ADDENDUM # 01

Project: Mt Diablo USD
Meadow Homes Elementary
Modernization of Three Elementary School Campuses - Increment 2
19six #: 23119.01
DSA #: 01-121440 INC 02
Bid #: 1945

Date: November 04, 2024

To all bidders submitting proposals for the above captioned project. This Addendum is hereby included in the Contract Documents to the same extent as though it were originally included therein. The following items modify, add to, delete from, or explain the drawings and/or specifications. The contents of this Addendum shall take precedence over the original specifications and plans.

BID DEADLINE:

The bid time shall not change.

A. NEW SPECIFICATIONS

Item #1: 01 21 00 Allowances
Item #2: 01 23 00 Alternates and Unit Pricing
Item #3: 01 25 10 Product Options and Substitutions
Item #4: 01 26 10 Requests for Information
Item #5: 01 31 20 Cloud-Based PM Software MT 190806
Item #6: 01 32 16 Construction Schedule Network Analysis
Item #7: 01 45 29 Testing and Laboratory Services
Item #8: 01 50 00 Temporary Facilities and Controls
Item #9: 01 52 10 Site Standards
Item #10: 01 66 10 Delivery, Storage and Handling
Item #11: 01 78 23 Operation and Maintenance Data
Item #12: 01 78 36 Warranties
Item #13: 02 07 10 Lead Based Paint Abatement Specifications
Item #14: 02 08 50 Asbestos Abatement Specifications
Item #15: 03 30 00 Cast In Place Concrete
Item #16: 06 41 00 Interior Architectural Laminated Casework
Item #17: 07 21 16 Building Insulation
Item #18: 07 92 00 Joint Sealants
Item #19: 08 41 00 Aluminum Entrance and Storefront
Item #20: 08 80 00 Glazing
Item #21: 09 29 00 Gypsum Board
Item #22: 09 51 13 Acoustic Panel Ceiling
Item #23: 09 65 19 Resilient Tile Flooring

Item #24: 09 67 00 Fluid Applied Flooring
Item #25: 09 68 13 Carpet Tile
Item #26: 09 84 00 Acoustic Wall and Ceiling Panels
Item #27: 09 84 33 Sound Absorbing Wall Units
Item #28: 10 17 19 Dimension Letter Signage
Item #29: 23 08 00 Commissioning of HVAC Systems
Item #30: 26 08 00 Commissioning of Electrical Systems
Item #31: 26 05 53 Identification for Electrical Systems
Item #32: 26 05 73 Power System Studies
Item #33: 26 09 43 Digital Lighting Controls
Item #34: 26 24 16 Panelboards
Item #35: 26 51 00 Interior Lighting
Item #36: 26 56 00 Exterior Lighting
Item #37: 31 23 33.14 Controlled Low Strength Material
Item #38: 32 17 00 Pavement Specialties
Item #39: 32 33 00 Site Furnishing

B. **NEW DRAWINGS**

Item #1: 2A-104 PC SHADE STRUCTURE PLANS & ELEVATIONS
Item #2: S-1 COVERSHEET
Item #3: S-2 GENERAL DATA
Item #4: S-3 GENERAL NOTES
Item #5: S-5 PROPERTIES & REBAR DETAILS
Item #6: S-6 VC14, VC18, V20, V28, & V30 FRAMING PLAN & ELEVATIONS
Item #7: S-7 VC14, VC18, V20, V28, & V30 FRAMING SCHEDULES
Item #8: S-10 PIER FOUNDATIN & SPREAD FOOTING SCHEDULES
Item #9: S-11 STANDARD DETAILS 1
Item #10: S-13 STANDARD DETAILS 3

C. CHANGES TO SPECIFIATIONS

Item #1: 01 91 000 General Commissioning
Item #2: 06 10 00 Rough Carpentry
Item #3: 23 00 00 Mechanical General Requirements
Item #4: 23 05 00 Heating Ventilating Air Conditioning
Item #5: 27 21 00 Data Communication Network Equipment
Item #6: 27 51 23.50 Educational Intercom
Item #7: 27 51 26 Assistive Listening Devices
Item #8: 28 20 00 Video Surveillance
Item #9: 28 46 00 Fire Detection and Alarm
Item #10: 31 05 13 Soils for Earthwork
Item #11: 31 10 00 Site Clearing
Item #12: 31 22 13 Rough Grading
Item #13: 31 23 00 Excavation & Fill
Item #14: 31 23 23.13 Backfill

Item #15: 32 11 23 Aggregate Base Course
Item #16: 32 13 16 Asphalt Pavement
Item #17: 32 12 36 Slurry Seal Ex Asphalt Paving
Item #19: 32 13 13 Concrete Paving

D. **CHANGES TO DRAWINGS**

NARRATIVE OF CHANGES:

a. **DSA Comments**: Adjustments have been made to incorporate feedback from the Division of the State Architect (DSA).
b. **CBC 2022 Updates**: The plans have been updated to comply with the 2022 California Building Code (CBC).
c. **New PC Metal Shade Structure**: A new prefabricated metal shade structure has been added to the plans.
d. **Building B.1 Remodel**: Changes have been made to the administration and library areas within Building B.1.
e. **FA, Technology, and Mechanical Modifications**: Adjustments to the fire alarm (FA) system, technology infrastructure, and mechanical systems have been made to accommodate the additional scope of work.

Item #1 2G-001 - TITLE SHEET
Item #2 2G-002 - SHEET INDEX & OVERALL EGRESS PLAN
Item #3 2G-003 - CALGREEN CODE COMPLIANCE
Item #4 2G-100 - CODE SITE PLAN
Item #5 2G-201 - BLDG A, B, C -EXIT ANALYSIS
Item #6 2G-202 - BLDG D, E -EXIT ANALYSIS
Item #7 2G-900 - ACCESSIBILITY CLEARANCES
Item #8 2C1.1 DEMOLITION PLAN
Item #9 2C2.1 DRAINAGE & GRADING PLAN
Item #10 2C3.1 HORIZONTAL CONTROL PLAN
Item #11 2C4.1 NOTES, DETAILS & LEGEND
Item #12 2C4.2 DETAILS
Item #13 2A-021 - DEMOLITION PLAN -BLDG A, C
Item #14 2A-022 - DEMOLITION PLAN -BLDG B
Item #15 2A-023 - DEMOLITION PLAN -BLDG D, E
Item #16 2A-031 - DEMO REFLECTED CEILING PLAN -BLDG A, B
Item #17 2A-032 - DEMO REFLECTED CEILING PLAN -BLDG D, E
Item #18 2A-041 - DEMO EXTERIOR ELEVATIONS -BLDG A, B1, B2
Item #19 2A-042 - DEMO EXTERIOR ELEVATIONS -BLDG C, D1, D2
Item #20 2A-043 - DEMO EXTERIOR ELEVATIONS -BLDG E
Item #21 2A-101 - ENLARGED SITE PLANS
Item #22 2A-104 - PC SHADE STRUCTURE PLANS & ELEVATION

Item #23 2A-111 - SITE DETAILS
Item #24 2A-201 - FLOOR PLAN -BLDG A, B, C
Item #25 2A-202 - FLOOR PLAN -BLDG D, E
Item #26 2A-211 - REFLECTED CEILING PLAN -BLDG A, B, C
Item #27 2A-212 - REFLECTED CEILING PLAN -BLDG D, E
Item #28 2A-221 - DEMO & NEW ROOF PLAN -BLDG B
Item #29 2A-222 - DEMO & NEW ROOF PLAN -BLDG C, MULTI-USE
Item #30 2A-251 - SIGNAGE & FINISH PLANS -BLDG A, B, C
Item #31 2A-252 - SIGNAGE & FINISH PLANS -BLDG D, E
Item #32 2A-301 - EXTERIOR ELEVATIONS -BLDG A, B1
Item #33 2A-302 - EXTERIOR ELEVATIONS -BLDG B2, C, D1& MPR
Item #34 2A-303 - EXTERIOR ELEVATIONS -BLDG D2, E
Item #35 2A-401 - BUILDING SECTIONS A, B.1
Item #36 2A-402 - BUILDING SECTIONS D.2, E
Item #37 2A-403 - WALL SECTIONS
Item #38 2A-501 - RESTROOM PLAN ENLARGEMENTS
Item #39 2A-502 - RESTROOM PLAN ENLARGEMENTS
Item #40 2A-601 - INTERIOR ELEVATIONS
Item #41 2A-602 - INTERIOR ELEVATIONS
Item #42 2A-603 - INTERIOR ELEVATIONS
Item #43 2A-604 - INTERIOR ELEVATIONS
Item #44 2A-605 - INTERIOR ELEVATIONS
Item #45 2A-606 - INTERIOR ELEVATIONS
Item #46 2A-607 - CASEWORK PLANS & ELEVATIONS
Item #47 2A-608 - CASEWORK PLANS & ELEVATIONS
Item #48 2A-701 - EXTERIOR DETAILS
Item #49 2A-801 - DOOR SCHEDULE
Item #50 2A-811 - WINDOW SCHEDULE
Item #51 2A-821 - DOOR AND WINDOW DETAILS
Item #52 2A-911 - WALL TYPES & DETAILS
Item #53 2A-921 - INTERIOR DETAILS
Item #54 2A-923 - CEILING DETAILS
Item #55 2A-924 - CEILING DETAILS
Item #56 2A-925 - SIGNAGE DETAILS
Item #57 2A-931 - CASEWORK DETAILS
Item #58 2S-100 - GENERAL NOTES
Item #59 2S-201 - BUILDING E -FOUNDATION PLAN
Item #60 2S-202 - ROOF FRAMING PLAN -BLDG B.1, C AND MULTI USE BUILDING
Item #61 2S-501 - TYPICAL CONCRETE DETAILS

Item #62 2S-800 - NAILING SCHEDULE
Item #63 2S-801 - FRAMING DETAILS
Item #64 2MP-001 - LEGENDS & NOTES -MECHANICAL & PLUMBING
Item #65 2MP-002 - SCHEDULES -MECHANICAL & PLUMBING
Item #66 2MP-201 - BLDGS A & C -DEMO & NEW FLOOR PLANS
Item #67 2MP-202 - BLDGS B.1, B.2 -DEMO & NEW FLOOR PLANS
Item #68 2MP-203 - BLDGS D.1, D.2 -DEMO & NEW FLOOR PLANS
Item #69 2MP-204 - BLDG E - DEMO & NEW FLOOR PLANS
Item #70 2MP-205 - MULTI-USE - DEMO & NEW FLOOR PLANS
Item #71 2MP-301 - BLDGS B.1, C & MU -DEMO & NEW ROOF PLAN
Item #72 2MP-401 - BLDG B.1 & E -DEMO & NEW RESTROOM PLANS
Item #73 2MP-402 - BLDG E - DEMO & NEW RESTROOM PLANS
Item #74 2MP-501 - CONTROLS -MECHANICAL
Item #75 2MP-601 - DETAILS -MECHANICAL & PLUMBING
Item #76 2MP-602 - DETAILS -MECHANICAL & PLUMBING
Item #77 2MP-801 - T24 - MECHANICAL
Item #78 2E000 - GENERAL INFORMATION
Item #79 2E001 - SCHEDULES
Item #80 2E002 - SCHEDULES
Item #81 2E003 - SCHEDULES
Item #82 2E100 - SITE PLAN
Item #83 2E201 - LIGHTING PLANS BLDG A
Item #84 2E202 - LIGHTING PLANS BLDG B.1
Item #85 2E203 - LIGHTING PLANS BLDG D.1
Item #86 2E204 - LIGHTING PLANS BLDG B.2 & D.2
Item #87 2E205 - LIGHTING PLANS BLDG E
Item #88 2E300 - POWER & SIGNAL PLANS BLDG C
Item #89 2E301 - POWER & SIGNAL PLANS BLDG A
Item #90 2E302 - POWER & SIGNAL PLANS BLDG B.1
Item #91 2E303 - POWER & SIGNAL PLANS BLDG D.1
Item #92 2E304 - POWER & SIGNAL PLANS BLDG D.2
Item #93 2E305 - POWER & SIGNAL PLANS BLDG E
Item #94 2E306 - POWER & SIGNAL PLANS MPR
Item #95 2E401 - DETAILS
Item #96 2E402 - DETAILS
Item #97 2E501 - GENERAL INFORMATION
Item #98 2E502 - SCHEDULES
Item #99 2E503 - SCHEDULES
Item #100 2E504 - SCHEDULES

Item #101 2E505 - SCHEDULES
Item #102 2F000 - GENERAL INFORMATION
Item #103 2F001 - VOLTAGE DROP CALCULATIONS
Item #104 2F002 - VOLTAGE DROP CALCULATIONS
Item #105 2F100 - SITE PLAN
Item #106 2F200 - FIRE ALARM PLANS BLDG C
Item #107 2F201 - FIRE ALARM PLANS BLDG A
Item #108 2F202 - FIRE ALARM PLANS BLDG B.1
Item #109 2F203 - FIRE ALARM PLANS BLDG D.1
Item #110 2F204 - FIRE ALARM PLANS BLDG D.2
Item #111 2F205 - FIRE ALARM PLANS BLDG E
Item #112 2F301 - RISER DIAGRAM
Item #113 2F401 - DETAILS
Item #114 2T-000 - TECHNOLOGY INFRASTRUCTURE COVER SHEET
Item #115 2T-010 - TECHNOLOGY INFRASTRUCTURE SITE PLAN DEMO
Item #116 2T-020 - TECHNOLOGY INFRASTRUCTURE FLOOR PLANS DEMO
Item #117 2T-021 - TECHNOLOGY INFRASTRUCTURE FLOOR PLANS DEMO
Item #118 2T-100 - TECHNOLOGY INFRASTRUCTURE SITE PLAN NEW
Item #119 2T-200 - TECHNOLOGY INFRASTRUCTURE FLOOR PLANS NEW
Item #120 2T-201 - TECHNOLOGY INFRASTRUCTURE FLOOR PLANS NEW
Item #121 2T-300 - TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLANS NEW
Item #122 2T-301 - TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLANS NEW
Item #123 2T-700 - TECHNOLOGY INFRASTRUCTURE RACK ELEVATIONS
Item #124 2T-701 - TECHNOLOGY INFRASTRUCTURE SINGLE LINE DIAGRAMS
Item #125 2T-800 - TECHNOLOGY INFRASTRUCTURE DETAILS
Item #126 2T-801 - TECHNOLOGY INFRASTRUCTURE DETAILS
Item #127 2T-802 - TECHNOLOGY INFRASTRUCTURE DETAILS
Item #128 2T-803 - TECHNOLOGY INFRASTRUCTURE DETAILS

ATTACHMENTS:
Diagrammatic Phasing Plan – Meadow Homes ES

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Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt 10/23/2024 11:16:23 AM

PHASE 1

PHASE 2

PHASE 3

INC 1 NO WORK

BLDG A

BLDG B.2

BLDG B.1

BLDG C

BLDG D.2

ADMIN - BLDG D.1

MULTI-USE

BLDG J.2

BLDG J.1

BLDG E

BLDG I.3

BLDG I.2

BLDG I.1

(E) KINDER PLAYGROUND

BLDG H.4

BLDG H.3

BLDG H.2

BLDG H.1

BLDG F

BLDG G.4

BLDG G.3

BLDG G.2

BLDG G.1

THIS PARKING LOT IS ASSOCIATED WITH THE ADJACENT PARK AND IS NOT OPERATED BY THE SCHOOL

FH

DN

19-6

560 HIGUERA STREET, SUITE C
SAN LUIS OBISPO, CA 93401
TEL (805) 476-0399

INC. II PHASING PLAN

MEADOW HOMES ES MODERNIZATION

1 SITE PLAN
SCALE: 1" = 20'-0"

TRUE NORTH

DOCUMENT 01 21 00

ALLOWANCES

1. GENERAL

1.1. RELATED DOCUMENTS AND PROVISION

Contractor shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1.1.1. General Conditions including without limitation, Contract Terms and Definitions;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any).

1.1.4. Agreement;

1.1.5. Bid Form; and

1.2. SUMMARY

1.2.1. **THE SPECIFIC ALLOWANCES FOR THIS PROJECT ARE AS LISTED IN THE AGREEMENT.**

1.2.2. This Document includes administrative and procedural requirements governing Allowances.

1.2.3. Certain items are specified in the Contract Documents by Allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements may be issued by Change Order or similar document.

1.3. SELECTION AND PURCHASE

1.3.1. At the earliest practical date after award of the Contract, Contractor shall advise District of the date when final selection and purchase of each product or system described by an Allowance must be completed to avoid delaying the Work.

1.3.2. At District's request, obtain proposals for each Allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

1.3.3. Purchase products and systems selected by District from the designated supplier.

1.4. SUBMITTALS

1.4.1. Submit proposals for purchase of products or systems included in Allowances, in the form specified for Change Orders.

1.4.2. Submit invoices or delivery slips to show actual quantities of materials delivered to the Site for use in fulfillment of each Allowance.

1.4.3. Coordinate and process submittals for Allowance items in same manner as for other portions of the Work.

1.5. COORDINATION

Coordinate Allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6. PAYMENT FOR ALLOWANCES

1.6.1. Allowance shall include all-inclusive cost to Contractor of specific products and materials under Allowance and Contractor may bill its time, materials, and other items in the identical structure as a Change Order.

1.7. UNUSED MATERIALS

1.7.1. Return unused materials purchased under an Allowance to manufacturer or supplier for credit to District, after installation has been completed and accepted.

1.7.2. If requested, prepare and deliver unused material for storage by District when it is not economically practical (as determined by District) to return the material for credit. If directed, deliver unused material to District's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

2. EXECUTION

2.1. EXAMINATION

Examine products covered by an Allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

2.2. PREPARATION

Coordinate materials and their installation for each Allowance with related materials and installations to ensure that each Allowance item is completely integrated and interfaced with related work.

END OF DOCUMENT

DOCUMENT 01 23 00

ALTERNATES AND UNIT PRICING

1. ALTERNATES AND UNIT PRICES

1.1. RELATED DOCUMENTS AND PROVISIONS

Contractor shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1.1.1. General Conditions;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Bid Form and Proposal; and

1.1.5. Instruction to Bidders.

END OF DOCUMENT

DOCUMENT 01 25 10

PRODUCT OPTIONS AND SUBSTITUTIONS

1. GENERAL

1.1. RELATED DOCUMENTS AND PROVISIONS

Contractor shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1.1.1. General Conditions;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any); and

1.1.4. Instructions to Bidders.

1.2. DOCUMENT INCLUDES

1.2.1. Product options.

1.2.2. Limitations on Substitutions.

1.2.3. Regulatory Requirements.

1.2.4. Substitution Representation.

1.2.5. Submittal Procedure.

1.2.6. District's Review.

1.3. DEFINITIONS

1.3.1. Requests for changes in products, materials, or equipment required by Contract Documents proposed by the Contractor prior to and after award of the Contract are considered requests for substitutions. Contractor must refer to the Instructions to Bidders, the General Conditions and the Special Conditions for limitations on when requests for substitution(s) are permitted on Project. The following are not considered substitutions:

1.3.1.1. Revisions to Contract Documents requested by the District or Architect.

1.3.1.2. Specified options of products, materials, and equipment included in Contract Documents.

1.3.2. Whenever in the Specifications any material, product, thing, or service is indicated or specified by grade, patent, or proprietary name, or by name of manufacturer, that Specification shall be deemed to be used for the purpose of facilitating the description

of the material, product, thing, or service, and shall be deemed to be followed by the words "or equal," except:

1.3.2.1. When designated to match other material, product, thing, or service in use on a particular public improvement either completed or in the course of completion; or

1.3.2.2. When designated as a field test or experiment.

1.4. PRODUCT OPTIONS

1.4.1. **Products Specified by Reference Standards or by Description Only**: Any Product meeting those standards or description.

1.4.2. **Products Specified by Naming One or More Manufacturers with or without Provision for Substitution**: Products of manufacturers named and meeting specifications with substitution of Products or manufacturer only when submitted under provisions of this section.

1.5. LIMITATIONS ON SUBSTITUTIONS

1.5.1. **Requests for substitution prior to bid or after bid, shall only be permitted as indicated in and in accordance with requirements specified in the Instructions to Bidders and the Special Conditions.**

1.5.2. The Bid shall be based upon the standards of quality established by those items of equipment and/or materials which are specifically identified in the Contract Documents.

1.5.3. Burden of proof of merit of requested substitution is the responsibility of the Contractor.

1.5.4. It is the sole responsibility of Contractor to submit the proper content of any requests for substitutions. Incomplete submittals will be rejected.

1.6. REGULATORY REQUIREMENTS

1.6.1. It shall be the responsibility of Contractor to obtain all regulatory approvals required for proposed substitutions.

1.6.2. All regulatory approvals shall be obtained for proposed substitutions prior to submittal of substitution request to Architect.

1.6.3. All costs incurred by the District in obtaining regulatory approvals for proposed substitutions to include the costs of the Architect and any authority having jurisdiction over the Project shall be reimbursed to the District. Costs of these services shall be reimbursed regardless of final acceptance or rejection of substitution.

1.6.4. Substitutions of materials or work procedures which affect the health, safety and welfare of the public shall have prior approval of the Division of the State Architect (DSA) field representative.

1.7. SUBSTITUTION REPRESENTATION

1.7.1. In submitting a request for substitution, Contractor makes the representation that:

1.7.2. Contractor has investigated the proposed substitution and determined that it meets or exceeds the quality level of the specified product;

1.7.3. Contractor has determined that all components of the proposed substitution are identical and fully interchangeable with the product name and number specified;

1.7.4. Contractor will provide the same warranty or guarantee for the substitution as for the specified product;

1.7.5. Contractor will coordinate installation and make changes to other work which may be required for the work to be completed with no additional cost to the District;

1.7.6. Contractor waives claims for additional cost or time extension which may subsequently become apparent; and

1.7.7. Contractor will reimburse District for the cost of District's and Architect's review or redesign services associated with substitution request.

1.8. SUBMITTAL PROCEDURE

1.8.1. Submit three (3) copies of each request.

1.8.2. Submit request using Architect's Substitution Request Form as indicated in Contract Forms and Submittals. Substitution requests that are not on Architects's required form shall be returned without review.

1.8.3. Limit each request to one proposed substitution.

1.8.4. Request to include sufficient data so that direct comparison of proposed substitution can be made.

1.8.5. Provide complete documentation for each request. Documentation shall include the following information, as appropriate, as a minimum:

1.8.5.1. Statement of cause for substitution request.

1.8.5.2. Identify product by specification section and article number.

1.8.5.3. Provide manufacturer's name, address, and phone number. List fabricators, suppliers, and installers as appropriate.

1.8.5.4. List similar projects where proposed substitution has been used, dates of installation and names of Architect and District.

1.8.5.5. List availability of maintenance services and replacement materials.

1.8.5.6. Documented or confirmation of regulatory approval.

1.8.5.7. Product data, including drawings and descriptions of products.

1.8.5.8. Fabrication and installation procedures.

1.8.5.9. Samples of proposed substitutions.

1.8.5.10. Itemized comparison of significant qualities of the proposed substitution with those of the product specified. Significant qualities may include size, weight, durability, performance requirements and visual effects.

1.8.5.11. Coordination information, including a list of changes or modifications needed to other items of work that will become necessary to accommodate proposed substitution.

1.8.5.12. Statement on the substitutions effect on the Construction Schedule.

1.8.5.13. Cost information including a proposal of the net reduction in cost to the Contract Price if the proposed substitution is accepted.

1.8.5.14. Certification that the substitution is equal to or better in every respect to that required by the Contract Documents and that substitution will perform adequately in the application intended.

1.8.5.15. Waiver of right to additional payment or time that may subsequently become necessary because of failure of substitution to perform adequately.

1.8.6. Inadequate warranty, vagueness of submittal, failure to meet specified requirements, or submittal of insufficient data will be cause for rejection of substitution request.

1.9. DISTRICT'S REVIEW

1.9.1. The District will accept or reject proposed substitution within a reasonable amount of time, 12 calendar days

1.9.2. If a request is made prior to bid opening and the District has not completed its review, Contractor shall base its bid on the product specified only.

1.9.3. There shall be no claim for additional time for review of proposed substitutions.

1.9.4. Final acceptance of a substitution submitted prior to the date established for the receipt of bids will be in the form of an addendum.

END OF DOCUMENT

SUBSTITUTION REQUEST FORM

Substitutions are only allowed within number of days specified. Use this form for requesting "or equal" products and materials.

Project:	Substitution Request Number:
	From:
To:	Date:
	Project Number:

Specification Section Title:		
Section Number:	Page:	Article/Paragraph:
Specified Item:		

Proposed Substitution:	
Manufacturer:	Address:
Contact Name:	Phone Number:
☐ Comparison between proposed substitution and specified product is attached. Note all differences.	

Reason for not using specified item:

☐ Specified product is no longer available.
☐ Substitution will improve lead time by _____ days
☐ Substitution will save Owner $ _____
☐ Other:

☐ List 3 similar installations including project name, address, owner, and date installed is attached.

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explanation attached.

Supporting Data Attached:

☐ Product Data (indicate any options to be included)

☐ Drawings ☐ Test Reports ☐ Samples ☐ Color Chart ☐ Other:

Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable is available.
- Proposed substitution will not affect or delay Construction Progress Schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including architectural or engineering design, detailing, and construction costs caused by the requested substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.
- Substitutions for products or systems involving structural, fire/life safety and access compliance will require AHJ approval. This will add time required to review those substitutions requiring AHJ approval. Contractor is solely responsible for all documentation, cost, and time required to obtain AHJ approval.

Submitted by:	Firm:
Signature:	Date:
Comments:	

A/E Review:

☐ Approve Substitution.
☐ Approve Substitution as Noted.
☐ Reject Substitution. Use specified product.
☐ Reject Substitution. Use specified product. Substitution request received too late.

Signed by:	Date:
Comments:	

Owner's Review and Action (Approval of substitution is not valid without Owner's signature)

☐ Substitution approved.
☐ Substitution approved as Noted.
☐ Substitution rejected. Use specified product.

Signed by:	Date:

Comments:

End of Substitution Request Form

END OF DOCUMENT

DOCUMENT 01 26 10

REQUESTS FOR INFORMATION

1. GENERAL

1.1. RELATED DOCUMENTS AND PROVISIONS

Contractor shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1.1.1. General Conditions;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Documentation Requirements;

1.1.5. Electronic Data Transfer;

1.1.6. Submittals;

1.1.7. Contract Closeout and Final Cleaning;

1.1.8. Operation and Maintenance Data;

1.1.9. Warranties; and

1.1.10. Record Documents;

1.2. DESCRIPTION

This Document contains procedures to be followed by the Contractor to request Architect provide additional information necessary to clarify or amplify an item in the Contract Documents that Contractor thinks is not clearly shown or called for in the Drawings or Specifications or other portions of the Contract Documents, or to address issues that have arisen under field conditions.

1.3. PROCEDURES

1.3.1. Notification by Contractor:

1.3.1.1. Submit all requirements for clarification or additional information, whether originated by the Contractor, a Subcontractor, or supplier at any tier, in writing to District as required by the Contract Documents.

1.3.1.2. Architect's review of or responses to RFI's shall not constitute an approval, direction, or procedure related to the construction site safety precautions, procedures, or methodology of the Contractor.

1.3.1.3. Number RFIs sequentially. Follow RFI number with sequential alphabetical suffix as necessary for each resubmission. For example, the first RFI would be "001." The second RFI would be "002." Contractor will limit each RFI to a single issue. Information which is discernable from the contract documents; construction means and methods; product substitution submittals; product submittals; and construction site safety will not be addressed by the Architect in responding to a RFI.

1.3.1.4. All substitutions and Requests for Information (RFI) that affect Structural Safety, Fire-Life Safety, Access Compliance or Energy (as applicable) shall be submitted to the Division of the State Architect for review and approval.

1.3.1.5. All RFIs shall reference all applicable Contract Document(s), including Specification section(s), detail(s), page number(s), drawing number(s), and sheet number(s), etc. Contractor shall make suggestions and interpretations of the issue raised by each RFI. An RFI cannot modify the Contract Price, Contract Time, or the Contract Documents. Architect's response to a RFI is not a change order or directive authorizing an increase in construction cost or time.

1.3.1.6. Limit each RFI to one subject.

1.3.1.7. Submit a RFI if one of the following conditions occurs:

1.3.1.7.1. Contractor discovers an unforeseen condition or circumstance that is not described in the Contract Documents.

1.3.1.7.2. Contractor discovers an apparent conflict or discrepancy between portions of the Contract Documents that appears to be inconsistent or is not reasonably inferred from the intent of the Contract Documents.

1.3.2. Contractor shall not:

1.3.2.1. Submit an RFI as a request for substitution.

1.3.2.2. Submit an RFI as a submittal.

1.3.2.3. Submit an RFI without first having thoroughly reviewed the Contract Documents.

1.3.2.4. Submit an RFI in a manner that suggests that specific portions of the Contract Documents are assumed to be excluded or by taking an isolated portion of the Contract Documents in part rather than whole.

1.3.2.5. Submit an RFI in an untimely manner without proper coordination and scheduling of Work related trades.

1.3.2.6. If Contractor submits an RFI contrary to the above, Contractor shall pay the cost of any review, which cost shall be deducted from the Contract Price.

1.3.3. Contractor shall be liable to the District for all costs incurred by the District associated with the processing, reviewing, evaluating and responding to any RFI, including without limitation, fees of the Architect and any other design consultant to the Architect or the District, that District reasonably determines:

1.3.3.1. Does not reflect adequate or competent supervision or coordination by the Contractor or any Subcontractor; or

1.3.3.2. Does not reflect the Contractor's adequate or competent knowledge of the requirements of the Work or the Contract Documents;

1.3.3.3. Requests an interpretation or decision of a matter where the information sought is equally available to the Contractor; or

1.3.3.4. Is not justified for any other reason.

1.4. RESPONSE TIME

1.4.1. Architect shall review RFIs and issue a response and instructions to Contractor within a reasonable time frame from the date the RFI is received and dated by the District.

1.4.2. Responses from the District will not change any requirement of the Contract unless so noted by the District in the response to the RFI. Should the Contractor contend that a response to an RFI causes a change to the Contract that requires a Change Order, the Contractor shall, before proceeding, give written notice to the District, indicating that the Contractor considers the District's response to the RFI to be a Change Order, as required by the Contract Documents.

1.4.3. Should Contractor direct its Subcontractors to proceed with the Work affected before receipt of a response from Architect, any portion of the Work which is not done in accordance with the Architect's ultimate interpretations, clarifications, instructions, or decisions is subject to removal or replacement at Contractor's sole expense and responsibility.

1.4.4. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures." If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 calendar days of receipt of the RFI response.

END OF DOCUMENT

SECTION 01 31 20

CLOUD-BASED PROJECT MANAGEMENT SOFTWARE

1 GENERAL

1.1 GENERAL PROJECT MANAGEMENT OBJECTIVES:

1.1.1 Contractor to provide and utilize a cloud-based project management software to manage project documentation.

1.1.2 Use of this project management software will not replace or change any contractual responsibilities of the construction team members.

1.1.3 Each Project team member of the Contractor: Superintendent, Project Engineer, Scheduler, and Project Manager, et al., shall have access to the Internet and an Internet e-mail address in order to communicate with various project team members. The Contractor shall provide immediately upon receipt of the Notice to Proceed confirmation of these conditions and the names, positions, and e-mail addresses to the Owner.

1.2 SOFTWARE AND HARDWARE REQUIREMENTS:

1.2.1 The Contractor is required to provide at both the field office and home office location from where this project is managed computer hardware and software that meet the requirements of Procore® Project Management software. The Contractor is required to purchase Procore® software, hardware and software required to access this system via the Internet. In addition, Contractor shall provide and pay for access for up to eight (8) Procore® users for Owner use including Architect, Construction Manager, and Owner. Owner users shall have full access to all information related to the project.

1.2.2 The Contractor shall provide the Owner with Procore® training. The anticipated training will take place within fifteen (15) days of Notice to Proceed and will be held either remotely or at the District Office in Concord, California, whichever is preferred by the Owner.

1.2.3 The Contractor shall provide an adequate number of users to properly manage the Project in accordance with the Project schedule. The Contractor shall have Internet access through an Internet service provider of its choice at its cost.

1.3 SYSTEM MANAGEMENT AND USE:

1.3.1 The Contractor will administer the Procore® application in accordance with the following.

1.3.1.1 There shall be a digital record of all additions, deletions or changes to information included in the Procore® application

1.3.1.2 Contractor shall provide a back-up of all information included in the Procore® system on a quarterly basis. Backup information shall be in a logical organized system that that is acceptable to the Owner and that allows for expeditious retrieval of all project documentation.

1.3.1.3 Contractor shall maintain the Procore® application and Owner access to the Procore® system through end of the project Warranty.

1.3.1.4 Contractor will provide an electronic copy of all documentation included in the Procore system in a logical organized manner that allows for expeditious retrieval of all project documentation at Final Completion and at end of project Warranty.

1.3.1 All costs associated with the Contractor's use of the Procore® system, including computer hardware and internet service are the responsibility of the Contractor.

1.4 USE BY SUBCONTRACTORS:

1.4.1 The Owner encourages the Contractor to utilize the Procore® project management application for communicating with its Subcontractors. The Contractor shall inform all Subcontractors of the purpose of the project management system and how it can assist them in obtaining information for the project.

1.5 COMMUNICATION PROCESS:

1.5.1 The Owner's will outline and detail communication, correspondence and coordination procedures for the Project.

1.5.2 Most Project communication will take place in the Procore® project management system by creating and distributing documents directly within the system, or by entering manually in the system dates and descriptions of items to track over time. All documents requiring formal signatures will be printed, and their hard copies signed and distributed.

1.5.3 The official submittal log will be maintained within Procore®. The Contractor will use the Procore® to submit and distribute prints, documents, reports, samples, etc. Physical samples will be transmitted in Procore® but delivered in the traditional manner. The Procore® project management system will be used to track and expedite processing of these items.

1.5.4 Contractor will be required to maintain all current drawings within Procore®. The Contractor will be able to control administration of the drawings which includes but is not limited to: the ability to create a custom folder structure; folder-level permissions; auto-notifications for certain events (e.g., delete, check out) using Procore's® messaging system and the user's email address; auto-detection and uploading of a drawing's reference files; detailed history for a document, including revisions and access logs.

1.5.5 Contractor will be required to utilize modules including but not limited to: daily reports; meeting minutes; punch lists; requests for information (RFI); change items; cost events; and owner change order within the Procore® project management system. The Contractor can enter an RFI and the Architect/Engineer respond to the RFI completely within the Procore® project management system without creating a hard copy. Support documentation in hard copy format for any document in Procore® may be scanned into an electronic file and attached in Procore® to documents.

1.5.6 Contractor is required to use a digital camera in order to photo-document job progress and upload the associated images taken on a regular basis to Procore®. Each daily report is to be accompanied by daily progress photos.

1.6 ARCHIVING:

1.6.1 Contractor, at its cost and expense, will provide the Owner backups (on digital media) as specified herein of documents in Procore®. In the event of any dispute as to what items are the true and correct project records, information contained the backups will control unless data has been digitally altered after distribution within the Procore® system.

ARTICLE 2 - PRODUCTS

2.1 Cloud Based Project Management Software shall be the following or equal:

Procore® Project Management: www.procore.com

ARTICLE 3 - EXECUTION

3.1 Project Management Software is an Internet-Accessed Centralized Database of project information and consists of several separate modules or master file divisions for ease of organization. Available file divisions include but are not limited to: Correspondence, Daily Reports, RFI's, Transmittals, Submittals, Meetings, Documents, Drawings, Specifications, Punch Lists, Reports, Project Photos, Project Team, Schedule of Values, change items, cost events, owner change orders, owner request for proposals, etc.

3.2 The Contractor shall provide the Owner with the number of user licenses for Procore® as described in paragraph 1.2.1 above. Each major team member for the Contractor (i.e. project manager, superintendent, etc.) must have a separate user license. The Contractor shall ensure that all major team members on this project have Internet access available during the duration of this Project.

3.3 Major Subcontractors are encouraged to utilize Procore® for the duration of their scope of work from commencement to completion of their scope of work. Major Subcontractors as a minimum shall be defined as mechanical, electrical, plumbing, structural steel, masonry, security, drywall, roofing, and others deemed beneficial by the Contractor.

END OF SECTION

DOCUMENT 01 32 16

CONSTRUCTION SCHEDULE – NETWORK ANALYSIS

1. GENERAL

1.1. RELATED DOCUMENTS AND PROVISION

Contractor shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1.1.1. General Conditions;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Coordination and Meetings; and

1.1.5. Submittals.

1.2. REFERENCES

1.2.1. Construction Planning and Scheduling Manual - A Manual for General Contractors and the Construction Industry, The Associated General Contractors of America (AGC).

1.2.2. CSI - Construction Specifications Institute MP-2-1 Master Format.

1.2.3. U.S. National Weather Service - Local Climatological Data.

1.3. PERFORMANCE REQUIREMENTS

1.3.1. Ensure adequate scheduling during construction activities so Work may be prosecuted in an orderly and expeditious manner within stipulated Contract Time.

1.3.2. Ensure coordination of Contractor and Subcontractors at all levels.

1.3.3. Ensure coordination of submittals, fabrication, delivery, erection, installation, and testing of products, materials and equipment.

1.3.4. Ensure on-time delivery of District furnished products, materials and equipment.

1.3.5. Ensure coordination of jurisdictional reviews.

1.3.6. Prepare applications for payment.

1.3.7. Monitor progress of Work.

1.3.8. Prepare proper requests for changes to Contract Time.

1.3.9. Prepare proper requests for changes to Construction Schedule.

1.3.10. Assist in detection of schedule delays and identification of corrective actions.

1.4. QUALITY ASSURANCE

1.4.1. Perform scheduling work in accordance with Construction Planning and Scheduling Manual published by the AGC.

1.4.2. Maintain one copy of Construction Planning and Scheduling Manual on Site.

1.4.3. In the event of discrepancy between the AGC publication and the Contract Documents, provisions of the Contract Documents shall govern.

1.5. QUALIFICATIONS

1.5.1. **Scheduler**:

1.5.1.1. Contractor shall retain a construction scheduler to work in enough capacity to perform all of the Contractor's requirements to prepare the Construction Schedule. The Scheduler shall plan, coordinate, execute, and monitor a cost/resource loaded CPM schedule as required for Project and have a minimum of five (5) years direct experience using Primavera Project Management or another program if pre-approved by the District.

1.5.1.2. Scheduler will cooperate with District and shall be available on site for monitoring, maintaining and updating schedules in a timely manner.

1.5.1.3. District has the right to reject the Scheduler based upon a lack of experience as required by this Document or based on lack of performance and timeliness of schedule submittals/fragnets on past projects. Contractor shall within seven (7) calendar days of District's rejection, propose another scheduler who meets the experience requirements stated above.

1.5.2. **Administrative Personnel**: Five (5) years minimum experience in using and monitoring schedules on comparable projects.

1.6. SUBMITTALS

1.6.1. Submit Short Interval Schedule at each Construction Progress Meeting.

1.6.2. Submit Time Adjustment Schedule within five (5) days of commencement of a claimed delay.

1.6.3. Submit Recovery Schedules as required for timely completion of Work or when demanded by the District.

1.6.4. Submit job cost reports when demanded by the District.

1.6.5. Submit one (1) reproducible and two (2) copies of each schedule and cost report.

1.6.6. Submit large format plotted schedules monthly or at the request of the District or Construction Manager.

1.7. REVIEW AND EVALUATION

1.7.1. Contractor shall participate in joint review of Construction Schedule and Reports with District and Architect.

1.7.2. Within seven (7) days of receipt of District and/or Architect's comments provide satisfactory revision to Construction Schedule or adequate justification for activities in question.

1.7.3. In the event that an activity or element of Work is not detected by District or Architect review, such omission or error shall be corrected by next scheduled update and shall not affect Contract Time.

1.7.4. Acceptance by District of corrected Construction Schedule shall be a condition precedent to making any progress payments.

1.7.5. Cost-loaded values of Construction Schedule shall be basis for determining progress payments.

1.7.6. Review and acceptance by District and Architect of Preliminary Construction Schedule or Construction Schedule does not constitute responsibility whatsoever for accuracy or feasibility of schedules nor does such acceptance expressly or impliedly warrant, acknowledge or admit reasonableness of activities, logic, duration, manpower, cost or equipment loading stated or implied on schedules.

1.8. FORMAT

1.8.1. Prepare diagrams and supporting mathematical analyses using Precedence Diagramming Method, under concepts and methods outlined in AGC Construction Planning and Scheduling Manual, or other method pre-approved by District.

1.8.2. **Listings**: Reading from left to right, in ascending order for each activity.

1.8.3. **Diagram Size**: 42 inches maximum height x width required.

1.8.4. **Scale and Spacing**: To allow for legible notations and revisions.

1.8.5. Illustrate order and interdependence of activities and sequence of Work.

1.8.6. Illustrate complete sequence of construction by activity.

1.8.7. Provide legend of symbols and abbreviations used.

1.9. COST AND SCHEDULE REPORTS

1.9.1. **Activity Analysis**: Tabulate each activity of network diagram and identify for each activity:

1.9.1.1. Description.

1.9.1.2. Interface with outside contractors or agencies.

1.9.1.3. Number.

1.9.1.4. Preceding and following number.

1.9.1.5. Duration.

1.9.1.6. Earliest start date.

1.9.1.7. Earliest finish date.

1.9.1.8. Actual start date.

1.9.1.9. Actual finish date.

1.9.1.10. Latest start date.

1.9.1.11. Latest finish date.

1.9.1.12. Total and free float.

1.9.1.13. Identification of critical path activity.

1.9.1.14. Monetary value keyed to Schedule of Values.

1.9.1.15. Manpower requirements.

1.9.1.16. Responsibility.

1.9.1.17. Percentage complete.

1.9.1.18. Variance positive or negative.

1.9.2. **Cost Report**: Tabulate each activity of network diagram and identify for each activity:

1.9.2.1. Description.

1.9.2.2. Number.

1.9.2.3. Total cost.

1.9.2.4. Percentage complete.

1.9.2.5. Value prior to current period.

1.9.2.6. Value this period.

1.9.2.7. Value to date.

1.9.3. **Required Sorts**: List activities in sorts or groups:

1.9.3.1. By activity number.

1.9.3.2. By amount of float time in order of early start.

1.9.3.3. By responsibility in order of earliest start date.

1.9.3.4. In order of latest start dates.

1.9.3.5. In order of latest finish dates.

1.9.3.6. Application for payment sorted by Schedule of Values.

1.9.3.7. Listing of activities on critical path.

1.9.4. Listing of basic input data which generates schedule.

1.10. CONSTRUCTION SCHEDULE

1.10.1. Contractor shall develop and submit a cost loaded preliminary schedule of construction (or Preliminary Construction Schedule) as required by this Document and the Contract Documents. It shall be submitted in computer generated network format and shall be organized by Activity Codes representing the intended sequencing of the Work, and with time scaled network diagrams of activities. The Preliminary Construction Schedule shall include activities such as mobilization, preparation of submittals, specified review periods, procurement items, fabrication items, milestones, and all detailed construction activities.

1.10.2. Upon District's acceptance of the Preliminary Construction Schedule, Contractor shall update the accepted Preliminary Construction Schedule until Contractor's Construction Schedule is fully developed and accepted. Since updates to the Construction Schedule are the basis for payment to Contractor, submittal and acceptance of the Construction Schedule and updates shall be a condition precedent to making of monthly payments, as indicated in the General Conditions.

1.10.3. Failure to submit an adequate or accurate Preliminary Construction Schedule, Construction Schedule, updates thereto or failure to submit on established dates, will be considered a breach of Contract.

1.10.4. Failure to include any activity shall not be an excuse for completing all Work by required Completion Date.

1.10.5. Activities of long intervals shall be broken into increments no longer than fourteen (14) days or a value over $20,000.00, unless approved by the District or it is a non-construction activity for procurement and delivery.

1.10.6. The Construction Schedule shall comply with the following and include the following:

1.10.6.1. Provide a written narrative describing Contractor's approach to mobilization, procurement, and construction during the first thirty (30) calendar days

including crew sizes, equipment and material delivery, Site access, submittals, and permits.

1.10.6.2. Shall designate critical path or paths.

1.10.6.3. Procurement activities to include mobilization, shop drawings and sample submittals.

1.10.6.4. Identification of key and long-lead elements and realistic delivery dates.

1.10.6.5. Construction activities in units of whole days limited to fourteen (14) days for each activity except non-construction activities for procurement and delivery.

1.10.6.6. Approximate cost and duration of each activity.

1.10.6.7. Shall contain seasonal weather considerations.

1.10.6.8. Indicate a date for Project Completion that is no later than Completion Date subject to any time extensions processed as part of a Change Order.

1.10.6.9. Conform to mandatory dates specified in the Contract Documents.

1.10.6.10. Contractor shall allow for inclement weather in the Proposed Baseline Schedule by incorporating an activity titled “Rain Day Impact Allowance” as the last activity prior to the Completion Milestone. No other activities may be concurrent with it. The duration of the Rain Day Impact Allowance activity will be in accordance with the Special Conditions, and will be calculated from the Notice to Proceed until the Completion.

1.10.6.11. Level of detail shall correspond to complexity of work involved.

1.10.6.12. Indicate procurement activities, delivery, and installation of District furnished material and equipment.

1.10.6.13. Designate critical path or paths.

1.10.6.14. Subcontractor work at all levels shall be included in schedule.

1.10.6.15. As developed, shall show sequence and interdependence of activities required for complete performance of Work.

1.10.6.16. Shall be logical and show a coordinated plan of Work.

1.10.6.17. Show order of activities and major points of interface, including specific dates of completion.

1.10.6.18. Duration of activities shall be coordinated with Subcontractors and suppliers and shall be best estimate of time required.

1.10.6.19. Shall show description, duration and float for each activity.

1.10.7. **Activity.** An activity shall meet the following criteria:

1.10.7.1. Any portion or element of Work, action, or reaction that is precisely described, readily identifiable, and is a function of a logical sequential process.

1.10.7.2. Descriptions shall be clear and concise. Beginning and end shall be readily verifiable. Starts and finishes shall be scheduled by logical restraints.

1.10.7.3. Responsibility shall be identified with a single performing entity.

1.10.7.4. Additional codes shall identify building, floor, bid opening and/or District's receipt of proposals, whichever is acceptable and CSI classification.

1.10.7.5. Assigned dollar value (cost-loading) of each activity shall cumulatively equal total contract amount. Mobilization, bond and insurance costs shall be separate. General requirement costs, overhead, profit, shall be prorated throughout all activities. Activity costs shall correlate with Schedule of Values.

1.10.7.6. Each activity shall have manpower-loading assigned.

1.10.7.7. Major construction equipment shall be assigned to each activity.

1.10.7.8. Activities labeled start, continue or completion are not allowed.

1.10.8. **Equipment and Materials.** For major equipment and materials show a sequence of activities including:

1.10.8.1. Preparation of shop drawings and sample submissions.

1.10.8.2. Review of shop drawings and samples.

1.10.8.3. Finish and color selection.

1.10.8.4. Fabrication and delivery.

1.10.8.5. Erection or installation.

1.10.8.6. Testing.

1.10.9. Include a minimum of fifteen (15) days prior to Completion Date for punch lists and clean up. No other activities shall be scheduled during this period.

1.11. SHORT INTERVAL SCHEDULE

1.11.1. The Four-Week Rolling Schedule shall be based on the most recent District Accepted Construction Schedule or Update. It shall include weekly updates to all construction, submittal, fabrication/procurement, and separate Work Contract activities. Contractor shall ensure that it accurately reflects the current progress of the Work.

1.11.2. Shall be fully developed horizontal bar-chart-type schedule directly derived from Construction Schedule.

1.11.3. Prepare schedule on sheet of sufficient width to clearly show data.

1.11.4. Provide continuous heavy vertical line identifying first day of week.

1.11.5. Provide continuous subordinate vertical line identifying each day of week.

1.11.6. Identify activities by same activity number and description as Construction Schedule.

1.11.7. Show each activity in proper sequence.

1.11.8. Indicate graphically sequences necessary for related activities.

1.11.9. Indicate activities completed or in progress for previous two (2) week period.

1.11.10. Indicate activities scheduled for succeeding three (3) week period.

1.11.11. Further detail should be added if necessary to monitor schedule or if requested by District.

1.12. REQUESTED TIME ADJUSTMENT SCHEDULE

1.12.1. Updated Construction Schedule shall not show a Completion Date later than the Contract Time, subject to any time extensions processed as part of a Change Order.

1.12.2. If an extension of time is requested, a separate schedule entitled "Requested Time Adjustment Schedule" shall be submitted to District and Architect.

1.12.3. Indicate requested adjustments in Contract Time which are due to changes or delays in completion of Work.

1.12.4. Extension request shall include forecast of Project Completion date and actual achievement of any dates listed in Contract Documents.

1.12.5. To the extent that any requests are pending at time of any Construction Schedule update, Time Adjustment Schedule shall also be updated.

1.12.6. Schedule shall be a time-scaled network analysis.

1.12.7. Accompany schedule with formal written time extension request and detailed impact analysis justifying extension.

1.12.8. Time impact analysis shall demonstrate time impact based upon date of delay, and status of construction at that time and event time computation of all affected activities. Event times shall be those as shown in latest Construction Schedule.

1.12.9. Activity delays shall not automatically constitute an extension of Contract Time.

1.12.10. Failure of Subcontractors shall not be justification for an extension of time.

1.12.11. Float is not for the exclusive use or benefit of any single party. Float time shall be apportioned according to needs of Project, as determined by the District.

1.12.12. Float suppression techniques such as preferential sequencing, special lead/lag logic restraints, extended activity durations, or imposed dates shall be apportioned according to benefit of Project.

1.12.13. Extensions will be granted only to extent that time adjustments to activities exceed total positive float of the critical path and extends Completion date.

1.12.14. District shall not have an obligation to consider any time extension request unless requirements of Contract Documents, and specifically, but not limited to these requirements, are complied with.

1.12.15. District shall not be responsible or liable for any construction acceleration due to failure of District to grant time extensions under Contract Documents should requested adjustments in Contract Time not substantially comply with submission and justification requirements of Contract for time extension requests.

1.12.16. In the event a Requested Time Adjustment Schedule and Time Impact Analysis are not submitted within ten (10) days after commencement of a delay it is mutually agreed that delay does not require a Contract Time extension.

1.13. RECOVERY SCHEDULE

1.13.1. When activities are behind Construction Schedule a supplementary Recovery Schedule shall be submitted.

1.13.2. Contractor shall prepare and submit to the District a Recovery Schedule whenever activities are behind Construction Schedule or at any time requested by the District, at no cost to the District.

1.13.3. Form and detail shall be sufficient to explain and display how activities will be rescheduled to regain compliance with Construction Schedule and to complete the Work by the Completion Date.

1.13.4. Maximum duration shall be one (1) month and shall coincide with payment period.

1.13.5. Ten (10) days prior to expiration of Recovery Schedule, Contractor shall have to show verification to determine if activities have regained compliance with Construction Schedule. Based upon this verification the following will occur:

1.13.5.1. Supplemental Recovery Schedule will be submitted to address subsequent payment period.

1.13.5.2. Construction Schedule will be resumed.

1.14. UPDATING SCHEDULES

1.14.1. Review and update schedules at least ten (10) days prior to submitting an Application

for Payment.

1.14.2. Maintain schedules to record actual prosecution and progress.

1.14.3. Approved Change Orders which affect schedules shall be identified as separate new activities.

1.14.4. Change Orders of less than $5,000.00 value or less than three (3) days duration need not be shown unless critical path is affected.

1.14.5. No other revisions shall be made to schedules unless authorized by District.

1.14.6. **Schedule Narrative Report**: Contractor shall include a written report to explain the Monthly Schedule Update. The narrative shall, at a minimum, include the following headings with appropriate discussions of each topic:

1.14.6.1. Activities or portions of activities completed during previous reporting period.

1.14.6.2. Actual start dates for activities currently in progress.

1.14.6.3. Deviations from critical path in days ahead or behind.

1.14.6.4. List of major construction equipment used during reporting period and any equipment idle.

1.14.6.5. Number of personnel by trade engaged on Work during reporting period.

1.14.6.6. Progress analysis describing problem areas.

1.14.6.7. Current and anticipated delay factors and their impact.

1.14.6.8. Proposed corrective actions and logic revisions for Recovery Schedule.

1.14.6.9. Proposed modifications, additions, deletions and changes in logic of Construction Schedule.

1.14.6.10. In updating the Schedule, Contractor shall not modify Activity ID numbers, schedule calculation rules/criteria, or the Activity Coding Structure required.

1.14.7. Schedule update will form basis upon which progress payments will be made.

1.14.8. District will not be obligated to review or process Application for Payment until the Construction Schedule and Schedule Narrative Report have been submitted.

1.15. DISTRIBUTION

1.15.1. Following joint review and acceptance of updated schedules distribute copies to District, Architect, and all other concerned parties.

1.15.2. Instruct recipients to promptly report in writing any problem anticipated by projections shown in schedules.

2. PRODUCTS

2.1. SCHEDULING SOFTWARE

Contractor shall utilize District-approved software and shall employ the Critical Path Method (CPM) in the development and maintenance of the Construction Schedule The scheduling software shall be capable of being resource loaded with manpower, costs and materials. It shall also be capable of generating time-scaled logic diagrams, resource histograms and profiles, bar charts, layouts and reports with any and/or all activity detail.

2.2. ELECTRONIC DATA

Provide USB flash drive or cloud storage that contain a back-up of the Proposed Baseline Schedule data on it and in a format approved by the District.

END OF DOCUMENT

DOCUMENT 01 45 29

TESTING LABORATORY SERVICES

1. GENERAL

1.1. RELATED DOCUMENTS AND PROVISION

Contractor shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1.1.1. General Conditions, including “Tests and Inspections”; and

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any).

1.2. DOCUMENT INCLUDES

1.2.1. Observation and Supervision.

1.2.2. Testing Laboratories and Agencies

1.2.3. Tests and Inspections

1.2.4. Selection and Payment

1.2.5. District's Testing Laboratory Responsibilities

1.2.6. Laboratory reports.

1.2.7. Limits on testing laboratory authority.

1.2.8. Contractor responsibilities.

1.2.9. Schedule of inspections and tests.

1.2.10. Project Inspector’s Access to Site

1.3. REFERENCES

1.3.1. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

1.3.2. ASTM E329 - Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.

1.3.3. CBC - California Building Code.

1.3.4. UBC - Uniform Building Code.

1.3.5. Title 24, Parts 1 and 2, of the California Code of Regulations. Contractor shall keep a copy of these available at the job Site for ready reference during construction

1.3.6. DSA - Division of the State Architect, Office of Regulation Services, Structural Safety Section. DSA shall be notified at or before the start of construction.

1.4. OBSERVATION AND SUPERVISION

1.4.1. The District and Architect or their appointed representatives will review the Work and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review. Administration by the Architect and any consulting Structural Engineer will be in accordance with applicable regulations, including, without limitation, 24 C.C.R. § 4-341.

1.4.2. One or more Project Inspector(s) approved by DSA and employed by or in contract with the District("Project Inspector"), will observe the Work in accordance with 24 C.C.R. §§ 4-333(b) and 4-342:

1.4.3. Project Inspector shall have access to the Work wherever it is in preparation or progress for ascertaining that the Work is in accordance with the Contract Documents and all applicable code sections. Contractor shall provide facilities and access as required and shall provide assistance for sampling or measuring materials.

1.4.3.1. Project Inspector will notify District and Architect and inform Contractor of any observed failure of Work or material to conform to Contract Documents.

1.4.3.2. The Project Inspector shall observe and monitor all testing and inspection activities required.

1.4.4. Contractor shall conform with all applicable laws as indicated in the Contract Documents, including, without limitation, to 24 C.C.R. § 4-343. Contractor shall supervise and direct the Work and maintain a competent superintendent on the Project who is authorized to act in all matters pertaining to the Work. The Contractor shall inspect all materials, as they arrive, for compliance with the Contract Documents. Contractor shall reject defective Work or materials immediately upon delivery or failure of the Work or material to comply with the Contract Documents. The Contractor shall submit verified reports as indicated in the Contract Documents, including, without limitation, the Specifications and as required by 24 C.C.R. § 4-336.

1.5. TESTING LABORATORIES AND AGENCIES

1.5.1. Testing agencies and tests shall be in conformance with the Contract Documents and the requirements of 24 C.C.R. § 4-335.

1.5.2. Testing and inspection in connection with earthwork shall be under the direction of the District's consulting soils engineer ("Soils Engineer").

1.5.3. Testing and inspection of construction materials and workmanship shall be performed by a qualified laboratory ("Testing Laboratory" or "Laboratory"). The Testing Laboratory shall be under direction of an engineer registered in the State of California, shall conform to requirements of ASTM E329, and shall be employed by or in contract with the District.

1.6. TESTS AND INSPECTIONS

1.6.1. Contractor shall be responsible for notifying District and Project Inspector of all required tests and inspections. Contractor shall notify District and Project Inspector forty-eight (48) hours in advance of performing any Work requiring testing or inspection.

1.6.2. Contractor shall provide access to Work to be tested and furnish incidental labor, equipment, and facilities to facilitate all inspections and tests.

1.6.3. District will pay for first inspections and tests required by the Title 24 and other inspections or tests that District and/or Architect may direct to have made, including, but not limited to, the following principal items:

1.6.3.1. Tests and observations for earthwork and pavings.

1.6.3.2. Tests for concrete mix designs, including tests of trial batches.

1.6.3.3. Tests and inspections for structural steel work.

1.6.3.4. Field tests for framing lumber moisture content.

1.6.3.5. Additional tests directed by District that establish that materials and installation comply with the Contract Documents.

1.6.3.6. Test and observation of welding and expansion anchors.

1.6.3.7. Factory observation of components and assembly of modular prefabrication structures and buildings.

1.6.4. District may at its discretion, pay and back charge Contractor for:

1.6.4.1. Retests or reinspections, if required, and tests or inspection required due to Contractor error or lack of required identifications of material.

1.6.4.2. Uncovering of work in accordance with Contract Documents.

1.6.4.3. Testing done on weekends, holidays, and overtime will be chargeable to Contractor for the overtime portion.

1.6.4.4. Testing done off site.

1.6.5. Testing and inspection reports and certifications:

1.6.5.1. If initially received by Contractor, Contractor shall provide to each of the following a copy of the agency or laboratory report of each test or inspection or certification: District; Construction Manager, if any; Architect; Consulting Engineer, if any; Other Engineers on the Project, as appropriate; and; Project Inspector.

1.6.5.2. When the test or inspection is one required by the Title 24, a copy of the report shall also be provided to the DSA.

1.7. SELECTION AND PAYMENT

1.7.1. District will hire and pay for services of an independent Testing Laboratory to perform specified inspection and testing as specified by District's Testing Laboratory.

1.7.2. District's hiring of Testing Laboratory shall in no way relieve Contractor of its obligation to perform work in accordance with requirements of Contract Documents.

1.8. DISTRICT'S TESTING LABORATORY RESPONSIBILITIES

1.8.1. Test samples of mixes submitted by Inspector.

1.8.2. Perform specified inspection, sampling, and testing of Products in accordance with specified standards.

1.8.3. Notify Architect and Contractor of observed irregularities or non-conformance of Work or Products.

1.8.4. Attend preconstruction conferences and progress meetings when requested by Architect.

1.9. LABORATORY REPORTS

1.9.1. After each inspection and test, District shall then submit one copy of laboratory report to Contractor. Reports of test results of materials and inspections found not to be in compliance with the requirements of the Contract Documents shall be forwarded immediately.

1.9.2. Each Testing Laboratory shall submit a verified report covering all of the tests which were required to be made by that agency during the progress of the Project. Such report shall be furnished each time that Work is suspended, covering the tests up to that time and at the Completion of the Project, covering all tests.

1.10. LIMITS ON TESTING LABORATORY AUTHORITY

1.10.1. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.

1.10.2. Laboratory may not approve or accept any portion of the Work.

1.10.3. Laboratory may not assume any duties of Contractor.

1.10.4. Laboratory has no authority to stop the Work.

1.11. CONTRACTOR RESPONSIBILITIES

1.11.1. Submit proposed items for testing as required herein and/or as further required in the Contract Documents to Architect for review in accordance with applicable specifications.

1.11.2. Cooperate with Laboratory personnel, and provide access to the Work and to manufacturer's facilities.

1.11.3. Notify Architect, District, and Testing Laboratory 48 hours prior to expected time for operations requiring inspection and testing services.

1.11.4. When tests or inspections cannot be performed after such notice, reimburse District for Laboratory personnel and travel expenses incurred due to the Contractor's negligence.

1.11.5. Contractor shall notify District a sufficient time in advance of the manufacture of material to be supplied by Contractor pursuant to the Contract Documents, which must by terms of the Contract be tested, in order that the District may arrange for the testing of same at the source of supply.

1.11.5.1. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice that such testing and inspection will not be required shall not be incorporated in the Work.

1.11.6. Contract and pay for services of District's Testing Laboratory to perform additional inspections, sampling and testing required when initial tests indicate Contractor's work and/or materials does not comply with Contract Documents.

1.12. SCHEDULE OF INSPECTIONS AND TESTS

The Testing Laboratory shall perform tests and inspections for the following in conformance with the (CBC) California Building Code (International Building Code with State of California Amendments), California Code of Regulations, Title 24, Part 2:

- Structural Tests and Special Inspections (Chapter 17A)
  - Special Inspections (§ 1704A)
- Soils and Foundations (Chapter 18A)
  - Geotechnical Investigations (§ 1803A)
- Concrete (Chapter 19A)
  - Specifications for Tests and Materials
  - Concrete Quality, Mixing and Placing
  - Concrete Reinforcement and Anchor Testing Inspection (§ 1916A)
- Masonry (Chapter 21A)
  - Masonry Construction Materials (§ 2103A)
  - Masonry Quality (§ 2103A)
  - Quality Assurance (§ 2105A)
- Structural Steel (Chapter 22A)
    - Structural Steel (§ 2205A)
    - Identification & Protection of Steel for Structural Purposes (§ 2203A)
  - Inspection and Tests of Structural Steel (§ 2212A)
- Wood (Chapter 23)
  - Minimum Standards and Quality (§ 2303)
  - Wood Construction (§ 1704A.6)
- Exterior Walls (Chapter 14)
    - Masonry Units (§ 1404.4)
    - Masonry Construction Materials (§ 2103A)
  - Exterior Insulation and Finish Systems (§ 1408)
- Roof Assemblies and Roofing Structures (Chapter 15)
  - Materials (§ 1506)
- Aluminum (Chapter 20)
  - Materials (§ 2002.1)
  - Inspection (§ 2003.1)

1.12.1. **Plumbing**

Testing as specified in Division 15 including, but not limited to: Sterilization, soil waste and vent, water piping, source of water, gas piping, downspouts and storm drains.

1.12.2. **Automatic Fire Sprinklers (where applicable)**

Testing as specified in Division 15 shall include, but not be limited to: hydrostatic pressure.

1.12.3. **Heating, Ventilating and Air Conditioning**

Testing as specified in Division 15 shall include, but not be limited to: Ductwork tests, cooling tower tests, boiler tests, controls testing, piping tests, water and air systems, and test and balance of heating and air conditioning systems.

1.12.4. **Electrical**

Testing as specified in Division 26, including, but not limited to: Equipment testing, all electrical system operations, grounding system and checking insulation after cable is pulled.

1.13. **PROJECT INSPECTOR'S ACCESS TO SITE**

1.13.1. A Project Inspector employed by the District in accordance with the requirement of State of California Code of Regulations, Title 24, Part 1 will be assigned to the Work. Project Inspector's duties are specifically defined in 24. C.C.R. §4-342, and as indicated in the General Conditions.

1.13.2. District and Construction Manager shall at all times have access for the purpose of inspection to all parts of the Work and to the shops wherein the Work is in preparation, and Contractor shall at all times maintain proper facilities and provide safe access for such inspection.

1.13.3. The Work in all stages of progress shall be subject to the personal continuous observation of the Inspector. Inspector shall have free access to any or all parts of the Work at any time. Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep Inspector fully informed respecting the progress and manner of the Work and the character of the materials. Inspection of the Work shall not relieve the Contractor from any obligation set forth in the Contract Documents.

1.13.4. The Inspector is not authorized to change, revoke, alter, enlarge or decrease in any way any requirement of the Contract Documents, drawings, specifications or subsequent change orders.

1.13.5. Whenever there is insufficient evidence of compliance with any of the provisions of Title 24 or evidence that any material or construction does not conform to the requirements of Title 24, the Division of the State Architect may require tests as proof of compliance. Test methods shall be as specified herein or by other recognized and accepted test methods determined by the Division of the State Architect. All tests shall be performed by a testing laboratory accepted by the Division of the State Architect.

END OF DOCUMENT

DOCUMENT 01 50 00

TEMPORARY FACILITIES AND CONTROLS

1. GENERAL

1.1. RELATED DOCUMENTS AND PROVISIONS

Contractor shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1.1.1. General Conditions;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Site Standards; and

1.1.5. Temporary Tree and Plant Protection.

1.2. TEMPORARY UTILITIES

1.2.1. **Electric Power and Lighting**:

1.2.1.1. Contractor will furnish and pay for power during the course of the work to the extent power is not in the building(s) or on the Site. Contractor shall be responsible for providing temporary facilities required on the Site to point of intended use.

1.2.1.2. Contractor shall furnish, wire for, install, and maintain temporary electrical lights wherever it is necessary to provide illumination for the proper performance and/or observation of the Work: a minimum of 20 foot-candles for rough work and 50 foot-candles for finish work.

1.2.1.3. Contractor shall be responsible for maintaining existing lighting levels in the Project vicinity should temporary outages or service interruptions occur.

1.2.2. **Heat and Ventilation**:

1.2.2.1. Contractor shall provide temporary heat to maintain environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation and curing of materials, and to protect materials and finishes from damage due to improper temperature and humidity conditions. Portable heaters shall be standard units complete with controls.

1.2.2.2. Contractor shall provide forced ventilation and dehumidification, as required, of enclosed areas for proper installation and curing of materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors, and gases.

1.2.2.3. Contractor shall pay the costs of installation, maintenance, operation, and removal of temporary heat and ventilation, including costs for fuel consumed,

required for the performance of the Work.

1.2.3. **Water**:

1.2.3.1. Contractor will furnish and pay for water during the course of the work. Contractor shall be responsible for providing temporary facilities required.

1.2.3.2. Contractor shall make potable water available for human consumption.

1.2.4. **Sanitary Facilities**:

1.2.4.1. Contractor shall provide sanitary temporary facilities in no fewer numbers than required by law and such additional facilities as may be directed by the Inspector for the use of all workers. The facilities shall be maintained in a sanitary condition at all times and shall be left at the Site until removal is directed by the District or Contractor completes all Work.

1.2.4.2. Use of toilet facilities in the Site shall not be permitted except by consent of the Project Inspector and District.

1.2.5. **Telephone Service**:

1.2.5.1. Contractor shall arrange with local telephone service company for telephone service for the performance of the Work. Contractor shall, at a minimum, provide in its field office one line for telephone and one line for fax machine.

1.2.5.2. Contractor shall pay the costs for telephone and fax lines installation, maintenance, service, and removal; for Construction Site Office, Construction Manager's Office and Inspector's Office.

1.2.6. **Fire Protection:**

1.2.6.1. Contractor shall provide and maintain fire extinguishers and other equipment for fire protection. Such equipment shall be designated for use for fire protection only and shall comply with all requirements of the California Fire, State Fire Marshall and/or its designee.

1.2.6.2. Where on-site welding and burning of steel is unavoidable, Contractor shall provide protection for adjacent surfaces.

1.2.7. **Trash Removal:**

1.2.7.1. Contractor shall provide trash removal on a timely basis from all Site Offices and throughout the Site.

1.2.8. **Temporary Facilities:**

1.2.8.1. Contractor shall provide sufficient space and facilities for its own force's needs.

1.2.8.2. In addition, unless otherwise indicated in the Contract Documents, Contractor shall provide the following facilities, trailers, offices, furniture and:

1.2.8.2.1. One (1) 12X60 office trailer with two (2) offices for two (2)

District representatives, with bathroom, common space between both offices;

1.2.8.2.2. One (1) 12X20 Project Inspector's Trailer/Office;

1.2.8.2.3. Basic furniture: chair, desks, plan table, conference room table, and chairs; and

1.2.8.2.4. Basic services: fixed line for phone, fax, and high speed internet service.

1.3. CONSTRUCTION AIDS

1.3.1. **Plant and Equipment:**

1.3.1.1. Contractor shall furnish, operate, and maintain a complete plant for fabricating, handling, conveying, installing, and erecting materials and equipment; and for conveyances for transporting workmen. Include elevators, hoists, debris chutes, and other equipment, tools, and appliances necessary for performance of the Work.

1.3.1.2. Contractor shall maintain plant and equipment in safe and efficient operating condition. Damages due to defective plant and equipment, and uses made thereof, shall be repaired by Contractor at no expense to the District.

1.3.2. No District tools or equipment shall be used by Contractor or its subcontractors for the performance of the Work.

1.4. BARRIERS AND ENCLOSURES

1.4.1. Contractor shall obtain District's written permission for locations and types of temporary barriers and enclosures, including fire-rated materials proposed for use, prior to their installation.

1.4.2. Contractor shall provide a six (6) foot high, chain link perimeter fence with posts driven into the ground and fabric screen as a temporary barrier around construction area. Contractor shall provide and maintain temporary enclosures to prevent public entry and to protect persons using other buildings and portions of the Site and/or Premises. Contractor shall remove temporary fence, barriers and enclosure upon Completion of the Work.

1.4.3. Contractor shall provide site access to existing facilities for persons using other buildings and portions of the Site, for the public, and for deliveries and other services and activities.

1.5. SECURITY

Contractor shall secure all construction equipment, machinery and vehicles, park and store only within fenced area, and render inoperable during non-work hours. Contractor is responsible for ensuring that no construction materials, tools, equipment, machinery or vehicles can be used for unauthorized entry or other damage or interference to activities and security of existing facilities adjacent to and in the vicinity of the Project Site.

1.6. TEMPORARY CONTROLS

1.6.1. **Noise Control**:

1.6.1.1. Contractor acknowledges that adjacent facilities may remain in operation during all or a portion of the Work, and Contractor shall take all reasonable precautions to minimize noise as required by applicable laws and the Contract Documents.

1.6.1.2. Notice of proposed noisy operations, including without limitation, operation of pneumatic demolition tools, concrete saws, and other equipment, shall be submitted to District a minimum of forty-eight (48) hours in advance of their performance.

1.6.2. **Noise and Vibration**:

1.6.2.1. Equipment and impact tools shall have intake and exhaust mufflers.

1.6.2.2. Contractor shall cooperate with District to minimize and/or cease the use of noisy and vibratory equipment if that equipment becomes objectionable by its longevity.

1.6.3. **Dust and Dirt**:

1.6.3.1. Contractor shall conduct demolition and construction operations to minimize the generation of dust and dirt, and prevent dust and dirt from interfering with the progress of the Work and from accumulating in the Work and adjacent areas including, without limitation, occupied facilities.

1.6.3.2. Contractor shall periodically water exterior demolition and construction areas to minimize the generation of dust and dirt.

1.6.3.3. Contractor shall ensure that all hauling equipment and trucks carrying loads of soil and debris shall have their loads sprayed with water or covered with tarpaulins, and as otherwise required by local and state ordinance.

1.6.3.4. Contractor shall prevent dust and dirt from accumulating on walks, roadways, parking areas, and planting, and from washing into sewer and storm drain lines.

1.6.4. **Surface and Subsurface Water:**

Contractor shall not permit surface and subsurface water, and other liquids, to accumulate in or about the vicinity of the Premises. Should accumulation develop, Contractor shall control the water or other liquid, and suitably dispose of it by means of temporary pumps, piping, drainage lines, troughs, ditches, dams, or other methods.

1.6.5. **Pollution**:

1.6.5.1. No burning of refuse, debris, or other materials shall be permitted on or in the vicinity of the Premises.

1.6.5.2. Contractor shall comply with applicable regulatory requirements and anti-pollution ordinances during the conduct of the Work including, without

limitation, demolition, construction, and disposal operations.

1.6.6. **Lighting**

If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

1.7. JOB SIGN(S)

1.7.1. **General:**

1.7.1.1. Contractor shall provide and maintain and locate a Project identification sign with the design, text, and colors designated by District and/or the Architect.

1.7.1.2. Signs other than the specified Project sign and or signs required by law, for safety, or for egress, shall not be permitted, unless otherwise approved in advance by the District.

1.7.2. **Materials:**

1.7.2.1. Structure and Framing: Structurally sound, new or used wood or metal; wood shall be nominal 3/4-inch exterior grade plywood.

1.7.2.2. Sign Surface: Minimum 3/4-inch exterior grade plywood.

1.7.2.3. Rough Hardware: Galvanized.

1.7.2.4. Paint: Exterior quality, of type and colors selected by the District and/or the Architect.

1.7.3. **Fabrication:**

1.7.3.1. Contractor shall fabricate to provide smooth, even surface for painting.

1.7.3.2. Size: 4'-0" x 8'-0", unless otherwise indicated.

1.7.3.3. Contractor shall paint exposed surfaces of supports, framing, and surface material with exterior grade paint: one coat of primer and one coat of finish paint.

1.7.3.4. Text and Graphics: As indicated.

1.8. PUBLICITY RELEASES

Contractor shall not release any information, story, photograph, plan, or drawing relating to information about the Project to anyone, including press and other public communications medium, including, without limitation, on website(s).

END OF DOCUMENT

DOCUMENT 01 52 10

SITE STANDARDS

1. GENERAL

1.1. RELATED DOCUMENTS AND PROVISIONS:

Contractor shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1.1.1. General Conditions, including without limitation, Site Access, Conditions, and Regulations;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Drug-Free Workplace Certification;

1.1.5. Tobacco-Free Environment Certification;

1.1.6. Criminal Background Investigation/Fingerprinting Certification; and

1.1.7. Temporary Facilities and Controls.

1.2. REQUIREMENTS OF THE DISTRICT

1.2.1. **Drug-Free Schools and Safety Requirements:**

1.2.1.1. All school sites and other District Facilities have been declared “Drug-Free Zones.” No drugs, alcohol, smoking or the use of tobacco products are allowed at any time in any buildings, Contractor-owned vehicles or vehicles owned by others while on District property. No students, staff, visitors, or contractors are to use drugs on these sites.

1.2.1.2. Contractor shall post: "Non-Smoking Area" in a highly visible location on Site. Contractor may designate a smoking area outside of District property within the public right-of-way, provided that this area remains quiet and unobtrusive to adjacent neighbors. This smoking area must be kept clean at all times.

1.2.1.3. Contractor shall ensure that no alcohol, firearms, weapons, or controlled substances enter or are used at the Site. Contractor shall immediately remove from the Site and terminate the employment of any employee(s) found in violation of this provision.

1.2.2. **Language**: Unacceptable and/or loud language will not be tolerated, "Cat calls" or other derogatory language toward students or public will not be allowed.

1.2.3. **Disturbing the Peace (Noise and Lighting):**

1.2.3.1. Contractor shall observe the noise ordinance of the Site at all times including, without limitation, all applicable local, city, and/or state laws, ordinances, and/or regulations regarding noise and allowable noise levels.

1.2.3.2. The use of radios, etc., shall be controlled to keep all sound at a level that cannot be heard beyond the immediate area of use. District reserves the right to prohibit the use of radios at the Site, except for handheld communication radios.

1.2.3.3. If portable lights are used after dark, the lights must be located so as not to direct light into neighboring properties.

1.2.4. **Traffic**:

1.2.4.1. Driving on the Premises shall be limited to periods when students and public are not present. If driving or deliveries must be made during the school hours, two (2) or more ground guides shall lead the vehicle across the area of travel. In no case shall driving take place across playgrounds or other pedestrian paths during recess, lunch, and/or class period changes. The speed limit on-the Premises shall be five (5) miles per hour (maximum) or less if conditions require.

1.2.4.2. All paths of travel for deliveries, including without limitation, material, equipment, and supply deliveries, shall be reviewed and approved by District in advance. Any damage will be repaired to the pre-damaged condition by the Contractor.

1.2.4.3. District shall designate a construction entry to the Site. If Contractor requests, District determines it is required, and to the extent possible, District shall designate a staging area so as not to interfere with the normal functioning of school facilities. Location of gates and fencing shall be approved in advance with District and at Contractor's expense.

1.2.4.4. Parking areas shall be reviewed and approved by District in advance. No parking is to occur under the drip line of trees or in areas that could otherwise be damaged.

1.2.4.5. All of the above shall be observed and complied with by the Contractor and all workers on the Site. Failure to follow these directives could result in individual(s) being suspended or removed from the work force at the discretion of the District. The same rules and regulations shall apply equally to delivery personnel, inspectors, consultants, and other visitors to the Site.

END OF DOCUMENT

DOCUMENT 01 66 10

DELIVERY, STORAGE AND HANDLING

1. GENERAL

1.1. RELATED DOCUMENTS AND PROVISIONS

Contractor shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1.1.1. General Conditions, including, without limitation, Site Access, Conditions and Requirements; and

1.1.2. Special Conditions.

1.2. PRODUCTS

1.2.1. Products are as defined in the General Conditions.

1.2.2. Contractor shall not use and/or reuse materials and/or equipment removed from existing Premises, except as specifically permitted by the Contract Documents.

1.2.3. Contractor shall provide interchangeable components of the same manufacturer, for similar components.

1.3. TRANSPORTATION AND HANDLING

1.3.1. Contractor shall transport and handle Products in accordance with manufacturer's instructions.

1.3.2. Contractor shall promptly inspect shipments to confirm that Products comply with Contract requirements, are of correct quantity, and are undamaged.

1.3.3. Contractor shall provide equipment and personnel to properly handle Products to prevent soiling, disfigurement, or damage.

1.4. STORAGE AND PROTECTION

1.4.1. Contractor shall store and protect Products in accordance with manufacturer's instructions, with seals and labels intact and legible. Contractor shall store sensitive Products in weather-tight, climate controlled enclosures.

1.4.2. Contractor shall place fabricated Products that are stored outside, on above-ground sloped supports.

1.4.3. Contractor shall provide off-site storage and protection for Products when Site does not permit on-site storage or protection.

1.4.4. Contractor shall cover Products subject to deterioration with impervious sheet covering and provide ventilation to avoid condensation.

1.4.5. Contractor shall store loose granular materials on solid flat surfaces in a well-drained area and prevent mixing with foreign matter.

1.4.6. Contractor shall provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

1.4.7. Contractor shall arrange storage of Products to permit access for inspection and periodically inspect to assure Products are undamaged and are maintained under specified conditions.

END OF DOCUMENT

DOCUMENT 01 78 23

OPERATION AND MAINTENANCE DATA

1. GENERAL

1.1. RELATED DOCUMENTS AND PROVISIONS

Contractor shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1.1.1. General Conditions, including, without limitation, Completion of the Work;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Submittals;

1.1.5. Contract Closeout and Final Cleaning;

1.1.6. Warranties;

1.1.7. Record Documents;

1.1.8. General Commissioning Requirements.

1.2. QUALITY ASSURANCE

1.2.1. Contractor shall prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.3. FORMAT

1.3.1. Contractor shall prepare data in the form of a flash drive with a file structure entitled “OPERATIONS AND MAINTENANCE MANUAL & INSTRUCTIONS” (“Manual”).

1.3.2. Flash Drive: Flash drive shall be of sufficient size for all necessary Operation and Maintenance data.

1.3.3. File Structure: Contractor shall identify each file with labeled title "OPERATION AND MAINTENANCE MANUAL & INSTRUCTIONS"; and shall list title of Project and identify subject matter of contents.

1.3.4. Contractor shall arrange content by systems process flow under section numbers and sequence of the Table of Contents of the Contract Documents.

1.3.5. Text: The content shall include Manufacturer's printed data.

1.3.6. Drawings: Contractor shall provide digitally marked up “as-built” drawings.

1.4. CONTENTS, EACH VOLUME

1.4.1. File Structure: Contractor shall provide title of Project; names, addresses, and telephone numbers of the Architect, any engineers, subconsultants, Subcontractor(s), and Contractor with name of responsible parties; and schedule of Products and systems, indexed to content of the volume.

1.4.2. For Each Product or System: Contractor shall list names, addresses, and telephone numbers of Subcontractor(s) and suppliers, including local source of supplies and replacement parts.

1.4.3. Product Data: Contractor shall mark each sheet to clearly identify specific Products and component parts, and data applicable to installation. Delete inapplicable information.

1.4.4. Drawings: Contractor shall supplement Product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Contractor shall not use Project Record Documents as maintenance drawings.

1.4.5. Text: The Contractor shall include any and all information as required to supplement Product data. Contractor shall provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

1.5. MANUAL FOR MATERIALS AND FINISHES

1.5.1. Building Products, Applied Materials, and Finishes: Contractor shall include Product data, with catalog number, size, composition, and color and texture designations. Contractor shall provide information for re-ordering custom manufactured Products.

1.5.2. Instructions for Care and Maintenance: Contractor shall include Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

1.5.3. Moisture Protection and Weather Exposed Products: Contractor shall include Product data listing applicable reference standards, chemical composition, and details of installation. Contractor shall provide recommendations for inspections, maintenance, and repair.

1.5.4. Additional Requirements: Contractor shall include all additional requirements as specified in the Specifications.

1.5.5. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.6. MANUAL FOR EQUIPMENT AND SYSTEMS

1.6.1. Each Item of Equipment and Each System: Contractor shall include description of unit or system, and component parts and identify function, normal operating characteristics,

and limiting conditions. Contractor shall include performance curves, with engineering data and tests, and complete nomenclature, and commercial number of replaceable parts.

1.6.2. Panelboard Circuit Directories: Contractor shall provide electrical service characteristics, controls, and communications.

1.6.3. Contractor shall include color coded wiring diagrams as installed.

1.6.4. Operating Procedures: Contractor shall include start-up, break-in, and routine normal operating instructions and sequences. Contractor shall include regulation, control, stopping, shut-down, and emergency instructions. Contractor shall include summer, winter, and any special operating instructions.

1.6.5. Maintenance Requirements: Contractor shall include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

1.6.6. Contractor shall provide servicing and lubrication schedule, and list of lubricants required.

1.6.7. Contractor shall include manufacturer's printed operation and maintenance instructions.

1.6.8. Contractor shall include sequence of operation by controls manufacturer.

1.6.9. Contractor shall provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

1.6.10. Contractor shall provide control diagrams by controls manufacturer as installed.

1.6.11. Contractor shall provide Contractor's coordination drawings, with color coded piping diagrams as installed.

1.6.12. Contractor shall provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

1.6.13. Contractor shall provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

1.6.14. Additional Requirements: Contractor shall include all additional requirements as specified in Specification(s).

1.6.15. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.7. SUBMITTAL

1.7.1. Concurrent with the Schedule of Submittals as indicated in the General Conditions, Contractor shall submit to the District for review a flash drive of a preliminary draft of proposed formats and outlines of the contents of the Manual.

1.7.2. For equipment, or component parts of equipment put into service during construction and to be operated by District, Contractor shall submit draft content for that portion of the Manual within ten (10) days after acceptance of that equipment or component.

1.7.3. On or before the Contractor submits its final application for payment, Contractor shall submit a flash drive of a complete Manual in final form. The District will provide comments to Contractor and Contractor must revise the content of the Manual as required by District prior to District's approval of Contractor's final Application for Payment.

1.7.4. Contractor must submit a flash drive of revised Manual in final form within ten (10) days after receiving District's comments. Failure to do so will be a basis for the District withholding funds sufficient to protect itself for Contractor's failure to provide a final Manual to the District.

END OF DOCUMENT

DOCUMENT 01 78 36

WARRANTIES

1. GENERAL

1.1. RELATED DOCUMENTS AND PROVISIONS

Contractor shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1.1.1. General Conditions, including, without limitation, Warranty/Guarantee/Indemnity;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Submittals;

1.1.5. Contract Closeout and Final Cleaning;

1.1.6. Operation and Maintenance Data;

1.1.7. Record Documents;

1.1.8. General Commissioning Requirements.

1.2. FORMAT

1.2.1. Flash Drive: Flash drive shall be of sufficient size for all necessary Warranties.

1.2.2. Cover: Contractor shall identify each file with typed title "WARRANTIES" and shall list the title of Project.

1.2.3. File Structure: Contractor shall provide the title of Project; name, address, and telephone number of Contractor and equipment supplier, and name of responsible principal. Contractor shall identify each item with the number and title of the specific Specification, document, provision, or section in which the name of the Product or Work item is specified.

1.2.4. Contractor shall separate each Warranty with folders keyed to the File Structure listing, providing full information and using separate typed sheets as necessary. Contractor shall list each applicable and/or responsible Subcontractor(s), supplier(s), and/or manufacturer(s), with name, address, and telephone number of each responsible principal(s).

1.2.5. In addition to all Warranty documentation and information required herein, Contractor shall provide its Guarantee as required by the Contract Documents.

1.3. PREPARATION

1.3.1. Contractor shall obtain Warranties, executed in duplicate by each applicable and/or responsible Subcontractor(s), supplier(s), and manufacturer(s), within ten (10) days after completion of the applicable item or Work. Except for items put into use with District's permission, Contractor shall leave date of beginning of time of Warranty until the date of Completion is determined.

1.3.2. Contractor shall verify that Warranties.

1.3.3. are in proper form, contain full information, and are notarized, when required.

1.3.4. Contractor shall co-execute submittals when required.

1.3.5. Contractor shall retain warranties until time specified for submittal.

1.4. TIME OF SUBMITTALS

1.4.1. Schedule of Warranties. Contractor shall provide District with a Schedule of Warranties at least fourteen (14) days prior to submitting its other required submittals indicated herein. This will provide District the opportunity to review the anticipated Warranties and make any comments, suggestions or revisions the District may require.

1.4.2. For equipment or component parts of equipment put into service during construction with District's permission, Contractor shall submit a draft Warranty for that equipment or component within ten (10) days after acceptance of that equipment or component.

1.4.3. On or before the Contractor submits its final application for payment, Contractor shall submit all Warranties and related documents in final form. The District shall indicate any Warranty-related Work that is being performed and incomplete at the time Contractor submits its final application for payment. District will provide comments to Contractor and Contractor must revise the content of the Warranties as required by District prior to District's approval of Contractor’s final Application for Payment.

1.4.4. For items of Work that are not completed until after the date of Completion, Contractor shall provide an updated Warranty for those item(s) of Work within ten (10) days after acceptance, listing the date of acceptance as start of the Warranty period.

END OF DOCUMENT

SECTION 01 91 00 - GENERAL COMMISSIONING

PART 1 – GENERAL

1.1 RELATED SECTIONS

A. 23 08 00 Commissioning of HVAC Systems

B. 26 08 00 Commissioning of Electrical Systems

1.2 DESCRIPTION OF WORK

A. Commissioning is a systematic process of ensuring that all building systems perform interactively according to the design intent and the owner's operational needs. This is achieved by beginning in the design phase and documenting design intent and continuing through construction, acceptance with actual verification of performance. The commissioning process shall encompass and coordinate the traditionally separate functions of system documentation, equipment startup, control system calibration, testing and balancing, performance testing and training.

B. The Commissioning Authority (CA) will be directly hired by the Owner. The General Contractor that is awarded the project shall not include the cost of the Commissioning Authority in their price. The general contractor (and their sub-contractors) shall include cost for their involvement in the commissioning process as described in this section and other related commissioning sections, including completion of system readiness checklists, and demonstration of installed equipment to the commissioning team members during the functional performance testing portion of the project.

C. Commissioning during the construction phase is intended to enhance the quality of system start-up and aid in the orderly completion and transfer of systems for beneficial use by the owner. The following objectives will be documented accordingly:

1. Verify that applicable equipment and systems are installed according to the manufacturer's recommendations and to industry accepted standards, that they meet design intent, and that they receive adequate operational checkout by installing contractors.
2. Verify and document proper performance of equipment and systems.
3. Verify that O&M documentation is provided to Owner.
4. Verify that the Owner's operating personnel are adequately trained.

D. The commissioning process does not take away from or reduce the responsibility of the system designers or installing contractors to provide a finished product, installed and fully functional in accordance with the contract documents.

1.3 ABBREVIATIONS

A. The following are common abbreviations used in the Specifications and in the Commissioning Plan.

A/E-	Architect and design Engineers	GC-	General Contractor (prime)
CA-	Commissioning Authority (Agent)	MC-	Mechanical Contractor
CC	Controls Contractor	PC -	Plumbing Contractor
CM-	Construction Manager (the owner's representative)	PM-	Project Manager (of the Owner)
Cx-	Commissioning	SRC	System Readiness Checklist
Cx Plan-	Commissioning Plan document	Subs-	Subcontractors to General
EC-	Electrical Contractor	TAB-	Testing Adjusting and Balance Contractor
FPT-	Functional Performance Test	TC-	Test Coordinator

1.4 DEFINITIONS

A. Commissioning Plan: An overall plan that provides the structure, schedule and coordination planning for the commissioning process.

B. Deferred Functional Tests: FTs that are performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions that disallow the test from being performed.

C. Deficiency: A condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Documents (that is, does not perform properly or is not complying with the design intent).

D. Design Narrative: Sections of either the Design Intent or Basis Of Design which describe the systems operation and principle function

E. Functional Performance Test (FPT): Test of the dynamic function and operation of equipment and systems using direct observation or monitoring methods. Functional testing is the dynamic testing in all modes of systems (rather than just components) under full operation (e.g. the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure set point). The systems are run through all the control system's sequences of operation and components are verified to be responding as the sequences state. Traditional air or water test and balancing (TAB) is not functional testing, in the commissioning sense of the word. The commissioning authority develops the functional test procedures in a sequential written form, coordinates, oversees and documents the actual testing, which is usually performed by the installing contractor or vendor. Functional performance tests shall demonstrate the correct installation and operation of each component, system, and system-to-system interface in accordance with the approved plans and specifications. Functional performance testing reports shall contain information addressing each of the building components tested, the testing methods utilized, and include any readings and adjustments made.

F. Over-written Value: Writing over a sensor value in the control system to see the response of a system (e.g., changing the outside air temperature value from 50F to 75F to verify economizer operation).

G. Sampling: Functionally testing only a fraction of the total number of identical or near identical pieces of equipment.

H. Seasonal Performance Tests: FT that are deferred until the system(s) will experience conditions closer to their design conditions.

I. Simulated Condition: Condition that is created for the purpose of testing the response of a system (e.g., applying a hair blower to a space sensor to see the response in a VAV box).

J. Simulated Signal: Disconnecting a sensor and using a signal generator to send an amperage, resistance or pressure to the transducer and DDC system to simulate a sensor value.

K. Systems Manual: Documentation of the operational aspects of the building shall be completed within the systems manual and delivered to the building owner or representative/operator

L. System Readiness Checklist (SRC): A checklist developed by the CA and provided to the contractor for execution. Completion of this checklist verifies the system or component has been installed in accordance with design documents and IOMs. This checklist is required before commencing functional testing. The signee for a specific contractor section in a SRC will be the same throughout the project (e.g. only one person will sign for the MC).

M. Testing Coordinator (TC): Commissioning Team member appointed by GC. TC's roles include distribution of SRCs between Subs & CA, ensure execution & completion of SRCs by Subs, collect/review completeness of SRCs for final delivery to CA, coordinate scheduling of functional tests, collect all required documents (eg O&Ms, training plans, etc) and deliver to the CA. The TC must be familiar with all of the commissioned equipment and possess good organizational skills.

1.5 COMMISSIONING PROCESS

A. The following activities describe the commissioning tasks during construction and the general order in which they occur. The CA coordinates all activities.

B. Scoping Meeting: All members of the design and construction team that will be involved in the commissioning process meet and agree on the scope of work, tasks, schedules, deliverables, and responsibilities for implementation of the Commissioning Plan.

C. Commissioning Plan: The Commissioning Plan provides guidance in the execution of the commissioning process. The Specifications take precedence over the Commissioning Plan.

D. Submittals: Equipment documentation is submitted within 30 days of approval from the A/E of record to the CA, including detailed start-up procedures.

E. Start-Up/System Readiness Checklists (SRC): The CA works with the Subcontractors to develop startup plans and documentation formats, including providing the Subcontractors with system readiness checklists to be completed during the startup process.

F. Functional Performance Testing: The CA develops specific equipment and system functional performance test procedures. The Subcontractors review the procedures. The procedures are executed by the Subcontractors, under the direction of, and documented by the CA.

G. Deficiencies and Resolution: The CA documents items of non-compliance in materials, installation or operation. The items are corrected at the Sub's expense and the equipment or systems are retested.

H. Operations and Maintenance Documentation: The CA reviews the Operation and Maintenance documentation for completeness.

I. Training: The CA reviews the training plans and agenda provided by the Subcontractors and verifies that training is completed.

J. Commissioning Report: The CA writes the commissioning report.

1.6 SCOPE OF WORK

A. The following building systems will be included in the commissioning process for the project:

1. Division 23 (Heating Ventilation and Air Conditioning)
2. Division 26 (Lighting and Lighting Control Systems)

1.7 COMMISSIONING TEAM

A. The members of the commissioning team consist of the following members:

1. Commissioning Authority (Agent) (CA)
2. Owner's Project Manager (PM)
3. General Contractor (GC or Contractor)
4. Architect and Design Engineers (particularly the mechanical and electrical engineers)
5. Mechanical Contractor (MC)
6. Test and Balance contractor (TAB)
7. Controls Contractor (CC)
8. Any other installing subcontractors or suppliers of equipment
9. Owner's maintenance personnel
10. Inspector of Record

1.8 COMMISSIONING AUTHORITY'S RESPONSIBILITIES

A. General

1. The CA, as leader of the commissioning team, directs and coordinates the commissioning activities in conjunction with the General Contractor. All members work together to fulfill their contracted responsibilities and meet the objectives of the contract documents.

2. Within 30 days prior to equipment startup, the CA will schedule and conduct a commissioning scope meeting with the entire commissioning team in attendance. Meeting minutes will be distributed to all parties by the CA. CA will revise the Commissioning Plan to its "final" version from information gathered at the meeting and will distribute to all parties.
3. The CA will work with the CM & GC according to established protocols to schedule the commissioning activities. The CA will provide sufficient notice to the CM & GC for scheduling commissioning activities. The GC will integrate all commissioning activities into the master schedule. All parties will address scheduling problems and make necessary notifications in a timely manner to expedite the commissioning process.
4. The CA will provide the initial schedule of primary commissioning events at the commissioning scope meeting. The Commissioning Plan provides a format for this schedule, as included in the Cx Plan. As construction progresses, more detailed schedules will be developed by the GC.
5. The CA is not responsible for design concept, design criteria, compliance with codes, design or general construction scheduling, cost estimating, or construction management. The CA may assist with problem-solving non-conformance or deficiencies, but ultimately that responsibility resides with the general contractor and the A/E. The primary role of the CA is to develop & coordinate the execution of a testing plan, observe & document performance—that systems are functioning in accordance with the documented design intent & in accordance with the contract documents. The Contractors will provide all tools or the use of tools to start, check-out & functionally test equipment and systems.
6. The CA will not release, revoke, alter, or enlarge on requirements of design documents.
7. The CA will not directly approve or accept any portion of construction work.

B. Construction and Acceptance Phase

1. Coordinates and directs the commissioning activities in a logical, sequential & efficient manner using consistent protocols and forms, centralized documentation, clear & regular communications & consultations with all necessary parties, frequently updated timelines & schedules and technical expertise.
2. Coordinate the commissioning work and, with the GC & CM, ensure that commissioning activities are being scheduled into the master schedule.
3. Revise the Commissioning Plan as required.

4. Plan and conduct a commissioning scoping meeting & other commissioning meetings as necessary.
5. Request and review additional information required to perform commissioning tasks, including O&M materials, contractor start-up and checkout procedures.
6. Before startup, gather & review the current control sequences & interlocks and work with contractors and design engineers until sufficient clarity has been obtained, in writing, to be able to write detailed testing procedures.
7. Write and distribute System Readiness Checklists.
8. Perform site visits to observe component & system installations as needed.
9. Approve SRCs and their completion as submitted by TC for CA's review. CA shall perform selected site observation and spot checking as needed.
10. Review TAB execution plan.
11. Approve air and water systems balancing by spot testing, reviewing completed reports and by selected site observation.
12. Create the FPT procedures for equipment and systems with input & review by GC/Subs. Submit to CM for review, and for approval if required.
13. Coordinate, witness and approve manual FT performed by installing contractors. Coordinate retesting as necessary until satisfactory performance is achieved.
14. Maintain a master deficiency and resolution log. Provide the CM with written progress reports and test results with recommended actions.
15. Compile and maintain a commissioning issues log.
16. Provide a final commissioning report.
17. Throughout the commissioning process, document that equipment and systems are installed and perform in accordance with design documents.

1.9 DESIGN TEAM RESPONSIBILITIES

A. Construction and Acceptance Phase

1. Attend the commissioning scope meeting.
2. Attend selected commissioning team meetings.
3. Perform normal submittal review, construction observation, as-built drawing preparation, O&M manual preparation, etc., as contracted.
4. Provide any design narrative documentation requested by the CA.
5. Review construction and issue punch lists as required.

6. Provide design intent and sequence of operation documentation as required by the CA.
7. Assist and Coordinate resolution of system deficiencies identified during commissioning or review, according to the contract documents.
8. Approve TAB report prior to distribution to the CA.
9. Prepare and submit final as-built design intent documentation for inclusion in the O&M manuals.
10. Review and approve the O&M manuals.

1.10 OWNER'S REPRESENTATIVE (PM) RESPONSIBILITIES

A. Construction and Acceptance Phase

1. Manage the contract of the CA
2. Facilitate the coordination of the commissioning work by the CA.
3. Ensure with CA & GC that commissioning activities are being scheduled into the master schedule.
4. Review the final Commissioning Plan.
5. Attend commissioning scope meeting and other commissioning team meetings.
6. Furnish to CA copies of all construction documents, addenda, change orders for commissioned equipment.
7. Review and approve CA generated FPT procedures prior to testing.
8. Observe SRC completion & FPT's for systems to be commissioned.
9. Review commissioning progress and deficiency reports.
10. Coordinate the resolution of non-compliance and design deficiencies identified in all phases of commissioning.
11. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.
12. Assist the GC in coordinating the training of owner personnel.
13. Provide required IP addresses to controls contractor for setting up remote access to controls systems.

1.11 GENERAL CONTRACTOR (GC) RESPONSIBILITIES

A. Construction and Acceptance Phase

1. Facilitate the coordination of the commissioning work by the CA.

2. Ensure with CA that commissioning activities are being scheduled into the master schedule.
3. Appoint TC for management of SRCs.
4. Include the cost of commissioning in the total contract price. Include all special tool and instruments (only available from vendor, specific to a piece of equipment) required for testing in base bid price.
5. Furnish a copy of all construction documents, addenda, change orders and approved submittals and shop drawings related to commissioned equipment to the CA.
6. Provide a copy of O&Ms, equipment and contractor warranties, startup reports, TAB reports, Title 24 forms and any other necessary documents for commissioned equipment to the CA.
7. Provide submittals for systems to be commissioned to the engineer of record and the CA.
8. In each purchase order or subcontract written, include requirements for submittal data, O&M data, commissioning tasks and training.
9. Provide equipment sequences of operation and final calibration point to point reports to the CA.
10. Ensure that all Subs execute their commissioning responsibilities according to the contract documents and schedule.
11. Attend commissioning scope meeting and other necessary meetings scheduled by the CA to facilitate the Cx process.
12. Coordinate with subs on construction progress & equipment readiness for SRC completion.
13. Coordinate with CA on construction progress & system readiness for FT completion. Provide the CA ten (10) day advance notice so that system start-up and functional testing can begin.
14. Provide input on functional test scripts.
15. Pre-test all systems and equipment using functional test scripts prior to formal testing in presence of commissioning agent.
16. Coordinate with Subs to assist in and execute functional tests for verification by the CA.
17. Resolve system deficiencies identified during commissioning process.
18. Coordinate with Subs to execute re-testing of deficient systems and equipment.
19. Coordinate the training of owner personnel. Submit an owner training plan to the CA for review and approval.

20. Video record training sessions and provide to owner.
21. Provide trend logs or remote access from the controls system to the CA for review.
22. Prepare O&M manuals, according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built conditions.
23. Responsible for certifying that the work is complete and systems are operational according to design documents.
24. Complete CALGreen closeout documentation as required.

1.12 EQUIPMENT SUPPLIERS

A. Provide all requested submittal data, including detailed start-up procedures and specific responsibilities of the Owner to keep warranties in force.

B. Assist in equipment testing per agreements with Subs.

C. Include all special tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment according to these Contract Documents in the base bid price to the Contractor, except for stand-alone data logging equipment that may be used by the CA.

D. Provide equipment sequence of operation and testing procedures as requested by CA.

E. Review test procedures for equipment installed (or started up) by factory representatives.

1.13 SYSTEMS TO BE COMMISSIONED

A. The following systems will be commissioned in this project:
   1. HVAC Systems
   2. Building Management System
   3. Lighting and Lighting Control Systems

1.14 COMMISSIONING DOCUMENTATION

A. Commissioning Plan: Prior to permit issuance, a commissioning plan shall be completed to document how the project will be commissioned. Provided as part of the bid documents, is binding on the Contractor. The commissioning plan provides guidance in the execution of the commissioning process. Just after the initial commissioning scoping meeting the CA will update the plan which is then considered the "final" plan, though it will continue to evolve and expand as the project progresses. The specifications will take precedence over the Commissioning Plan. The commissioning plan shall include the following:

1. General project information
2. Commissioning goals
3. Systems to be commissioned
4. Commissioning team information
5. Commissioning process activities, schedules and responsibilities

B. The Owner Project Requirements and Basis of Design shall be incorporated into the drawings, specifications and other design documents.

C. Commissioning Report: A final summary report by the CA will be provided to Owner. The report will focus on evaluating commissioning process issues. System Readiness Checklists, functional tests and monitoring reports will not be part of the final report. For each piece of commissioned equipment, the report should contain the disposition of the commissioning authority regarding the adequacy of the equipment, documentation and training meeting the contract documents in the following areas:

1. Description of Commissioning Scope
2. System Readiness Checklists and Equipment Start-Up
3. Functional Performance Testing Results
4. Training documentation and evaluation
5. Outstanding Issues
6. Recommendations

1.15 SUBMITTALS

A. The CA employs the submittals and IO&Ms to develop the SRCs and FPT's. The CA shall review submittals for conformance with construction documents, OPR, & BOD. Submittals provided to the CA must have been approved by the A/E.

B. The A/E will review & approve commissioned equipment submittals for conformance to the contract documents as it relates to the commissioning process, the functional performance of the equipment, & adequacy for developing test procedures. This review shall verify compliance with equipment specifications. The A/E will notify the CM or PM of items missing or areas that are not in conformance with contract documents and which require resubmission.

C. A/E or GC shall provide a complete & approved submittal package to the CA.

D. The CA may request additional design narratives from the A/E and Controls Contractor, depending on the completeness of the design intent documentation and sequences provided in the specifications.

E. Equipment submittals to the CA do not constitute compliance for O&M manual documentation. The IO&M manuals are furnished separately by the Contractor. CA shall review them for development of the SRCs and FPTs. IO&M manuals shall be provided with the approved submittals.

F. Contractor shall provide/submit the following documents to the CA:

1. Revised construction schedule including commissioning tasks.
2. Equipment submittals for all commissioned equipment.
3. Sequences of operation for all commissioned equipment.
4. Control diagrams for all commissioned equipment.
5. Final testing and balancing report.
6. Energy code compliance forms – if applicable.
7. Completed SRCs.
8. Manufacturer IO&Ms for commissioned equipment.
9. Training plan for commissioned systems.
10. As-built control sequences and construction drawings.

PART 2 – PRODUCTS

2.1 TEST EQUIPMENT

A. See Schedules on Drawings for equipment data. Furnish and install all equipment in All standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by the Division contractor for the equipment being tested. E.G. the MC of Division 23 shall ultimately be responsible for all standard testing equipment for the HVAC system and controls system in Division 23, except for equipment specific to and used by TAB in their commissioning responsibilities.

B. Special Tools: Special equipment, tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment, according to these Contract Documents shall be included in the base bid price to the Contractor and left on site. Stand-alone data logging equipment used by the CA shall not be subject to this requirement.

2.2 RECORDING

A. The GC shall digitally record the audio and visual of selected trainings:

1. HVAC and Controls
2. Lighting and Lighting Controls

B. An introduction shall be made at the beginning of each recording, identifying what equipment is being illustrated, where it is located and who the trainer is.

C. Recording shall be accomplished with a tripod when possible and performed in an expert manner so that the issues being discussed are clearly illustrated and instructions clearly audible. A high quality camera shall be used and additional light provided if ambient light is insufficient.

D. Media shall be clearly labeled with the equipment, date, trainer and segment duration.

E. The digital visual and audio recording shall be bookmarked at each training with an index/table of contents provided and recorded on the DVD. The bookmarks will clearly indicate which equipment is being presented and the format will allow search and go-to functions for rapidly locating training segments.

F. An original and one copy of the recordings shall be submitted to the OWNER.

PART 3 – EXECUTION

3.1 COMMISSIONING PROCESS

A. The following narrative provides a brief overview of the typical commissioning tasks during design and construction and the general order in which they occur:

1. CA reviews updated OPR, BOD, and design documents to ensure feedback comments have been reviewed.
2. CA develops draft commissioning plan for review by the design team. After the scope meeting, the CA will update the Cx Plan and provide the final plan to the commissioning team.
3. Equipment documentation is submitted to the CA after submittal approval by the A/E.
4. The CA develops the System Readiness Checklists and provides these to the TC to be completed during the startup process.
5. In general, the checkout and performance verification proceeds from simple to complex; from component level to equipment to systems and intersystem levels with the SRCs being completed before FPT's.
6. SRCs will be developed and issued after receipt of A/E approved submittals and IO&Ms by the CA.
7. Commissioning during construction begins with a scope meeting conducted by the CA where the commissioning process is reviewed with the commissioning team members.
8. TC shall deliver one set of blank SRCs to Subs. TC shall collect all completed SRCs and deliver package to CA.
9. The Subs, under their own direction, execute the system start-ups and their completion on the SRCs. The completed SRCs are returned to the TC to be returned to the CA for review.
10. The CA develops specific equipment and system FPT procedures.
11. The FPT procedures are executed by the Subs under the direction of the CA and documented by the CA.
12. Items of non-compliance in material, installation or setup are corrected at the Sub's expense (including the CA's time and expenses) and the system is retested. The General Contractor is responsible for collecting cost and expenses for retesting.
13. GC shall bear all costs should the CA receive any incomplete SRCs and the CA is required to complete the SRCs to support the construction schedule.

14. The CA provides functional test forms to the GC for review. Close coordination is especially required between the CA and the CC to ensure successful development of the functional tests.
15. CA witnesses all functional tests executed by the subs under the direction of the CA.
16. CA to verify control system trend capability and data storage.
17. Any required re-tests are conducted as determined by the CA. Any associated costs with re -tests, including the CA's time and expenses will be charged back to the GC and may be collected from the subs.
18. Training plans are developed and provided to the Owners representative for review.
19. Training is conducted by the Subs and verified by the CA.
20. Functional tests and training is finished before Substantial Completion.
21. Final commissioning report is written.

3.2 SYSTEM READINESS CHECKLIST

A. Procedure: The following procedures apply to all equipment to be commissioned as listed in the Commissioning Plan. Mechanical, plumbing, & electrical commissioning specification sections describe subcontractor responsibilities

B. General: The SRC for a given system must be successfully completed prior to formal functional performance testing of equipment or subsystems of the given system. The Checklist is developed as follows:

1. A/E approved submittals are provided to CA by A/E or GC.
2. IO&M manuals provided to CA by GC.
3. CA develops SRCs from IO&Ms and submittal information.

C. Execution of the SRC

1. CA provides SRC to TC.
2. Installing contractor obtains documentation from TC and any specific manufacturer start-up, including checklists from the O&M.
3. TC coordinates execution of the equipment start-up among Subs per construction schedule.
4. Subs complete start-up and complete SRCs.
5. Only individuals that have direct knowledge and witnessed the start-up shall sign and complete the SRC.

6. All completed SRCs are returned to TC to be provided to the CA for review and approval.

D. Deficiencies, Non-Conformance and Approval in Checklists and Startup

1. The Subs shall clearly list any outstanding items of the initial start-up on the SRC.

2. The SRC and any outstanding deficiencies are provided to the CA within one week of test completion.

3. The CA reviews the SRC & shall work with the Subs & vendors to correct and retest deficiencies or uncompleted items at contractor's expense (including CA's time). The installing Subs or vendors shall correct all areas that are deficient or incomplete in the checklists and tests in a timely manner. Subs shall notify the CA as items have been corrected. Start-up report shall be updated as deficiencies are resolved.

4. Items left incomplete, which later cause deficiencies or delays during functional testing may result in additional costs due to either CA interventions or construction delay liquidated damages to the responsible party. Any SRCs that required CA to complete will result in additional charges to the GC that may be collected from installing sub.

3.3 FUNCTIONAL PERFORMANCE TESTING

A. This sub-section applies to all commissioning functional testing for all divisions.

B. Equipment: The general list of equipment to be commissioned is found in the Commissioning Plan.

C. See Mechanical, plumbing, & electrical commissioning specification sections for Subs responsibilities.

D. Objectives and Scope.

1. The objective of FPT's is to demonstrate that each system is operating according to the documented design intent and contract documents. FPT's facilitate bringing the systems from a state of substantial completion to full dynamic operation. Additionally, during the testing process, areas of deficient performance are identified and corrected, improving the operation and functioning of the systems.

2. In general, each system should be operated through all modes of operation (seasonal, occupied, unoccupied, warm-up, cool-down, part- and full-load) where there is a specified system response. Verifying each sequence in the sequences of operation is required. Proper responses to such modes and conditions as power failure, freeze condition, low oil pressure, no flow, equipment failure, etc. shall also be tested.

E. Development of Test Procedures.

1. Before test procedures are written, the CA shall obtain all requested documentation and a current list of change orders affecting equipment or systems, including an updated points list, control sequences and parameters. Each Sub or vendor responsible to execute a test, shall provide assistance to the CA in developing the procedures (answering questions about equipment, operation, sequences, etc.). Prior to execution, the CA shall provide a copy of the test procedures to the Sub(s) who shall review the tests for feasibility, safety, equipment and warranty protection. The CA may submit the tests to the A/E for review, if requested.

F. Test Methods.

1. FPT's and verification may be achieved by manual testing (persons manipulate the equipment and observe performance) or by monitoring the performance and analyzing the results using the control system's trend log capabilities or by stand-alone data loggers.

2. Simulated Conditions. Simulating conditions (not by an overwritten value) shall be allowed, though timing the testing to experience actual conditions is encouraged whenever practical.

3. Overwriting Values. Overwriting sensor values to simulate a condition, such as overwriting the outside air temperature reading in a control system to be something other than it really is, shall be allowed, but shall be used with caution and avoided when possible. Such testing methods often can only test a part of a system, as the interactions and responses of other systems will be erroneous or not applicable. Simulating a condition is preferable. e.g., for the above case, by heating the outside air sensor with a hair blower rather than overwriting the value or by altering the appropriate setpoint to see the desired response. Before simulating conditions or overwriting values, sensors, transducers and devices shall have been calibrated.

4. Altering Setpoints. Rather than overwriting sensor values, and when simulating conditions is difficult, altering setpoints to test a sequence is acceptable. For example, to see the AC compressor lockout work at an outside air temperature below 55F, when the outside air temperature is above 55F, temporarily change the lockout setpoint to be 2F above the current outside air temperature.
5. Indirect Indicators. Relying on indirect indicators for responses or performance shall be allowed only after visually and directly verifying and documenting, over the range of the tested parameters, that the indirect readings through the control system represent actual conditions and responses. Much of this verification is completed during completion of the start-up plan.
6. Setup. Each function and test shall be performed under conditions that simulate actual conditions as close as is practically possible. The Sub executing the test shall provide all necessary materials, system modifications, etc. to produce the necessary flows, pressures, temperatures, etc. necessary to execute the test according to the specified conditions. At completion of the test, the Sub shall return all affected building equipment and systems, due to these temporary modifications, to their pre-test condition.
7. Sampling. Multiple identical pieces of non-life-safety or otherwise non-critical equipment may be functionally tested using a sampling strategy. No sampling by Subs is allowed for SRCs or FPT's. Should frequent failures during testing require more troubleshooting than verification, the CA shall stop the testing and require the responsible Sub to perform and document a checkout of the remaining units.

G. Coordination and Scheduling

1. The Subs through the TC shall provide sufficient notice to the CA of their completion schedule for the SRCs and startup of all equipment and systems. The CA shall schedule functional tests through the CM, GC and affected Subs. The CA shall direct, witness and document the FPT's of all equipment and systems. The Subs shall execute the tests.
2. In general, functional testing is conducted after completion of the start-up plan. The control system is sufficiently tested and approved by the CA before it is used for TAB or to verify performance of other components or systems. The air balancing and water balancing is completed and debugged before functional testing of air-related or water-related equipment or systems. Testing proceeds from components to subsystems to systems. When the proper performance of all interacting individual systems has been achieved, the interface or coordinated responses between systems is checked.

H. Deficiencies, Non-Conformance, and Approval in Checklists and Startup:

1. The Subcontractors shall clearly list any items of the start-up and functional procedures not successfully completed at the bottom of the form or on an attached sheet. The procedures form and any outstanding deficiencies are provided to the CA within two days of test completion.

2. The CA reviews and verifies all functional checklists and start-up reports and recommends approval to the PM. The CA assists the Subcontractors and vendors to correct and retest deficiencies or uncompleted items, involving other members of the commissioning team as necessary.

3.4 DEFICIENCY RESOLUTION

A. Documentation

1. The CA shall witness and document the results of all FPT's using the specific procedural forms developed for that purpose. Prior to testing, these forms are provided to the GC for review and approval and to the Subs for review.

B. Non-Conformance.

1. The CA shall record the results of the FPT on the procedure or test form. All deficiencies shall be noted and reported to the GC and CM on a standard non-compliance form.

2. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CA. In such cases the deficiency and resolution will be documented on the procedure form.

3. Every effort will be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the procedures. The CA does not have the authority to overlook deficient work or loosen acceptance criteria to satisfy scheduling or cost issues.

4. If commissioning for equipment or systems is delayed by Owner occupancy requirements or other unforeseen conditions, the CA will coordinate completion with Owner's schedule. This may involve testing conducted outside of normal occupancy hours. Contractor assistance will still be required to conduct functional testing outside of normal occupancy hours without any additional cost to the owner.

5. If a deficiency is identified, the CA shall discuss the issue with the executing contractor.

a. When there is no dispute on the deficiency and the Sub accepts responsibility to correct it:

1) The CA documents the deficiency, records the Sub's response, and proceeds with remaining FPT's. The Sub corrects the deficiency and certifies that the equipment is ready to be retested and coordinates retesting with the GC and CA.

2) The CA reschedules the test and the test is repeated.

b. If there is a dispute about a deficiency, regarding whether it is a deficiency or who is responsible:

1) The deficiency shall be documented with the Sub's response and a copy given to the GC and to the Sub representative assumed to be responsible.

2) Resolutions are made at the lowest management level possible. Other parties are brought into the discussions as needed. Final interpretive authority is with the A/E. Final acceptance authority is with the Project Manager.

3) Once the interpretation and resolution have been decided, the appropriate party corrects the deficiency and certifies the equipment is ready for retesting. The CA reschedules the test and the test is repeated until satisfactory performance is achieved.

6. Cost of Retesting

a. The cost for the Sub to retest a functional test, if they are responsible for the deficiency, shall be borne by the Sub. If the Sub is not responsible, any cost recovery for retesting costs shall be negotiated with the GC.

b. The time for the CA and CM to direct any retesting required because a specific SRC, reported to have been successfully completed, but determined during functional testing to be faulty, will be backcharged to the GC, who may choose to recover costs from the party responsible for executing the faulty SRC.

7. The Contractor shall respond in writing to the CA and CM at least as often as commissioning meetings are being scheduled concerning the status of each apparent outstanding discrepancy identified during commissioning. Discussion shall cover explanations of any disagreements and proposals for their resolution.

8. The CA retains the original non-conformance forms until the end of the project.

C. Failure Due to Manufacturer Defect

1. If 10% of identical pieces (size alone does not constitute a difference) of equipment fail to perform to the contract documents (mechanically or substantively) due to manufacturing defect, not allowing it to meet its submitted performance spec, all identical units may be considered unacceptable by the CM or PM. In such case, the Contractor shall provide the Owner with the following:

    a. Within one week of notification from the CM or PM, the Contractor or manufacturer's representative shall examine all other identical units making a record of the findings. The findings shall be provided to the CM or PM within two weeks of the original notice.

    b. Within two weeks of the original notification, the Contractor or manufacturer shall provide a signed and dated, written explanation of the problem, cause of failures, etc. and all proposed solutions which shall include full equipment submittals. The proposed solutions shall not significantly exceed the specification requirements of the original installation.

    c. The CM or PM will determine whether a replacement of all identical units or a repair is acceptable.

    d. One example of the proposed repair solution will be installed by the Contractor and the CM will be allowed to test the installations for up to one week, upon which the CM or PM will decide whether to accept the solution.

    e. Upon acceptance, the Contractor and/or manufacturer shall replace or repair all identical items, at their expense and extend the warranty accordingly, if the original equipment warranty had begun. The replacement/repair work shall proceed with reasonable speed beginning within one week from when parts can be obtained.

D. Approval

1. The CA notes each satisfactorily demonstrated function on the test form. The CA recommends acceptance of each test to the Owner. The Owner gives final approval for acceptance.

3.5 OPERATIONS AND MAINTENANCE DOCUMENTATION

A. The contractor will provide the owner with complete operations and maintenance information. Contractor to provide at a minimum:

1. Basic operation (i.e. narratives of basic equipment operation, interfaces, interlocks, and interaction with other equipment & systems, initial maintenance provided by the contractor).
2. General site operating schedules (i.e. instructions for changes in major system operating schedules, instructions for changes in major system holiday and weekend schedules).
3. Basic troubleshooting (i.e. cite recommended troubleshooting procedures specific to major systems and equipment, manual operation procedures, standby/backup/bypass operation procedures, major system power fail resets and restarts, trend log listing).
4. Recommended maintenance events log (i.e. HVAC air filter replacement schedule and log, building control system sensor calibration schedule and log).

B. Electronic O&M manuals shall be provided for all commissioned systems. Electronic O&M manuals shall consist of all hard-copy O&M manual data in searchable pdf files in a logical folder structure with descriptive file names which make it clear what the manual includes. In all cases, this requires renaming the files from any O&M's cryptic numeric file names.

C. Where electronic data from the manufacturer contains data about other models and features not included in this project, the contractor shall mark the applicable model and features for the equipment in this job in the pdf, so the operations staff can readily identify what equipment model and features in the electronic O&M apply to this building.

3.6 TRAINING OF OWNER PERSONNEL

A. Coordination: The GC shall be responsible for training coordination and scheduling and ultimately for ensuring that training is completed.

B. A program for training of the appropriate maintenance staff for each equipment type and/or system shall be developed and documented in the commissioning report.

C. In addition to these general requirements, the specific training requirements of Owner personnel by Subs and vendors is specified in Division 21, 23 and 26 . Each Sub and vendor responsible for training will submit a written training plan to the CA for review and approval prior to training. The plan will cover the following elements:

1. System/equipment overview
2. Intended audience
3. Location of training

4. Objectives
5. Subject covered
6. Duration of training on each subject
7. Instructor for each subject
8. Instructor qualifications
9. Methods (lecture, video, site walk-through, written handouts, etc)
10. Review and demonstration of servicing/preventative maintenance
11. Review of record drawings on the system/equipment

D. For the primary HVAC equipment, the controls contractor shall provide a short discussion of the control of the equipment during the mechanical or electrical training conducted by others.

E. Training shall cover a review of the written O&M instructions emphasizing safe and proper operating requirements, preventative maintenance, special tools needed and spare parts inventory suggestions. The training shall include start-up, operation in all modes possible, shut-down, seasonal changeover, as applicable, and any emergency procedures.

F. The trainings will be tailored to the needs and skill-level of the trainees and be oriented to the specific system installed in this project.

G. The contractor shall record the training sessions and provide the owner with a training manual and digital copies of the training sessions.

3.7 DEFERRED TESTING

A. Unforeseen Deferred Tests: If any check or test cannot be completed due to the building structure, required occupancy condition or other deficiency, execution of checklists and functional testing may be delayed upon approval of the PM.

B. Additional, missing or incomplete functional testing will be done by CA and will back charge to the responsible party. GC is responsible for collecting these charges and expenses from subcontractors.

3.8 FINAL REPORT

A. The final commissioning report shall include an executive summary, list of participants and roles, brief building description, overview of commissioning and testing scope and a general description of testing and verification methods. Outstanding non-compliance items shall be specifically listed.

END OF SECTION 01 91 00

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SPECIFICATIONS

FOR

LEAD-BASED PAINT (LBP) ABATEMENT / HAZARD CONTROL

APPLICABLE TO

MEADOW HOMES ELEMENTARY SCHOOL
1371 DETROIT AVENUE
CONCORD, CA 94520

FOR

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
MS. MELANIE KOSLOW
DIRECTOR OF FACILITIES & BONDS
MAINTENANCE & OPERATIONS
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1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings (architectural, structural and/or mechanical) and general provisions of the Contract, including General and Supplementary Conditions of the Specification, apply to work specified in this Section.

B. Related work specified elsewhere in the Specification is included in the following sections:

Section 01010 - Summary of Work
Section 01040 - Project Coordination
Section 01045 - Cutting and Patching
Section 01546 - Safety and Health
Section 02070 - Selective Demolition
Section 02081 - Asbestos-Containing Materials (ACM) Abatement
Section 05120 - Structural Steel
Section 15050 - Basic Mechanical Materials and Methods
Section 16050 - Basic Electrical Materials and Methods

C. The following Lead-Based Paint (LBP) Abatement / Hazard Control Specifications for Meadow Homes Elementary School, 1371 Detroit Ave., Concord, CA 94520, shall be fully complied with by the Contractor.

1.2 SCOPE OF WORK

A. LBP Components:

LBP was identified on an interior window frames door frame components. A few others were identified as Lead-Containing Paint (LCP). The ceramic tile in the restrooms were characterized and determined to be California Restricted Hazardous waste. For the purposes of these specifications, assume all paint on the clerestory & store front window systems as LBP.

B. LBP hazard control procedures shall be followed whenever LBP/LCP components are impacted. .

C. The Contractor shall provide all labor, materials, tools equipment, supervision and incidentals necessary to perform the work of lead-based paint (LBP) removal under this specification. After removal, the areas disturbed shall be cleaned and tested in accordance with the procedures outlined herein.

D. This specification, and related documents, shall constitute the definition of the

Lead-Based Paint abatement / hazard control project.

NOTE: The Contractor shall phase his work so that under no circumstances, will allow the co-mingling of asbestos-containing material and lead-based paint wastes. Furthermore, the Contractor shall bring clean HEPA vacuums with new HEPA filters. These shall be DOP tested and labeled for *asbestos or lead use only*.

1.3 DESCRIPTION OF WORK

The description of the LBP abatement / hazard control procedures for referenced project are summarized below to assist the Contractor in developing a general understanding of the flow of the work process. It is not intended, nor shall it relieve the Contractor of any legislative, regulatory, or contractual responsibilities associated with the work.

A. Baseline Assessments:

1. The Contracting Officer (hence referred to as the Owner) or his represent may conduct baseline wipe tests on the interior window sills / floors affected by the project area and within the planned containment areas. These wipe tests may either be conducted at the beginning of the day on which LBP abatement work is scheduled, or on the day before work is scheduled. In no case shall the baseline wipe tests be collected more than seventy-two (72) hours prior to scheduled LBP abatement work.

2. The wipe tests are intended to provide information on the extent of lead dust contamination prior to the start of any work, including set-up, in the project area. They are not intended to relieve the Contractor from attaining final clearance standards.

   NOTE: All LBP removal work, including final wipe clearances (when applicable), must be completed by the abatement Contractor before any other trades are allowed to begin work on the abated area/surface. Baseline wipe tests provide information on the overall degree of lead contamination, or lack thereof, prior to the start of abatement and/or construction work.

3. The Owner may elect to discontinue the baseline assessments once a reliable database has been established.

B. Work Area Preparation & Inspection:

1. Work Area Preparation

   a. For LBP Removal, the Contractor shall HEPA vacuum the horizontal surfaces in the work area.

2. The Contractor shall request the Owner or his Representative to inspect the

work area containment/enclosure.

C Worker Protection Overview:

1. LBP Abatement Work:

   a. According to Cal/OSHA this work is classified as a Trigger Task I, therefore are required to wear disposable suits, half-mask air-purifying respirators equipped with HEPA filters.

   b. Disposable (Tyvek-like) coveralls and booties shall be provided to each worker.

   c. Workers shall abide by the work and hygienic practices specified herein.

   d. An on-site, portable, centrally-located hand & face washing is required. Removal of soiled, disposable suits, washing of hands and face are required prior to lunch, breaks and at the end of the shift.

D. LBP Abatement & Visual Clearance:

4. For LBP Abatement: After visual inspection and approval of the containment by the industrial hygienist, the Contractor shall begin removal. The containment at a minimum shall be two (2) layers of 6-mil poly on the ground extended, at minimum, ten (10') feet away from the exterior wall. Additionally, a barrier, such as contractor orange plastic web, shall also be erected demarcating the work area.
   a. The Contractor shall completely remove all of the window systems, selected walls and ceramic tile per the demolition plans.

   b. The removed LBP components shall be wrapped with 6-mil plastic, ensuring a sight seal with duct tape. Enviro-STAR shall collect representative LBP components i.e., window frames, walls for laboratory characterization to determine proper waste disposal.

   c. The entire work area shall be tripled-cleaned and the Contractor shall request a visual inspection by the Contracting Officer or his Representative (See Final Clean-Up Procedures for details).

   d. Failure to meet clearance standards will require the Contractor to re-clean the interior of the containment system and retest.

E. The Contractor is responsible for the "initial determination", as required by the OSHA Construction Lead Standard. The Contractor shall also conduct periodic exposure monitoring of employees to assure compliance. The Contracting Officer may conduct area monitoring within the containment and in the surrounding work areas during periods of active LBP disturbance.

1.4 EXISTING SITE CONDITIONS

F. Accident Prevention: Due to the fact that many of the building systems will be operating at all times during the project, the lock out, tag out procedures (if applicable) must be strictly followed to avoid potentially serious accidents and/or electrocution of Contractor personnel.

1.5 DEFINITIONS AND ABBREVIATIONS

The following definitions apply to the work of this specification:

1. AA - Atomic absorption.

2. AC - Alternating current.

3. ACCREDITED LABORATORY - A laboratory which is accredited by the American Industrial Hygiene Association, participates in the Proficiency Analytical Program (PAT), and is accredited by the State of California's Environmental Laboratory Accreditation Program.

4. ACCURACY - The degree to which a measurement process determines a known amount of lead or other component in a particular reference material.

5. ACTION LEVEL - The point at which something is required due to the presence of lead. For example, the OSHA action level for airborne lead is 30 $\mu g/m^3$.

6. AIR MONITORING (air sampling) - The process of measuring the lead content of a specific volume of air using the National Institute for Occupational Safety and Health (NIOSH) method or other method approved by the Contracting Officer of his Representative. Flow rate and sample volume shall be in accordance with the method chosen. Also see Area Monitoring and Exposure Monitoring.

7. AIRLOCK - A system for permitting ingress or egress without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways at least 6 feet apart.

8. AMENDED WATER - A water to which a surfactant, such as trisodium phosphate, has been added.

9. ANSI - American National Standards Institute.

10. AREA MONITORING - Air monitoring of lead concentrations within the lead abatement area and outside the lead area, which is a representative of the ambient airborne concentration of lead. Also see Exposure Monitoring.

11. ASHRAE - American Society of Heating, Refrigerating and Air- Conditioning

Engineers.

12. ASME - American Society of Mechanical Engineers.

13. ASSOCIATED SURFACE - Interior/exterior walls, hangers, duct work, duct work insulation, conduit, electrical cables, light fixtures, junction boxes, panel boxes, building insulation materials and other items joined with or adjacent to structural members.

14. ASTM - American Society for Testing and Materials.

15. AUTHORIZED VISITOR - Any visitor to the site whose visit has been authorized by the Contracting Officer of his Representative.

16. BARRIER - A physical structure such as a wooden or tape (yellow ribbon with lead hazard warning signs) barricade, which defines the limits of the containment area wherein LBP abatement is occurring. The barrier and a single-stage containment (work area and decontamination area) are the basic, or first level, engineering control; the second level control is a two-stage containment (dirty room and clean/change room) with negative air; the third level control is a three-stage containment (dirty room, shower and clean/change room) with negative air. The level of engineering control is predicated on the type of LBP abatement methods employed and/or the results of initial and ongoing lead air monitoring results.

17. BIOLOGICAL MONITORING - The analysis of a person's blood and/or urine to determine the level of lead contamination in the body. The OSHA Lead standard requires biological monitoring as part of the medical surveillance requirements.

18. BLANK - A non-exposed sample of the medium used for testing, such as a wipe or filter, which is analyzed like other samples to determine whether samples are contaminated with lead before samples are collected (e.g., at the factory or at the testing site), or whether the samples are contaminated after sample collection (e.g., during transportation to the laboratory or in the laboratory).

19. CDPH - California Department of Public Health

20. CFR - The Code of Federal Regulations is the basic component of the Federal Register publication system. The CFR is a codification of the regulations of the various federal agencies.

21. CHARACTERISTICS - EPA has identified four characteristics of a hazardous waste: ignitability; corrosivity; reactivity; and toxic characteristic leaching procedure (TCLP) toxicity (formerly extraction procedure (EP) toxicity). Any solid waste that exhibits one or more of these characteristics is classified as a hazardous waste under the Resource Conservation and Recovery Act (RCRA).

See EP Toxicity and TCLP.

22. CHEMICAL REMOVER - A pre-mixed chemical penetrating agent designed specifically for removal of lead containing material.

23. CLEAN ROOM - An uncontaminated area or room which is part of the workers decontamination facility, with provisions for storage of workers' street clothes and clean or unused protective equipment.

24. CONTAINER - Any portable device in which material is stored, transported, treated, disposed of, or otherwise handled.

25. CONTAINMENT - A process for protecting both workers and the environment by controlling exposures to lead dust and debris created during lead control. Three levels of containment are identified beyond the barrier stage: a SINGLE-STAGE containment (work area and decontamination area), TWO-STAGE containment (work area, dirty room and clean/change room) with negative air and a THREE-STAGE containment (work area, dirty room, shower and clean/change room) with negative air.

26. CONTAINMENT AREA - A work area or zone for lead abatement work that is defined by tape, signs and/or physical barriers.

27. CONTRACTOR - Any business entity, public unit, or person performing the role of LBP abatement contractor for the project.

28. DF - Decontamination Facility.

29. DIRECT READING XRF - An analyzer that provides an operator with a display of a lead -based paint concentration, expressed in milligrams per square centimeter (mg/cm^2), and calculated from the lead "K" x-ray intensity.

30. CONTRACTING OFFICER - A person, firm, corporation, public housing authority, guardian, conservator, receiver, trustee, executor, or other judicial officer, who, alone or jointly or severally with others, owns, holds, or controls the whole or any part of the freehold or leasehold title to any property, with or without accompanying actual possession of it, and shall include in addition to the holder of legal title, any vendee in possession of it, but may not include a mortgagee or an Contracting Officer of his Representative of a reversionary interest under a ground rent lease.

31. DISPOSAL - The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that any constituent therefore may enter the environment or be emitted into the air or discharged in any waters, including ground waters.

32. DISPOSAL FACILITY - A facility or part of a facility at which hazardous waste is intentionally placed into or on any land or water, and at which waste

will remain after closure.

33. DOT - Department of Transportation.

34. ENCAPSULANT (sealant) - A liquid material which can be applied to lead containing areas and which controls the possible release of LBP from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

35. ENCAPSULATION - Involves resurfacing or covering a surface, and sealing or caulking with durable materials, so as to prevent or control chalking and flaking of lead-containing substances.

36. ENCLOSURE - See Containment Area and Barrier.

37. ENGINEERING CONTROLS - Measures implemented at the work site to physically/mechanically contain, control, and/or otherwise reduce exposure to lead dust and debris. Does not include administrative and/or respiratory protection controls.

38. EP - Extraction procedure.

39. EPA - Environmental Protection Agency

40. EPA IDENTIFICATION - The unique number assigned by EPA to each generator or transporter of hazardous waste, and each treatment, storage, or disposal facility.

41. EP TOXICITY - A test, called the extraction procedure, that is designed to identify wastes likely to leach hazardous concentrations of particular toxic constituents into the ground water as a result of improper management. EP toxicity is a characteristic of hazardous waste. It has since been replaced by TCLP as the acceptable method. See TCLP and Characteristics.

42. EQUIPMENT ROOM - A contaminated area or room that is part of the workers' decontamination facility, with provisions for storage of contaminated clothing and equipment.

43. EU - Exhaust Unit.

44. EXPOSURE MONITORING - Worker air monitoring to establish initial or to document on-going lead exposure levels. Must be done to enable each employee's exposure level to be reasonably represented by at least one full-shift (at least 7 hours) air sample.

45. FACILITY - All contiguous land, structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous

waste. A facility may consist of several treatment, storage, or disposal operational units, e.g., one or more landfills, surface impoundments, or a combination of them.

46. FEDERAL REGISTER - A document published daily by the federal government that contains either proposed or final regulations.

47. FINAL INSPECTION - Inspection by a qualified inspector, industrial hygienist, or local public health official to determine whether lead abatement work and clean up are complete.

48. ft^2 - Square feet.

49. CF - Cubic feet.

50. CFM - Cubic feet per minute.

50. GENERATOR - Any person who first creates a hazardous waste or any person who first makes the waste subject to the Subtitle C regulation (i.e., imports a hazardous waste; initiates a shipment of a hazardous waste from a hazardous waste treatment, storage, or disposal facility (TSD); or mixes hazardous wastes of different Department of Transportation (DOT) shipping descriptions by placing them into a single container).

52. GFCI - Ground fault circuit interrupter.

53. GROUND WATER - Water below the land surface in a zone of saturation.

54. H_2O- Water.

55. HAZARDOUS WASTE - As defined in RCRA, a solid waste or combination of solid wastes which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may:

    * Cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

    * Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

    As defined in the regulations, solid waste is hazardous if it meets one of four conditions:

    * Exhibits a characteristic of a hazardous waste (40 CFR Section 261.20 through 262.24).

    * Has been listed as hazardous (40 CFR Section 261.31 through 261.33).

* Is a mixture containing a listed hazardous waste and a nonhazardous solid waste (unless the mixture is specifically excluded or no longer exhibits any of the characteristics of hazardous waste).

* Is not excluded from regulation as a hazardous waste.

56. HEPA - High efficiency particulate air.

57. HEPA VACUUM - A specially-designed vacuum cleaner fitted with a HEPA filter.

58. HIGH EFFICIENCY AIR (HEPA) FILTER - A filter capable of filtering out particles of 0.3 microns or greater from a body of air at 99.97% efficient against mono-dispersed particles that are 0.3 microns in diameter or larger.

59. HIGH PHOSPHATE DETERGENT - Detergent which contains at least 5% trisodium phosphate (TSP).

60. HUD - United States Department of Housing and Urban Development.

61. U.S. Department of Housing and Urban Development (HUD) LBP Guidelines - Lead-Based Paint: Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing, June 1995.

62. LCP, ES - Inductively coupled plasma, atomic emission spectroscopy.

63. INITIAL DETERMINATION - Includes instrument monitoring of the air for the presence of lead and covers the exposure of a representative number of employees who are reasonably believed to have the greatest exposure. Provides the basis for the determination of the level of engineering controls, degree of respiratory protection, and other required actions.

64. INITIAL XRF SURVEY - A systematic inspection of a structure by a qualified inspector, using a portable XRF analyzer, atomic absorption spectroscopy, or other approved testing techniques, to determine whether a lead-based paint hazard is present.

65. kg - Kilogram(s).

66. LANDFILL - A disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a land treatment facility, a surface impoundment, or an injection well.

67. LBP - Lead-Based Paint .

68. LBP PAINT REMOVAL - A strategy of paint removal which entails stripping (mechanically or chemically) lead paint from surfaces of components.

69. LBP ABATEMENT - A comprehensive process (removal, encapsulation, enclosure, etc.) of eliminating exposure or potential exposure to lead paint and lead dust which must include monitoring, measures for worker protection, containment of dust and debris, cleanup and disposal of waste, and clearance testing.

70. LCP - Lead-Containing Paint

71. Lead-Based Paint - A painted surface is identified as containing Lead-Based Paint if the XRF result is ≥ 1.0 mg/cm^2 or if laboratory analysis indicate the paint chip sample contains 0.5% or 5000 ppm or greater.

72. Lead-Containing Paint - A painted surface is identified as containing Lead-Containing Paint is the XRF result is 0.01 - 0.9 mg/cm^2 or if laboratory analysis indicate the paint chip sample contains less than 0.5% or less than 5000 ppm.

73. Lead Not Detected - A painted surface is identified as being Lead Not Detected if the XRF result is <0.0 mg/cm^2 or if laboratory analysis does not detect any level of lead in the paint chip sample.

74. LEAD PERMISSIBLE EXPOSURE LIMIT (PEL) - The limit is 50 micrograms per cubic meter of air as an 8-hour, time-weighted average.

75. LISTED - Hazardous wastes that have been placed on one of three lists developed by EPA: non-specific source wastes; specific source wastes; or commercial chemical products. These lists were developed by examining different types of waste and chemical products to see if they exhibit one of the four hazardous waste characteristics, meet the statutory definition of hazardous waste, are acutely toxic or acutely hazardous, or are otherwise toxic.

76. LND - Lead Not Detected

77. LOCAL EXHAUST SYSTEM - A system in which static pressure in an enclosed abatement area is lower than that of the environment outside the abatement area, as specified herein.

78. MANIFEST - The shipping document, EPA form 8700-22, used for identifying the quantity, composition, origin, routing, and destination of hazardous waste during its transportation from the point of generation to the point of treatment, storage, or disposal.

79. MEAN - The arithmetic average of data values. The algebraic sum of the data values divided by the number of data values. When using an XRF, the mean is the average of a series of numerical readings reported by the XRF.

80. MEDICAL REMOVAL - The temporary removal of workers due to elevated blood lead levels as defined by the OSHA Lead standard.

81. mg/cm^2 - Milligrams per square centimeter.

82. MICROGRAMS - One millionth of a gram: 453 grams in a pound, 28,310,000 micrograms in one ounce.

83. mil - Millimeter.

84. NAM - Negative air machine.

85. NEGATIVE AIR MACHINE (NAM, "HOG") - A self-contained local exhaust machine utilized in a negative air pressure system.

86. NEGATIVE AIR PRESSURE SYSTEM - A local exhaust system capable of maintaining a minimum pressure differential of minus 0.02 inch of water gauge in a work area relative to adjacent areas.

87. NEMA - National Electrical Manufacturers Association.

88. NIBS - National Institute of Building Sciences. Also refers to the NIBS Lead-Based Paint Operations & Maintenance Work Practices Manual for Homes and Buildings, May 1995

89. NIOSH - National Institute for Occupational Safety and Health.

90. OSHA - Occupational Safety and Health Administration.

91. PAPR - Powered air purifying respirator.

92. PEL - Permissible exposure limit.

93. PERMIT - An authorization license or equivalent control document issued by EPA or an authorized State to implement the regulatory requirements of Subtitle C Parts 264 and 265 for TSDs.

94. PRECISION - The degree of repeatability of a series of successive measurements.

95. psi - Pounds per square inch.

96. RCRA - Resource Conservation and Recovery Act of 1976. An amendment to the Solid Waste Disposal Act of 1965. RCRA was amended in 1980 and most recently on November 8, 1984 by the Hazardous and Solid Waste Amendment.

97. REGULATION or RULE - All or part of any Federal statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy; or describe the Federal Department's organization or its procedure or practice requirements.

98. REMOVAL - All herein-specified procedures necessary to mechanically or chemically strip all LBP from the designated areas and to dispose of these materials at an acceptable site.

99. REPLACEMENT - A strategy of lead abatement which entails the removal of components such as windows, doors, and trim that have lead-painted surfaces and installing new components free of lead paint.

100. SCRAPING - The process of removing loose, peeling or chipped LBP from the substrate; collection of debris and disposal as a hazardous waste. Usually performed with hand tools such as a broad blade putty knife; does not include sanding (manual or powered).

101. SDS - Safety Data Sheet - chemical manufacturer forms containing health hazard information about chemical products.

102 SITE - The land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

103. SOLID WASTE - As defined in RCRA, any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under the Clean Water Act, or special nuclear or byproduct material as defined by the Atomic Energy Act of 1954.

104. SPECTRUM ANALYZER XRF - A type of XRF analyzer which provides the operator with a plot of the energy and intensity of both "K" and "L" shells, as well as a calculated lead concentration, expressed in mg/cm^2.

105. STANDARD - Used in two ways: (1) levels established by law or regulation, such as the CAL/OSHA PEL of 50 $\mu g/m^3$; (2) materials to which known quantities of lead have been applied. Used to evaluate the accuracy and performance of the XRF analyzer, usually called Standard Reference Materials.

106. STORAGE - The holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere.

107. TCLP - Toxic Characteristic Leaching Procedure (see EP Toxicity Test and Characteristics).

108. TIME-WEIGHTED AVERAGE (TWA) - The TWA is an 8-hour, time-weighted average of airborne concentration for lead per cubic meter of air which represents the employee's 8-hour workday.

109. TRANSPORTER - Any person engaged in the off-site transportation of hazardous waste within the United States, by air, rail, highway or water, if such transportation requires a manifest under 40 CFR Part 262.

110. TRIPLE CLEAN - The cleaning of a surface to remove loose LBP and lead dust by: 1) HEPA vacuuming, 2) washing with a 5% TSP solution and 3) HEPA vacuuming (See Clean-Up Procedures for details).

111. TWA - Time weighted average.

112. µg: Micrograms - the prefix "micro-" means "1/1,000,000 of" (one millionth of). A microgram is 1/1,000,000 of a gram and 1/1000 of a milligram. A microgram is equal to about 35/1000,000,000 (thirty-five billionths) of an ounce. 28,400,000 µg are equal to 1 ounce.

113. $\mu g/m^3$ - Micrograms per cubic meter.

114. $\mu g/ft^2$ - Micrograms per square foot.

115. µg/g - Microgram/gram.

116. µm - Micrometer.

117. U.S. Department of Housing and Urban Development (HUD) LBP Guidelines - Lead-Based Paint: Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing, 2012 edition.

118. WET CLEANING - The process of eliminating lead contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened by water amended with TSP, and afterwards disposing of these cleaning tools as lead-contaminated waste.

119. WORK AREA - A room or location in which lead is indicated to be removed by the contract.

120. WORK PRACTICE CONTROL - See Engineering Controls.

1.6 STANDARDS AND GUIDELINES

A The current issue of each document shall govern. Where conflict among requirements or within these specifications exist, the more stringent requirements shall apply.

B. General Applicability of Codes, Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the

specification, all applicable codes, regulations, and standards have the same force and effect (and are made part of the specification by reference) as if copied directly into the specification, or as if published copies are bound herewith.

C. Contractor Responsibility: The Contractor shall assume full responsibility and liability for compliance with all applicable federal, state, and local regulations pertaining to work practices, hauling, disposal and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of all personnel as required by the applicable federal, state, and local requirements.

In addition, the Contractor will be responsible for obtaining all local permits and paying all fees prior to beginning work. Copies of permits must be submitted to the Owner or his Representative prior to start of work and must be posted at the project site.

D. HUD LBP Guidelines: The Contractor shall comply with all provisions and/or responsibilities, as applicable, contained in the Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, 2012 edition , U.S. Department of Housing and Urban Development.

E. OCCUPATIONAL SAFETY AND HEALTH ACT

1. The Contractor shall comply with the requirements of the General Industry Safety and Health Standards, 29 CFR Part 1910, and the Safety and Health Regulations for Construction, 29 CFR Part 1926, including all other standards and regulations which administer such Acts, and said requirements, standards, and regulations as incorporated herein by reference.

2. The Contractor shall strictly adhere to the provisions of the following 29 CFR Sections:

1910.134: Respiratory Protection
1910.302-307, 1926.400: Electrical
1910.28, .29, .67, .22, .23, .66, 1926.451: Scaffolding
1910.22, .100h, 1926.25: Housekeeping
1910.1200: Hazard Communication (Employee Right-to-Know)
1910.25, .26, 1926.450: Ladders
1910.37, .38: Egress and Emergency Plans
1019.95, .132-.137, .1001, 1926.28, .100-.014 Personal Protective Equipment
1910.141, 1926.27, .51, .950h: Sanitation
1910.242-.244, 1926.302: Powered Hand Tools
1926.16: Contractors Responsibilities
1926.20: General Safety and Health Provisions
1926.21: Safety Training and Education
1925.25: Housekeeping
1926.28: Personal Protective Equipment
1926.51(f): Washing Facilities

1926.55: Gases, Vapors, Fumes, Dusts and Mists
1926.57: Ventilation
1926.59: Hazardous Communication Standard
1926.62: Lead
1926.103: Respiratory Protection
1926.353©: Ventilation: Welding, Cutting or Heating of Metals of Toxic Significance

Copies of these standards are available from OSHA.

3. Compliance with the requirements of standards will be strictly enforced by the Contracting Officer's Representatives.

F. STATE AND LOCAL REQUIREMENTS

1. The Contractor shall comply with the following State of California Department of Occupational Safety and Health (Cal/OSHA) Regulations, Title 8 California Code of Regulations: General Industry Safety Orders, Section 5216, Lead Regulations and Construction Safety Orders, Section 1532.1.

2. The Contractor shall comply with CDPH Title 17, California Code of Regulations, Division 1, Chapter 8 Accreditation, Certification and Work Practices for Lead-Based Paint and Lead Hazards, April 30, 2008.

3. The Contractor shall comply with the Federal Environmental Protection Regulations pertaining to handling and disposal of lead-containing materials as well as the State of California and any local governmental agencies which have delegated responsibility for the administration and enforcement of federal regulations.

4. The Contractor shall comply with all requirements of the EPA-approved landfill which is selected as the disposal site.

G. OTHER REQUIREMENTS

1. American National Standards Institute (ANSI) - ANSI Z9.2. Fundamentals Governing the Design and Operation of Local Exhaust Systems.

2. The Contractor shall comply with said regulations, requirements, and standards (noted above) and require and be directly responsible for compliance therewith on the part of his agents, employees, and Subcontractors; and shall directly receive and be responsible for all citations, assessments, fines or penalties which may be incurred by reason of his agents, employees, or Subcontractors failing to so comply.

1.7 SUBMITTALS AND NOTICES

Post-Contract Award Submittals -

Within five (5) calendar days of contract award, the Contractor shall submit to the Contracting Officer or his Representative for review and approval:

A. Proof satisfactory to the Owner that all required permits, site locations, and arrangements for transport and disposal of lead-based materials and wastes and the like have been obtained including, but not limited to, the following:

1. The EPA hazardous waste generator identification number (GIN).

2. The name and appropriate certification/licenses of the hazardous materials transport firms.

3. The name and appropriate certification/licenses of the landfill facility.

B A comprehensive work plan for the lead abatement project in compliance with this specification and applicable regulations. The work plan shall clearly identify the removal method(s), containment plan(s) by building or section, time lines, and responsible parties.

These requirements shall be met by submission of shop drawings on which each of these areas are clearly identified.

1. A written respiratory protection plan as required in 29 CFR 1926.103.

2. A written medical examination and consultation plan that includes the items required by 29 CFR 1926.52.

3. Copies of all permits.

C. Pre-Construction Submittals -

Within five (5) calendar days of the Notice-to-Proceed, or at the Pre-Construction Meeting, whichever is occurs sooner, the Contractor shall submit to the Contracting Officer or his Representative for review and approval:

1. The following documentation on individual Contractor employees:

   a. Proof of medical examination, per 29 CFR 1926.52 protocol;
   b. Records of baseline (pre-job) blood lead tests, per 29 CFR 1926.52 protocol;
   c. Medical authorization for respirator usage, per 29 CFR 1926.103; and
   d. Certificates of appropriate lead training, as required by 29 CFR 1926.52 and this Specification.

2. Weekly work schedule.

3. Method of application and materials to be used.

4. Various manufacturers' information (including SDS) and type and brands of materials for workers' protection.

D. Weekly Submittals:

At the beginning of each week, the Contractor shall submit to the Contracting Officer or his Representative for approval:

1. Copies of all daily manpower and work logs indicating area(s) and type of work performed.

2. Test results for area and personal air monitoring.

3. Copies of all OSHA Form 101 or equivalent CAL/OSHA accident/injury/incident reports.

1.8 EXPERIENCE AND WORKMANSHIP

A. The Contractor performing the lead abatement work shall have a minimum of one (1) year of experience performing lead dust clean up, removal or abatement work on projects similar in scope and size. Documented proof of past experience will be requested consisting of a list of projects with references for confirmation.

B. The Contractor performing this work must be familiar with all applicable regulations covering removal work. This includes all permits, licenses, and certificates required to perform this type of hazardous work and related disposal requirements.

C. A complete work plan outlining the methods and controls to be used during the performance of this work will be submitted to the Owner or his Representative prior to the start of any work. Written approval from the Owner of his Representative, or their representative, must be obtained prior to the start of abatement work.

D. It is the Contractor's responsibility to maintain adequate controls and perform periodic air and personal monitoring to insure worker safety for the duration of this work and submit weekly reports to the Owner of his Representative on the air quality during lead dust abatement work.

1.9 PERSONNEL TRAINING AND PROTECTION

A. <u>Personnel Training</u>

1. The Contractor’s on-site supervisors shall have, at a minimum, 4 days training in lead (CDPH) approved) and have current certification. The content and duration of the lead training shall conform, to the extent possible, to the Lead Training Standards developed by the California Department of Public Health, Childhood Lead Poisoning Prevention Program.

2. Any worker involved in Lead Abatement, as defined in this Specification, must have successfully completed, at a minimum, a CDPH- approved Lead Abatement Worker Training course and have current certification.

B. Biological Monitoring

1. All LBP abatement workers must have baseline and post-lead abatement blood lead level screening determined by the whole blood lead methods, utilizing Vena-Puncture technique.

2. This test must be performed before workers enter a lead contaminated work area.
3. A worker will be removed from the job if his blood lead level is 50 µg/dl or greater [29 CFR 1926.62 (k)]. The Contractor shall be responsible for medical surveillance and record keeping.

C. Initial Determination

1. The Contractor's supervisor shall conduct an initial determination of the worker lead exposures as required by the OSHA Construction Lead Standard [29 CFR 1926.62 (d)].

2. All Contractor and subcontractor employee categories shall be included in the exposure monitoring.

3. The duration of air monitoring shall be sufficient to provide a statistical confidence (95% upper confidence limit) that no employees are exposed above the lead AL or PEL.

4 The results of the initial determination shall be used to establish the degree of engineering (barriers, two-stage, or three-stage containment), administrative and respiratory protection controls and the frequency of periodic exposure monitoring.

5. The results of the initial determination shall be reviewed and approved by an Industrial Hygienist retained by the Owner of his Representative.

D. Respiratory Protection

1. The Contractor shall provide all workers, foremen, and superintendents with properly fitted respirators approved by NIOSH and OSHA, and as determined by the results of the initial determination. Respirators are required when the permissible exposure limit (PEL) for lead is expected to be exceeded. The PEL is 50 $\mu g/m^3$ per 8-hour exposure.

2. Authorized visitors (i.e., federal, state and local inspectors) must provide a current health and medical report certifying them as approved to wear half-face respirators.

3. When respirators and disposable filters are employed, sufficient replacement filters will be provided by the Contractor for the workers and any visitors.

4. The minimum respiratory protection required for this project is, as follows:

   * Negative pressure, half mask, air purifying respirators, equipped with HEPA filters for airborne lead dust levels not in excess of 500 $\mu g/m^3$ (10 x PEL). **Contractors will base bids on this type of respirator.**

   * Full face piece air purifying respirator, with HEPA filters for airborne dust levels not in excess of 2,500 $\mu g/m^3$ (50 x PEL).

   * Pressure demand, full face piece, supplied air respirators for airborne lead dust concentrations are expected to meet or exceed 2,5000 $\mu g/m^3$ (>50 x PEL).

5. All workers inside the LBP abatement work area shall wear the proper respirator for the lead dust level generated.

6. Workers must be properly trained in the care, use, and maintenance of respirators.

7. The Contractor shall ensure that a fit-test was performed and passed by each abatement worker no less than thirty (30) days before they enter the work area.

8. A formal respiratory protection program must be implemented in accordance with 29 CFR 1910.134.

9. Respirators will not be removed until the worker enters the washing area of the decontamination chamber.

E. Personal Protective Equipment

1. Workers will wear full body disposal suits with hoods and booties, appropriate for the given "trigger task". A TYVEK or similar type of suit may be worn. Suits will be worn inside the work area after the area passes pre-lead abatement inspection and shall remain in use until the area passes final clearance inspection. Light-weight nylon clothes may be worn under the suit, but these clothes must be changed before leaving the work area and should be laundered separately.

2. Goggles with side shields will be worn when working with a material that may splash or fragment, or if protective eye wear is specified on the SDS for that product.

3. Additional respiratory protection by supplemental filters, such as organic vapor cartridges, may be needed when handling some coating products. Consult the SDSs and obtain the proper filters as necessary.

F. Personal Hygiene Practices

1. The Contractor shall enforce and follow good personal hygiene practices during lead abatement. These practices will include, but not be limited to, the following:

2. No eating, drinking, smoking, chewing gum or tobacco, or applying of cosmetics in work area. The Contractor will provide a clean space, separated from the work area, for these activities.

3. All workers must wash upon leaving the work area. Wash facilities located adjacent to the work area, will be provided by the Contractor consisting of, at least, running potable water, towels, and a HEPA vacuum. Upon leaving the work area, each worker will remove and dispose of work suit, wash and dry face and hands, and vacuum clothes. An appropriate emergency eyewash shall be available for use.

4 Disposable clothing such as TYVEK suits and other personal protective equipment (PPE) must be donned prior to entering work area. A clean room will be provided for workers to put on suits and other personal protective equipment and to store their street clothes. Disposal suits shall be used once, then properly discarded.

5 A lavatory facility must be provided and located in the immediate vicinity of work area. The eating and drinking area, clean room, and the lavatory facility must be maintained in a clean an orderly fashion at all times. The Contractor will provide portable lavatories when needed and disinfect them daily.

6 If air monitoring data gathered by the Contractor shows that employee exposure to airborne lead exceeds 50 $\mu g/m^3$, the following conditions apply:

* Street clothes cannot be worn into containment. Workers must wear nylon shorts, TYVEK shorts, or nothing under a disposable suit.

* Showers must be provided. Shower water must pass through at least a 5.0 micron filter before returning to the public waste system, and the effluent discharge lead concentrations must not exceed the levels stipulated by the local agencies.

* All workers must shower upon leaving work area.

* Three-stage decontamination unit must be established consisting of dirty room and airlock; shower and airlock; and a clean room.

G. Periodic Exposure Monitoring

1. Notwithstanding the results of the initial determination, the Contractor shall conduct periodic employee exposure monitoring of not less than ten percent

(10%) of the Contractor's employees.

2. Periodic exposure monitoring of the Contractor's employees shall be performed to enable each employee's exposure to be reasonably represented by at least one full-shift (7 hours minimum) air sample.

3. The frequency of the exposure monitoring shall be maintained based on employee exposure levels, as required by 29 CFR 1926.62.

H. Area Monitoring

1. The Contracting Officer of his Representative, or the industrial hygiene consultant, may conduct initial and periodic area monitoring inside and outside the containment area.

2. Each containment area shall be considered to have four (4) sides for the purpose of this section. A minimum of two (2) air samples shall be collected: one (1) inside the designated work area and one (1) outside at the perimeter of the containment.

1.10 STOPPING THE WORK

A If, at any time, Enviro-STAR or the Owner decides that work practices are violating pertinent provisions of this Contract, endangering workers, or endangering Owner facilities, the Owner or Owner Representative will immediately notify the Contractor that operations shall cease until corrective action is taken and the Contractor shall take such corrective action before proceeding with the work.

B. Delays caused by inappropriate work practices as noted in these specifications and/or excessive concentrations shall be at the Contractor's expense. Threshold Limit Value - Short Term Exposure Limit (TLV-STEL) shall be according to the 1998-1999 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices (American Conference of Governmental Industrial Hygienists).

1. Excursions in worker exposure levels may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a workday, and under no circumstances should they exceed 5 times the TLV-TWA, provided that the TLV-TWA is not exceeded.

2. If these levels are exceeded, operations shall cease until an industrial hygienist determines that acceptable standards are met.

3. No later claims for extra compensation which result from action taken under this cause will be recognized by the Contracting Officer of his Representative.

C. In case of disagreement between the Contracting Officers Representative and the

Contractor regarding the analysis of any air monitoring data (initial, periodic area or employee exposure), the decision of the Contracting Officer will be regarded as final and conclusive. Differences in analytical results of up to a maximum of thirty percent (30%) shall be regarded as being substantially in agreement.

1.11 SITE SECURITY

A. The Contractor shall plan to provide tight security for all work, storage and office areas. All storage areas containing hazardous materials including lead-based paint waste shall be fully enclosed and locked at all times when personnel are not present to oversee the material. All storage areas containing hazardous materials shall be clearly labeled as containing hazardous materials with signs in both English and Spanish.

B. The lead-based paint related work area is to be restricted only to authorized, trained and protected personnel. These may include the Contractor's employees, employees of Subcontractors, Owner employees and representatives, state and local inspectors and any other designated individuals. A list of authorized personnel shall be established prior to job start and posted in the clean room of the worker decontamination facility and in the Contractor's office.

C. Contractor shall be notified by the Owner of any other authorized visitor prior to his/her entry to the job site.

1. Entry into the work area by unauthorized individuals shall be reported immediately to the Owner by the Contractor.

2. A log book shall be maintained in the clean room area of the worker decontamination system or contractor's office. Anyone who enters the LBP related work area must record name, affiliation, time in, and time out for each entry.

D. Contractor shall have control of site security during operations in order to protect work efforts and equipment.

E. During the course of the entire project, the Contractor shall have a supervisor on site, Monday through Friday.

1.12 EMERGENCY PLANNING

A. Emergency planning and procedures shall be developed by the Contractor, and approved by the Owner of his Representative, prior to the commencement of lead abatement work.

B. Emergency procedures shall be in written form and prominently posted. All employees must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.

C. Emergency planning shall include considerations of fires, explosions, toxic atmospheres, electrical hazards, loss of electrical power, slips, trips and falls, confined spaces and heat related injuries. Written procedures shall be developed and employee training in procedures shall be provided.

D. Employees shall be trained in evacuation procedures in the event of workplace emergencies.

1. For non-life-threatening situations, employees injured or otherwise incapacitated shall decontaminate following normal procedures before exiting the workplace to obtain proper medical treatment.

2. For life-threatening injury or illness, worker decontamination shall take least priority. After taking measures to stabilize the injured worker, he/she shall be removed from the workplace and proper medical treatment secured.

3 In the event that evacuation procedures are required, the Contractor shall notify ambulance, paramedic personnel, the medical facility and any other required persons that the injured individual(s) is or may be contaminated with lead.

E. Emergency telephone numbers of all emergency response personnel shall be prominently posted job board, along with the location of the nearest hospital.

F. If two- or three-stage containments are required, the Contractor shall provide an emergency generator(s) with sufficient capacity to operate all negative air machines required during the lead abatement project.

1.13 PRE-CONSTRUCTION MEETING

G. The Contractor shall attend a pre-construction job meeting at a time agreed upon by the Contractor, Owner and his Representative. Attending this meeting will be representatives of the Contractor (project manager, supervisor and/or foreman), Owner and his Representative.

H. At this meeting, the Contractor and supervisory personnel who will provide on-site direction of the lead abatement activities must attend and be prepared to discuss:

1. Preparation of work area.

2. Personal protective equipment including respiratory protection and protective clothing.

3. Employees who will participate in the project, including delineation of experience, training, and assigned responsibilities during the project.

4. Decontamination procedures for personnel, work area and equipment.

5. Lead abatement methods and procedures to be utilized.

6. Required air monitoring procedures.

7. Procedures for handling and disposing of waste materials.

8. Procedures for final decontamination and clean-up.

9. Detailed work and performance schedule.

10. Procedures for dealing with heat stress.

11. Emergency procedures.

2.0 PART 2 - PRODUCTS

2.1 SUBSTITUTION OF MATERIALS AND/OR METHODS

A. Any substitution in materials or methods to those specified shall be approved by the Consultant and Owner or his Representative prior to use. Any requests for substitution shall be provided in writing to the Consultant and the Owner or his Representative. The request shall clearly state the rationale for the substitution.

B. Submit to the Consultant and the Owner or his Representative product data and samples of all materials to be considered as an alternate.

C. Product data shall consist of manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, safety data sheets (SDS) and other standard descriptive data. SUBMITTALS data shall be clearly marked to identify pertinent materials, products or models and show performance characteristics and capacities. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product or material with integrally related parts and attachment devices.

D. No work shall begin which requires SUBMITTALS for approval until the Consultant has "approved" or "approved as noted" the SUBMITTALS.

2.2 MATERIALS AND SUPPLIES

A. All materials, tools, and equipment listed herein required shall be provided by the abatement contractor.

B. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name, and labeling as required by 29 CFR 1910.1200, Hazard Communication Standard.

C. Store all materials that are subject to damage off the ground, away from wet or

damp surfaces, and under cover sufficient to prevent damage or contamination.

D. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with lead shall be disposed of in accordance with the applicable regulations.

E. Polyethylene Sheeting - 6 mil thickness, unless otherwise specified, in sizes to minimize the frequency of joints.

F. Tape - Capable of sealing joints of adjacent sheets of plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under dry and wet conditions, including use of amended water, chemical removers, or removal encapsulates.

G. Chemical Remover - Suitable to aid in removal of lead, as necessary.

H. Warning Labels and Signs - As required by OSHA Regulations, 29 CFR 1910.1025. All warning signs provided for this project must be in both English and Spanish.

I. Encapsulant - Product shall have UL approval.

J. Other Materials - Provide all other materials as specified in drawings; also, other materials such as lumber, nails, and hardware, which may be required to construct and dismantle the decontamination area and the barriers that isolate the work area.

2.3 TOOLS AND EQUIPMENT

A. Provide suitable tools for removal, including a sufficient number of HEPA vacuums to assure proper and efficient clean-ups.

B. All HEPA vacuums, and as required, all negative air machines shall be DOP tested and certified on site by an trained/authorized, third-party testing firm.

C. Powered Air Purifying Respirator (PAPR) - A positive pressure device which employs a portable, rechargeable battery pack and blower to force contaminated air through a filter or cartridge, where the air is cleaned and supplied to the wearer's breathing zone. This respirator shall utilize HEPA filters and be either half-mask or full face piece units.

D. Half-face air purifying respirator with canisters containing HEPA filters.

E. Full-face air purifying respirator with canisters containing HEPA filters.

F. Temporary electrical cords and outlets shall be of an approved type and connected to a source of power outside of the work area and protected by a ground fault circuit interrupter (GFCI) as directed by Consultant or the Owner or his Representative.

G. Temporary Electrical Panels and Emergency Generator - Provide temporary electrical panels and emergency generator sized, properly grounded and equipped to accommodate all electrical equipment and lighting required for abatement work.

3.0 PART 3 - EXECUTION

3.1 WORK SCHEDULE

A. The work is to be carried out diligently to completion with utmost speed. The Contractor shall furnish to the Owner or his Representative for approval a schedule showing anticipated starting and completion dates for each removal phase, area, unit and/or building. This schedule shall be furnished to the Owner within five (5) calendar days from issuance of the Owner‘s written Notice to Proceed. The schedule shall be reviewed weekly and updated, as required.

B. If, in the opinion of the Owner or his Representative, it becomes necessary to work additional men for maintaining the schedule for the completion of any phase of the project within the specified time, the Contractor must immediately do so upon written request by the Owner or the Owner’s Representative.

C. Site work shall proceed immediately upon approval of the Contractor's LBP Work Plan by the Owner or his Representative.

D. During the project, work will be phased and coordinated with other projects concurrent with this project.

3.2 INSPECTIONS BY THE CONTRACTING OFFICER

A. Owner or his Representative shall inspect the site preparation work as outlined herein to ensure that:

1. The facility is adequately sealed off, and the decontamination enclosure system and waste storage area are in place.

2. Half-face and/or full-face respirators are on site and a sufficient number of HEPA filters are available.

3. The Contractor SHALL NOT PROCEED with the removal phase of work until such time as the Owner or his Representative has inspected the site preparation work and given the Contractor Notice to Proceed (AREA PREPARATION).

B. The Owner or his Representative shall inspect the removal work and work area upon its completion within the building or section thereof to ensure that all visible LBP has been removed. The Contractor SHALL NOT PROCEED with the next phase of the work, prime, seal or spray any encapsulant on the building systems until such time as the Owner or his Representative inspected the facility and given

the Contractor authorization to proceed.

C. After abatement, the Owner or his Representative shall inspect the adequacy of the work within the building or section thereof. The Contractor SHALL NOT PROCEED with final clean-up until an authorization has been issued.

D. All inspections by the Owner or his Representative shall be scheduled by the Contractor at least 8 working hours in advance. Reinspection may be scheduled 2 working hours in advance.

E. The Owner or his Representative will inspect the facilities daily, as necessary or as directed, to ensure compliance with these specifications. The Owner or his Representative will be on-site at all times during the performance of LBP stabilization work.

F. The Owner or his Representative is not limited by the inspection requirements as noted above; additional safety and health inspections by the Owner Representative will occur randomly.

3.3 PREPARATION OF WORK AREA

A. Remove Objects: The Contractor performing the LBP abatement and LBP Hazard Control work shall remove all movable objects from the work area. Cover all non-movable objects and furnishings with 6-mil plastic, sealing them with waterproof tape and industrial staples.

B. Pre-Clean Work Area: LBP Hazard Control work generally requires less pre-cleaning, although HEPA vacuuming the area is recommended.

C. Work Area Containments: Preparation of the work area is dependent upon the terrain and configuration of the individual buildings. Where there is a grade on the exterior ground, the protective 6-mil plastic shall be bermed to keep the paint chip / dust within the protective layer of plastic. The height of the berm shall be sufficient to prevent LBP debris from contaminating other clean areas.

1. The number and sequence of containments shall be identified in the work plan.

D. Signs: Except in emergency situations, at least three (3) days before removing or encapsulating lead paint, the Contractor shall post warning signs immediately outside all entrances and exits to the work area.

1. The Contractor shall keep the signs posted until the Owne0'sr Representative issues a notice of completion after final inspection and clearance testing have been performed and approved.

2. The Contractor shall insure that the warning signs meet the following description:

The sign is at least 20" by 14" and states the date and place of the lead abatement project;

The sign includes the phrase, "Caution Lead Hazard, Keep Out" in bold lettering at lease two inches high.

E. Exits: Maintain emergency and fire exits from the work areas, or establish adequately marked alternative exits satisfactory to the Owner or his Representative.

3.4 LBP DISTURBANCE SHALL NOT COMMENCE UNTIL:

A. The LBP Abatement Work Plan, and all required submittals and notices have been reviewed and approved by the Owner or his Representative.

B. Arrangements have been made for disposal of waste at acceptable sites.

C. Arrangements have been made for containing and/or disposal of waste water resulting from showering and other lead based paint stabilization activities.

D. Work areas, decontamination enclosure system, and waste load-out area are effectively segregated.

E. Dumpster or containers are leak tested.

F. Tools, equipment, and material waste receptacles are on-site.

G. All respirators are on-site and fully operative.

H. A visitor and employee log-in/log-out system is in place at the job site. All persons entering the site will be required to sign in and sign out. Bound, pre-paginated ledgers shall be employed for the sign-in, sign-out system.

3.5 ENCLOSURE AND WASTE LOAD-OUT AREA

1. All double-bagged waste shall be transported to dumpster by sealed, portable containers. The dumpster and portable container shall be fully lined (exclusive of ceiling) with one layer of 6 mil polyethylene sheeting. Dumpster and portable containers shall be leak tight and tested by the Contractor.

3.6 MAINTENANCE OF ENCLOSURE SYSTEM (when necessary)

A. Ensure that barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.

B. Use smoke methods to test effectiveness of barriers and the negative air pressure system when directed by the Owner or his Representative.

3.7 CLEAN-UP PROCEDURES

A. General: When active LBP abatement work is taking place, the work site shall be cleaned at the end of each day's activities. Disposable supplies such as mop heads, sponges, and rags shall be replaced regularly and disposed of according to the contract documents. Durable equipment, such as power and hand tools, generators, and vehicles shall be cleaned daily. All equipment shall be cleaned by HEPA vacuuming and wet wipe methods.

B. All clean-up procedures, as described herein, shall be completed before the removal of the six (6) mil plastic sheeting on vents, windows, etc.

C. Clean-Up Methods and Equipment: Areas in which LBP stabilization operations have been completed shall be cleaned, by using a high efficiency particulate air (HEPA) vacuum, followed by a wet cleaning with an approved cleaning agent.

D. High Efficiency Particulate Air (HEPA) Vacuum: The Contractor shall obtain HEPA vacuum attachments, such as various sized brushes, crevice tools, and angular tools to be used for varied application, and service the HEPA vacuum routinely to assure proper operation. Caution shall be taken any time the HEPA is opened for filter replacement or debris removal. Operators shall wear a full set of protective clothing and equipment, including respirators, when using the HEPA vacuuming equipment.

E. Wet Cleaning with approved cleaning agent. Detergent solutions should be replaced after each individual area has been washed unless the Contractor has used a garden spray application and vacuumed the surface. The waste water from cleanup shall be contained and disposed of according to the contract document.

F. Removal of Plastic Sheeting: The plastic sheeting covering the ground shall be HEPA-vacuumed and wet wiped prior to removal. The plastic sheeting shall be carefully folded from the corners and ends toward the middle and placed into a double four (4) mil or single six (6) mil plastic bag and sealed. Bags shall be stored in the designated area and disposed of according to the specifications.

G. Triple Clean: The entire area shall be HEPA-vacuumed, washed, and HEPA-vacuumed again. No dry sweeping is allowed. After this cleaning, any surfaces requiring painting such as wood windows/doors, wood trims, plaster walls, or plaster ceilings shall be sealed or primed with an approved product.

H. Final Cleanup and Inspection: The entire area shall be HEPA-vacuumed, washed with an approved cleaning agent, and HEPA-vacuumed, washed with an approved cleaning agent, and then HEPA-vacuumed again. No dry sweeping is allowed. Enviro-STAR will then visually inspect the entire area to ensure that all abated surfaces and floors have been properly cleaned. All disposal supplies used during cleanup, such as mop heads, sponges, etc., shall be disposed of according to the specifications.

J. No statements in this section are meant to relieve the Contractor of his responsibility to meet the final cleanup criteria as established by these contract documents or any other applicable laws or regulations.

3.8 FINAL CLEARANCE TESTING & STANDARDS

A. After the lead paint abatement, clean-up and waste removal, the Owner's Representative shall conduct periodic wipe tests for the completed work, in accordance with the requirements and procedures of the HUD LBP Guidelines and the U.S. Environmental Protection Agency.

B. Wipe samples will be taken in a randomly-selected window sills, as applicable, in each area. Samples will be submitted for analysis by a qualified laboratory utilizing ICP or AA spectroscopy.

C. The Contracting Officer's Representative shall compare the test results to the HUD guidelines for post-abatement clearances, as follows:

1.	Interior Floors:	10 micrograms per square foot.
2.	Window Sills:	100 micrograms per square foot.
3.	Exterior Window Sills, Floors & Walkways:	400 micrograms per square foot.

D. If the test results indicate higher levels, the Contractor shall repeat the clean-up procedure and retest for dust until the area is tested and found to contain an acceptable level of lead dust.

3.9 WASTE STREAM SEGREGATION, TESTING & STORAGE

A. All wastes will be segregated into the follow categories:

1. Paint chips and dust,
2. Removed LBP components, parts, large debris;
3. Used cleaning materials (rags, mop) and small debris;
4. Used disposable protective clothing, plastic sheeting and tape.

B. All waste will be containerized or bagged in six (6) mil plastic bags or sealed in six (6) mil plastic, as appropriate, waste containers, bags, packages and labeled pending analysis with the following information:

1. Waste category
2. Date accumulated
3. Name, address of Contracting Officer or his Representative

The labeling of individual waste containers, bags and packages may be simplified by using A, B, C, and as applicable, D to identify waste categories 1 - 4,

respectively.

The above segregation and labeling system shall not exempt the Contractor from compliance with Federal, State and Local laws, regulations, and ordinances on hazardous waste storage and transportation. It is intended to facilitate waste segregation, handling and storage and to reduce the volume of hazardous waste.

C. Each category of potential lead waste shall be tested and interpreted, as follows:

1. Title 22 CCR - Total Threshold Limit Concentration (TTLC) <1,000 ppm = nonhazardous waste, if greater than 50 ppm, must be analyzed by STLC method.

2. Title 22 CCR - Soluble Threshold Limit Concentrations (STLC) <5 ppm = nonhazardous waste

3. USEPA - Toxicity Characteristic Leaching Procedure (TCLP) <5 ppm = nonhazardous waste

D. If the waste is determined to be hazardous by any of these tests, each such container represented by that result must be labeled as hazardous waste according to Title 2 Section 16508.

E. Storage, transportation, and disposal must be in accordance with local, state and federal requirements.

F. Temporary, secure storage of waste (on-site) shall be the responsibility of the abatement contractor. Storage of hazardous waste for greater than 90 days is prohibited without special permits. It is the responsibility of the Contractor to ensure that hazardous waste is not stored on-site more than 90 days from the date of accumulation.

DO NOT REMOVE WASTE FROM THE SITE
UNTIL IT HAS BEEN CHARACTERIZED BY LABORATORY ANALYSIS
AND RELEASED BY THE CONTRACTING OFFICER OR HIS REPRESENTATIVE

3.10 DISPOSAL OF WASTE MATERIAL

A. The Contractor shall contact the regional EPA, state, and local authorities to determine lead-based paint debris disposal requirements. RCRA requirements shall be complied with as well as applicable state solid waste plan requirements.

B. During the actual lead abatement project, the Contractor shall not leave debris in the yard or nearby property, incinerate debris, dump waste by the road or in an unauthorized dumpster, or introduce lead-contaminated water into storm water (will not be flushed down yard inlet or street drain) or sanitary sewers (will not be flushed down toilet or other household drain).

C. Testing of lead-based paint waste materials by use of the TCLP, STLC and TCLP test shall be completed by the Owner or his Representative and the results made available to the Contractor.

D. The following materials, at a minimum, shall be tested to determine whether or not they are hazardous:

1. Paint chips and large construction debris (having a lead concentration more than 1% is considered hazardous);

2. Waste water (if any);

3. Dust from HEPA filters and from damp sweeping;

4. Plastic sheets, duct tape, or tape used to cover floors and other services during the lead-based paint removal;

5. Liquid waste, such as wash water used to decontaminate wood after solvents have been used, and liquid waste from exterior water blasting;

6. Rags, sponges, mops, HEPA filters, respirator cartridges, scrapers, and other materials used for testing, lead control, and cleanup;

7. Disposal work clothes and respirator filters;

8. Any other items contaminated with lead-based paint.

E. Hazardous Solid Waste (as determined by testing): The Contractor shall place lead-based paint chips, debris, and lead dust in double (4-mil) or single (6-mil) polyethylene bags that are air-tight and puncture-resistant.

Pieces of wood or other types of substrates that do not fit into plastic bags will be wrapped and labeled "DANGER, LEAD DUST."

E. The Contractor will place all disposable cleaning materials, such as sponges, mop heads, filters, disposable clothing, and brooms in double (4-mil) or single (6-mil) plastic bags and seal.

F. The Contractor shall clean surfaces and equipment and remove large debris. The Contractor shall then remove plastic sheeting and tape from covered surfaces. Prior to removing the plastic sheeting, the Contractor shall lightly mist the sheeting in order to keep dust down and fold inward into tight small bundles to bag for disposal. The Contractor shall place all plastic sheeting in double (4-mil) or single (6-mil) thick plastic bags and seal.

G. The Contractor shall bag and seal vacuum bags and filters in double (4-mil) or single (6-mil) thick plastic bags.

H. The Contractor shall place all contaminated clothing or clothing covers used during lead abatement and cleanup in plastic bags for disposal prior to leaving equipment room.

I. The Contractor shall place solvent residues and residues from strippers in properly labeled drums made out of materials that cannot be dissolved or corroded by chemicals. Solvents will be tested by the Contractor to determine if they are hazardous. Solvents, caustics, and acid waste must be segregated and not stored in the same containers.

J. The Contractor shall contain and properly dispose of all liquid waste, including lead-dust contaminated wash water.

K. The Contractor shall HEPA-vacuum the exterior of all liquid waste containers prior to removing the waste containers from the work area and shall wet wipe the containers to ensure that there is no residual contamination. Containers should then be moved out of the work area into the designated storage area.

L. The Contractor shall carefully place the containers into the truck or dumpster used for disposal.

M. The Contractor shall ensure that all waste is transported in covered vehicles to a landfill, or lined landfill, if available.

N. If the Contractor subcontracts the removal of the lead-based paint waste, the Contractor shall ensure that the company removing the waste material adequately covers all loads so that no dust or debris is released.

O. Disposal of Hazardous Waste (as determined by testing). The Contractor will be required to comply with RCRA and applicable state and local laws and regulations governing hazardous waste disposal.

P. If more than 100 kg of hazardous waste will be generated from the lead control process during any calendar month, the Contractor shall apply for an EPA identification number from the appropriate Regional EPA office. If less than 100 kg, the Contractor shall obtain EPA generator numbers from each property address. The Owner or his Representative may assist the Contractor in contacting the appropriate EPA office to secure the identification.

Q. Waste Containers: The Contractor will comply with EPA and DOT regulations for containers. The Contractor shall contact the state and local authorities to determine their criteria for containers. The more stringent regulations shall apply.

R. Waste Transportation: If the Contractor is not a certified hazardous waste transporter, a contract shall be entered into with a certified transporter to move the waste. The Contractor shall require the certified hazardous waste transport to follow DOT regulations.

END OF SECTION

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SPECIFICATIONS

FOR

ASBESTOS-CONTAINING MATERIALS (ACM) REMOVAL

APPLICABLE TO

MEADOW HOMES ELEMENTARY SCHOOL
5880 MT. ZION DRIVE
CLAYTON, CA 94517

FOR

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
MS. MELANIE KOSLOW
DIRECTOR OF FACILITIES & BONDS
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March 21, 2024

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1.0 GENERAL

1.1 SCOPE OF WORK

1.1.1 The Specifications for Asbestos-Containing Materials (ACM) Removal are intended to apply to the abatement anc cleanup of the Asbestos- Containing Materials (ACM's) identified as drywall/taping mud, 9" x 9"vinyl floor tile & associated mastic, 12" x 12" vinyl floor tile, residual mastic as defined in Section 1.7 Definitions. Henceforth, the Specifications for Asbestos-Containing Materials (ACM) Removal are referred to as the Specifications.

1.1.2 The Contractor shall remove the drywall system as identified on the demolition drawings. The removal is limited in scope. This removal shall require a Negative Pressure Enclosure (NPE) with a two-stage personnel decontamination system.

Abatement of the flooring materials shall be performed in all areas identified as containing asbestos mastic. This work shall be performed within a NPE with a two-stage personnel decontamination system. If mechanical removal means are employed, the contractor shall comply with BAAQMD notification and containment requirements.

The casework anchored to the walls shall be removed. The removal may cause some disturbance to the drywall taping mud. The contractor shall place critical barriers using 6-mil plastic on all openings in the area being worked on. A HEPA air filtration unit shall be employed, exhausting the filtered air to the exterior of the work area. . A full containment is not required, however, the work area flooring shall have a drop sheet to catch any drywall fallout.

The windows are assumed to have putty that contains <1% chrysotile asbestos. This material has not been analyzed by "point count" and is considered RACM (Regulated Asbestos-Containing Material) by Bay Area Air Quality Management District. Prior to commencing the work, Enviro-STAR will submit a sample for point count analysis, Note; The windows are Lead-Based Paint and will be characterized to determine disposal means. Should the characterization, determine the windows are hazardous waste, it must de disposed as such regardless of the asbestos content.

1.1.3 The Contractor shall use a negative pressure enclosure (NPE) with a two-stage personnel decontamination system for personnel performing the ACM removal, unless, the material is deemed RACM which will require a 3-stage decontamination system.

1.2 DESCRIPTION OF WORK

1.2.1 The work specified herein is the abatement of asbestos- containing material(s) to be performed by competent persons trained, knowledgeable, and qualified

in the techniques of asbestos abatement, handling and disposal of asbestos and/or asbestos-contaminated materials, and the subsequent cleaning of asbestos contaminated areas. Work shall be performed by Contractors who comply with all applicable federal, state and local regulations, and are capable of, and willing to, perform the work as per this specification.

1.2.2 All abatement work shall be performed under the strict work practices and procedures for this project defined in the Specifications. The MDUSD Representative (henceforth refered to as the Owner's representative) decision(s) will be final in all matters relating to the interpretation of these specifications and all applicable regulations. The Contractor shall abide by all directions and decisions of the Contracting Officer's Representative relative to asbestos removal and/or asbestos fiber control.

1.2.3 The Contractor shall supply all labor, materials, services, training, insurance, permits, and equipment necessary to successfully carry out the work in accordance with applicable federal, state and local regulations, and these specifications.

1.2.4 The Contractor shall comply with the MDUSD regulations regarding work hours, building access, and facility use.

1.2.5 The Contractor is responsible for performing any demolition necessary to complete the work specified herein, unless otherwise specified.

1.2.6 Repair and/or reconstruction of any demolition items to be performed by others unless otherwise specified.

1.3 CONTRACTOR QUALIFICATIONS/SUBMITTALS

1.3.1 Prior to commencing work, the Contractor shall provide evidence that he is duly licensed in the State of California in accordance with the provisions of Chapter 9 of Division 3 of the Business and Professions Code, as amended.

1.3.2 Prior to commencing work, the Contractor shall provide evidence that he is certified as an asbestos contractor by the California Contractor's State License Board.

1.3.3 Prior to commencing work, the Contractor shall provide evidence of registration with the Chief of the Division of Occupational Safety and Health, State of California (Cal/OSHA) as a contractor involved in the construction, repair, renovation, maintenance, demolition, and/or salvage activities in which any materials containing more than 1% asbestos are handled.

1.3.4 Prior to commencing work, the Contractor shall provide proof that all workers working within the asbestos removal area have been trained to meet the requirements of 8 CCR 5208 and 29 CFR Part 1926 and BAAQMD requirements. The training and fit testing shall be of quality and substance

deemed to be satisfactory by the Contracting Officer's Representative.

1.3.5 Prior to commencing work, the Contractor shall provide proof that all workers working within the asbestos removal area are included in the medical surveillance program required by 8 CCR 5208 and 29 CFR Part 1926 requirements and that they have medical approval to work with asbestos and wear respirators. This proof shall be certified by a licensed physician.

1.3.6 Only persons certified pursuant to 1.3.4 and1.3.5 will be allowed to work on this job. A list of the trained and medically approved employees that will be allowed to work on this job shall be submitted to the Contracting Officer's Representative prior to commencing work.

1.3.7 Prior to commencing work, the Contractor shall provide proof of Hazardous Waste Hauler licensing from the State of California Department oF Toxic Substance Control (DTSC) including identification number, for the transporter that is to be used.

1.3.8 Prior to commencing work, the Contractor shall provide the name, location, and EPA/DTSC license of the hazardous waste site proposed to be used.

1.3.9 Prior to commencing work, the Contractor is to provide written proof that the owner of any rental equipment has been notified that it is to be utilized inside of an asbestos work area.

1.3.10 Prior to commencing work, the Contractor's air sampling plan is to be approved by the Owner's Representative.

1.4 APPLICABLE STANDARDS AND GUIDELINES

1.4.1 All work under this contract shall be performed in strict accordance with all applicable federal, state and local regulations, standards and codes governing asbestos related work and any other trade work done in conjunction with the abatement.

1.4.2 The most recent editions of any relevant regulations, standards, documents or codes shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall apply. Such documents include, but are not limited to, the following:

1.4.2.1.1 U.S. Department of Labor, Occupational Safety and Health Administration (OSHA)

1.4.2.1.2 Title 29 of the Code of Federal Regulation, Section 1926.1101-Construction Standard for Asbestos (29 CFR 1926.1101)

1.4.2.1.3 Respiratory Protection Standard (29 CFR 1910.134)

1.4.2.1.4 Hazard Communication (29 CFR 1910.1200)

1.4.2.1.5 Specifications for Accident Prevention, Signs and Tags (29 CFR 110.145)

1.4.2.2 California Division of Occupational Safety and Health (DOSH)

1.4.2.2.1 Title 8 of the California Code of Regulations, General Industry Safety Orders, Section 5208 - Asbestos Standard (8 CCR GISO 5208)

1.4.2.2.2 Respiratory Protective Equipment Standard (8 CCR GISO 5144)

1.4.2.2.3 Hazard Communication Standard (8 CCR GISO 5194)

1.4.2.2.4 Accident Prevention Program (8 CCR GISO 3203)

1.4.2.2.5 Access to Employees Exposure and Medical Records (8 CCR GISO 3204)

1.4.2.2.6 Accident Prevention Signs (8 CCR GISO 6003)

1.4.2.2.7 Emergency Action Plan (8 CCR GISO 3220)

1.4.2.2.8 Fire Prevention Plan (8 CCR GISO 3221)

1.4.2.2.9 Electrical Safety Orders (Chapter 4, Subchapter 5)

1.4.2.2.10 Construction Safety Orders (Chapter 4, Subchapter 4)

1.4.2.3 U.S. Environmental Protection Agency (USEPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulation (40 CFR 61, Subparts A, B and M)

1.4.2.4 Bay Area Air Quality Management District (BAAQMD).

1.4.2.5 American National Standards Institute (ANSI) Standard Z88.2-1980, Practices for Respiratory Protection.

1.4.2.6 ANSI Z9.2 - Fundamentals Governing the Design and Operation of Local Exhaust Systems

1.4.2.7 National Electric Code

1.4.2.8 California Code of Regulations Title 22 and Department of Health Services regulations pertaining to disposal and Transportation of Hazardous Waste

1.4.2.9 40 CFR 260-265: Resource Conservation and Recovery Act

1.4.2.10 Guidance for Controlling Asbestos-Containing Material in Buildings (EPA 560-5-85-024)

1.4.2.11 Asbestos Waste Management Guidance: Generation; Transport; Disposal (EPA 530-SW-85-007)

1.5 NOTIFICATIONS

1.5.1 The Contractor shall be responsible to perform all notifications of federal, state and local authorities and to obtain all necessary permits in accordance with applicable regulations, including but not limited to:

1.5.1.1 Notify the Federal Environmental Protection Agency (EPA) as required under the National Emission Standards for Hazardous Air Pollutants (NESHAPS) (40 CFR 61, Subpart M). Written notification to the district office is required 10 days prior to commencement of asbestos demolition/renovation activities if required.

1.5.1.2 Notification to BAAQMD. Written notification 10 days prior to commencement of asbestos demolition/renovation activities, if applicable.

1.5.1.3 Notify Cal/OSHA of this ACM-related job.

1.5.1.4 Notify the appropriate government agency to obtain permission to discharge waste water into the sewer system, if required.

1.5.1.5 Obtain appropriate permits required for construction activities and for equipment to be located on the street, if applicable.

1.5.1.6 A copy of all notices and permits must be provided to Enviro-STAR at least five (5) working days in advance of start of project.

1.6 GENERAL REQUIREMENTS

1.6.1 The Contractor shall comply with all specifications.

1.6.2 The Contractor shall submit a proposed schedule of the operations, with man power loading per work shift, a work plan and a procedures plan to Enviro-STAR for approval at least five (5) working days in advance of start of the project. The schedule shall consist of a time bar for each major category or unit of work indicating the time frames for all milestones and sequence/coordination of all elements of work. The Owner's representative shall be notified of any changes during the progress of the project.

1.6.3 The Contractor shall consult with the Owner's representative and adhere to

all requirements as to time and method of material and equipment delivery and removal of debris and equipment.

1.6.4 The Contractor shall be allowed reasonable space at the site and access to the area. The Contractor shall confine his operations to the assigned space(s) and work site(s).

1.6.5 All drawings and material estimates are for information purposes only and may not reflect the actual as-built conditions. It is the Contractor's responsibility to verify all conditions at the site prior to bidding. After award of the contract the Contractor is responsible for the conditions as they exist.

1.6.6 The Contractor shall attend regularly scheduled meetings with MDUSD, project manage, Enviro-STAR. These meetings shall include review of overall project status and work schedules; and any coordination, submission, sampling results, et. al., issues that may arise.

1.6.7 There will be no extra work or additions to the contract chargeable to the Owner without prior written approval of the Owner.

1.6.7.1 MDUSD, after consultation with Owner's Representative, may make changes by altering, adding to or deducting from the work and negotiating a change to the contract sum. All work changes shall be executed in conformity with the terms and conditions of the contract documents unless otherwise provided in the change orders. Any change in the contract sum or time for completion shall be adjusted in the change order which will be effective when it is signed by both parties.

1.6.7.2 The change order shall describe or enumerate the work to be performed and state the price to be added to or deducted from the contract sum. If the extent or cost of the work is not determinable until after the change work is performed, the change order on contract shall specify the method for determining the cost and extent of the changed work when completed.

1.6.8 Emergency exits are to be kept clear at all times.

1.6.9 Do not allow open flames or smoking in the asbestos removal area. Place **"NO SMOKING"** signs at entrance and within the abatement area.

1.6.10 Main electrical power and water will be provided by MDUSD Distribution of electrical power and water for Contractor's equipment and work is the responsibility of the Contractor.

1.6.11 Any work stoppage of the Contractor by Owner's Representative and/or MDUSD supervisoty personnel for non-compliance to the specifications is the sole responsibility of the Contractor.

1.6.12 Any contamination or perceived contamination (air, bulk, etc.) is the total responsibility of the Contractor and all costs associated with the perceived contamination decontamination is the total responsibility of the Contractor, including all industrial hygiene services by Owner's Representative.

1.6.13 There is no work or admittance to the work area once the work area containment has been approved for ACM related work without permission of the Owners Representative .

1.6.14 The Contractor shall be responsible for project site security. This shall include but not necessarily limited to equipment, materials, supplies and project security fencing.

1.7 DEFINITIONS AND ABBREVIATIONS

1.7.1 Aggressive Sampling: Refers to air sampling following the agitation of the air.

1.7.2 Amended Water: A water to which a surfactant has been added.

1.7.3 Area Monitoring: Sampling of asbestos fiber concentrations within the asbestos work area and outside the asbestos work area. Sampling shall represent airborne concentrations of asbestos fibers that may reach the breathing zone.

1.7.4 Asbestos Containing Material (ACM): Material composed of asbestos of any type and in an amount greater than 1% by weight, either alone or mixed with other fibrous or non-fibrous materials. **Note: Cal/OSHA (CCR 1529) defines ACCM as being greater than 0.1%. The Contractor shall adhere to this regulation for purposes of worker protection and work practices when removing material having greater than 0.1% asbestos.**

1.7.5 Asbestos Fibers: Refers to asbestos fibers having an aspect ratio of 3:1, and those fibers longer than five (5) micrometers.

1.7.6 Asbestos Permissible Exposure Limit (PEL): 0.1 fibers (those longer than five micrometers) per cubic centimeter as an eight hour time weighted average.

1.7.7 Authorized Visitor: Designated employees or consultants for the Contracting Officer, testing lab personnel, and representatives of any federal, state and local regulatory or other agency having authority over the project.

1.7.8 Baseline: Refers to the background level of asbestos monitored before abatement.

1.7.9 Breathing Zone: A hemisphere forward of the shoulders and head with a radius of approximately six to nine inches.

1.7.10 Bridging Encapsulant: An encapsulant that forms a discrete layer on the

surface of an in-situ asbestos matrix.

1.7.11 Certified Asbestos Consultant (CAC): An individual demonstrating his/her compentency in asbestos related construction through experience, education and successfully passing a Cal/OSHA administered exam.

1.7.12 Change Rooms: Refers to the two chambers in the decontamination area used to change into and out of protective clothing.

1.7.13 CAC/Technician: Refers to the Contracting Officer's retained Certified Asbestos Consultant, or his designated technician.

1.7.14 Clean Room: An uncontaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of worker's street clothes and protective equipment.

1.7.15 Clearance Level: Refers to less than <0.01 fibers/cubic centimeter for each sample collected when analyzed via Phase Contrast Microscopy (PCM). Clearance level for samples analyzed via Transmission Electron Microscopy (TEM) will be less than 70 structures per square millimeter (<70 s/mm^2).

1.7.16 Contaminated: Shall mean all materials which either contain asbestos or are presumed to contain asbestos or have come into contact with the asbestos materials either through dispersion of debris or fiber contamination by airborne asbestos.

1.7.17 Critical Barrier: The outermost polyethylene seal of a work area. This includes the decontamination unit, but not the wall or floor polyethylene unless they form the boundary between the work area and the uncontaminated environment.

1.7.18 Decontamination Unit: A decontamination unit shall be set up for each containment area. Refers to system of airlocks used to decontaminate personnel, waste bags, equipment, etc. when exiting the work area.

1.7.19 Disposal Bag: Six millimeters thick leak-tight plastic bags used for transporting asbestos waste from the work place and to the disposal site. Label each as described in Section 29 CFR 1926.1101) and as follows:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

1.7.20 Encapsulant: A liquid material which can be applied to asbestos containing material which controls the possible release of asbestos fibers from the

material either by creating a membrane over the surface (bridging) or by penetrating into the material and binding its components together (penetrating encapsulant).

1.7.21 Equipment Decontamination Enclosure System: A decontamination enclosure system for materials and equipment, typically in a designated area of the work area, and including a washroom, a holding area, and an uncontaminated area.

1.7.22 Equipment Room: A contaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment.

1.7.23 Filter: A media component used in respirators to remove solid or liquid particles from the inspired area.

1.7.24 Foreman: An individual who fulfills the duties of "competent person" as defined in 29 CFR 1926.1101 (b) and 29 CFR 1926.1101 (e)(6)(ii)&(ii). This individual must supply documentation of a passing grade in an EPA accredited course in Practices and Procedures in Asbestos control. The foreman must supervise on-site.

1.7.25 HEPA Filter Vacuum Collection Equipment: High efficiency particulate air (absolute) filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 microns or larger. ***The HEPA equipment, including negative air machines and vacuums, shall be smoke challenged (DOP) tested on site***.

1.7.26 High-Efficiency Filter: A filter that removes from air 99.97% or more of monodisperse dioctyl phthalate (DOP) particles having a mean particle diameter of 0.3 micrometers.

1.7.27 MDUSD: Mount Diablo Unified School District..

1.7.28 Monitoring: Shall include visual inspection for the presence of visible contamination, air monitoring performed in accordance with accepted OSHA methods and observation of work areas and contractor performance of work.

1.7.29 Monitoring Technician: Conducts monitoring under the direction of a Certified Asbestos Consultant, certified by Cal/OSHA. The technician shall conduct monitoring according to 29 CFR 1910.1001 (d), 1926.1101, CAL/OSHA, and as otherwise specified in this contract.

1.7.30 Negative Pressure Respirator: A respirator in which the air pressure inside the respirator inlet covering is positive during exhalation in relation to the

air of the outside atmosphere, and negative during inhalation in relation to the air pressure of the outside atmosphere.

1.7.31 Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).

1.7.32 NIOSH: National Institute for occupational Safety and Health.

1.7.33 Penetrating Encapsulant: An encapsulant absorbed by the in-situ asbestos matrix without leaving a discrete surface layer.

1.7.34 Personal Monitoring: Sampling of asbestos fiber concentrations within the breathing zone of an employee.

1.7.35 Phase Contrast Microscopy (PCM): Phase Contrast Microscopy (PCM) is a technique using a light microscope equipped to provide enhanced contrast between the fibers and the background. Filters are cleared with a chemical solution and viewed through the microscope at a magnification of approximately 400X.

This method does not distinguish between fiber types and only counts those fibers longer than 5 micrometers and wider than approximately 0.25 micrometers. Because of these limitations, fiber counts by PCM typically provide only an index of the total concentration of airborne asbestos in the environment monitored.

1.7.36 Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

1.7.37 Qualified Laboratory: A laboratory that has been judged proficient in the counting of asbestos fibers by successful participation in the National Institute for Occupational Safety and Health (NIOSH) Proficiency Analytical Testing (PAT) Program and is accredited by the American Industrial Hygiene Association (AIHA).

1.7.38 Removal: Procedures necessary to strip all asbestos containing materials from the designated areas and to properly dispose of these materials at an approved, acceptable site.

1.7.39 Shower Room: A room between the clean room and the equipment room in the worker decontamination enclosure system. This room contains hot and cold or warm running water and soap suitably arranged for complete showering during decontamination. The shower room comprises an air lock between contaminated and clean areas.

1.7.40 Surfactant (wetting agent): A chemical wetting agent added to water to

improve penetration of the ACM, normally consisting of 50% polyoxyethylene ether and 50% of polyoxyethlene ester, or equivalent, mixed with water to provide a concentration of one ounce surfactant to 5 gallons of water.

1.7.41 Transmission Electron Microscopy: Transmission Electron Microscopy Level II (TEM) is a technique that focuses an electron beam onto a thin sample. As the beam transmits through certain areas of the sample, an image resulting from varying densities of the sample is projected onto a fluorescent screen.

Transmission electron microscopy is the state-of-the-art analytical method for identifying asbestos fibers collected in air samples in non-industrial settings. Transmission electron microscopes equipped with selected area electron diffraction (SAED) capabilities, also can provide information on the crystal structure of an individual particle.

1.7.42 Visible Emissions: Any emission containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

1.7.43 Water Filtration: The system shall be capable of filtering particulates with at least a 5.0 micron size collection capability. The system must contain a series of at least three (3) filters with progressively smaller pore sizes down to at least a 5.0 micron size to avoid rapid clogging.

1.7.44 Work Area: The area where asbestos-related work or removal is performed and that is defined or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel. Work area is a Regulated Area as defined by 29 CFR 1926.1101 and CAL/OSHA.

2.0 PRODUCTS

2.1 GENERAL REQUIREMENTS

2.1.1 All materials, tools, and equipment listed herein shall be provided by the Contractor.

2.2 MATERIALS

2.2.1 Plastic sheet: (Referred to as poly) Shall be clear polyethylene, sized in lengths and widths to minimize the frequency of joints. The minimum thickness, deemed necessary for protection of the building and personnel outside of the asbestos removal area(s), shall be:

Application	**Thickness**
Critical barriers	6 mil reinforced - 2 layers *

Wall Barriers 6 mil - 1 layer*

* Unless differently authorized by the Owners Representative.

2.2.2 Plastic bags: (Referred to as poly bags) Shall be **clear** 6 mil polyethylene minimum with proper asbestos warning label(s) in compliance with all applicable regulations.

2.2.3 Tape: Shall be capable of sealing joints of adjacent sheets of plastic to each other or to finished or unfinished surfaces of dissimilar materials and shall be capable of adhering under dry and wet conditions including the use of amended water; i.e. a good quality duct tape.

2.3 EQUIPMENT

2.3.1 Vacuum equipment and negative air filtration equipment shall be supplied with HEPA filtration. ***The HEPA equipment, including negative air machines and vacuums, shall be smoke challenged (DOP) tested on site***.

2.3.2 Scaffolding/staging/ladders/tools shall meet all applicable safety regulations.

3.0 EXECUTION

3.1 WORK AREA ISOLATION

3.1.1 The area involving the removal of asbestos containing materials will require isolation as determined and deemed necessary by the Owners Representative.

3.1.2 Seal off all doors, windows, vents etc. to adjacent area(s), with 6 mil clear poly sealed with tape. The work shall be phased to allow tenants at least one safe means of ingress and egress of their units .

3.1.3 Seal off all air plenum(s) and/or HVAC system opening(s) in controlled area(s) with 6 mil clear poly sealed with tape.

3.1.4 Prevent unauthorized personnel ingress and egress by appropriate warning signs and barriers.

3.1.5 Each exterior designated work area shall have two (2) layers of 6-mil poly on the ground. The poly shall be affixed to the base of the wall with duct tape.

3.1.6 Each exterior designated work area shall have plastic-construction fencing as a perimeter barrier.

3.1.7 Removal will not begin until the enclosure is inspected and approved by the Owners Representative.

3.2 WORK DECONTAMINATION SYSTEM (DECON)

3.2.1 The Contractor shall provide a worker decontamination enclosure system (Decon) at the entrance to the work area consisting of at least two (2) totally enclosed chambers: dressing area and dirty room. The dirty room shall be the only direct entry/exit to the actual work area.

3.2.2 Alternate Decon construction methods such as a metal or wood frame covered on all sides with two (2) layers of 6 mil clear reinforced poly and with a hard ceiling, may be used with the permission of the Owner's Representative.

3.2.3 Before the Decon is constructed, all walls the Decon will impact shall be isolated in the same manner as the work area walls with the poly preparation work extending four (4) feet minimum beyond the Decon itself and attached to the work area wall poly.

3.2.4 Before the Decon is constructed, the floor area the Decon will occupy shall be isolated in a manner that a good tight water proof seal is formed.

3.2.5 The wall poly on the outside of the Decon wall(s) itself shall be attached to the top (inner most) layer of the general work area floor poly with the first layer of the Decon wall poly extending out 12 inches minimum onto the floor. The next layer of Decon wall poly shall extend out 12 inches minimum past the first layer.

3.2.6 The wall poly on the inside of the Decon itself shall be attached to the Decon floor poly which shall be separate from the general work area floor poly and shall be installed on top of it.

3.2.7 The dressing room shall be located between the equipment/storage room and the shower room. At each end of the dressing room "Z" flaps (triple flaps) shall be constructed to separate the dressing room from the equipment/storage room and the shower room. With the permission of the Owners Representative the dressing room and equipment/storage room may be combined into one large room.

3.2.8 The shower room (if requried) shall be located between the dressing room and the dirty room. At each end of the shower room "Z" flaps (triple flaps) shall be constructed to separate the shower room from the dressing room and from the dirty room. The shower itself shall be placed within this room with the shower itself having a heavy curtain at both exits/entrances to the shower. There shall be an area large enough to stand in between the shower itself and the "Z" flaps to the dirty room and the shower itself and the "Z" flaps to the dressing room.

3.2.8.1 The shower room shall contain at least one shower for every ten asbestos abatement workers or fraction thereof with hot and cold or

warm running water. The Contractor is responsible for any required piping and water heating.

3.2.8.2 Gas water heaters are prohibited.

3.2.8.3 Careful attention shall be paid to the shower enclosure to ensure against leakage. The Contractor is responsible for any damage resulting from water leakage.

3.2.8.4 Drainage from the shower is the complete responsibility of the contractor, including any required material or plumbing work.

3.2.8.5 Shower waste water shall be drained, collected, and filtered through a system with at least a 5.0 micron particulate size collection capability. A system containing a series of at least three (3) filters with progressively smaller pore sizes down to at least 5.0 micron size is necessary to avoid rapid clogging of the filtration system by larger particles.

3.2.8.5.1 Prior to commencement of work, the design and specifications of the filtering system shall be furnished by the Contractor to the owner's representative for approval.

3.2.8.5.2 Two spare sets of filters shall be maintained at the site at all times to replace clogged or dirty filters.

3.2.8.5.3 The filters shall be replaced when they become clogged or at the direction of the owner's representative. Treat and discard the used filters as hazardous waste.

3.2.8.5.4 Provide a holding tank (or shower pan) to provide storage of excess shower water when the amount of water generated exceeds the flow capacity of the filters. This hold tank must be capable of containing the amount of water generated while running the shower at full capacity for three minutes.

3.2.8.5.5 The shower room and the shower itself shall be cleaned at the end of each work shift or at the direction of Enviro-STAR. The Contractor shall not leave the project until this has been accomplished to the satisfaction of the Owner's Representative.

3.2.8.5.6 The Contractor shall keep a minimum two day supply of clean disposable towels (for personnel drying after showering), body soap and shampoo (liquid soap may be substituted for both body soap and shampoo) on site at all times. If there is not an adequate supply of these items on site to shower out all personnel who may enter the work area then the Contractor may not physically enter the work area until he has actually brought sufficient and adequate amounts of these items to the job site.

3.2.8.5.7 If there is not sufficient hot and cold water or warm water actually operating at the shower the Contractor may not enter the work area until this has been corrected to the satisfaction of the Owner's Representative. The Owner's Representative may test the shower operation before any entry into the work area.

3.2.8.5.8 At the end of each work shift the entire Decon area shall be wet wiped and cleaned and all supplies, materials and equipment neatly stacked by the Contractor before he leaves the job site. This work must be done to the satisfaction of the Owner's Representative.

3.2.8.5.9 All seals and curtained doorways of the Decon shall be kept in proper condition. Repairs are to be made immediately as needed or at the direction of the Owner's Representative and shall be to the Owners Representative's satisfaction. Failure to comply to this will result in a STOP WORK ORDER being issued by the Owner's Representative .

3.3 MONITORING AND SURVEILLANCE

3.3.1 The owner will provide air monitoring and surveillance of the complete asbestos removal project by, under the direction of the Owner's Representative . Air sampling of Contractor personnel is not included. At his expense he shall perform his own OSHA and Cal/OSHA required personnel air monitoring.

3.3.1.1 Prior to the start of work the Contractor shall submit his air sampling plan to the Owner's Representative for approval.

3.3.1.2 The plan shall describe at least the following items:

3.3.1.3 The name(s) and qualifications of the person(s) who will perform the air sampling.

3.3.1.4 The sampling strategy to be used. For example, cover how 8-hour time-weighed average (TWA) and STEL exposures will be determined, selection of the employees to be sampled, the frequency of sampling, calibration procedures, et. al.

3.3.1.5 The name, location, and qualification of the laboratory that will be used to analyze the air samples.

3.3.2 Routine air sampling including work area and perimeter, will be performed pursuant to NIOSH 7400A by the Owner's Representative as follows:

3.3.2.1 All air sample analyses shall be performed by a qualified laboratory as defined in Section 1.7.37.

3.3.2.2 At work area perimeters outside the containment/work area during abatement work. Airborne concentrations at these area are not to exceed .01 fibers/cc.

3.3.2.3 Inside the work enclosure during abatement work shall not exceed 0.1 fibers/cc.

3.3.2.4 After removal of work area isolation, if sampling is deemed necessary concentrations are not at any time to exceed 0.01 fibers/cc.

3.3.2.5 The Contractor shall provide the Owner's Representative with the results of the air samples collected by the Contractor within 48 hours of collection. These air samples shall not be considered valid and acceptable unless they are performed by a qualified laboratory as defined in 1.7.37.

3.3.3 The Owner's Representative may issue a STOP WORK ORDER any time the Contractor's methods or protective measures are not in accordance with published regulations or these specifications.

3.3.4 If, at any time, any air sample inside the work area exceeds or is likely to exceed 0.1 fibers/cc, or any sample outside the work area exceeds or is likely to exceed 0.01 fibers/cc, the work methods will be reassessed by the Owner's Representative and recommendations made to correct possible work deficiencies. Non-cooperation by Contractor for correction of deficiencies will be cause for a STOP WORK ORDER.

3.4 ASBESTOS WORK PRACTICES

3.4.1 All Contractor and subcontractors who will be working in asbestos removal area(s) shall be trained to meet OSHA, CAL/OSHA, BAAQMD and any other pertinent requirements for asbestos and respirators.

3.4.2 Place OSHA and AB3713 approved warning signs at all entrances to asbestos removal area(s).

3.4.3 Ensure that ALL persons don appropriate personal protective equipment before entering the asbestos removal area and wear this protective equipment while within the abatement area. Personal protective equipment includes approved respirators, disposable coveralls, hoods, booties and gloves. Where safety hazards dictate, hard hats, safety glasses, safety shoes and/or rubber boots and rubber and/or work gloves shall also be worn. All of these items are to be furnished free of charge to all employees of the Contractor and/or his subcontractor(s), the industrial hygienist(s), site visitor(s) and governmental agency representative(s).

3.4.4 Respiratory protective equipment shall consist, at a minimum, of NIOSH approved half face dual cartridge negative pressure air purifying respirators equipped with HEPA filters. If exposure concentrations warrant, as

prescribed in the OSHA regulations, then higher protection factor NIOSH approved respiratory protection will be required by Enviro-STAR's Project Manager. For operations involving the use of spray glue, spraying of encapsulation material and/or other toxic materials the use of HEPA filtered/organic vapor combined respirator cartridges are required. The organic vapor respirator cartridge must meet the requirements of the MSDS for the substance(s) being used.

3.4.5 Outer work clothes shall consist of disposal full body coveralls, disposable head covers, and disposable shoe covers. Disposable clothing should be taped shut at wrists, ankles, and neck, as appropriate.

3.4.6 Upon egress of the asbestos work area, all persons are required to shower thoroughly and completely with body soap and hair shampoo, removing all possible asbestos contamination from themselves. They shall also wash off their respirator before exiting from the shower; no time limit shall be set by the Contractor for showering.

3.4.7 The Contractor shall provide disposable protective clothing for all authorized visitors to the work area, including the owner, the Industrial Hygienist, and pertinent government agency representatives. **The level of respiratory protection that is required of the Contractor personnel shall be the level also required for all visitors/** the **Owners Representative (i.e., PAPR, half face dual cartridge, etc.).** All visitors shall comply with the entry and exit requirements.

3.4.8 All items provided to visitor(s)/ personnel shall be new, clean, and furnished at no charge to the site visitor(s). The only exception is that the Owner's Representative personnel will furnish their own respirator.

3.5 WASTE BAG OUT

3.5.1 The Contractor shall notify the Owner's Representative in advance of bag out of both contaminated and non-contaminated waste. The Contractor and the Owners Representative shall then review the bag out procedures and pathway of the waste from the work area to the hazardous waste dumpster or the hazardous waste transportation vehicle. (Hazardous waste dumpster is defined to include the hazardous waste transportation vehicle throughout these specifications.)

3.5.2 All contaminated waste shall be removed from within the work area(s) by the double bagging method. Each bag shall be of at least 6 mil clear poly with both bags having all applicable warning signage on them. The first bag is to be clean and free of all dust, debris, etc., (by wet wiping or washing) on the outside. It is then passed from the dirty room to the shower room (if the personnel decon is used for bag out) or the center room (if a material/equipment air locked decon is used). This bag is to have been previously sealed. Once passed from the dirty room this first bag is placed into a second bag that is then twisted closed, folded over and taped

shut. The double bagged contaminated waste is then passed out of the Decon. Persons within the work area are to be under shower conditions. All personnel outside the work area may wear tyvek suits over their street clothes. They shall have a respirator readily accessible in case of a spill.

3.5.3 Once passed out of the Decon this bagged waste is to be placed into a heavy duty cart lined with one (1) layer of 6 mil clear poly. The poly is to be placed into the cart such that there are no seams. When fully loaded (bags are to be only loaded to the top edge of the cart) the cart is to be taken directly and immediately to the hazardous waste storage dumpster. The cart is to be covered with one (1) layer of black poly while the hazardous waste is being transported to the hazardous waste dumpster.

3.5.4 All persons outside the work area, the Decon or the hazardous waste dumpster itself involved in handling and transporting the bagged debris, are to be fully approved by the owner's representative to work in and around asbestos. While involved in this work they are to wear their respirators around their neck such that their respirator is immediately available in case of an incident.

3.5.5 The hazardous waste dumpster is to be fully lined on the bottom and all sides with 6 mil clear poly. Seams are to be taped such that they are watertight. It is to be properly labeled and capable of being locked/secured.

3.5.6 The bags are to be off-loaded from the cart into the hazardous waste dumpster in such a manner that they remain intact - **they are not to be thrown**.

3.5.7 Person(s) inside the hazardous waste dumpster are to be under respirator conditions with at least a tyvek suit, with head cover and booties, worn over their street clothes.

3.5.8 Non-contaminated debris from within the work area can be removed from the work area and disposed of without any special preparations as standard construction debris. As long as it is removed from the work area before abatement of the asbestos material starts, which includes pre-wetting.

3.5.9 Asbestos contaminated waste shall not remain within the work area. Prior to the end of the shift, the Contractor shall allocate plenty of time to remove the ACM and leave the work area free of loose ACM.

3.5.10 If contaminated waste contains material/debris, et. al., that is likely to cause cutting/breaking of the bags, then approved drums shall be used for containment, transport and disposal.

3.6 WASTE DISPOSAL

3.6.1 All asbestos-containing material in **FRIABLE** condition shall be disposed

of as hazardous waste in accordance with all applicable regulations, with the exception of window putty if the paint on the windows is deemed hazardous waste.

3.6.2 Transportation of hazardous waste to the designated licensed hazardous waste site shall be by the designated licensed hazardous waste transporter in a DOHS licensed vehicle in accordance with all applicable regulations.

3.6.3 The Owner shall provide the Contractor with his EPA waste generator number. If the Owner does not have one he shall procure one.

3.6.4 The Contractor shall initiate and ensure completion of a Uniform Hazardous Waste Manifest (UHWM) for each shipment. The weight of each shipment shall be shown on the manifest. Bag counts are not sufficient.

3.6.5 The generator's copy of each UHWM shall be given to the Owner by the Contractor within 24 hours of its completion.

3.6.6 All dumpsters used to store or transport asbestos contaminated waste shall be fully and properly licensed and registered as per all applicable regulations.

3.6.7 The transporter used to transport all asbestos contaminated waste shall be fully and properly licensed and registered as per all applicable regulations.

3.6.8 The dump site to which the asbestos contaminated waste shall be delivered shall be fully and properly licensed and registered as per all applicable regulations.

3.6.9 The asbestos contaminated waste may be transported in a motor vehicle as long as it is fully and properly licensed and registered as per all applicable regulations.

3.6.10 The Contractor may transport asbestos contaminated waste from the building/project if he is a duly licensed and registered hazardous waste hauler and does so in fully licensed and registered vehicles/dumpsters and adheres to all applicable regulations.

3.6.11 Asbestos contaminated waste may not be transported between buildings (unless they are interconnected) without adhering to all applicable regulations for transporting asbestos contaminated waste.

3.6.12 Asbestos contaminated waste may not be removed from the building/job site by hand carrying to another building/job site.

3.6.13 All hazardous waste dumpsters used to store asbestos at the building/job site shall be posted with appropriate asbestos warning signs.

3.7 CLEANUP

3.7.1 Cleanup procedures are extremely important. If not performed well, elevated airborne levels, both inside and outside the work area, will occur during all phases of the removal work. Daily remove all visible accumulations of asbestos material and debris within the abatement/work area and place in appropriate container(s).

3.7.2 At all times the work area shall be kept neat and clean. When leaving the work area for lunch break all asbestos material(s) shall have been picked up and bagged or gathered into one pile, wet and completely covered with one (1) layer of 6 mil clear poly. Also, equipment shall have been washed down of accumulations of asbestos material and this material handled as waste. If accumulations are found elsewhere they shall also be handled as above.

3.7.3 At the end of each work shift all asbestos material(s) shall be cleaned up and bagged such that there is no loose asbestos to be found within the work area on the floor poly, wall poly, equipment, building items remaining inside the work area (such as HVAC duct, electrical conduit, etc.). If this requires a wash down and/or mopping of the complete work area and items within it, the Contractor shall be prepared to do so. The Contractor is responsible for starting the clean up process such that it can be finished by the end of the normal work shift. If the Contractor has not completed this clean up work by the end of the work shift he shall remain until it has been accomplished, at no extra charge to the owner. If at the beginning of any work shift it is found that the Contractor failed to adequately clean at the end of the last work shift then no abatement related work shall start until the work area has been cleaned as it should have been done. This is to be at no charge to the owner. The Owner's Representative shall be the final authority on the cleanliness of the work area.

3.8 CLEARANCES

3.8.1 When the Contractor believes that removal including detailing, wet wiping, general work area and decon clean up and equipment cleanliness is complete, then he shall request the Owner's Representative to evaluate the removal and initiate clearance procedures.

3.8.2 Clearance procedure shall consist of four (4) general phases, which will be evaluated separately by the Owner's Representative:

3.8.2.1 Visual evaluation of the degree of removal, including detailing of asbestos from the designated area.

3.8.2.2 Visual evaluation of the degree of cleanliness of the poly in the work area.

3.8.2.3 Visual evaluation of the degree of general cleanliness of the work

area.

3.8.2.4 Final visual evaluation of the entire work area after all containment has been removed.

3.8.3 Upon the Contractor's request, the Owner's Representative will evaluate the thoroughness of asbestos removal and detailing of the asbestos areas, the cleanliness of all poly surfaces (including the Decon), cleanliness of all unprotected surfaces, cleanliness of all building systems items remaining within the work area and contractor equipment remaining within the work area.

3.8.4 Upon the approval of the work area by the Owner's Representative, the Contractor shall encapsulate all surfaces within the work area, including but not limited to, abated surfaces, poly, unprotected hard surfaces, building systems items, etc.

3.8.5 Once this coat of encapsulant has dried to a tacky non-liquid state then the Contractor shall remove the poly from the work area. He will also remove the poly around building systems items within the work area. Upon the approval of the Owners Representative, these surfaces are to be encapsulated.

3.8.6 At no time during the clearance procedures or during the abatement project are any HVAC duct openings, electrical conduit openings, building system items or equipment that can become internally contaminated be uncovered. The poly for these items can be removed only after clearance air levels have been achieved.

3.8.7 At no time during the clearance procedures are any items within the work area to be uncovered that can be damaged by encapsulant. The poly for these items can be removed after clearance air levels been achieved.

3.8.8 The clearance criterion shall be a visual inspection of the abated surfaces and the general work area.

END OF SECTION

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Cast-in-place concrete footings, foundations and grade beams.

B. Cast-in-place walls.

C. Floors and slabs on grade.

D. Cast-in-place equipment pads.

E. Surface finish of floors and walls.

F. Preparation of concrete base slabs to receive toppings.

1.2 RELATED WORK

A. Section 03 10 00: Concrete Formwork.

B. Section 03 20 00: Concrete Reinforcement.

C. Mechanical and electrical items to be cast in concrete.

1.3 QUALITY ASSURANCE

A. Perform cast-in-place concrete work in accordance with ACI 318, unless specified otherwise in this Section.

B. Inspection and testing will be performed by owner's testing laboratory.

C. Owner's testing agency shall check the first batch at the start of the day to verify materials and proportions conform to the approved mix design.

1.4 SUBMITTALS

A. Submit proposed mix design of each class of concrete to inspection and testing firm and Architect and Engineer for review prior to commencement of work.

B. Three concrete test cylinders will be taken not less than once for every 50 cubic yards of concrete placed or not less than once a day for each class of concrete placed by special inspector.

C. The cement supplier shall submit certification of compliance in accordance with CBC Section 1910A.1.

D. One additional test cylinder will be taken during cold weather concreting and be cured on job site under same conditions as concrete it represents.

E. One slump test will be taken for each set of test cylinders taken.

F. The manufacturer of transit-mix concrete shall deliver to job inspector a certificate with each mixer truck. Certificate shall bear signature of representative of Testing Laboratory, stating quantity of cement, fine aggregate, coarse aggregate, and admixtures contained in load. Certificates shall indicate time, to the nearest minute, that batch was mixed.

1.5 REFERENCES

A. American Concrete Institute (ACI):

1. ACI 318 - Building Code Requirements for Reinforced Concrete
2. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing concrete.
3. ACI 301 - Specifications for Structural Concrete for Buildings.
4. ACI 305 - Hot Weather Concreting.
5. ACI 306 - Cold Weather Concreting.

B. All work shall be done in accordance with California Code of Regulations. Title 24, 2022 edition, also known as California Building Code (CBC).

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

A. Cement: Portland, Type II; ASTM C150. Gray, except where noted, supplement with the following:

1. Fly Ash: 25 percent maximum; Fly Ash shall conform to ASTM C618 Class N or F.
2. Combined Fly Ash and Pozzolan: 19 percent maximum
3. Ground Granulated Blast Furnace Slag: 50 percent maximum
4. Combined Fly Ash or Pozzolan and Ground Granulated Blast Furnace Slag: 50 percent maximum with combined Fly Ash and Pozzolans not exceeding 25 percent

B. Fine and Coarse Aggregates: ASTM C33 for normal weight concrete. Aggregate shall be from established sources with proven history of successful use in producing concrete with minimum shrinkage. The average drying shrinkage after 28 days shall not exceed 0.045 percent for hardrock concrete.

C. Water: Clean, and free from injurious amounts of oil, alkali, organic matter, or other deleterious material.

D. Source of aggregate shall remain constant for the duration of the work, as practical.

2.2 ADMIXTURES

A. Air Entrainment: ASTM C260.

B. Water-Reducing Admixture: ASTM C494, Type A, and containing not more than 0.1 percent chloride ions.

C. Water-Reducing, Retarding Admixture: ASTM C494, Type D, and containing not more than 0.1 percent chloride ions.

D. Pozzolan: ASTM A618, containing not more than 0.1 percent chloride ions.

E. Calcium Chloride: Not permitted.

F. ASTM C 494, Type C, 30% + 2% solution of Calcium Nitrite

2.3 ACCESSORIES

A. Bonding Agent: "Anvil Bond" as manufactured by Master Builders or approved equal.

B. Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2400 psi in two days and 6000 psi in 28 days.

C. Absorptive Mats: Cotton fabric or burlap-polyethylene, minimum 8oz./sq. yd; bonded to prevent separation during handling, placement and curing.

D. Liquid Membrane-Forming curing Compound: Conforming to ASTM C309, Type I, and which will not discolor concrete or affect bonding or other finish applied thereover, and which restricts loss of water to not more than 0.500 grams per sq. cm. of surface when tested per ASTM C156.

E. Provide Fly Ash or other reclaimed cementitious materials as indicated in Section 2.01.A.

F. Slab-Leveling Compound. Provide leveling compound where required to meet floor flatness and levelness requirements. Acceptable products include Ardex SD-L, Burke 300 Durock or approved equal.

2.4 PROPORTIONING AND DESIGN OF MIXES

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method used,

use an independent testing facility acceptable to Engineer and Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Architect.

B. Except as otherwise specified, submit written reports to Architect and Engineer of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Architect and Engineer.

C. Unless lower limits are stated in the contract documents, all concrete exposed to freezing and thawing in moist condition and/or required to be watertight or used in slabs-on-grade shall have a maximum W/cm ratio of 0.45.

D. Provide concrete of following strength:

1. Compressive strength (28 day) shall be as shown on Structural Drawings.
2. Select proportions for normal weight concrete in accordance with ACI 301 by Method 1, 2 or 3 as applicable. Add air-entraining agent to concrete to entrain air as indicated in ACI 301.

E. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, water, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by architect before using in work.

F. Admixtures:

1. Use water-reducing admixture or high-range, water-reducing admixture (super plasticizer), may be used in concrete subject to approval by Architect.
2. Use accelerating admixture in concrete slabs placed at ambient temperatures below 50 degrees F (10 degrees C).
3. Use air-entraining admixture in exterior exposed concrete, unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having air content of 4 percent to 6 percent.

2.5 CONCRETE MIXES

A. Ready-Mix Concrete: All concrete shall be ready-mix concrete unless otherwise approved by the Engineer and Architect.

B. Self-Leveling Concrete Topping - Underlayment for Interior Applications:

1. Topping for epoxy terrazzo flooring application shall include latex modifier, such as “TERA-GEM III, Revocoat Latex #1 Additive”. Follow manufacturer’s recommendations and flooring installation requirements.

2. Use self-leveling underlayment concrete formulated to level concrete floors without shrinking, cracking or spalling, and capable of being placed from feathered edge to 1" thickness without aggregate in one pour. If greater than 1" thickness is required, aggregate shall be used in accordance with manufacturer's requirements. Appropriate primer shall be utilized for all underlayment applications.
3. Example acceptable product: Ardex Engineered Cements "ARDEX K-15"
4. Example acceptable product: Euclid Chemical's "Flo-Top or Super Flo-Top"
5. Example acceptable product: Sika Corporation "Sika Level Series"
6. Example acceptable product: BASF "MasterTop 110SL"

PART 3 - EXECUTION

3.1 PLACING CONCRETE

A. Pre-placement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.

B. Place concrete in accordance with ACI 304, and as herein specified.

C. Notify Structural Engineer minimum 48 hours prior to placing of concrete.

D. Ensure anchors, seats, plates, and other items to be cast into concrete are placed, held securely, and will not cause problems in placing concrete. Rectify misplacements and proceed with work.

E. Maintain records of poured concrete items. Record date, location of pour, quantity, air temperature and test samples taken.

F. Ensure reinforcement, embedded parts, formed expansion and contraction joints, and other inserts are not disturbed during concrete placement.

G. Prepare previously placed concrete by blowing joints and provide keyway.

H. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified only with prior approval of the Architect. Deposit concrete as nearly as practicable to this final location to avoid aggregation.

I. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

J. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand- spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.

K. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

L. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

M. Bring slab surfaces to correct level with straight-edge and strike off. Use bull floats or derbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

N. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer and Architect immediately on discovery.

O. Conform to ACI 305 when concreting during hot weather.

P. Conform to ACI 306 when concreting during cold weather.

Q. Unless otherwise permitted, time for completion of discharge shall comply with ASTM C94/C94M. When discharge is permitted after more than 90 minutes have elapsed since batching or after the drum has revolved 300 revolutions, verify that air content of air-entrained concrete, slump, and temperature of concrete are as specified. When discharge is permitted after more than 90 minutes have elapsed since batching or after the drum has revolved 300 revolutions, no water may be added.

3.2 FINISH OF FORMED SURFACES

A. Rough Form Finish: For all formed concrete surfaces except as noted below. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projects exceeding 1/4" in height rubbed down or chipped off.

B. Smooth Form Finish: For formed concrete surfaced exposed-to-view or to be covered with a material such as waterproofing that requires a smooth surface. This is as cast arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas, with fins or other projects completely removed and smoothed.

3.3 MONOLITHIC SLAB FINISHES

A. General: finish slab surfaces in accordance with one of the finishes noted below, as designated in the Contract Documents. Finish all joints and edges with proper tools as approved.

B. Placement: Place concrete at rate that allows spreading, straight-edging, and darbying or bull floating before bleed water appears. Screed all slabs, topping fills to true levels and slopes. Work surfaces as required to produce specified finish. Do no finishing in areas where water has accumulated; drain and re-screed. In no case use a sprinkling of cement and sand to absorb moisture.

C. Tolerances: Measure slabs-on-grade to verify compliance with the tolerance requirements of ASTM E 1155 and ACI 117. Measure floor finish tolerances within 72 hours after slab finishing and before removed of supporting formwork or shoring.

1. Concrete slab flatness and levelness tolerances to meet ACI 117, Section 4.5.6.a. Minimum requirements at slab-on-ground: Flatness overall min Ff = 20 and levelness overall min Fl = 17.

D. Scratch Finish:

1. Apply scratch finish to monolithic slab surfaces that are to receive mortar setting beds for tile, where mortar set tile is indicated on drawings.
2. After placing slabs, plane surface to a tolerance not exceeding ¼" in 10' when tested with a 10' straightedge. Slop surfaces uniformly to drains where required. After leveling, roughen surface before final set, with staff brushes, brooms, or rakes.

E. Float Finish:

1. Apply float finish to monolithic slab surfaces scheduled to receive trowel finish and other finishes as hereinafter specified.
2. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Check and level surface plane to a tolerance not exceeding 1/4" in 10' when tested with a 10' straightedge. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, re-float surfaces to a uniform, smooth, granular texture.

F. Trowel Finish:

1. Unless otherwise noted, apply trowel finish to monolithic slab surfaces to be left exposed-to-view, or scheduled to receive floor finishes other than setting bed types.

2. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding those called out above in section C. Grind smooth surface defects, which would telegraph through applied floor covering system.

G. Non-Slip Broom Finish:

1. Apply non-slip broom finish to exterior concrete platforms, walkways, steps and ramps, and elsewhere as indicated.
2. Immediately after trowel finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.4 CONCRETE CURING AND PROTECTION

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Start curing procedures as soon as free water has disappeared from concrete surface after placing and finishing.
2. Continue curing as directed by Architect and in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

B. Curing Methods: Perform curing of concrete by either moist curing, by moisture retaining cover curing, membrane curing, or by combinations thereof, as herein specified.

1. Provide moisture curing by following methods:
   a. Keep concrete surface continuously wet by covering with water.
   b. Continuous water-fog spray.
   c. Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4-inch lap over adjacent absorptive covers.
2. Provide moisture-cover curing as follows: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed at widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
3. Provide liquid membrane curing as follows:
   a. Apply the specified membrane-forming curing compound to damp concrete surfaces as soon as possible after final finishing operations are complete, but not later than 2 hours. Apply uniformly in a continuous operation by power spray equipment or roller equipment in accordance

with the manufacturer's directions. Recoat areas that are subjected to heavy rainfall within three hours after initial application. Maintain the continuity of the coating and repair damage to the coat during the entire curing period.

b. Verify compatibility of membrane curing compounds on surfaces that are to be covered with a coating material applied directly to the concrete or with a covering material bonded to the concrete, such as other concrete, liquid floor hardener, waterproofing, dampproofing, membrane roofing, flooring, painting, and other coatings, and finish materials, unless otherwise acceptable to the Architect.

c. Do not use curing compounds that will diminish bond of subsequent materials.

4. Curing Formed surfaces: Cure formed concrete surfaces, including walls with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.
5. Curing Unformed surfaces: Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by any of the methods specified herein, as applicable.

3.5 PATCHING

A. Allow Architect/Structural Engineer to inspect concrete surfaces immediately upon removal of forms. Patch imperfections as directed.

3.6 FIELD QUALITY CONTROL

A. Contractors Testing Laboratory: As specified in section 1.3 of this specification.

3.7 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to required lines, details, and elevations.
B. Repair or replace concrete not properly placed resulting in excessive honeycombing and other defects. Patch, fill, touch up, repair, or replace exposed architectural concrete for each individual area in accordance with Architect's particular directions.

END OF SECTION 03 30 00

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 DESCRIPTION

A. Section Includes: Provision of all lumber framing, rough hardware, blocking and backing as indicated in the contract drawings.

1.2 REFERENCES

A. Requirements of GENERAL CONDITIONS and DIVISION NO. 1 apply to all Work in this Section.

B. The following published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to Work in this Section (latest editions apply).

1. California Code of Regulations. Title 24, 2022 edition, also known as California Building Code (CBC).

2. (APA) - American Plywood Association, "Guide to Plywood Grades."

3. (PS) - United States Product Standard, PS-1 and PS-2 "Construction and Industrial Plywood."

4. (UL) - Underwriters' Laboratories, Inc., "Fire Hazard Classification, FR-S."

5. (WCLIB) - West Coast Lumber Inspection Bureau, "Standard Grading Rules No. 17."

6. (WWPA) - Western Wood Products Association, "Grading Rules for Lumber."

7. (AWPA) - American Wood Preservers Association Standards.

a. T1 – "Processing and Treatment Standard"

b. U1 – "User Specification for Treated Wood"

8. (AF&PA) - American Forest and Paper Association, "National Design Specification for Wood Construction." "Special Design Provisions for Wood & Seismic.".

9. (ASTM) - American Society of Testing and Materials.

1.3 SUBMITTALS

A. Shop Drawings of all specially fabricated rough hardware.

B. Certification: Provide lumber with each piece factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mil.

C. Samples as requested by the architect.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Provide proper facilities for handling and storage of materials to prevent damage to edges, ends, and surfaces.

B. Keep materials under cover and dry. Protect against exposure to moisture and contact with damp or wet surfaces. Where necessary, stack materials off ground on level flat forms, fully protected from weather.

1.5 JOB CONDITIONS

A. Environmental Requirements: Maintain uniform moisture content of lumber at not more than 19-percent during and after installation.

B. New lumber adjacent and connected to existing lumber shall have a moisture content of not more than 15 percent at the time of installation.

C. Sequencing, Scheduling: Coordinate details with other Work supporting, adjoining or fastening to rough carpentry Work.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Rough Carpentry:

1. Sills on Concrete: Douglas Fir with Preservative Treatment.

2. Lumber (Wood Framing): Meet requirements of following minimum grades.

Item	
Studs	D.F. No. 1
Plates	D.F. No. 1
Beams	D.F. No. 1
Joists	D.F. No. 1
Batten	D.F. No. 1
Posts	D.F. No. 1
Blocking	D.F. No. 2

3. Plywood: Provide thickness, grade, and panel identification index shown on drawings. For plywood thickness 15/32 or greater provide a minimum of 5 ply.

B. Rough Hardware: All exterior hardware shall be hot-dipped galvanized.

1. Nails: Common wire per ASTM F1667, typical; hot-dipped zinc-coated galvanized, stainless steel, silicon bronze, or copper at exposed conditions, fire-retardant-treated, and preservative-treated lumber.

2. Expansion Bolts: Reverse cone, self-wedging, expansion type, Tightening of nut or increased tension on bolt shank shall act to force wedges outward to create positive increased resistance to withdrawal, Simpson Strong-Bolt 2, Hilti Kwik-Bolt TZ2, or equal product substituted per Section 01 63 00.

3. Metal Framing Connectors: Fabricate from hot-dipped galvanized steel (G90 coating). Connectors in contact with preservative-treated lumber shall have G185 hot dipped galvanized coating per ASTM A653. Connectors in contact with fire-treated lumber or are in high corrosive environments shall be manufactured with Type 316L stainless steel. Connectors shall be at least 16-gauge material, 1/8-inch plate materials where welded, unless otherwise shown or specified, punched for nailing. Nails and nailing shall conform to the manufacturer's instructions, including coating and material where applicable, with a nail provided for each punched nail hole. Use maximum nail size listed by manufacturer. Manufactured by Simpson Company or equal product substituted per Section 01 60 00.

4. Miscellaneous Hardware: Provide all common screws, bolts, fastenings, washers and nuts required to complete rough carpentry Work.

5. Bolts and sill bolts in wood shall be ASTM A307 with standard cut threads; full diameter bolts (no rolled or "upset" threads permitted) per ANSI/ASME standard B18.2.1.

6. Fasteners used for attachment of exterior wall coverings shall be hot-dipped zinc-coated galvanized steel, mechanically deposited zinc-coated steel, stainless steel, silicon bronze, or copper. The coating weights for hot-dipped zinc-coated fasteners shall be in accordance with ASTM A153. The coating weights for mechanically deposited zinc-coated fasteners shall be in accordance with ASTM B695, Class 55 minimum.

2.2 TREATMENTS

A. Fire-Retardant Treatment: Furnish in accordance with AWPA Standards T1, U1, and P17, "Fire Retardant Formulations."

B. Preservative Treatment: Furnish in accordance with AWPA Standards T1 and U1. Preservatives with an ammonia base, including Ammoniacal Copper Zinc Arsenate (ACZA) are not permitted.

2.3 FABRICATION

A. Preparation:

1. Verify measurements at job site.

2. Verify details and dimensions of equipment and fixtures integral with finish carpentry for proper fit and accurate alignment.

3. Coordinate details with other work supporting, adjoining, or fastening to casework.

B. Lumber:

1. Air- or kiln-dry to maximum 19-percent moisture content at time of surfacing.

2. Furnish surfaced four sides, S4S, unless otherwise noted.

3. Size to conform with rules of governing standard. Sizes shown are nominal unless otherwise noted.

C. Wood Treatments:

1. Fire-Retardant Treatment:

a. Treat in accordance with AWPA Standards T1 and U1 and approved manufacturer's recommendations. Verify AWPA Use Category with proposed application prior to selected preservative. Fire treated lumber shall conform to the requirements of CBC Section 2303.2.

2. Preservative Treatment:

a. Treat lumber and plywood sheathing that is:

i. In contact with concrete and masonry less than six feet above the ground.

ii. Exposed to weather permanently.

iii. Where specified in the Contract Documents.

b. Treat in accordance with AWPA Standards T1 and U1. Verify AWPA Use Category with proposed application prior to selecting preservative.

c. Treated lumber shall be marked per CBC Section 2303.1.9.1.

d. After Treatment and prior to shipping, air- or kiln-dry lumber to maximum 19-percent moisture content.

2.4 SOURCE QUALITY CONTROL

A. Lumber shall bear grade-trademark or be accompanied by certificate of compliance of appropriate grading agency.

B. Plywood shall bear APA grade-trademark.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive rough carpentry Work and verify following:

1. Completion of installation of building components to receive rough carpentry Work.

2. That surfaces are satisfactory to receive Work.

3. That spacing, direction, and details of supports are correct to accommodate installation of blocking, backing, stripping, furring and nailers.

4. That all anchor bolts and holdown bolts are properly installed.

3.2 INSTALLATION

A. Cutting: Perform all cutting, boring, and similar Work required.

B. Selection of lumber pieces:

1. Carefully select all members. Select individual pieces so that knots and defects will not interfere with placement of bolts, with nailing or making connections.

2. Cut-out and discard pieces with defects that make the piece unable to serve its intended function. The Architect may reject lumber, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus or mold as well as for improper cutting or fitting.

3. Shimming: Do not shim sills, joists, short studs, trimmers, headers, lintels and other framing members unless specifically detailed in drawings.

C. Drill holes in pieces where splitting may occur.

1. Remove split lumber and replace with new members.

2. Fasten framing anchors and steel bridging with galvanized special nails furnished with hardware in every nail hole, except where noted to be welded to structural steel supports in which case comply with AWS requirements.

D. Studs, Joists, Beams, and Posts: Install all members true to line. No wood shingle shims are permitted. Place joists with crown up; maximum 1/4-inch crown permitted.

E. Nail joints in accordance with applicable requirements of the CBC Table 2304.10.2 unless otherwise shown or specified. Predrill where nails tend to split wood. Nails into preservative-treated lumber shall be hot-dipped galvanized.

F. Bolt holes to be 1/16-inch oversize. Threads shall not bear on wood. Use standard malleable iron washers against wood. Carriage bolts require washers under the nut only.

G. Provide blocking, grounds, nailers, stripping, and backing as shown and as required to secure other Work.

H. Adjoining sheathing panel edges shall bear and be attached to the framing members. Nails shall be placed not less than 3/8-inch from the panel edge.

I. Plywood flooring shall be field glued with adhesive meeting APA specification AFG-01 applied in accordance with the manufacturer's recommendations. Apply continuous line of glue on joists and in groove of tongue and groove panels.

J. Protect preservative-treated and fire-treated lumber per APWA Standard M4, "Standard for the Care of Preservative-Treated Wood Products."

K. Where wood is cut, sawed, planed, bored or marred after preservative or fire-retardant treatment, apply two heavy brush coats of same material used in treatment.

L. Nail heads shall be driven flush with plywood surface. Overdriven nails (nails which fracture the outer ply layer) shall be replaced one for one.

M. Screws (Wood or Lag): Screws shall be screwed and not driven into place. Screw holes for the unthreaded portion shall be predrilled to the same diameter and depth of shank. Holes for threaded portion shall be predrilled less than or equal to the diameter of the root of the thread. Provide standard cut washers under head of lag screws.

N. Sheathing used for diaphragms and shear walls that are part of the seismic-force-resisting system shall be applied directly to framing members.

3.3 CLEANING AND ADJUSTING EXPOSED TIMBER

A. Remove damaged or otherwise disfigured portions and replace with new prior to the Owner's acceptance.

B. Wash finished Work in strict accordance with product manufacturer's directions and ensure that washed surfaces do not differ from clean unwashed surfaces. Any difference will be considered unsatisfactory work.

3.4 FIELD QUALITY CONTROL

A. The Owner's Testing Agency shall:

1. Inspect erected timber framing as required to establish conformity of work with Drawings.

2. Inspect all timber connectors per CBC Section 1705A.5.6.

B. Machine Nailing: Use of machine nailing is subject to a satisfactory jobsite demonstration for each project and the approval of the Project Inspector and the Structural Engineer. The approval is subject to continued satisfactory performance. If the nail heads penetrate the outer ply more than would be normal for a hand-held hammer, or if minimum allowable edge distances are not maintained, the performance will be deemed unsatisfactory and machine nailing shall be discontinued.

3.5 CLEAN-UP

A. Dispose of pressure-treated wood in an authorized disposal area. DO NOT BURN TREATED WOOD. Do not bury wood of any type on the jobsite.

END OF SECTION 06 10 00

SECTION 06 41 00 - INTERIOR ARCHITECTURAL LAMINATED CASEWORK

PART 1 - GENERAL

1. RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

2. SUMMARY

A. This Section includes the following:
   1. Plastic-laminate countertops. (PL-1)
   2. Plastic-laminate cabinets (PL-2).

B. Related Sections include the following:
   1. Division 6 Section "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
   2. Division 10 Section “Visual Display Surfaces” for marker board incorporated in custom teaching wall.

3. DEFINITIONS

A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

4. SYSTEM DESCRIPTION

A. Design Requirements:
   1. Cabinet Grade(s):Comply with Architectural Woodwork Standards 2nd Edition (2014)
      a. Custom Grade cabinets (classrooms)
      b. Premium Grade cabinets (reception areas)
   2. Cabinet Types:
      a. Frameless
         1. Flush overlay
         2. Reveal Overlay
         3. Lipped

b. Face Frame
    1. Flush overlay
    2. Reveal Overlay
    3. Lipped
3. Cabinet and Drawer Hardware:
    a. Provide touch latches and/or U-shaped wire pulls at all accessible casework or equally accessible pull hardware.

5. SUBMITTALS

A. Product Data: For each type of product indicated.
B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
    1. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
    2. Apply WI-certified compliance label to first page of Shop Drawings and follow Section 1, "Guidelines for Architectural Millwork Shop Drawing".

C. Samples for Initial Selection: For each type of product indicated requiring product selection.
D. Samples for Verification:
    1. Plastic laminates, 8 by 10 inches, for each type, color, pattern, and surface finish, with 1 sample applied to core material and specified edge material applied to 1 edge.
    2. Exposed cabinet hardware and accessories, one unit for each type and finish.
        a. Hardware samples will be returned up on approval.

E. Product Certificates: For each type of product, signed by product manufacturer.
F. Woodwork Quality Standard Compliance Certificates for Product and Installation: WI-certified compliance certificates confirming conformance with Certified Compliance Program (CCP).
G. Qualification Data: For Installer and fabricator.

6. QUALITY ASSURANCE

A. Reference Standards:
    1. Title 24 CCR, Part 1 - 2022 Building Standards Administrative Code
    2. Title 24 CCR, Part 2 - 2022 California Building Code, VOL. 1&2 (CBC) (2021 IBC, as Amended by CA

3. Title 24 CCR, Part 6 - 2022 California Energy Code
4. Title 24 CCR. Part 8 - 2022 California Historical Building Code
5. Title 24 CCR, Part 9 - 2022 California Fire Code (CFC) (2021 IFC, as Amended by CA
6. Title 24 CCR, Part 10 – 2022 California Existing Building Code
7. Title 24 CCR, Part 12 - 2022 California Reference Standards Title 19 C.C.R., Public Safety, SFM Regulations.
8. Americans with Disabilities Act (ADA), Title II or Title III.
9. Architectural Woodwork Standards (Edition 3.1-2017)

B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance. Shop is a licensee of WI's Certified Compliance Program.

C. Installer Qualifications: Licensee of WI's Certified Compliance Program.

D. Quality Standard: Unless otherwise indicated, comply with WI's "Manual of Millwork" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
   1. Before delivery to job-site, Millwork supplier:
      a. Licensees of WI shall issue a certified compliance certificate indicating millwork products being furnished for this project, and certifying that these products and their installation, will fully meet requirements of grade or grades specified.
      b. Non-Licensees of WI shall provide evidence that they have arranged for inspection by WI inspector after completion of fabrication and installation. If conditions are found to be compliant, inspector will issue Compliance Certificate indicating millwork products being furnished for this project, and certifying that these products and their installation, will fully meet requirements of grade or grades specified.
   2. Each elevation of casework and each countertop shall bear certified compliance label.

E. Fire-Test-Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.

F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

7. DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

8. PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
B. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.
C. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
    1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.
    2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

9. COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

10. WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of interior architectural woodwork that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer's Warranty: 1 year.

PART 2 - PRODUCTS

1. MANUFACTURERS

A. Acceptable Manufacturers:
   1. Active member of the Woodwork Institute licensed by WI to provide WI Certified Compliance Certificates and Labels for the products and materials specified in this Section.

B. High-Pressure Decorative Laminate: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following:
   1. Wilsonart International; Div. of Premark International, Inc. (Basis of Design)
   2. Formica Corporation.
   3. Nevamar Company, LLC; Decorative Products Div.
   4. Or equal (Reference substitution requirements in Section 01 60 00).

C. PLASTIC-LAMINATE COUNTERTOPS
   1. High-Pressure Decorative Laminate Grade: HGS, 0.048 inches (1.2 mm) thick.
   2. Provide Exterior grade plywood at wet locations and comply with following:
   3. No seams shall occur within 18 inches of sink cut-outs.
   4. Sink cut-outs shall be coated with opaque sealer.
   5. Back splash shall coordinate with size of soap and paper tower dispensers for solid attachment.
   6. Corners of tops shall be cut at 45 degrees if projecting or in pathway.
   7. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
   8. Colors: per architect's selection from full range of standard colors
      a. Countertops (laminate or solid surface)
   9. Edge Treatment: Self-edge banded or as detailed.
   10. Medium-density fiber board (MDF). Do not use plywood.
   11. Backer Sheet: Provide plastic-laminate backer sheet, Grade BKL, on underside of countertop substrate.

C. Solid Surface Counter-tops: Corian® surfaces from the DuPont company (Basis of Design). or equal (Reference substitution requirements in Section 01 60 00).
   1. Thickness:
      a. 1/2″
   2. Edge Treatment
      a. Radius 1/4 inch with drip groove.
   3. Color:
      a. As selected from full range of manufacturers colors

D. Medium-Density Fiberboard: ANSI A208.2, Grade MD, made with binder containing no urea formaldehyde.
   1. Medex, Medex NC, Medite II, or Arreis SDF by SierraPine Ltd.
   2. Weyerhaeuser Company; Premier Plus by Weyerhaeuser.
   3. Or equal (Reference substitution requirements in Section 01 60 00).

2. CABINET HARDWARE

A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified and as modified below
B. Cabinet hardware: Subject to compliance with requirements, provide products by one of the following manufacturers if not listed under the specific component
   1. Accuride.
   2. Blum
   3. Hafele.
   4. Or equal (Reference substitution requirements in Section 01 60 00).

C. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.
D. Drawer and Door Pulls: "U" shaped wire pull, steel with chrome finish, 4 inch centers.
E. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with chrome finish.
   1. Provide a Schedule for the cabinet locks installed.
   2. Schedule to conform to BHMA A156.9 and include the following information:
      a. Building that they are installed in.
      b. Room number use Districts (sign) Room Numbers) where lock is installed in.
      c. Manufacturer.
      d. Model number of cylinder used.

3. Format of Schedule: Excel.

F. Catches: Magnetic.

G. Drawer Slides:
1. Type: Full extension.
2. Static Load Capacity: As required by WI standards.
3. Mounting: Side mounted.
4. Stops: Integral type.
5. Features: Provide self closing/stay closed type.
6. Products:
a. Accuride International, Inc: www.accuride.com.
b. Grass America Inc: www.grassusa.com.
c. Knape & Vogt Manufacturing Company: www.knapeandvogt.com.
d. Substitutions: See Section 01 60 00 - Product Requirements.

H. Hinges: European style concealed self-closing type, BHMA No. grade 1, steel with polished finish.
1. Provide hinges with provision for attachment to all-glass doors where indicated.

3. MATERIALS

A. General: Provide materials that comply with requirements of WI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Core and Substrates: Comply with the following:
1. Medium-Density Fiberboard: ANSI A208.2, Grade MD.

C. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
1. Provide PVC or polyester edge banding complying with LMA EDG-1 on components with exposed or semi-exposed edges.

D. High-Pressure Decorative Laminate (HPDL): NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.

E. Solid Polymer Components:
1. Cast. Non-porous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
2. Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing.

4. CABINET HARDWARE AND ACCESSORIES

A. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.
B. Grommets: Plastic, 2 inch diameter, locations as indicated. If locations are not indicated, as selected by Architect during shop drawing review. Doug Mockett, Sugatsune, Wood Technology, or equal.
C. Drawer and Door Pulls: For all, including accessible casework.
   1. "U" shaped wire pull, aluminum with satin finish, 4 inch centers.

D. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with chrome finish to key with door hardware. All doors and drawers to be lockable.
E. Hinges: Concealed (fully mortised) self-closing type, BHMA No. 652, steel with polished finish.
   1. Products: Blum or equal.

F. Drawer Slides: BHMA A156.9, B05091.
   1. Heavy Duty (Grade 1HD-200): Side mounted; full-extension type; zinc-plated steel ball-bearing slides. Model 3640 by Accuride or equal.

5. MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.
C. Adhesives, General: Do not use adhesives that contain urea formaldehyde.
D. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Wood Glues: 30 g/L.
   2. Contact Adhesive: 250 g/L.

E. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.

1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

6. FABRICATION, GENERAL

A. Interior Woodwork Grade: Unless otherwise indicated, provide Premium-grade interior woodwork complying with referenced quality standard.
B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
   1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4 Inch Thick or Less: 1/16 inch.
   2. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch.

D. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
   1. Notify Architect 7 days in advance of the dates and times woodwork fabrication will be complete.
   2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.

E. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
   1. Seal edges of openings in countertops with a coat of varnish.

7. PLASTIC-LAMINATE CABINETS

A. WI Construction Style: Style A, Frameless. Or Face Frame
B. WI Construction Type: Type I, multiple self-supporting units rigidly joined together.
C. WI Door and Drawer Front Style:

1. Flush Reveal overlay.
2. Flush overlay
3. Lipped

D. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
   1. Both sides of all shelves shall be 0.028 high pressure decorative laminate, regardless of location or exposure, and shall not span more than 34 inches.
   2. Shelves shall be retained with seismic clips.
   3. Cabinets shall be designed for full use of corners.
   4. Upper cabinets shall be at 4'-6" AFF max.

E. Semi-Exposed Surfaces: Any one of following.
   1. Low pressure decorative polyester overlay.
   2. Low pressure decorative melamine overlay.
   3. HPL cabinet liner.
   4. Solid Phenolic core (SPC).

F. Concealed Surfaces: Any of one of following.
   1. Solid Wood or Plywood: Any hardwood or softwood species, with no defects affecting strength or utility. Hardwood and softwood lumber kiln dried to 7 and 10 percent moisture content, respectively.
   2. Particleboard: ANSI A208.1, Grade M-2.
   3. Medium-Density Fiberboard: ANSI A208.2.
   4. Solid Phenolic core (SPC).

G. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
   1. Colors: per Architects selection from full range of standard colors

8. PLASTIC-LAMINATE COUNTERTOPS

A. High-Pressure Decorative Laminate Grade: HGS, 0.048 inches (1.2 mm) thick.
B. Provide Exterior grade plywood at wet locations and comply with following:
   1. No seams shall occur within 18 inches of sink cut-outs.
   2. Sink cut-outs shall be coated with opaque sealer.
   3. Back splash shall coordinate with size of soap and paper tower dispensers for solid attachment.
   4. Corners of tops shall be cut at 45 degrees if projecting or in pathway.

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. Colors: per Architects selection from full range of standard colors
2. Edge Treatment: Self-edge banded for laminated OR For Solid Top ¼" Radiused corners

D. Laminate Substrates: Medium-density fiber board (MDF). Do not use plywood.
E. Backer Sheet: Provide plastic-laminate backer sheet, Grade BKL, on underside of countertop substrate.

PART 3 - EXECUTION

1. PREPARATION

A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and back-priming.

2. INSTALLATION

A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.
D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
2. Maintain veneer sequence matching of cabinets with transparent finish.
3. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into wood framing, blocking, or hanging strips No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

G. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.
H. Refer to Division 9 Sections for final finishing of installed architectural woodwork not indicated to be shop finished.

3. ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
B. Clean, lubricate, and adjust hardware.
C. Clean woodwork on exposed and semi exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 06 41 00

SECTION 07 21 16 - BUILDING INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Batt insulation and vapor barrier in exterior wall and roof construction.

B. Batt insulation for filling perimeter window and door shim spaces. crevices in exterior wall and roof.

C. Batt sound insulation in interior walls and partitions and above ceiling.

1.2 QUALITY CONTROL

A. Reference Standards:
1 Title 19 CCR, Public Safety, State Fire Marshall Regulations
2 Title 24 CCR, Part 1 - 2022 Building Standards Administrative Code
3 Title 24 CCR, Part 2 - 2022 California Building Code, VOL. 1&2 (CBC) (2018 IBC, as Amended by CA
4 Title 24 CCR, Part 3 - 2022 California Electrical Code (CEC) (2017 NEC, as Amended by CA)
5 Title 24 CCR, Part 4 - 2022 California Mechanical Code (CMC) (2018 IAPMO UMC, as Amended by CA)
6 Title 24 CCR, Part 5 - 2022 California Plumbing Code (CPC) (2018 IAPMO UPC, as Amended by CA)
7 Title 24 CCR, Part 6 - 2022 California Energy Code
8 Title 24 CCR, Part 9 - 2022 California Fire Code (CFC) (2018 IFC, as Amended by CA
9 Title 24 CCR, Part 10 - 2022 California Existing Building Code
10 Title 24 CCR, Part 12 - 2022 California Reference Standards.
11 Americans with Disabilities Act (ADA), Title II or Title III.

B. ASTM C665 - Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

C. ASTM C1320 - Installation of Mineral Fiber Batt and Thermal Insulation for Light Frame Construction.

D. ASTM C 578: Standard Specification for Rigid Cellular Polystyrene Thermal Insulation

E. ASTM C 518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

F. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials.

G. International Code Council Evaluation Service (ICC-ES), Evaluation Report.

H. CCR - California Code of Regulations.

I. CBC - California Building Code.

1.3 PERFORMANCE REQUIREMENTS

A. Materials of this Section shall provide continuity of thermal and moisture barrier at building enclosure elements.

B. Materials of this Section shall provide continuity of sound control where indicated or scheduled.

1.4 REGULATORY REQUIREMENTS

A. Installation of insulation may only commence if insulation meets mandatory manufacturer certification to the California Energy Commission required by Title 24, Part 6, Section 118 of the California Code of Regulations (CCR) that insulation complies with Title 20, Chapter 4, Article 3 of the California Quality Standards for Insulating Materials.

B. Insulation materials shall be certified in compliance with Business and Professions Code Section 19165.

C. Insulation manufacturer shall be licensed by the California Department of Consumer Affairs, Bureau of Home Furnishing and Thermal Insulation according to Business and Professions Code, Section 19059.7.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Submit Product Data for each type of insulation specified.

C. Submit manufacturer’s certification that materials meet or exceed specified regulatory requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original packaging.
B. Store and protect products in accordance with manufacturer's instructions. Store in a dry area and protect from water, direct sunlight, flame, and ignition sources. Do not install insulation that has been damaged or wet.
1 In the event the board insulation becomes wet, wipe dry prior to installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS - INSULATION MATERIALS

A. Certain Teed Corp.

B. Manville Corp.

C. Owens-Corning Fiberglass Corporation.

2.2 MATERIALS

A. Batt Insulation: ASTM C665 preformed glass fiber batt, Type III, Class A, Category 1 with stapling flanges for attachment of blanket to applicable construction. Equivalent continuous roll membrane facing may be utilized in lieu of individual faced glass fiber batts. Provide R30 at ceilings and roofs, R19 at walls.

B. Batt Sound Insulation: ASTM C665 preformed glass fiber batt, Type I unfaced, with flame spread of 25 or less, and a smoke density of less than 450 when tested in accordance with UL 723-03. Provide R-15, 3½ inch minimum thickness.

D. Nails or Staples: Steel wire; electroplated; type and size to suit application.

E. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inches wide.

F. Support Wire: 16 gauge steel wire.

G. Support Rods: 13 gauge, pointed spring steel length as required for stud spacing.

H. Spindle Fasteners: Steel impale spindle and clip on flat metal base, [spot welded

to substrate] [self adhering backing], length to suit insulation thickness, capable of securely and rigidly fastening insulation in place.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation are dry and ready to receive insulation.

B. Do not install until building is fully enclosed to weather.

3.2 INSTALLATION

A. Install insulation in accordance with insulation manufacturer's instructions and ASTM C739, C1149 and C1320. Cut “blow-in” holes only where specifically needed.

B. Install batt insulation in exterior walls, ceiling furring, and roof spaces without gaps or voids. Where wood framed furred ceiling occur, install insulation over the furring strips rather than between the rafters.

C. Install batt sound insulation in interior walls and where indicated or scheduled.

D. Install blow-in insulation in cavities where it is unfeasible to install batt insulation.

E. Trim insulation neatly to fit spaces.

F. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation. Leave no gaps or voids.

G. Install with factory-applied membrane facing on warm side of building spaces.

H. Lap ends and side flanges of vapor barrier membrane over face of framing members.

I. Extend vapor barrier on to any adjacent construction and tape seal edge of vapor barrier.

J. Seal butt ends, lapped flanges, and tears or cuts in membrane with tape or another layer of membrane.

K. Seal joints in vapor barrier caused by pipes, conduits, electrical boxes, and similar items penetrating vapor barrier.

L. [Face staple flange over flange of adjacent blanket to wood studs at maximum 6 inches on center.]

M. [Tape stapling flange over flange of adjacent blanket to flange of metal stud.]

N. Friction fit sound insulation between studs as required to completely fill space between the wall finishes.

O. Where wall finish does not occur, [use support rods spaced not more than 16 inches on center vertically at wood studs.] [use 16-gauge support wire through studs at not more than 16 inches on center vertically at metal studs.]

P. Retain unsupported roof insulation to metal or concrete substrate with spindle fasteners at 24 inches on center.

Q. Coordinate patching of “blow-in” holes with Work under other Sections.

R. Remove all unused insulation and related products and dispose of correctly.

END OF SECTION 07 21 16

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes joint sealants.
   1. Silicone joint sealants.
   2. Urethane joint sealants.
   3. Silyl-terminated polyether joint sealants.
   4. Butyl joint sealants.
   5. Latex joint sealants.

B. Related Sections include the following:
   1. Division 8 Section "Glazing" for glazing sealants.
   2. Division 9 Section "Gypsum Board" for sealing perimeter joints of gypsum board partitions to reduce sound transmission.
   3. Division 9 Section "Ceramic Tile" for sealing tile joints.
   4. Division 32 Section "Concrete Paving Joint Sealants" for sealing joints in paved roads, parking lots, walkways, and curbing.

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.
B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch wide joints formed between two 4-inch long

strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:
   1. Joint-sealant application, joint material location, and designation.
   2. Joint-sealant manufacturer and product name.
   3. Joint-sealant formulation.
   4. Joint-sealant color.

E. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

F. SWRI Validation Certificate: For each elastomeric sealant specified to be validated by SWRI's Sealant Validation Program.

G. Qualification Data: For Installer.

H. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
   1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
   2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

I. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.

J. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Reference Standards:
   1. Title 19 CCR, Public Safety, State Fire Marshall Regulations
   2. Title 24 CCR, Part 1 - 2022 Building Standards Administrative Code
   3. Title 24 CCR, Part 2 - 2022 California Building Code, VOL. 1&2 (CBC) (2018 IBC, as Amended by CA
   4. Title 24 CCR, Part 3 - 2022 California Electrical Code (CEC) (2017 NEC, as Amended by CA)
   5. Title 24 CCR, Part 4 - 2022 California Mechanical Code (CMC) (2018 IAPMO UMC, as Amended by CA)
   6. Title 24 CCR, Part 5 - 2022 California Plumbing Code (CPC) (2018 IAPMO UPC, as Amended by CA)

7. Title 24 CCR, Part 6 - 2022 California Energy Code
8. Title 24 CCR, Part 9 - 2022 California Fire Code (CFC) (2018 IFC, as Amended by CA
9. Title 24 CCR, Part 10 - 2022 California Existing Building Code
10. Title 24 CCR, Part 11 - 2022 California Green Building Standards Code (Calgreen Code)

B. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

C. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

D. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 ENVIRONMENTAL REQUIREMENTS

A. Adhesives, sealants and caulks shall meet the following requirements of the following standards:
1. Adhesives, adhesive bonding primers, adhesive primers, Sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules as applicable or SCAQMD Rule 1168 VOC limits as shown on tables 5.504.4.1 and 5.504.4.2. Such products shall also comply with rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene) except aerosol products as specified in subsection 2 noted below.
2. Aerosol adhesives and smaller unit sizes of adhesives and sealant or caulking compounds (in units, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on the use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with section 94507.

1.7 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated. Notify Architect/ Inspector of the non-compliant condition.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: 5 years (20 years for Silicone Sealants) from the date of Final Completion

B. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within the specified warranty period.
   1. Warranty Period: 2 years final Completion.

C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
   1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
   2. Disintegration of joint substrates from natural causes exceeding design specifications.
   3. Mechanical damage caused by individuals, tools, or other outside agents.
   4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Joint Sealants: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Dow Corning Corp.

2. Pecora Corporation.
3. United States Gypsum Co
4. Tremco, Inc.
5. Bostik Construction Products Division
6. General Electric Sealants
7. WR Meadows
8. Or equal. (Reference substitution requirements in Section 01 60 00)

2.2 MATERIALS, GENERAL

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.
C. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
D. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Sealants: 250 g/L.
   2. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Sealant Primers for Porous Substrates: 775 g/L.

E. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.
F. Low-Emitting Interior Sealants: Sealants and sealant primers shall comply with the testing and product requirements of the California Department of Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.3 JOINT SEALANTS

A. Type A - Acrylic Latex: One-part, non-sag, mildew resistant acrylic emulsion compound complying with ASTM C834, Type OP, Grade NF, formulated to be paintable.

1. Tremco Inc., "Tremflex 834"
2. Bostik Construction Products Division, "Chem-Calk 11200".
3. Pecora Corporation, "AC-20"

B. Type B - Butyl Sealant: One-part, non-sag solvent-release-curing sealant complying with ASTM 1311 and formulated with a minimum of 75 percent solids.
1. Tremco Inc., Tremco "Bitul Sealant"
2. Bostik Construction Products Division, "Chem-Calk 300".
3. Pecora Corporation, "BC-158".

C. Type C - Silicone Sealant: One-part nonacid-curing silicone sealant complying with ASTM C920, Type S, Grade NS, Class 25.
1. Dow Corning Corp., "Dow Corning 791".
2. General Electric Co., "SCS 2000 Silpruf".
3. Pecora Corp., "890FTS"

D. Type D - Neutral-Curing Silicone Sealant: One part medium modulus neutral-curing silicone sealant complying with ASTM C920, Type S, Grade NS, Class 25.
1. Dow Corning Corp., "Dow Corning 899".
2. General Electric Co., "SSG 4000AC Ultraglaze".
3. Tremco, Inc., "Spectrum 3".
4. Pecora Corp., "895NST".

E. Type E - One-Part Mildew-Resistant Silicone Sealant: Complying with ASTM C920, Type S, Grade NS, Class 25.
1. Dow Corning Corp., "Dow Corning 791".
2. General Electric Co., "SCS 1700 Sanitary".
3. Tremco, Inc., "Proglaze"
4. Pecora Corp., "860" or "894NST"

F. Type F - Multi-Part Pourable Sealant: Complying with ASTM C920, Type M, Grade P, Class 25. Shore A hardness +40.
1. Tremco, Inc., "Vulkem 45SSL".
2. Pecora Corp., "Dynatred" or "Urexpan NR-200".
3. W.R. Meadows, "Pourthane SL".

G. Type G - Acoustical Sealant: Nondrying, nonhardening permanently flexible conforming to ASTM D217.
1. Pecora Corp., "BA-98 Acoustical Sealant"
2. Tremco, Inc., "Tremco Acoustical Sealant".
3. United States Gypsum Co., "Sheetrock Acoustical Sealant".

H. Type H - Sound and Fire Protective Rated Moldable Putty Pads as wall opening protective materials when code required in fire-rated walls.

2.4 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

D. Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width

E. Bond Breaker: Pressure-sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with manufacturers and document requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning of installation means installer accepts existing substrate.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include examples of the following:

    a. Asphalt
    b. Concrete.
    c. Masonry
    d. Unglazed surfaces of ceramic tile.
    e. Exterior insulation and finish systems

B. Remove laitance and form-release agents from concrete.
1. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include examples of the following:

    a. Metal.
    b. Glass.
    c. Porcelain enamel.
    d. Glazed surfaces of ceramic tile.

C. Verify that joint backing and release tapes are compatible with sealant.

D. Perform preparation in accordance with ASTM C1193.

E. Protect elements surrounding the Work of this Section from damage or disfiguration Joint Priming:

F. Prime joint substrates, where recommended in written form by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

G. Joint Priming: Prime joint substrates, where recommended in written form by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces

H. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
C. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
    1. Do not leave gaps between ends of sealant backings.
    2. Do not stretch, twist, puncture, or tear sealant backings.
    3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
    1. Place sealants so they directly contact and fully wet joint substrates.
    2. Completely fill recesses in each joint configuration.
    3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form

smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
4. Provide flush joint profile according to Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth according to Figure 8C in ASTM C 1193.
    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

H. Installation of Preformed Tapes: Install according to manufacturer's written instructions.

I. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:

1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.
4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

J. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT LOCATION SCHEDULE

SCHEDULE ***(MAKE SELECTIONS AND DELETE MATERIALS THAT DO NOT APPLY) "TO MATCH ADJACENT MATERIAL" IS RECOMMENDED WHERE PRACTICAL***

Type	Location	Color
Type A - Acrylic Latex Cure	All interior joints not otherwise scheduled	To match adjacent surfaces
Type B - Butyl	Under thresholds	White or Translucent
Type C - One-Part Nonacid Curing Silicone	Exterior door, entrance & window frames. Exterior & Interior vertical joints in concrete & masonry, metal flashing	Aluminum, to match adjacent material
Type D - Neutral-Curing Silicone	Joints within aluminum entrance systems, glass and glazing	Translucent, White, or Aluminum
Type E - Mildew-Resistant Silicone	Interior joints in ceramic tile and at plumbing fixtures	White or Translucent
Type F - Multi-part Pourable Urethane	Exterior & interior joints in horizontal surfaces of concrete; between metal & concrete masonry and mortar	To match adjacent material
Type G - Acoustical Sealant	In sound rated walls between stud track/runner and adjacent construction. Between outlet boxes and gypsum board.	White or Translucent
Type H - Sound and Fire Protective Rated Moldable Putty Pads	At fire-rated wall openings when code required, such as electric boxes. In sound rated walls at electric boxes.	Red

END OF SECTION 07 92 00

SECTION 08 41 00 - ALUMINUM ENTRANCE AND STOREFRONT

PART 1 -GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions, Supplementary General Conditions, and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes aluminum entrance and storefront and related work as shown and specified.

1.03 REFERENCES

A. American Architectural Manufacturers Association (AAMA)
B. American Society for Testing and Materials (ASTM)
C. Aluminum Association (AA)

1.04 SUBMITIALS

A. Product Data:
   a. Aluminum Entrance and Storefront: None required for specified products; required for alternate products.
B. Shop Drawings: Submit manufacture and installation details, including fastenings, for review.
C. Samples:
   a. Aluminum Entrance and Storefront: If specifically requested for specified products; required for alternate products. Submit manufacturer's standard colors.
D. Certificates: Storefront shall bear a permanently installed "AAMA Prime and Replacement Label" bearing the manufacturers name, product series number, grade and class designations. Do not install label in exposed location.
E. Installer Qualifications: If requested, provide evidence that installers meet the requirements of Article 1.4.
F. Closeout Submittals:
   0 & M Manuals: Maintenance instructions and installation Manual.
   Guarantee: Provide completed form per Article 1.5.

1.05 QUALITY ASSURANCE

A. Design Requirements: Aluminum frame members must span vertically to withstand 25 pounds per square foot wind load, minimum, per CBC; provide internal reinforcing as required; maximum deflection of L/175 of clear span or maximum of 3/4 inch.
B. Single Source Responsibility:

a. Obtain entrances and storefront systems and finish through one source from a single manufacturer.

C. Installer Qualifications: Minimum of 3 years of experience on similar work; knowledge and understanding of standards referenced herein; skill necessary to perform in compliance with this specification. Installers failing to demonstrate the required experience, knowledge, or skill shall be removed from the project.

1.06 GUARANTEE

A. Aluminum Entrance and Storefront: Provide manufacturer's warranty that products are to be free from defects in materials and workmanship for 3 years beginning at date of acceptance by Owner.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect prefinished components with wrapping or strippable coating; adhesive papers and sprayed coatings are not acceptable.

1.08 PROJECT CONDITIONS

A. Do not install sealants when temperature is less than 40 degrees F.

PART 2 -PRODUCTS

2.01 ALUMINUM ENTRANCE AND STOREFRONT (ALST)

A. Acceptable Products:

1. Aluminum-Framed Storefront

a. Basis of Design:
Manufacturer: Arcadia, Inc., 2301 E Vernon, Vernon, CA.
Telephone 323/269-7300, Fax 323/269-7390.

Product: AFG451T Series, 2" x 4-1/2" **Thermally broken**; center glazed system, screw spline, shear block, compensating stick or punched opening fabrication for 1" glass.

b. Or approved thermally-broken equal products by:
Old Castle
Vistawall
U.S. Aluminum Systems
Traco Co., Inc.

B. System Description

2. General: In addition to requirements shown or specified, comply with:

a. Applicable provisions of AAMA Aluminum Storefront and Entrance Manual for design, materials, fabrication, and installation of component parts.

3. Design Requirements: Arcadia AG451T Series is a framing system that provides for flush glazing on all sides without projected stops, with glass in the center of the frame. Framing system suitable for outside or inside glazing.
4. Performance Requirements:
    a. Limit air leakage through assembly to 0.06 CFM/min/sq. ft. (.00003 m3/sm2) of wall area at 6.24 PSF (300 Pa) as measured in accordance with ASTM E283.
    b. Water Resistance: No water leakage when measured in accordance with ASTM E331 with a static test pressure of 8 PSF(383 Pa).
    c. Limit mullion windload deflection of L/175 with full recovery of glazing materials, when measured in accordance with ASTM E 330.
    d. System shall not deflect more than 1/8" at the center point, or 1/16" at the center point of a horizontal member, once deadload points have been established.
    e. System shall accommodate expansion and contraction movement due to surface temperature differential of 180 degrees F.
    f. Seismic testing shall conform to AAMA recommended static test method for evaluating performance of curtain walls and storefront wall systems due to horizontal displacements associated with seismic movements and building sway.
    g. Thermal Performance – When tested in accordance with AAMA 1503.1 the following results should be attained: U-Maximum .63/CRF – minimum of 59.
    h. National Fenestration Rating Council (NFRC) specific application evaluation.

C. Framing Materials and Accessories
    a. Framing members, transition members, mullions, adaptors, and mounting: Extruded 6063-T6 aluminum alloy (ASTM B221 – Alloy G.S. 10a T6).
    b. Screws, fastening devices, and internal components: Aluminum, stainless steel, or zinc-plated steel in accordance with ASTM.A-164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from aluminum.
    c. Glazing Gasket
    d. Compression-type design, replaceable, molded, or extruded, or ethylene propylene diene monomer (EPDM).
    e. Shall be of type that locks securely into the glazing reglet to prevent glazing gaskets from disengaging.

D. Finish: Clear Anodized, Architectural Class I.
E. Glass: As shown; refer to Section 08810 -GLASS AND GLAZING.
F. Fasteners: As recommended by manufacturer to meet wind pressures shown.
G. Protective Coatings:
    a. General: Bituminous, FS TT-C-494, Type II.
    b. Gasketing: Chromate type.
H. Sealant: Apply a high-performance, single-component, moisture-cure, ultralow modulus silicone sealant like Spectrem 1 by Tremco or approved equal and in accordance with manufacturer's written installation guidelines.

I. System Fabrication
   a. Continuous sub-sill shall be provided under sill members to collect water infiltration and divert from the interior of the system.
   b. Framing members shall be internally reinforced and secured at head and sill as necessary for structural performance requirements, for hardware attachment, and as indicated.
   c. Fasteners shall be so located as to ensure concealment from view in the final assembly.

PART 3 -EXECUTION

3.1 EXAMINATION

A. Examine conditions of work in place before beginning work, report defects.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Take field measurements, report variance between plan and field dimensions.

3.3 INSTALLATION

A. Install in conformance with referenced standards, manufacturer's written directions, as shown, and as specified.
B. Storefront:
   Install level, plumb, straight and aligned with adjacent surfaces, with hairline watertight joints; free of dents, buckles, twists, or other imperfections, as shown. Install flashings where shown.
   Anchor to adjacent structure; permit sufficient adjustment to accommodate construction tolerances and other irregularities. Use No. 12 sheet metal screws, or wood screws at 18 inches on center with a minimum of 2 inches penetration into structure.
   Tolerances: Maximum variation from plumb of 0.06 inch every 3'-0" non-cumulative or 1/16 inch per 10'-0", whichever is less. Maximum misalignment of 2 adjoining members abutting in plane of 1/32 inch.
   Thermal Isolation: Provide where components penetrate or disrupt building insulation. Coordinate attachment and seal of perimeter air and vapor barrier materials.
C. Glazing:
   General: As specified under Section 08810 -GLASS AND GLAZING.
   Glazing Stops: Anchor glass holding assemblies with frame clips and machine screws.
E. Dissimilar Materials: Isolate from other metals, plaster, or concrete.
F. Sealant: Install per Section 079010 -JOINT SEALERS.

3.4 ADJUSTING

A. Prior to acceptance, adjust moveable parts to assure smooth operation.

3.5 CLEANING

A. Remove protective covering per manufacturer's instructions.
B. Keep premises free from accumulation of waste and debris. At completion of installation remove surplus materials and debris.
C. At completion clean exposed surfaces in a manner that will not damage finish.

END SECTION 08 41 00

SECTION 08 80 00 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
   1. Aluminum Windows.
   2. Doors.

B. Related Sections include the following:
   1. Division 8 Section "FRP Aluminum Hybrid Doors".
   2. Division 8 Section “Aluminum Entrance and Storefront”.

1.3 DEFINITIONS

A. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.

C. Deterioration of Coated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in metallic coating.

D. Deterioration of Insulating Glass: Failure of hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

E. Fire Rated Glass: Glass that is manufactured and tested by a testing lab/ agency recognized by DSA.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
   1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300.

1.5 SUBMITTALS

A. Concurrent Review Requirements: Submit submittals of this section with other sections requiring glazing specified in this section.
   1. Division 8 Section "FRP Aluminum Hybrid Doors".
   2. Division 8 Section “Aluminum Entrance and Storefront”.

B. Product Data: For each glass product and glazing material indicated.

C. Samples: For each glazing products, in the form of 12-inch- square Samples for glass and of 12-inch- long Samples for sealants. Install sealant Samples between two strips of material representative in color of the adjoining framing system.
   1. Insulating glass for each designation indicated.
   2. Fire-rated glazing.

D. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.
   1. List by windows and door types scheduled on Drawings.

E. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.
   1. For solar-control low-e-coated glass, provide documentation demonstrating that manufacturer of coated glass is certified by coating manufacturer.

F. Qualification Data: For installers. Minimum of 10 years of documented experience for supervisory staff in the installation of glass and glazing.
G. Preconstruction Adhesion and Compatibility Test Report: From glazing sealant manufacturer indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.
H. Product Test Reports: For each types of glazing products specified.

1.6 QUALITY ASSURANCE

A. Reference Standards:
   1. Title 19 CCR, Public Safety, State Fire Marshall Regulations
   2. Title 24 CCR, Part 1 - 2022 Building Standards Administrative Code
   3. Title 24 CCR, Part 2 - 2022 California Building Code, VOL. 1&2 (CBC) (2021 IBC, as Amended by CA
   4. Title 24 CCR, Part 3 - 2022 California Electrical Code (CEC) (2017 NEC, as Amended by CA)
   5. Title 24 CCR, Part 4 - 2022 California Mechanical Code (CMC) (2018 IAPMO UMC, as Amended by CA)
   6. Title 24 CCR, Part 5 – 2022 California Plumbing Code (CPC) (2018 IAPMO UPC, as Amended by CA)
   7. Title 24 CCR, Part 6 - 2022 California Energy Code
   8. Title 24 CCR, Part 9 - 2022 California Fire Code (CFC) (2018 IFC, as Amended by CA
   9. Title 24 CCR, Part 10 - 2022 California Existing Building Code

B. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
C. Source Limitations for Glass: Obtain glazing products through one source from a single manufacturer for each glass type.
D. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.
E. Glass Product Testing: Obtain glass test results for product test reports in "Submittals" Article from a qualified testing agency based on testing glass products.

1. Glass Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

F. Elastomeric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.
   1. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
   2. Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.

G. Glazing for Fire-Rated Door Assemblies: Glazing for assemblies that comply with NFPA 80 and that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252.

H. Glazing for Fire-Rated Window Assemblies: Glazing for assemblies that comply with NFPA 80 and that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 257.

I. Safety Glazing Products: Comply with testing requirements in 16 CFR 1201.
   1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the Safety Glazing Certification Council or another certification agency or manufacturer acceptable to authorities having jurisdiction.
   2. Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sq. ft. in exposed surface area of one side, provide glazing products that comply with Category II materials, for lites 9 sq. ft. or less in exposed surface area of one side, provide glazing products that comply with Category I or II materials, except for hazardous locations where Category II materials are required by 16 CFR 1201 and regulations of authorities having jurisdiction.

J. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
   1. IGMA Publication for Insulating Glass: SIGMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units."

K. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the following testing and inspecting agency:
   1. Insulating Glass Certification Council.
   2. Associated Laboratories, Inc.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
   1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F.

1.9 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
   1. Warranty Period: 10 years.

B. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
   1. Warranty Period: 10 years.

C. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Non-Fire-Rated Glass Manufacturers: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. All Weather
   2. Vitro Architectural Glass (Basis of Design).
   3. Guardian.
   4. Pilkington.
   5. Visteon.
   6. Or equal (Reference substitution requirements in Section 01 60 00).

B. Non-Fire-Rated Glazing Fabricators: Subject to compliance with requirements, provide either the named fabricator or an equal fabricator by one of the other fabricators specified.
   1. Oldcastle Glass. (Basis of Design)
   2. Viracon.
   3. Guardian.
   4. Or equal (Reference substitution requirements in Section 01 60 00).

C. Fire-Rated Glazing Fabricators: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. FireLite NT by Nippon Electric Glass Co., Ltd., and distributed by Technical Glass Products (Basis of Design)
      a. Premium grade, lamination on one side, 3/16 inch thick.
   2. Interedge Technologies.
   3. Oldcastle Glass.
   4. Pilkington.
   5. Pyran Star F by Schott.
   6. Safti.
   7. Or equal (Reference substitution requirements in Section 01 60 00)

2.2 GLASS PRODUCTS

A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.
B. Heat-Treated Float Glass (Safety Glass): ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.
   1. For uncoated glass, comply with requirements for Condition A.

2. For coated vision glass, comply with requirements for Condition C (other uncoated glass).
3. Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS (heat-strengthened) float glass where safety glass is indicated.

C. Tinted Insulating-Glass Units: Insulated glass units for all exterior storefronts, doors and aluminum windows: Double pane, low-e with glass to elastomer edge seal. Outer pane of tinted glass, inner pane of clear glass. Place reflective coating on No.2 surface within the unit.
1. Product: Solarban 60 Gray by Vitro Architectural Glass
2. Visible Transmittance: 35%.
3. Visible Light Reflectance: 7%.
4. U-Value:
   a. Winter Night time: 0.29.
   b. Summer Day time: 0.28
5. Shading Coefficient: 0.33.
6. Solar Heat Gain Coefficient: 0.29.
7. Light to Solar Gain (LSG): 1.25.

D. Frosted Glazing:
1. Etched surface (inner face) of pane.
   a. Install pane on outer face of insulated units
2. Provide medium to heavy sandblast samples for Architect selection

2.3 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of material complying with standards referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:

2.4 GLAZING SEALANTS

A. General: Provide products of type indicated, complying with the following requirements:
1. Compatibility: Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

B. Elastomeric Glazing Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
C. Glazing Sealants for Fire-Resistive Glazing Products: Identical to products used in test assemblies to obtain fire-protection rating.

2.5 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800.
B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive.

2.6 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

G. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistance rating.

2.7 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
B. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing glazing, with Installer present, for compliance with the following:
   1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
   2. Presence and functioning of weep system.
   3. Minimum required face or edge clearances.
   4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
B. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.
E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
G. Provide spacers for glass lites where length plus width is larger than 50 inches as follows:
    1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
    2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
E. Do not remove release paper from tape until just before each glazing unit is installed.
F. Apply heel bead of elastomeric sealant where indicated.
G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
C. Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
D. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 LOCK-STRIP GASKET GLAZING

A. Comply with ASTM C 716 and gasket manufacturer's written instructions. Provide supplementary wet seal and weep system, unless otherwise indicated.

3.8 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.
B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.
C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.
E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 08 80 00

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SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following interior gypsum board:
   1. Type X (GWB).
   2. Classroom Buildings
   3. Construction DocumentsIII
   4. Sound Control Gypsum Board (GWB-STC)
   5. Abuse Resistant (GWB-VHI).
   6. Abuse and Water Resistant (GWB-WR).

B. Related Sections include the following:
   1. Division 6 Section "Rough Carpentry" for wood framing and furring that supports gypsum board.
   2. Division 9 Section "Ceramic Tile" for cementitious backer board installed as substrates for ceramic tile.
   3. Division 9 Section “Painting” for primers and finishes applied to gypsum board surfaces.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For the following products:
   1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.
   2. Finishes: Provide Level 4 and 5 of gypsum board finish indicated for use in exposed locations. 4 by 4 foot sample of each.
      a. Finishes: For each finish indicated and on same backing indicated for Work.

1.4 QUALITY ASSURANCE

A. Reference Standards:

1. Title 19 CCR, Public Safety, State Fire Marshall Regulations
2. Title 24 CCR, Part 1 - 2022 Building Standards Administrative Code
3. Title 24 CCR, Part 2 - 2022 California Building Code, VOL. 1&2 (CBC) (2021 IBC, as Amended by CA
4. Title 24 CCR, Part 3 - 2022 California Electrical Code (CEC) (2017 NEC, as Amended by CA)
5. Title 24 CCR, Part 4 - 2022 California Mechanical Code (CMC) (2018 IAPMO UMC, as Amended by CA)
6. Title 24 CCR, Part 5 - 2022 California Plumbing Code (CPC) (2018 IAPMO UPC, as Amended by CA)
7. Title 24 CCR, Part 6 - 2022 California Energy Code
8. Title 24 CCR. Part 8 - 2022 California Historical Building Code
9. Title 24 CCR, Part 9 - 2022 California Fire Code (CFC) (2018 IFC, as Amended by CA
10. Title 24 CCR, Part 10 - 2022 California Existing Building Code
11. Title 24 CCR, Part 11 - 2022 California Green Building Standards Code (Calgreen Code)

B. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency acceptable to DSA.

C. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

D. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Install mockups for the following:
      a. Each level of gypsum board finish indicated for use in exposed locations.
      b. Each finish indicated.
      c. Each areas such as walls, ceilings, and soffits.
   2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
   3. Simulate finished lighting conditions for review of mockups.
   4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of gypsum board that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Interior Gypsum Board: Subject to compliance with requirements, provide products by one of the following:
   1. USG Corporation.
   2. National Gypsum Company.
   3. G-P Gypsum.
   4. Or equal (Reference substitution requirements in Section 01 60 00)

B. Sound Control Wall Board: Subject to compliance with requirements, provide products by one of the following:

1. Pabco Corporation.
2. Certainteed
3. Gold Bond
4. Or equal (Reference substitution requirements in Section 01 60 00)

C. Steel Trim Accessories: Subject to compliance with requirements, provide products by one of the following:
   1. Amico.
   2. Or equal (Reference substitution requirements in Section 01 60 00)
   3. Steel Trim Accessories:

2.2 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36 or ASTM C 1396, as applicable to type of gypsum board indicated and whichever is more stringent.

B. Type X:
   1. Thickness: 5/8 inch.
   2. Long Edges: Tapered.

C. Water-Resistant Gypsum Backing Board: ASTM C 630 or ASTM C 1396.
   1. Core: 5/8 inch, Type X.
   2. Use: Toilet rooms and janitor's closets walls with painted finish.
   3. Products:
      a. SHEETROCK Brand Water-Resistant Firecode Core Gypsum Panels by USG.
      b. Gold Bond Brand Moisture-Resistant Fire Resistant Gypsum Board by National Gypsum.
   4. Or equal (Reference substitution requirements in Section 01 60 00)
      a. Steel Trim Accessories:

   5. When Water-Resistant Gypsum Backing Boards are not available (gradual phasing out by manufacturers), provide Moisture- and Mold-Resistant Type X: With moisture - and mold-resistant core and surfaces.
      a. SHEETROCK Brand HUMITEK by USG.
      b. XP Wallboard by National Gypsum.
      c. DensArmor Interior Guard by G-P.
   6. Or equal (Reference substitution requirements in Section 01 60 00)

a. Steel Trim Accessories:

D. Sound Control Gypsum Board
1. Manufactured to ASTM C1278 material standards.
2. Core: 5/8 inch, Type X.
3. Products:
a. Sound Break XP by Goldbond (Basis of Design)
b. Quietrock by Pabco.
c. Silent FX by Certainteed
4. Type and Thickness: Type X, 5/8 inch thick.

E. Impact Resistant Type: ASTM C1278 and ASTM C1629.
1. Core: 5/8 inch, Type X.
2. High-density paperless gypsum and cellulose wall panels with long edges.
3. Products:
a. FIBEROCK Brand VHI panels by USG.
b. Hi-Impact XP Wallboard by National Gypsum.
4. Or equal (Reference substitution requirements in Section 01 60 00)
a. Steel Trim Accessories:

F. Fiber-Reinforced Gypsum Board:
1. Manufactured to ASTM C1278 material standards.
2. Product: Fiberock Brand Aqua-Tough Panel by USG Corp. (Basis of Design)
3. Type and Thickness: Type X, 5/8 inch thick.
4. Description: Abuse resistant, water resistant, mold resistant, fire resistant, environmentally friendly (made from 95% recycled materials), smooth paintable surface.
5. Stud Spacing: Up to 24 inches on center on ceilings with Type X, 5/8 inch thick.
6. Use:
a. On ceilings over sheet waterproofing and with epoxy painted finish.
b. Toilet rooms and janitor’s closets ceilings with epoxy painted finish.

2.4 TRIM ACCESSORIES

A. Trim: ASTM C 1047.
1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:
a. Cornerbead.
b. Bullnose bead.
c. LC-Bead: J-shaped; exposed long flange receives joint compound.
d. L-Bead: L-shaped; exposed long flange receives joint compound.
e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
f. Casing bead; J-shaped; exposed long flange receives joint compound

g. Expansion (control) joint.
h. Curved-Edge Cornerbead: With notched or flexible flanges.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475.

B. Joint Tape: Paper.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

C. Acoustical Sealant: Sheetrock Acoustical Sealant by USG or equal.

D. Thermal and Acoustical Insulation: As specified in Division 7 Section "Building Insulation."

E. Gypsum Board Adhesives: High performance latex-based construction adhesive designed for gypsum board applications.
1. Green Series SW-325 Shear & Drywall Adhesive by OSI.
2. Drywall Adhesive GDWA by Grabberman.
3. Or equal (Reference substitution requirements in Section 01 60 00)
4. Steel Trim Accessories:

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Notify Inspector of Record 48 hrs in advance of when coats of mud are being applied to confirm correct coats.

C. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

D. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

E. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

F. Form control and expansion joints with space between edges of adjoining gypsum panels.

G. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

H. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

I. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension

lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.

3.3 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:
   1. Cornerbead: Use at outside corners, unless otherwise indicated.
   2. LC-Bead: Use at exposed panel edges.
   3. L-Bead: Use where indicated.
   4. U-Bead: Use at exposed panel edges.
   5. Casing Bead: Provide at edges of Gyp. Bd. where material changes occurs or when gyp. bd. butt to windows and/or doors to provide a straight and level finished edge.
   6. Expansion (control) joint.
   7. Curved-Edge Cornerbead: Use at curved openings.

3.4 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Comply with GA 214 for Level definitions.
   1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
   2. Level 2: Panels that are substrate for ceramic tile or acoustical tile.
   3. Level 3: Where indicated on Drawings.
   4. Level 4: At panel surfaces that will be exposed to view with flat paint finish.
      a. Primer and its application to surfaces are specified in other Division 9 Sections.
   5. Level 5: At panel surfaces that will be exposed to view with non-flat paint finish.

a. Primer and its application to surfaces are specified in other Division 9 Sections.

3.5 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 25 00

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SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes acoustical panels and exposed suspension systems for ceilings
   1. 2 X 4 Direct Attached Acoustic Panels (C3)
   2. 2 X 4 Lay-in Acoustic Panels (C4)

B. Related Sections include the following:
   1. Division 7 Section “Joint Sealants” for acoustical sealant requirements.
   2. Division 9 Section “Finish Schedule” for color selection.

1.3 REFERENCES

B. ASTM A513 - Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing.

C. ASTM C635 - Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

D. ASTM C636 - Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.

E. ASTM C641 - Zinc-Coated (Galvanized) Carbon Steel Wire.

F. ASTM E580 - Application of Ceiling Suspension Systems from Acoustic Tile and Lay-in Panels in Areas Requiring Seismic Restraint. (Reference Section 5)

G. ASTM E1264 - Classification of Acoustical Ceiling Products.

H. CCR - California Code of Regulations, Title 24, Part 2, Chapter 25A.

I. DSA - Division of the State Architect.

J. CBC - California Building Code.

K. UL - Underwriters' Laboratories Building Material Directory.

1.4 DEFINITIONS

A. AC: Articulation Class.

B. CAC: Ceiling Attenuation Class.

C. LR: Light Reflectance coefficient.

D. NRC: Noise Reduction Coefficient.

1.5 SYSTEM DESCRIPTION

A. DSA Interpretation of Regulations (IR) Document Metal Suspension Systems for Lay In Panel Ceilings (IR25-2.13) references CBC, Section 2501A.5:

1. Applies to ceiling systems whose total weight, including air conditioning grilles and light fixtures, does not exceed four (4) psf. Heavier systems and those supporting lateral loads from partitions will require special design details.
2. 12 ga. minimum hanger wires may be used for up to and including 4'-0" x 4'-0" grid spacing and shall be attached to main runners.
3. Provide 12 ga. hanger wires at the ends of all main and cross runners within eight (8) inches of the support or within one-fourth (1/4) of the length of the end tee, whichever is least, for the perimeter of the ceiling area. Perimeter wires are not required when the length of the end "T" is eight (8) inches or less. End connections for runners which are designed and detailed to resist the applied vertical and horizontal forces may be used in lieu of the 12 ga. Hanger wires, subject to Division of the State Architect (DSA) review and approval.
4. Provide trapeze or other supplementary support members at obstructions to typical hanger spacing. Provide additional hangers, struts or braces as required at all ceiling breaks, soffits or discontinuous areas. Hanger wires that are more than 1 in 6 out of plumb are to have counter sloping wires.
5. Ceiling grid members may be attached to not more than two (2) adjacent walls per ASTM E580 Section 5.2.3. Ceiling grid members shall be at least 3/4 inch free of other walls. If walls run diagonally to ceiling grid system runners, one end of main and cross runners should be free, and a minimum of 3/4 inch clear of wall.

6. At the perimeter of the ceiling area where main or cross runners are not connected to the adjacent wall, provide interconnection between the runners at the free end to prevent lateral spreading. A metal strut/ stabilizer or a 16 ga. wire with a positive mechanical connection to the runner may be used. Where the perpendicular distance from the wall to the first parallel runner is eight (8) inch or less, this metal strut/ stabilizer or a 16 ga. wire is not required.
7. Provide bracing assemblies consisting of a compression strut and four 12 ga. Splayed bracing wires oriented 90 degrees from each other at the following spacing:
    a. For school buildings, place bracing assemblies at a spacing not more than 12 by 12 feet on center.
    b. For Essential Services Buildings, place bracing assemblies not more than 8 by 12 feet on center.
    c. Provide bracing assemblies at locations not more than 1/2 the spacings given above, from each perimeter wall and at the edge of vertical ceiling offsets. The slope of these wires shall not exceed 45 degrees from the plane of the ceiling and shall be taut. Splices in bracing wires are not to be permitted without special DSA approval.
    d. Lateral force bracing *may* be omitted for all values of S_{SD} suspended acoustical ceiling systems with a ceiling area less than 144 square feet or less, , surrounded by walls which connect directly to the structure above, do not require bracing assemblies when attached to two adjacent walls.
8. Fasten hanger wires with not less than 3 tight turns. Fasten bracing wires with 4 tight turns. Make all tight turns within a distance of 1-1/2 inches. (NOTE: Hanger wire twists between 1-1/2" and 3" are assumed to develop no more than 50% of allowable load for the wire.) Hanger or bracing wire anchors to the structure should be installed in such a manner that the direction of the wire aligns as closely as possible with the direction of the forces acting on the wire.
    a. Wire turns made by machine where both strands have been deformed or bent in wrapping can waive the 1-1/2-inch requirement, but the number of turns should be maintained, and be as tight as possible.
9. Separate all ceiling hanging and bracing wires at least 6 inches from all unbraced ducts, pipes, conduit, etc. It is acceptable to attach lightweight items, such as single electrical conduit not exceeding 3/4-inch nominal diameter, to hanger wires using connectors acceptable to DSA.
10. When drilled-in concrete anchors or shot-in anchors are used in reinforced concrete for hanger wires, 1 out of 10 must be field tested for 200 lbs. in tension. When drilled-in concrete anchors are used for bracing wires, 1 out of 2 must be field tested for 440 lbs. in tension. Shot-in anchors in concrete

are not permitted for bracing wires. If any shot-in or drilled-in anchor fails, see CBC, Section 1923A.3.5.

a. Post-installed anchors (e.g. expansion anchors, screw anchors and power actuated fasteners) shall have a current Evaluation Report acceptable to DSA in accordance with DSA IR-A-5.
b. Drilled-in or shot-in anchors require special DSA approval when used in pre-stressed concrete. *Processing costs and design fees required to process changes will be back-charged to the Contractor thru a deductive change order.*

11. Attach all light fixtures and ceiling mounted air terminals or services, to the ceiling grid runners to resist a horizontal force equal to the weight of the fixtures. A minimum of two (2) screws or approved fasteners are required.
12. Flush, surface-mounted or recessed light fixtures and air terminals or services, weighing less than 56 lbs., may be supported directly on the runners of a heavy duty grid system but, in addition, they must have a minimum of two 12 ga. slack safety wires attached to the fixture at diagonal corners and anchored to the structure above. All 4 x 4 feet light fixtures must have slack safety wires at each corner.
    a. All flush or recessed light fixtures and air terminals or services weighing 56 lbs. or more must be independently supported by not less than four (4) taut 12 ga. wires each attached to the fixture and to the structure above regardless of the type of ceiling grid system used.
    b. The 4 taut 12 ga. Wires including their attachment to the structure above must be capable of supporting 4 times the weight of the unit.
    c. Light fixtures weighing 10#'s or less shall have a minimum of one (1) #12 ga slack safety wire connected from the fixture to the structure above.
13. All fixtures and air terminals or services supported on intermediate duty grid systems must be independently supported by not less than 4 taut 12 ga. wires each attached to the fixture or terminal, and to the structure above.
14. Support surface mounted light fixtures by at least two positive devices which surround the mail ceiling runner and which are each supported from the structure above by a 12 ga. wire. Spring clips or clamps that connect only to the runner are not acceptable.
    a. Provide additional supports when light fixtures are 8'-0" or longer.
15. Support pendant mounted light fixtures directly from the structure above with hanger wires or cables passing through each pendant hanger and capable of supporting 4 times the weight of the fixture. A bracing assembly per Figure 1, is required where the pendant hanger penetrates the ceiling. Special details are required to attach the pendant hanger to the bracing assembly to transmit horizontal forces.
16. Required notes on construction documents:

a. Classification of ceiling grid is heavy duty.
b. Manufacturer's catalog number - main runner.
    i. DX-26 (USG).
    ii. 7301 (Armstrong).
c. Manufacturer's catalog number - cross runner.
    i. DX424 or DX216 (USG).
    ii. XL7341 4 ft cross tee and XL7328 2 ft cross tee (Armstrong).
d. Manufacturer's catalog number of detail for runner splice.
    i. Integral system (USG).
    ii. Same as main runner, 7301. Mains connect together for compression/tension strength (Armstrong).

17. Additional Requirements for Metal Panels. Metal panels and panels weighing more than 1/2 psf, other than acoustical tile, are to be positively attached to the ceiling suspension runners.
18. Suspended Acoustical Ceilings below Gypsum Board Ceilings. Where gypsum board or other ceiling finishes are attached to the framing, special details will be required for the vertical hanger wire and lateral bracing wire support connections to the framing.
19. List of DSA Product Approvals for Suspended Acoustical Ceiling System:
    a. PA-026: Chicago Metallic Suspended Ceiling System.
    b. PA-030: USG Interior (Donn) Suspended Ceiling Grid Systems.
    c. PA-041: Armstrong World Industries Suspended Ceiling System. (Basis of Design)
20. Expansion joints and seismic separations joints:
    a. Expansion joints shall be provided in the ceiling at intersections of corridors and a junction of corridors and lobbies and similar areas.
    b. For ceilings exceeding 2,500 sf, a seismic separation joint shall be provided to divide ceiling areas not to exceed 2,500sf in accordance with ASTM E580, Section 5.2.9.

1.6 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For components with factory-applied color finishes.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
    1. Acoustical Panel: Set of 6-inch- square Samples of each type, color, pattern, and texture.
    2. Exposed Suspension System Members, Moldings, and Trim: Set of 12-inch-long Samples of each type, finish, and color.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical panel ceiling.

E. Research/Evaluation Reports: For each acoustical panel ceiling and components and anchor and fastener type.

F. Maintenance Data: For finishes to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Reference Standards:
1. Title 24 CCR, 2022 Building Standards Administrative Code, Part 1, CBSC.
2. Title 24 CCR, 2022 California Building Code (CBC), Part 2, CBSC
3. Title 24 CCR, 2022 California Electrical Code (CEC), Part 3, CBSC
4. Title 24 CCR, Part 4 - 2022 California Mechanical Code (CMC) (2018 IAPMO UMC, as Amended by CA)
5. Title 24 CCR, 2022 California Energy Code, Part 6, CBSC.
6. Title 24 CCR, 2022 California Fire Code, Part 9, (CFC) (2018 IFC, as Amended by CA.
7. Title 24 CCR, California referenced Standards, Part 12 CBSC.
8. Title 19 C.C.R., Public Safety, SFM Regulations.

B. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:
1. Surface-Burning Characteristics: Provide acoustical panels with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:
a. Smoke-Developed Index: 450 or less.
b. Flame-Spread Classification: CBC 802.2 and Table 8-A.
i. Flame-Spread Rating: Class 1 (0-25).

D. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand the effects of earthquake motions according to the following:
1. UBC Standard 25-2, "Metal Suspension Systems for Acoustical Tile and for Lay-in Panel Ceilings."

E. Installer: Company with five years minimum documented experience, approved by manufacturer.

F. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.10 COORDINATION

A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of acoustical panel ceilings that fails in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
   2. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
      a. Warranty Period: 1 year.

B. Acoustic panels:
   a. Warranty Period: Per manufacturer warranty

C. Installer's Warranty: 1 year.

1.12 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Acoustical Ceiling Panels: Full-size panels equal to 2.0 percent of quantity installed.
   2. Suspension System Components: Quantity of each exposed component equal to 2.0 percent of quantity installed.
   3. Hold-Down Clips: Equal to 3.0 percent of quantity installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acoustical Panels: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Armstrong World Industries, Inc.
   2. BPB Celotex.
   3. Chicago Metallic Corporation
   4. USG Interiors, Inc.
   5. Substitutions: Under provisions of Section 01 60 00.

B. Suspension Systems: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Prelude XL Armstrong World Industries, Inc.
      a. 15/16" Prelude XL Grid
   2. Chicago Metallic Suspended Ceiling System.
   3. USG Interior (Donn) Suspended Ceiling Grid Systems.
   4. Armstrong World Industries Suspended Ceiling System. (Basis of Design)
   5. Substitutions: Under provisions of Section 01 60 00

2.2 ACOUSTICAL PANELS, GENERAL

A. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as

designated by types, patterns, acoustical ratings, and light reflectance's, unless otherwise indicated.

1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.

2.3 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING

A. Acoustical Panels: Mineral fiber, ASTM E 1264 Type III, with the following characteristics:
   1. C3 Invisacoustics by Armstrong World Industries.
      a. Type: Model 1914 – 24 x 48 as indicated on Drawings.
      b. Texture: Smooth
      c. Thickness: Mineral Fiber
      d. Average Light Reflectance: 85 percent, determined as specified in ASTM E 1477.
      e. NRC Range: 0.75
      f. Edge: Square (all sides)
      g. Surface Color: White.
      h. Recycled Content: greater than 50%.
      i. Class A: Flame spread 25 or under (UL Labeled) per ASTM E.
      j. Direct attach
   2. C4 "Ultima" by Armstrong World Industries.
      a. Type: Model 1914 – 24 x 48 as indicated on Drawings.
      b. Texture: Fine.
      c. Thickness: 15/16 inches. Mineral Fiber
      d. Average Light Reflectance: 85 percent, determined as specified in ASTM E 1477.
      e. NRC Range: 0.60, determined as specified in ASTM C 1414
      f. Edge: Beveled Tegular edge.
      g. Surface Color: White.
      h. Recycled Content: 32 to 53%.
      i. Class A: Flame spread 25 or under (UL Labeled) per ASTM E 1264.
      j. Suspension Grid Face: 15/16 inch.

2.4 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.

C. Attachment Devices: Size for 5 times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
   1. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing and inspecting agency.

D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
   1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641, Class 1 zinc coating, carbon steel.
   2. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 12 gauge (0.106") diameter, soft temper. Minimum tensile strength = 70 ksi. Maximum allowable (ASD) tension load for wire meeting this specification is 350#'s.

E. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

F. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch- thick, galvanized steel sheet complying with ASTM A 653, G90 coating designation; with bolted connections and 5/16-inch- diameter bolts.

G. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.

H. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.

I. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in-place.

J. Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches o.c. on all cross tees.

K. Impact Clips: Where indicated, provide manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.

2.5 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING

A. Exposed Steel Suspension System: Formed galvanized steel, commercial quality cold rolled; heavy-duty.
   1. Product: 7301 Prelude XL by Armstrong.
      1. Profile: Tee; 15/16 inch wide face.
      2. Construction: Double web.
      3. Structural Classification: ASTM C 635 Heavy-Duty.
      4. Finish: Factory painted white.

2.6 METAL EDGE MOLDINGS AND TRIM

A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.
   1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.

2.7 ACOUSTICAL SEALANT

A. Comply with requirement of Division 7 “Joint Sealants”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

A. General: Install acoustical panel ceilings to comply with UBC Standard 25-2 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Suspend ceiling hangers from building's structural members and as follows:
   1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
   2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.
   3. Where width of ducts and other construction within ceiling plenum produces hanger spacing that interfere with location of hangers at spacing required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
   4. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
   5. Do not attach hangers to steel deck tabs.
   6. Space hangers not more than 48 inches oc. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
   7. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or post-installed anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
   1. Arrange directionally patterned acoustical panels as follows:
      1. As indicated on reflected ceiling plans.
   2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
   3. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
   4. For reveal-edged panels on suspension system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension system surfaces and panel faces flush with bottom face of runners.
   5. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
   6. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions, unless otherwise indicated.

3.4 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

SECTION 09 65 19 - RESILIENT TILE FOORING

PART 1 - GENERAL

1.1 SUMMARY

A. This section deals with resilient flooring found in the drawings and schedules of the contract that meet the requirements of this section.

1.2 RELATED SECTIONS

A. Section 3 – Cement: not covered in this section.

B. Section 6 – Wood and plastic: not covered in this section.

C. Section 7 – Thermal and humidity protection: not covered in this section.

D. Section 9 – Other sections containing information related to floor finishes: not covered in this section.

1.3 REFERENCES (INDUSTRY STANDARDS)

A. ASTM F 710: Practice for Preparing Concrete Floors to Receive Resilient Flooring.

B. ASTM E 648: Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

C. ASTM E 662: Test Method for Specific Optical Density of Smoke Generated by Solid Materials.

D. ASTM F 1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

E. ASTM F 2170: Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes.

1.4 ITEMS TO DELIVER

A. Provide the product’s Technical Specifications data sheet as well as all installation and maintenance instructions.

B. When required, supply floor drawings and installation plans.

C. Supply a set of samples measuring at least 3 in. (7.5 cm) by 6 in. (15 cm) of the complete range of colors and finishes chosen for the project.

D. When required, provide Manufacturer's attestation, certified by an independent laboratory, confirming that the flooring complies with the fire standards of the following tests:
   1. ASTM E 648; Critical Radiant Flux: 0.45 watts/cm2 or more.
   2. ASTM E 662; Smoke Density: 450 or less.

E. Provide Manufacturer's Warranty Certificate.

1.5 QUALITY ASSURANCE

A. Have flooring installed by an installer qualified in the installation of resilient flooring.

B. In accordance with the installation instructions, use all accessories recommended by Manufacturer when installing its flooring.

C. Follow the instructions specified in the most recent version of Manufacturer's installation instructions.

1.6 DELIVERY, HANDLING, STORAGE

A. Deliver the flooring to the installation site in Shaw Contract's original packaging. Indicate the project name and handling instructions on the outside of the boxes.

B. Advise the carrier of any damaged material and indicate it on the packing slip.

C. Store the flooring inside, sheltered from extreme hot or cold temperatures. Place the material on a smooth level floor or where there is uniform solid support in a clean, dry, well-ventilated area. The long-term storage temperature must be maintained between 65°F (18°C) and 85°F (29°C). Protect adhesive and flooring material from freezing, extreme heat and direct sun exposure.

D. Acclimate the subfloor, all flooring material and adhesive for 48 hours before, during and after the installation by maintaining the room temperature between 65°F (18°C) and 85°F (29°C). The pallets should be unstacked 24 hours prior to use.

E. Afterwards, maintain the room temperature between 65°F (18°C) and 85°F (29°C). Protect the material from direct sources of heat such as air vents and other types of heaters.

F. Install the flooring after all other finishing work, including painting, has been completed.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Shaw Contract, 160 S. Industrial Blvd, Calhoun GA 30701 Telephone 800.241.4494.
Website: Commercial Flooring Solutions | ShawContract
Contact:

B. Substitutions or Equals:
1. Substitutions are allowed only if they meet the following criteria:
a. Acceptance of alternate product(s) that are accepted as equals must be approved by parties (including, but not limited to) that have material interest in the specifications including: Designer, Architect, End-User, and Flooring Contractor.

2.2 MATERIALS

A. DETAILED PRODUCT CONSTRUCTION SPECIFICATIONS

Style Name	Joy Squared – 0993V
Collection	Joy Squared
Product Type	Direct Glue LVT
Overall Thickness	2.5 mm (0.098”)
Wear Layer	20 mil (0.02 mm)
Finish	ExoGuard+®
Size	24” x 24” or 12” x 24”
Square Feet Per Carton	68 sf/ctn
Pounds Per Carton	57.79 lbs/ctn
Installation Method	Direct Glue

Recommended Installation Methods

Brick or Ashlar

Sustainability

Floor Score Floor Score Certified

Country of Origin USA

Environmental Product Declaration 3rd Party Certified in Accordance with ISO 14025, EN 15804, & ISO 21930:2017

Class III, Type B

B. Refer to the product's Technical Specifications data sheet for detailed specifications.

C. Choose from any of ShawContract's complete line of 24 colors

D. All specifications are subject to normal manufacturing tolerances

2.3 ADHESIVE

A. Shaw Contract requires the use of the following adhesives to maintain the product warranty:
   1. S150-95 Resilient Tile Spray
   2. 4200 Resilient Tile 4 Gallon
   3. 4151 Multi-Use Premium 4 Gallon

2.4 OTHER MATERIAL

A. Subfloor repairs: use a good-quality Portland cement-based compound modified with latex that has a minimal resistance to compression of 3500 lbs/sq. in. (246 kg/cm2). to fill, smooth and/or level subfloor imperfections.

B. Self-levelling underlayment: use a Portland cement-based self-levelling underlayment modified with a polymer that has a minimal resistance to compression of 3500 lbs/sq. in. (246 kg/cm2).

PART 3 - EXECUTION

3.1 SITE INSPECTION

A. Examine the subfloor before installation to ensure that the surface is clean, dry, smooth, structurally sound and free from foreign substances that may adversely affect adhesion or cause discoloration. Furthermore, ensure that the subfloor is free of paint, varnish, adhesive, oil, grease, solvent and other foreign substances, including treatment compounds, sealers and curing compounds that may adversely affect adhesion or alter the appearance or durability of the resilient flooring.

B. Verify the surface to ensure there is no powder, scaling or mold. If found remove with a mechanical sander and level with a good-quality Portland cement-based self-levelling underlayment modified with a polymer that has a minimal resistance to compression of 3500 lbs/sq. in. (246 kg/cm2).

C. Slabs that have been either using a curing agent or a sealer will have to be treated to ensure that the adhesion has not been impaired.

D. Do not install on cement slabs that have been subjected to adhesive chemical abatement unless an approved remediation system was used afterwards.

E. Report and rectify all unsatisfactory conditions. Do not start flooring installation until all rectifications have been completed.

3.2 SUBFLOOR PREPARATION

A. Level all rough surfaces and fill cracks and marks with a Portland cement-based patching compound modified with latex.

B. Mechanically remove all surface contaminants such as paint, oil, grease, varnish, adhesive as well as various other products such as treatment compounds.

C. Measure the humidity and pH levels in the cement in compliance with the following standards before installation:
   1. ASTM F 2170, Relative Humidity (RH) test using in situ probes.
   2. ASTM F 710, pH levels (test procedure 5.3.1).
   3. The ASTM test frequency recommendation is 3 measures for the first 1,000 sq. ft. (92.9 sq. m) and one measure for each additional 1,000 sq. ft. (92.9 sq. m).

D. Ensure Moisture, Relative Humidity and pH tests have all been conducted and measurements meet manufacturer’s recommendations.

E. In case of doubt, test the adhesion on the cement subfloor or other surface that will be covered by the flooring. Do the test using the specified flooring and recommended adhesive.

3.3 RESILIENT FLOORING INSTALLATION

A. Install the flooring according to the latest version of Shaw Contract's installation instructions. Use the tools, adhesives, trowel types and procedures recommended in the instructions.

B. Acclimate the subfloor, all flooring material and adhesive for 48 hours before, during and after the installation by maintaining the room temperature between 65°F (18°C) and 85°F (29°C). Afterwards, maintain the temperature between 65°F (18°C) and 85°F (29°C).

3.4 CLEANING AND PROTECTION

A. Remove all excess adhesive immediately after installation as recommended in Shaw Contract's installation instructions.

B. Before allowing traffic after installation, consult and follow the recommendations in Shaw Contract's installation instructions.

C. Following installation and cleanup, if the work of all other trades has not yet been completed, protect the flooring by laying sheets of non-staining brown Kraft paper and then a layer of plywood sheets (rolls of non-staining heavy cardboard material could also be used for protection).

D. Follow the instructions in ShawContract's Maintenance Instructions when performing initial and regular maintenance procedures.

E. Please note that technical website documents prevail.

END OF SECTION 09 65 19

SECTION 09 67 00 - FLUID-APPLIED FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fluid-applied flooring and base.
   1. Medium Duty.

B. Divider strips and accessories.

1.02 RELATED REQUIREMENTS

A. Pertinent sections specifying Concrete Floor Preparation and Concrete Floor Moisture Content.

1.03 REFERENCE STANDARDS

A. ASTM C 307 - Standard Test Method for Tensile Strength of Chemical Resistant Mortar, Grouts, and Monolithic Surfacings.

B. ASTM C 413 - Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.

C. ASTM C579 - Standard Test Method for Compressive Strength of Chemical Resistant Mortar, Grouts, Monolithic Surfacings and Polymer Concretes.

D. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 1998 (Reapproved 2010).

E. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2014.

F. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine, 2004.

G. ASTM D2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact), 2010.

H. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2014c.

I. MIL-PRF-24613A, Performance Specification: Deck Covering Materials, Interior, Cosmetic Polymeric (03 Nov 2007).

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittals, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available . Demonstrate compliance with specified attributes.

C. VOC Submittals:
1. Product Data - VOC Limits: For adhesives sealants, fillers and primers, documentation including printed statement of VOC contents.

D. Qualifications: For Manufacturer and Applicator. Demonstrate compliance with specified attributes.

E. by inch in size illustrating color and pattern for each floor material for each color specified.

F. Manufacturer's Installation Instructions: Indicate special procedures.

G. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Manufacturer’s representative shall be available to advise applicator on proper surface preparation and application techniques.

1.06 MOCK-UP

A. Following review of complete submittals, Provide complete mock-up, 6 feet long by 6 feet wide, illustrating finish color and texture.

B. Locate where directed.

C. Mock-up may not remain as part of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store resin materials in a dry, secure area.

B. Store materials for three days prior to installation in area of installation to achieve temperature stability.

1.08 PROJECT CONDITIONS

A. Sequence cabinet base and wall finish installation prior to fluid flooring to enable installation of integral coved flooring base in a single operation.

B. Coordinate fluid flooring installation with size, location and installation of service utilities.

1.09 FIELD CONDITIONS

A. Maintain minimum temperature in storage area of 55 degrees F.

B. Maintain ambient temperature required by manufacturer 72 hours prior to, during, and 24 hours after installation of materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fluid-Applied Flooring:
1. Tera-Lite, Inc.; www.tera-lite.com
2. Dur-A-Flex.; www.dur-a-flex.com (Basis of Design)
3. Stonhard, www.stonhard.com.

B. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

A. VOC Limits for adhesives sealants, fillers, coatings and primers.

B. Provide Fluid-Applied Flooring with specified adhesion to concrete floors at up to 100% Relative Humidity as measured by ASTM D 2170, in situ probe testing.

C. Fluid-Applied Troweled Flooring System, Medium Duty : Epoxy, polymer modified, water-dispersed cementitious, three component, nominal 3/16 inch thickness.
1. Products:
   a. Tera-Lite; Tera-Gem III Decorative Quality (DQ) Troweled.
   b. Substitutions: See Section 01 6000 - Product Requirements.
2. Components:
   a. Epoxy Primer: Manufacturer's standard penetrating two-component type.
   b. Base Coat: 1/8 inch thick; selected color, three component mortar consisting of epoxy resin, curing agent and finely graded aggregates.
   c. Undercoat (Receiving Coat): 100% solids epoxy formulation, three component, free-flowing.

d. Top Coat: Epoxy, single component; UV resistant, 1/16 inch thick; clear color.
e. Non-slip Surfacing: Quartz Aggregate, manufacturer's standard integral color type, suitable for broadcast application, selected color blend. Install to produce Coefficient of Friction between 0.7 and 0.8

3. Performance Criteria:
a. Tensile Strength: 1,700 psi, when tested in accordance with ASTM D 307.
b. Compressive Strength: 10,000 psi, when tested in accordance with ASTM C 579.
c. Water Absorption: <0.1 percent, when tested in accordance with ASTM C 413 for 24 hr.
d. Mildew Resistance: No growth.
e. Impact Resistance: 60 in/lb; no cracking, chipping or delamination, when tested in accordance with ASTM D2794 or MILPRF24613.
f. Flammability: Self-Extinguishing (Class I) per ASTM E648.
g. Color: Selected from full range of available colors. Minimum of 7 colors in product line.
h. Coefficient of Friction, Installed: 0.60 minimum, wet, measured in accordance with ASTM D2047.

D. Topical Vapor Control Coating for Fluid Flooring: Cementitious, polymer-modified three component, nominal 1/16 - 1/ 8 inch thickness, compatible with fluid-applied flooring. Allow successful installation of fluid applied flooring over concrete of 100 % Relative Humidity as measured by ASTM D2170 in situ probe.
1. Primer: Manufacturer's standard penetrating type.
2. Base Coat: 1/8 inch thick; selected color, polymer-modified mortar consisting of liquid latex resin and finely graded aggregates.

2.03 ACCESSORIES

A. Divider Strips: Zinc, 1/8 inch thick, height to match flooring thickness, with anchoring features; color as selected.

B. Control Joint Strips: Match divider strips; 1/8 inch nominal width, 1/8 inch wide neoprene filler strip between side strips, with anchoring features, strip height to suit flooring thickness.

C. Base caps: Type recommended by manufacturer for conditions required.

D. Cant Strips: Molded of flooring resin material.

E. Primer: Type recommended by manufacturer for substrate and body coats indicated.

F. Patching and Fill Material: Resinous product of or approved by epoxy coating manufacturer and recommended by manufacturer for application indicated.

G. Sealant: manufacturer's recommended type, suitable for conditions required.

H. Cleaners: Heavy-duty industrial detergent, manufacturer's recommended type, suitable for conditions required.

I. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Cementitious Subfloors:
   1. Verify that substrates have been prepared and tested for moisture content and pH as specified in related sections.
   2. Verify preparation of substrate to specified flatness and levelness tolerances as specified in related sections.
   3. Verify substrate has been mechanically cleaned and surface profiled as specified in related sections.

B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of materials to sub-floor surfaces.

C. Verify that sub-floor surfaces are sloped to drain, free of ponding areas or conditions which would impair positive drainage when installation is complete. Flood-test with water to confirm free drainage.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Crack Repair: Repair concrete slab cracks as recommended, using materials recommended by the flooring manufacturer and included in their warranty. Quantity Allowance: One lineal foot of crack repair per square foot of floor installation.

B. Apply, trowel, and float filler to achieve smooth, flat, hard surface with positive drainage configuration. Grind irregularities above the surface level. Prohibit traffic until filler is cured.

C. Vacuum clean substrate.

D. Apply primer to surfaces required by flooring manufacturer.

E. Install topical vapor control coating for fluid flooring complete with primer and recommended accessories at all areas indicated to receive fluid-flooring.

3.03 INSTALLATION - STRIPS

A. Accurately saw cut substrate to install divider strips.

B. Install strips straight and level to locations indicated.

C. Install fillet strips at base of walls where flooring is to be extended up wall as base.

D. Install terminating cap strip at top of base; install "H" or "T" channel configurations as required to suit specific conditions where wall panel finishes abut base; attach securely to wall substrate.

3.04 INSTALLATION - FLOORING

A. Apply in accordance with manufacturer's instructions.

B. Apply each coat to minimum thickness required by manufacturer, free from trowel marks, swirls, pooled glaze or imperfections. Completed mock-up shall serve as appearance and texture standard for completed work.

C. Apply first coat of clear sealer and broadcast aggregate to refusal and allow to cure as required by manufacturer. Sweep off excess aggregate and apply second seal coat to obtain specified thickness and surface finish textures matching approved mockups.

D. Finish to smooth level surface with positive drainage as indicated. No ponding or birdbaths, all surface water flows to drain.

E. Fillet and cove at vertical surfaces.

F. Install sealants at perimeter and transition conditions in accordance with manufacturer's standard details and installation recommendations.

3.05 FIELD QUALITY CONTROL

A. Following manufacturer's recommended curing period, and prior to installation of further work, flood completed floor with water in presence of Owner's Inspector to verify positive drainage.

B. Completed work shall exhibit positive drainage, free from ponding or "birdbaths", with uniform color and texture consistent with the granular character of the flooring material, free of pooled,"swirled", or glazed topcoat, with surface finish textures matching approved mockups.

C. Immediately remove and replace work not conforming to these requirements.

D. Adjust textures at no cost to Owner at locations where finish textures do not match approved mockups:
   1. Too Rough: Apply additional coats of glaze topcoat until texture is acceptable.

2. Too Smooth: Apply additional broadcast of aggregate and lock-in with additional glaze top coat until texture is acceptable.

3.06 PROTECTION

A. Prohibit traffic on floor finish for 48 hours after installation.

B. Barricade area to protect flooring until fully cured.

3.07 SCHEDULE

A. Epoxy Floor Coating - Medium Duty: Total Assembly thickness 3/16 inch (188 mil) minimum.
   1. Surface Preparation - Concrete: SSPC-SP13 / NACE No. 6 Surface Preparation of Concrete, minimum concrete surface profile (CSP) 4-6 per ICRI Technical Guideline 03741, as recommended by Fluid Flooring Manufacturer.
   2. Repair cracks.
   3. Topical Vapor Control Coating: If floor substrate Relative Humidity is outside manufacturer's recommended range, apply Topical Vapor Control Coating to horizontal surfaces, over prime coats as recommended by Manufacturer.
   4. Primer: Apply prime coats to surfaces if recommended by Manufacturer.
   5. Mortar / Slurry Base Coat: 3/16 inch (188 mils) DFT.
   6. Color Finish / Topcoat: Color as selected; 8.0 to 12.0 mils DFT.
   7. Integral Color Aggregate Broadcast to Refusal.
   8. Clear Topcoat, minimum two: 8.0 to 12.0 mils DFT, total.

END OF SECTION 09 67 00

SECTION 09 68 13 – CARPET TILE

PART 1 – GENERAL

1.01 SUMMARY

A. Related Documents: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.02 SUBMITTALS

A. Shop Drawing: Show the following:
   1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
   2. Carpet tile type, color, and dye lot.
   3. Type of subfloor.
   4. Type of installation.
   5. Seam locations
   6. Pattern of installation.
   7. Pattern type, location, and direction.
   8. Installation method (monolithic, quarter turn, ashlar, brick random, interactive patterning).
   9. Type, color, and location of electrical insets and penetrations and borders.
   10. Type, color, and location of edge, transition, and other accessory strips.
   11. Transition details to other flooring materials.

B. Floor schedule using same room designations indicated on drawings.

C. Product Data: For each type of product

   1. Include manufacturer's written specifications and lab documents for any physical testing.
   2. Include installation recommendations for each type of substrate as specified in carpet manufacturer's installation guidelines and/or Carpet & Rug Institute Installation Standard, where applicable.
   3. Include carpet maintenance recommendations as outlined by the carpet manufacturer.
   4. Carpet Manufacturer shall also submit a plan for recycling the specified carpet at the end of the useful life of the carpet.

D. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

   1. Carpet Tile: Full-size Sample.
   2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch long Samples.

E. Manufacturer's Product Warranty.

F. Certifications: Manufacturer to submit copies of the following independent laboratory reports showing compliance with requirements per these methods outlined in Part 2 of this document. Submitted results shall represent average results for production goods of the specified style.
   1. ASTM E-648 Flooring Radiant Panel
   2. ASTM E-662: Smoke Density
   3. AATCC 134: Electrostatic Propensity
   4. ASTM D-3936: Delamination

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications

   1. Company specializing in manufacturing specified carpet with minimum 5 years documented experience.

   2. Upon request, manufacturer to provide representative to assist in project start-up and to inspect installation while in process and upon completion. Representative will notify designated contact if any installation instructions are not followed.

   3. Single Source Responsibility: Obtain each type of product from one source and by a single manufacturer.

B. Installer Qualifications

   1. Flooring contractor must be certified by the manufacturer prior to bid.
   2. An installer with a minimum of 5 years commercial carpet installation experience, and who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.
   3. Flooring contractor to be a specialty contractor normally engaged in this type of work and shall have prior experience in the installation of these types of materials.
   4. Certify payment of Prevailing Wage Rates to the installers.

   5. Flooring contractor possessing Contract for the product installation shall not sub-contract the labor without written approval of the Project Manager.

   6. Flooring contractor will be responsible for proper product installation, including floor testing and preparation as specified by the manufacturer and JOB CONDITIONS herein.

   7. Flooring contractor to provide Owner a written installation warranty that guarantees the completed installation to be free from defects in materials and workmanship for a period of one year after job completion.

1.04 DELIVERY, STORAGE, & HANDLING

A. Deliver materials to the site in manufacturer's original packaging listing manufacturer's name, product name, identification number, and related information.

B. Store in a dry location, between 65 degrees F and 90 degrees F and a relative humidity below 65%. Protect from damage and soiling. Store in pallet form as supplied by Manufacturer. Do not stack pallets.

C. Make stored materials available for inspection by the Owner's representative.

D. Store materials in area of installation for minimum period of 48 hours prior to installation.

1.05 PROJECT CONDITIONS

A. Sub-floor preparation is to include all required work to prepare the existing floor for installation of the product as specified in this document and Manufacturer's installation instructions.

B. Please see Modular Installation & Floor Preparation Instructions for specific requirements for moisture vapor emission rate, ambient conditions, and other requirements.

C. All material used in sub-floor preparation and repair shall be recommended by the carpet manufacturer and shall be chemically and physically compatible with the carpet system being bid.

D. Maintain minimum 65 degrees F ambient temperature and 65% Relative Humidity for 72 hours prior to, during, and 48 hours after installation.

E. Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

1.06 EXTRA MATERIALS

A. Provide additional 5% of each product for attic stock.

PART 2 - PRODUCTS

2.01 RECYCLED CONTENT

A. Product must contain a minimum of 45% recycled content by weight. This percentage is calculated by dividing the weight of recycled content in one square yard of finished product by the total weight of one square yard of finished product, and multiplying by

100. [(Recycle Content Weight) / (Total Product Weight) x 100].

B. Product must contain 28% post-consumer recycled content by weight from recycled post consumer carpet. This ensures that carpet is diverted from landfills for the production of the product and that virgin resource use in the product is reduced.

C. Recycled content must be certified by a neutral, independent, third party organization such as Scientific Certification Systems. Product must carry product label certifying overall recycled content (including post-industrial and post-consumer content). Report percentage of post-industrial and post-consumer recycled content as a percentage of total product weight.

D. Product must be available inclusive of 50% recycled content secondary backing.

1. Recycled content and post consumer content must not be subject to availability. Post industrial and post consumer recycled content of product installed must be the same as those required by Project requirements.
2. Also, Recycled content must be expressed as an exact percentage or a range. Statements such as "up to 60%" recycled content are not acceptable.
3. Manufacturer must fully comply with FTC Part 260 "Guides for the Use of Environmental Marketing Claims," with respect to advertising, labeling, product inserts, catalogs and sales presentations of all its flooring products submitted and sold.

2.02 PRODUCT RECYCLABILITY

A. Product must meet FTC guides for recyclability and Preference will be given to manufacturer's recycling 100 percent of reclaimed carpet tile back into carpet tile with recycled content

B. Recyclability of product installed must be the same as those required by Project requirements.

C. Carpet Disassembly and Recycling: Carpet capable of disassembly and recycling, with nylon being recycled into nylon and backing being recycled into backing.
D. Carpet product must meet guidelines of Presidential Executive Order 13101, and must meet the spirit of section 6002 of the Resource and Recovery Act (RCRA).

2.03 RECYCLING PROGRAM

A. Manufacturer must have a collection and recovery system for product and a fully established, currently operational recycling program at time of bid per FTC guides Section 260.7 (d).
    1. Manufacturer must be able to reclaim and recycle 100% of installed carpet. Like material as installed must be 100% recycled.
    2. Manufacturer must have written guarantee that 100% of the recovered vinyl backed carpet will be recycled and that no portion of the product will be landfilled or incinerated (including waste-to-energy).

2.04 NSF 140-2007 CERTIFICATION

A. Product must be certified at the Platinum level to ANSI standard NSF 140, the Sustainable Carpet Assessment Standard (SCAS). Product certification must be conducted by an independent, third party organization such as Scientific Certification Systems. Provide documentation.
B. Product must be Silver level Cradle to Cradle Certified™ v3.1. Cradle to Cradle Certified is a certification mark licensed by the Cradle-to-Cradle Products Innovation Institute.

2.05 PRODUCT WARRANTY

A. Warranty to be sole source responsibility of the Manufacturer. Second source warranties and warranties that involve parties other than the carpet manufacturer are unacceptable.

B. If the product fails to perform as warranted when properly installed and maintained, the affected area will be repaired or replaced at the discretion of the Manufacturer.

C. Chair pads are not required, but are recommended for optimum textural performance. Absent the use of chair pads, more intensive maintenance will be required for areas in direct contact with chair caster traffic, and some degree of appearance change is to be expected.

D. The non-prorated lifetime limited warranty shall specifically warranty against:
1. Excessive Surface Wear: More than 15% loss of pile fiber weight
2. Excessive Static Electricity: More than 3.0 kV per AATCC 134
3. Resiliency Loss of the Backing: More than 10% loss of backing resiliency
4. Delamination
5. Edge Ravel
6. Zippering

E. Tuft Bind warranty in lieu of edge ravel and zippering is not acceptable.

2.06 FIBER

A. Nylon Fiber: Bulked Continuous Filament (BCF) Nylon in a loop pile construction: TDX Nylon.

B. For yarn containing recycled content, report post consumer and post industrial recycled content of the pile face yarn based on total yarn weight i.e. [(Recycle Content in Pile Face Yarn) / (Total Weight of Pile Face Yarn) x 100]

C. Fiber to contain carbon-core filament for permanent static control. Topical treatments are not allowed.

D. Durable soil protection should be applied to the fiber during product manufacturing to resist fiber soiling.
Application Rate: 2% of Face Weight

2.07 BACKING CHARACTERISTICS

A. Primary Backing: Synthetic Non-Woven.

B. Secondary Backing: Ethos modular with Omnicoat Technology
1. Density (ASTM D-1667): 65 Min. lbs/cu ft +/- 5%
2. Standard Size: 24" x 24"
3. Recycled Content: 50% Recycled Content Secondary Backing
4. Fiberglass Reinforced
5. Face yarn fully fused to secondary backing system that will not delaminate.
6. Delamination: No delamination per ASTM D3936
7. Product must not contain pesticides (US EPA Registered Antimicrobials). Installation adhesives are exempt from this section.

2.08 PERFORMANCE CHARACTERISTICS

A. Test reports for the following performance assurance testing to be submitted upon request. Submitted results shall represent average results for production goods of the referenced style.

B. Requirements listed below must be met by all products.

1. Flooring Radiant Panel
ASTM E-648 / NFPA 253: Class 1 (CRF: 0.45 watts/sq cm or greater)

2. Federal Flammability
CPSC FF 1-70: Passes

3. Smoke Density
ASTM E-662 / NFPA 258: < 450 Flaming Mode

4. Electrostatic Propensity
AATCC 134 (Step & Scuff): 3.0 kV or less

5. Static Coefficient of Friction
ASTM C-1028: Passes ADA Requirements for Accessible Routes (minimum 0.60)

6. Delamination of Secondary Backing of Pile Floor Coverings
ASTM D-3936: No Delamination

7. Lightfastness
AATCC 16E: > 4 @ 100 hours

8. TARR
Severe Traffic: 3.5 minimum

9. Dimensional Stability
Aachen / ISO 2551: Maximum Change +/- 0.149%

11. Moisture Barrier

Moisture Penetration by Impact @ 10 psi: No Penetration of backing after 10,000 impacts

12. Other
As specified in 2.04, 2.05 and 2.06 of this document.

2.09 PRODUCT SPECIFICATIONS

A. Manufactured by Shaw Contract

1. Creative Zone or Set Up Carpet Lines, (Color: TBD)
   A. Construction: Multi-Level Pattern Loop
   B. Gauge: 24
   C. Stitch Rate: 8.0 pile units / inch
   D. Tuft Density: 96.0 tufts/sq inch
   E. Pile Height Average: .187 inch
   F. Pile Thickness: .115 inch
   G. Density Factor (UM44D): 7,513 oz/cu yd
   H. Fiber System: Solution Q Extreme® Nylon, Ecosolution Q100™ Nylon
   I. Dye Method:100% Solution Dyed
   J. R-Value: 0.51 Minimum Hr-ft2-ºF/Btu
   K. Static Coefficient of Friction: Passes ADA requirements.
   L. Static Propensity: AATCC 134: 3.5 kv or less
   M. Flooring Radiant Panel: ASTM E-648 or NFPA 253: Class 1
   N. Acoustic Requirements: Noise Reduction Coefficient (NRC): 0.15 Minimum
   O. Secondary Backing Density: 65 Min. lbs/cu ft +/- 5%
   P. Secondary Backing Recycled Content: 50%
   Q. Total Weight: 101.9 oz/sq yd +/- 5%
   R. Third Party Certification: NSF 140 Platinum rating
   S. Total Product Recycled Content (based on Total Weight): 54.7%
   T. Total Product Post Consumer Content (based on Total Weight): 32.4%
   U. Environmental Impact: No pesticides added to product (US EPA Registered Antimicrobials

B. Substitutes/Alternates

Subject to compliance with all requirements, “or equal” must match the selected colors, have similar aesthetic appearance and tuft density, factory-applied “dry” adhesive, equivalent NSF 140 certification, recycled content certification labels and recyclability. Substitution sample and submittals must be submitted for written approval of quality and color at least ten days prior to bid to be considered. Sample of proposed substitute must be inclusive of both the face and proposed backing (color-only sample not acceptable).

2.10 ACCESSORIES

A. Materials recommended by Manufacturer for patching, leveling, priming, etc.

B. Base, Carpet Edge, and Transition Strips: As specified in applicable sections.

PART 3 EXECUTION

3.01 EXAMINATION / PREPARATION

A. Prepare sub-floor to comply with criteria established in Manufacturer's installation instructions. Use only preparation materials that are acceptable to the Manufacturer.

1. Remove all deleterious substances from substrate(s) that would interfere with or be harmful to the installation.
2. Remove sub-floor ridges and bumps. Fill cracks, joints, holes, and other defects.

B. Verify that sub-floor is smooth and flat within specified tolerances and ready to receive carpet.

C. Verify that substrate surface is dust-free and free of substances that would impair bonding of product to the floor.

D. Verify that concrete surfaces are ready for installation by conducting moisture and pH testing. Results must be within limits recommended by Manufacturer.

E. There will be no exceptions to the provisions stated in the Manufacturer's installation instructions.

3.02 INSTALLATION - GENERAL

A. Install product in accordance with Manufacturer's installation instructions.

B. Product must meet the requirements of CRI's Green Label Plus (GLP) program for carpet. Provide documentation.

C. Adhesive must meet the requirements of CRI's Green Label Plus program for adhesive. Provide documentation.

D. Adhesives must be below the VOC content limits specified by the South Coast Air Quality Management District Rule #1168. Provide documentation.

E. No US EPA registered pesticides (antimicrobials) are to be added to the product. Antimicrobial treatments are registered with the EPA as preservatives of the products only, and no health benefit should be claimed or expected. If antimicrobials are added then third party documentation with a seal is required stating that the pesticides used will cause NO HARM to the occupants. Installation adhesives are exempt from this section.

F. Product as installed to be securely attached to the floor in compliance with Americans with Disabilities Act (ADA), Section 4.5.3.

G. Where demountable partitions or other items are indicated for installation on top of finished carpet tile floor, install carpet tile before installation of these items.

H. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.

I. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

J. Install pattern parallel to walls and borders.

K. Roll with appropriate roller for complete contact of product with adhesive to sub-floor.

L. Trim carpet neatly at walls and around interruptions.

M. Completed product is to be smooth and free of bubbles, puckers, and other defects.

3.03 PROTECTION & CLEANING

A. Perform the following operations immediately after installing carpet tile:
   1. Remove excess adhesive, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
   2. Remove yarns that protrude from carpet tile surface.
   3. Vacuum carpet tile using commercial machine with face-beater element.

B. Protect installed carpet tile to comply with Carpet & Rug Institute Installation Standard, "Protecting Indoor Installations."

C. When construction or move-in activities will continue where new carpet is installed, provide non-staining building material paper to protect carpet. Don’t use plastic sheeting as it can trap moisture, and self-sticking plastic sheeting can transfer adhesive residue to carpet that will attract soil.

D. When heavy objects are moved over carpet within 24 hours of installation, use plywood over carpet to prevent buckling and wrinkling.

E. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION

09 84 00
ACOUSTICAL WALL PANELS

PART 1 - GENERAL

1.01 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.
B. Coordinate the work of this Section with related trades.
C. Verify applicable dimensions at the jobsite.
D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the work required by project conditions.
   1. Acoustical Wall Panels, accessories and installation.

1.02 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.
B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code
   1. Non-residential new construction
      a. All occupancy types
C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.
D. American Society For Testing and Materials (ASTM)
   2. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

1.03 PERFORMANCE, TESTING AND INSPECTION

A. **General:**
   1. Comply with manufacturer's standards.
   2. Comply with Building Code.
   3. Job site inspections shall be done as herein specified and as listed in drawings.
   4. Testing shall be done as herein specified and as listed in drawings.
   5. Refer to Division 1 for additional requirements for DSA projects.

B. **Standards:**

Item	Name of Test	Performance	Testing Std.
Wall & Ceiling Panels	Flame Spread	Class	ASTM E84
	Light Reflectance	.75/.60	
	R-Value	1.75 per 1" thickness	
	Sound Absorption	NRC between .40 & 1.0 depending on membrane and type of acoustical backing	ASTM C428-81
Refer to drawings and as herein specified			

C. **Sustainability:**
   1. Refer to Division 1 sustainability requirements.
   2. Refer to product criteria identified herein.

D. **Construction Testing:**

Item	Name of Test	Performance Results	Testing Std.
[Product/material]	[Test name]	[Performance results]	[ASTM -]
[Product/material]	[Test name]	[Performance results]	[ASTM -]
Water Vapor Emissions per mfgr's recommendations and acceptance of existing substrate			

E. **Construction Testing / Inspection by others:**

Item	Name of Test	Performance Results	By Whom
[Product/material]	[Test name]	[Performance results]	Special Inspector
[Product/material]	[Test name]	[Performance results]	Geotechnical Engineer

F. **Construction Monitoring/Observations by others:**

Item	Name of Test	Performance Results	By Whom
[Product/material]	Const. Waste Management	Comply	Refer to Division 1 for construction waste management and disposal/recycling requirements
[Product/material]	[Test name]	[Performance results]	Special Inspector
[Product/material]	[Test name]	[Performance results]	Geotechnical Engineer

1.04 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.
B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.
C. Refer to Division 1 for sustainability requirements.
D. Submit Manufacturers data and shop drawings:
   1. List materials proposed for use, indicating location for each material. Include complete product data.
E. Submit samples:
   1. Standard color ranges of exposed materials for **Architect's** selection.
   2. Set of 6-inch square samples for each ceiling panel unit required, showing full range of exposed color and texture to be expected in completed work.
   3. Set of 12-inch long samples of each exposed suspension system track and molding.
F. Submit Manufacturer's product specifications and installation instructions for each acoustical ceiling material and suspension system required, including certified laboratory test reports.
   1. Test Data: Submit copies of all applicable data from accredited testing laboratories to substantiate all NRC & flame ratings.
G. Site mock-up, refer to "Mock-Up" heading.

1.05 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.
B. Contractor / Installer shall have been in business for **five (5)** years providing / installing similar size projects and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing similar size projects and complexity.
D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.
B. Deliver materials in original, unopened, protective packaging, with manufacturer's labels indicating brand name, pattern, size, and thickness, legible and intact.
   1. Protect finish and edges in accordance with panel manufacturer's recommendations.
   2. Store material in accordance with panel manufacturer's recommendations.
C. Store materials in original protective packaging to prevent soiling, physical damage or wetting.
D. Store cartons open at each end to stabilize moisture content and temperature.

1.07 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.
B. Do not install interior acoustical ceilings until space is enclosed and weatherproof. Complete installation of damp materials before beginning work.
C. Maintain humidity of 65-75 percent in areas where acoustical materials are to be installed 24 hours before, during and after installation.
D. Maintain a uniform temperature in the range of 55 to 70°F prior to and during installation of materials.

1.08 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.
B. Finish work defaced with other materials on surface shall be replaced.
C. Protect work under this section from damage by other trades.

1.09 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.
B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.
   1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.
C. Furnish manufacturer's additional [Fill in years] (fill in number) year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.
   1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner.**

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:
   1. Mechanical (Air Supply and Return Devices/grills. Etc.): Division 15.
   2. Electrical (Light Fixtures, outlets, switches, etc): Division 16.
B. Related Sections include, but are not limited to the following:
   1. Division 1
   2. Section 06 20 00 – Finish Carpentry

3. Section 09 29 00 – Gypsum Board & Sheathing Substrates
4. Section 09 90 00 – Painting

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:
   1. Complete instructions regarding maintenance of the materials, finishes, etc.
   2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.
B. Schedule required testing, prior to the installation of materials, components, etc.

1.13 EXTRA MATERIAL

A. Submit as part of project closeout:
   1. Provide extra material for each product type, color, finish, etc. in same lot as installed product.
      a. Furnish extra panels for each type of unit installed in quantities equal to not less than one percent (1%) of total installed area, and at least one (1) full, unopened carton.
      b. Furnish extra stock for each type and color of panel covering installed in quantities equal to not less than one percent (1%) of total installed area, and at least three (3) square yards.
   2. Provide extra material in unopened fully labeled containers.
      a. Mark boxes with manufacturer's name, color pattern, thickness & label "Extra Stock for Repairs".
B. Furnish written certification that extra materials supplied have been inspected and confirmed to be the same as those used in the Work.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.
B. Acceptable manufacturers shall be one of the following and as listed herein and in Drawings:
   1. Panels:
      a. Claridge Home - Claridge Products
   2. Reviewed Equivalent by **Architect**.
      a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
      b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
      c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.
C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.
D. Refer to drawings, details, and other related specification section whether listed or not.
E. Details shall set basic requirements for size and configuration of systems.

2.02 MATERIALS

A. Schedule:

1. Tackable Wall Panels:
   a. Panel: (Prefinished factory assembled panels:)
      1. Mfgr: Claridge
         a. COLOR: Guilford of Maine – Color Quartz 1691
   b. Panel:
      1. Mfgr: Claridge – TW2D
         a. Type: Acoustical Walls
            1. General:
               a. Core type: Duracore Panel
               b. Core thickness: Varies, select for specific panel type
               c. Edge: Edge wrapped panel
               d. Trim: Aluminum Trim
               e. Finish/color: Guilford of Maine – 1691 Quartz

2.03 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - EXECUTION

3.01 INSPECTION/EXAMINATION

A. Verification of Conditions:
   1. Examine areas and conditions under which work is to be performed.
   2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.
B. Surface:
   1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.
   2. Sub-surface allowable tolerance shall not be greater than 1/8 inch in 10 feet for level, warp and bow in ceilings & tolerances variation shall not be collective.

3.02 COORDINATION

A. Refer to Division 1 for project coordination requirements.
B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.03 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.
B. Take all necessary measurements in the field to ensure proper dimensions.
C. Layout reveals to be true and square and coordinate with panel layout.

3.04 MOCK-UP

A. Erect at location approved by **Architect**.
   1. Mock-up shall not be part of final construction once approved by **Architect**.

2. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings.

B. Mock-up
1. Size: 1 Panel

3.05 INSTALLATION

A. General:
1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
2. Install each roll in sequential numeric order and install each strip in the same order it is cut from the roll.
a. Panels shall be installed in order and alignment to match this organization.
b. Fabric shall run in same direction unless noted otherwise.

B. Reveals:
1. Reveals shall be installed with full length pieces and butt joints shall only occur at intersections and end pieces using Flannerys' grid system.
2. Provide intersections.
3. Install using prefabricated intersections or prefabricated grid system with factory cutouts for seamless type intersections.
4. Install without exposed fasteners.
5. Install with structural adhesive to full backing.

3.06 ADJUSTING AND CLEANING

A. Following installation, clean dirty and/or discolored surfaces of units and leave tile free of defects.
B. In the event of damage, make all repairs and replacements necessary to the approval of the **Architect** at no additional cost to the **Owner**.

3.07 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.
B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.
C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.
D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner.**
F. After completion of work in this section, remove all erection equipment and implements of service, and debris.
1. Leave entire area in a neat, clean, acceptable condition.
G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.
H. Provide record drawings in accordance with Division 1 closeout submittal procedures.
I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION

SECTION 09 84 33 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes acoustical panels and exposed suspension systems for ceilings
   1. Sliding stacked dividers

1.3 REFERENCES

B. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

C. ASTM E 84/CAN/ULC S102 Standard Test Method for Surface Burning Characteristics of Building Materials.

D. NFPA 701 (2010; Small Scale Test) Standard Methods of Fire Tests for Flame Resistant Textiles and Films

E. NFPA 705 Recommended Practice for a Field Flame Test for Textiles and Films.

F. SIN 722-06 Flammability Requirements for Fire Retardant Trees and Plants.

G. Title 19 California State Fire Marshal minimum requirements for flame resistance products identified in Section 13115, California Health and Safety Code.

H. NF X 70-100 (1986, Tube Furnace Method) Fire Test for Analysis of Pyrolysis and Combustion Gasses. Evaluation of Toxic Fumes.

I. CCR - California Code of Regulations, Title 24, Part 2, Chapter 25A.

J. DSA - Division of the State Architect.

K. CBC - California Building Code.

L. UL - Underwriters' Laboratories Building Material Directory.

1.4 SUBMITTALS

A. Product Data: Submit Data sheet or Manufacturer Documentation for each product showing dimensions, materials, and colors.

B. Shop Drawings: Submit shop drawings of site plans showing details of construction, product configuration, and related construction.

C. Verification Samples: Submit samples of each chosen material and color.

1.5 QUALITY ASSURANCE

A. Reference Standards:
1. Title 24 CCR, 2019 Building Standards Administrative Code, Part 1, CBSC.
2. Title 24 CCR, 2019 California Building Code (CBC), Part 2, CBSC
3. Title 24 CCR, 2019 California Electrical Code (CEC), Part 3, CBSC
4. Title 24 CCR, Part 4 - 2019 California Mechanical Code (CMC) (2018 IAPMO UMC, as Amended by CA)
5. Title 24 CCR, 2019 California Energy Code, Part 6, CBSC.
6. Title 24 CCR, 2019 California Fire Code, Part 9, (CFC) (2018 IFC, as Amended by CA.
7. Title 24 CCR, California referenced Standards, Part 12 CBSC.
8. Title 19 C.C.R., Public Safety, SFM Regulations.

B. Single-Source Responsibility: Provide acoustical components and installation components by a single manufacturer.

C. Installer: Company with five years minimum documented experience, approved by manufacturer.

D. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

E. Coordination of Work: Coordinate acoustical component work with installers of related work including, but not limited to light fixtures, mechanical systems, electrical systems, and sprinklers.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical components to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.6 PROJECT CONDITIONS

A. Space Enclosure:
Acoustical Components: All wet work must be complete and dry prior to installation. Installation shall be carried out where the temperature is between 60 degrees F and 100 degrees F. These temperature conditions must be maintained for optimal component lifespan.

1.7 COORDINATION

A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of acoustical panel ceilings that fails in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
   2. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
      a. Warranty Period: 1 year.

B. Acoustic panels:
      a. Warranty Period: Per manufacturer warranty

C. Installer’s Warranty: 1 year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acoustical Panels: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
1. CSI Creative
Location: 9901 W 74th St, Eden Prairie, MN 55344
Phone: 800-213-0653
Email: info@csicreative.com
Web Address: www.csicreative.com
2. Substitutions: Under provisions of Section 01 62 00.

2.2 SOUND ABSORBING DIVIDERS

A. Basis-of-Design:
1. Stackable Dividers by CSI Creative www.csicreative.com

B. Materials:
1. Soundcore® 100 percent recyclable12mm PET, 60 percent recycled content.

C. Panel color:
To be coordinated with the Architect; assume two (2) colors.

D. Edge:
Exposed

E. Attachment Method:
Sliding system with rubber wheel stoppers; two tracks mounted side by side on a steel angles; two panels per track.

F. Properties:
a. Acoustic Performance: NRC (ASTM C423): 0.45 - 1.55 varies by design.

b. Burning Characteristics: ASTM E-84 Class A.

2.3 METAL TRACK CASING

A. Roll-Formed, Sheet-Metal Casing: Type and profile indicated or, if not indicated, manufacturer's standard powder coated casing which responds to design requirements; formed from sheet metal of same material, finish, and color as that used for exposed U-channel on felt panel below.

2.4 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel track and sliding system attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

A. Clean substrates and attachment points of dirt, oils, and other substances that could cause issues during installation

B. Install units in accordance with manufacturer's instructions and approved submittals.

3.4 ADJUSTING AND CLEANING

A. Replace damaged or broken components.

B. Adjust units for proper position, uniform appearance and operation.

C. Clean exposed and semi-exposed surfaces using materials acceptable to the manufacturer.

D. Maintenance of components should consist of:

i. Blot spills from material quickly. Wipe with a damp cloth. If stain persists, apply small quantities of carpet or upholstery shampoo solution with a damp cloth (test on inconspicuous location first). Blot well with a clean cloth after each application. Avoid excessive amounts of water. Ensure adequate ventilation if the product is subject to excessive moisture.

3.5. WASTE MANAGEMENT

A. A. Waste Management

i. Coordinate recycling of waste materials with Section 01 74 19 - Construction Waste Management and Disposal.

ii. Collect recyclable waste and dispose of or recycle field generated construction waste created during demolition, construction or final cleaning.

iii. Remove recycling containers and bins from site.

3.6. PROTECTION

A. Protect finished installation from dust and damage from subsequent and ongoing construction activity.

END OF SECTION 09 51 13

SECTION 10 14 19 DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.01 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, Division 0 and Division 1 requirements apply to the work of this Section.
B. Coordinate the work of this Section with related trades.
C. Verify applicable dimensions at the jobsite.
D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:
   1. Exterior Monument Sign.

1.02 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.
B. Title 24, California Code of Regulations, California Building Standards Commission
C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.
D. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission
E. Title 24, Chapter 11 – California Green Building Standards Code
   1. Non-residential new construction
      a. All occupancy types

1.03 PERFORMANCE, TESTING AND INSPECTION

A. **General:**
   1. Comply with manufacturer's standards.
   2. Comply with Building Code.
   3. Job site inspections shall be done as herein specified and as listed in drawings.
   4. Testing shall be done as herein specified and as listed in drawings.
   5. Refer to Division 1 for additional requirements for DSA projects.

B. **Sustainability:**
   1. Refer to Division 1 sustainability requirements.
   2. Refer to product criteria identified herein.

1.04 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.
B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.
C. Refer to Division 1 for sustainability requirements
D. Submit the following for **Architect's** review:
   1. Manufacturer product data and technical data sheets
   2. Shop drawings:
      a. Plans, sections, and elevation views of all sides; information to include, but not be limited to:

1. Overall Size
2. Letters – style/text type, size, color and finish
3. Numbers – style/text type, size, color and finish
4. Text schedule
5. Electrical and Lighting components
6. Mounting and Installation Instructions
7. Footings and mix designs, when applicable

3. Samples:
   a. 4" x 6" Samples of each type of individual letter, number and general sign surface materials and finishes
      1. Where color selection is required, provide color samples for **Architect's** selection of signage colors.
   b. Samples of each type of cast, cut or engraved letters, numbers, or monolithic sign

E. Mock-up
   1. Provide mockup of dimensional letter signage in each type and mounting configuration.
      a. Erect at location approved by **Architect**.
   2. Mock-up shall be part of final construction once approved by **Architect**.

1.05 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.
B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.
C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.
B. Deliver and store products suitable wrapped or packaged to protect against damage. Do not remove protective coverings until time of installation.
   1. Protect finish and edges in accordance with panel manufacturer's recommendations.
   2. Store material in accordance with panel manufacturer's recommendations.

1.07 JOB CONDITIONS

A. Field-verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

1.08 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.
B. Finish work defaced with other materials on surface shall be replaced.
C. Protect work under this section from damage by other trades.

1.09 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.
B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.
   1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner.**

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:
   1. Site Work, Parking, Flatwork, etc.
   2. Finish grading
   3. Landscaping
   4. Site lighting
B. Related Sections include, but are not limited to the following:
   1. Division 1
   2. Section 03 30 00 – Cast in Place Concrete
   3. Section 08 41 00 – Aluminum Entrances and Storefronts
   4. Section 09 29 00 – Gypsum Board
   5. Section 09 90 00 – Painting and Coating

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:
   1. Complete instructions regarding maintenance of the materials, finishes, etc.
   2. Refer to Division 1 for closeout submittal procedures.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.
B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:
   1. Signage Manufacturer:
      a. Western Sign Company, Inc, www.westernsign.com, Diamond Springs, CA
      b. Signs and Graphic Design, www.singsandgraphic.com, Chico, CA
      c. Pacific Neon, www.pacificneon.com, Sacramento, CA
   2. Reviewed Equivalent by **Architect**.
      a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
      b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
      c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.
C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.
D. Refer to drawings, details, and other related specification section whether listed or not.
E. Details shall set basic requirements for size and configuration of systems.

2.02 MATERIALS – DIMENSIONAL LETTERS

A. **Sign Type BI-1**
B. Materials:
   1. Clear Anodized Aluminum
   2. Painted Aluminum
C. Lighting:
   1. None
D. Character style (letters and numerals):
   1. Channel – fabricated three-dimensional characters
   2. Flat Cutout characters – dimensional character cut from sheet or plate stock
E. Sign Schedule:
   1. Sign "BI-1"
      a. To read: "Meadow Homes Elementary School"
      b. Font Style: Arial
      c. Height: 24"
      d. Depth/Thickness: 1"
      e. Font Style, Size and Text to be verified with **Architect** and **Owner** prior to fabrication.
      f. Mounting:
         1. Individual Pin Mounted Letters
            a. Cast-in
            b. Welded
            c. Mechanically Fastened
         2. Internally Lit, Individual Pin Mounted Letters
            a. Cast-in
            b. Welded
            c. Mechanically Fastened
         3. Pin Mounted connected letters/numerals
            a. Cast-in
            b. Welded
            c. Mechanically Fastened
         4. Internally Lit, Pin Mounted connected letters/numerals
            a. Cast-in
            b. Welded
            c. Mechanically Fastened
         5. Refer to drawings for location and substrate information.
   2. Sign "BI-2"
      a. To read: "Building __" (refer to site plan for building #)
      b. Font Style: Arial
      c. Height: 18"
      d. Depth/Thickness: 1"
      e. Font Style, Size and Text to be verified with **Architect** and **Owner** prior to fabrication.
      f. Mounting:
         1. Individual Pin Mounted Letters
            a. Cast-in
            b. Welded
            c. Mechanically Fastened

2. Internally Lit, Individual Pin Mounted Letters
    a. Cast-in
    b. Welded
    c. Mechanically Fastened
3. Pin Mounted connected letters/numerals
    a. Cast-in
    b. Welded
    c. Mechanically Fastened
4. Internally Lit, Pin Mounted connected letters/numerals
    a. Cast-in
    b. Welded
    c. Mechanically Fastened
5. Refer to drawings for location and substrate information.

F. Logos:
    a. Artwork to be provided by **Owner**
        1. Logo, Font Style, Size, and Text to be verified with **Architect** and **Owner** prior to fabrication.
    b. Mounting:
        1. Individual Pin Mounted Letters
            a. Cast-in
            b. Welded
            c. Mechanically Fastened
        2. Internally Lit, Individual Pin Mounted Letters
            a. Cast-in
            b. Welded
            c. Mechanically Fastened
        3. Pin Mounted connected letters/numerals
            a. Cast-in
            b. Welded
            c. Mechanically Fastened
        4. Internally Lit, Pin Mounted connected letters/numerals
            a. Cast-in
            b. Welded
            c. Mechanically Fastened
        5. Refer to drawings for location and substrate information.

PART 3 - EXECUTION

3.01 INSPECTION/EXAMINATION

A. Verification of Conditions:
    1. Examine areas and conditions under which work is to be performed.
    2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective installation or cause latent defects in workmanship.

3.02 COORDINATION

A. Refer to Division 1 for project coordination requirements.
B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.03 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.
B. Take all necessary measurements in the field to ensure proper dimensions, layout and location of sign.
C. Coordinate work under this Section with other trades whose work adjoins, combines, or aligns with it including, but not limited to:
   1. Lighting.

3.04 INSTALLATION

A. Prior to installation, carefully inspect and verify that the installed work of other trades is complete to the point where this installation may properly commence.
B. Verify that specified items may be installed in accordance with the approved design.
C. Sign shall be installed in concrete footing and in compliance with plan details.
D. Sign shall be constructed in accordance with reviewed Shop Drawings.

3.05 ADJUSTING AND CLEANING

A. Remove all dust, dirt, finger marks, etc. from finishes, characters and numerals, as recommended by manufacturer.
B. Keep area / site free from accumulated waste materials, rubbish and debris resulting from work identified herein.
   1. Upon completion of said work, remove tools, appliances, surplus materials, waste materials, rubbish, debris and accessory items used in or resulting from said work, and legally dispose of off-site.

3.06 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.
B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.
C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.
F. After completion of work in this section, remove all erection equipment and implements of service, and debris.
G. Leave entire area in a neat, clean, acceptable condition.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.
I. Provide record drawings in accordance with Division 1 closeout submittal procedures.
J. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION

SECTION 23 00 00 - MECHANICAL GENERAL REQUIREMENTS

PART 1 – GENERAL

1.1 CONDITIONS AND REQUIREMENTS

A. Refer to the General Conditions, Supplementary Conditions, and Division 01 General Requirements.

1.2 SCOPE OF WORK

A. Provide all labor, apparatus, and materials that are required to provide a complete installation as indicated on the drawings and in the specifications, including that reasonably inferred for proper execution of this Division.

B. Consult all other Sections to determine the extent of this work specified elsewhere.

C. Coordinate all utility requirements for equipment furnished under this Division. Rough-in required systems and make final connections.

1.3 REGULATIONS AND STANDARDS

A. Install all work to meet or exceed requirements prescribed by governmental bodies having jurisdiction and in accordance with all federal, state, and local codes and ordinances, and all OSHA requirements. These codes include, but are not limited to the latest applicable edition of the following:

1. California Building Code
2. California Electrical Code
3. California Plumbing Code
4. California Mechanical Code
5. California Energy Code
6. California Green Buildings Standard
7. California Fire Code
8. National Fire Protection Association

1.4 QUALITY ASSURANCE

A. Comply with current governing codes, ordinance and regulations of the Authority Having Jurisdiction and the regulations and requirements of the Owner's insurance underwriter.

B. Where requirements differ between drawings, specifications, codes and standards, apply the more stringent.

C. Should any change in drawings or specifications be required to comply with governing regulations, notify the Architect prior to submitting bid.

D. After contract is awarded, if minor changes or additions are required by the aforementioned authorities, even though such work is not shown on drawings or overtly covered in the specifications, they shall be included at the Contractor's expense.

E. Execute work in strict accordance with the best practices of the trades in a thorough, substantial, skillful and well-executed manner by competent workers. Provide a competent, experienced full-time Superintendent who is authorized to make decisions on behalf of the Contractor.

F. The Architect or Architect's Representative may conduct unannounced field reviews of any work completed or in progress. A report will be issued for all items that are found to be inconsistent with the contract documents. All items in the report shall be addressed in writing by the Contractor within two (2) weeks.

1.5 SAFETY

A. Contractors must conduct a weekly safety meeting with their employees and maintain documentation of attendance and topics of discussion. Contractor shall comply with all OSHA regulations. Contractor is required to obtain and pay for insurance required to cover all activities withing Contractor's scope of work.

1.6 PERMITS, FEES, AND UTILITIES

A. Secure and pay for all permits, licenses, inspections, and fees required.

B. Coordinate with other Sections and schedule sequence of accomplishing the work in such a manner as not to interrupt existing services and utilities at a time that will inconvenience the Owner. Provide Owner a minimum 48 hour notice when utilities will be interrupted.

1.7 PAINTING

A. See Division 09 for painting.

1.8 COORDINATION

A. Coordinate with work performed by other Sections in order to ensure adequate space and proper location of all necessary work on this project whether or not work is under this Section. Coordination shall be done prior to order or manufacture of any systems or components.

B. At a minimum, coordinate location of each piece of equipment, requirements for access panels, space required for supports, power requirements for each piece of equipment, and control requirements for each piece of equipment.

C. Coordination meetings shall happen within the first two weeks of construction start. Coordination meeting minutes shall be submitted to the Architect for review.

D. Prepare complete set of construction coordination shop drawings indicating equipment actually purchased and exact routing of all piping and ductwork. Requirement for coordination shop drawings shall not be construed as authorization for contractor to make unauthorized changes to Contract Documents. Prior to final acceptance, contractor shall submit the coordination shop drawings as part of the record drawings.

E. Wherever the work is of sufficient complexity, prepare additional detail drawings to scale to coordinate the work with the work of other trades. At completion, include a set of these drawings with the record drawings.

F. Install the work in cooperation with other trades. Before installation, make proper provisions to avoid interferences.

G. No additional costs will be considered for work which has to be relocated due to conflicts with other trades or for additional equipment/parts that need to installed due to a lack of coordination prior to, or during, construction.

PART 2 – PRODUCTS

2.1 EQUIPMENT AND MATERIALS

B. Provide products and materials that are new, clean, free of defects, damage and corrosion. Inspect all materials and remove defective materials from the site.

C. Provide materials and equipment bearing the label of, or listed by, the Underwriter's Laboratories (UL), unless the material or equipment is of a type for which label or listing service is not provided.

D. Furnish all materials and equipment of the same type by the same manufacturer.

E. Statically and dynamically balance rotating equipment for minimum vibration and lowest operating noise level.

2.2 ALTERNATE EQUIPMENT AND MATERIALS

A. No substitute materials or equipment may be installed without the written approval of the Architect.

B. Contract documents are based on materials specified and equipment manufacturers indicated. Acceptance of alternative equipment manufacturers does not relieve Contractor of the responsibility to provide equipment and materials which meet the quality and performance stated or implied in the contract documents.

C. All submittals for substitution must include comparison to show equal with scheduled equipment. Submit proposals to supply alternate materials or equipment, in writing, with sufficient lead time for review prior to the date equipment must be ordered to maintain project schedule.

D. No increase in the contract price will be considered to accommodate the use of alternative equipment, including revisions required by other trades.

2.3 SUBMITTALS

A. Submit shop drawings, manufacturer's data, samples and test reports as specified.

B. The review of submittals is for general compliance with the design concept and contract documents. Comments or absence of comments does not relieve the Contractor/Vendor/Manufacturer from compliance with the contract documents. The Contractor remains solely responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of construction, for performing the work in a safe manner, and for coordinating the work with that of other trades.

C. No part of the work shall be ordered, procured, or installed until that work has been submitted, reviewed, and returned without comment.

D. Items indicated in submittal comments shall be provided and installed by contractor.

E. The Engineer and/or Architect shall review the submitted documents for general conformance with the design concept of the project. The review does not relieve the Contractor of the responsibility of deviations from the requirements stated in the contract documents.

F. The Engineer's and/or Architect's review shall not be construed as a completed detailed check of the work submitted, nor shall it relieve the Manufacturer or Contractor of responsibility for errors or omissions of any sort or from the necessity of furnishing any work required by the contract documents.

G. Submittals are not reviewed for quantities, dimensions, weights, fabrication processes, construction methods, coordination with work of other trades, construction safety practices, service clearance, location of control and electrical panels, and other layout constraints. These items shall remain the sole responsibility of the Contractor.

H. A minimum period of ten (10) working days will be required in the Engineer's office each time a submittal is sent for review. Contractor shall prioritize submittal reviews where multiple submittals are sent for review. This time period must be considered by the Contractor in the scheduling of the work.

I. Submittals will be returned to indicate appropriate action taken as follows:

1. No Exceptions Taken.
2. Make Corrections Noted. No Resubmittal Required.
3. Revise and Resubmit.
4. Rejected.
5. Not Reviewed.

J. Use electronic form acceptable to Architect for electronic submittals, containing the following information:

1. Project name.
2. Date.
3. Name and address of Architect and Engineer.
4. Name of Owner.
5. Name, address and contact information of Contractor.
6. Names and contact information of sub-contractor, manufacturer, and supplier.
7. Name of entity that prepared submittal.
8. Category and type of submittal.
9. Specification Section number and title.
10. Drawing number and detail references, as appropriate.
11. Transmittal number, numbered consecutively and revision number clearly identified.

12. Each item submitted labeled or identified the same as on the drawings.

K. Identify each sheet of submittal pages (using arrows, underlining or circling) to show applicable sizes, types, model numbers, ratings, capacities and options actually being proposed. Cross out non-applicable information.

L. Organize submittals to keep all related items together; break submittal into sections and provide appropriate identifying tags on submittal pages to indicate item being submitted.

M. Submit all items related to specification section in single submittal file. Partial submittals will be deemed incomplete and not reviewed.

N. Inadequate or incomplete submittals will not be reviewed and will be returned to the Contractor for resubmittal.

O. Place orders for all equipment in time to prevent any delay in construction schedule or completion of project. No additional costs will be considered for any special handling charges or expedited processing required for materials or equipment not ordered in time.

2.4 REQUEST FOR INFORMATION

A. While every effort has been made to coordinate the locations of equipment covered under other sections or divisions of these specifications, it is the responsibility of the Contractor to coordinate the exact requirements governed by actual job conditions. Check all information and report any discrepancies before submitting bid or fabricating work.

B. Report discrepancies in time to avoid unnecessary work, and make changes as directed by the Architect.

C. Do not make changes or additions that are subject to additional compensation without written authorization, based upon an agreed price. Any changes made without the above-mentioned authorization shall be at Contractor's own risk and expense.

D. Follow manufacturer’s instructions where they cover points not specifically indicated. However, if they are in conflicts with these drawings and specifications, obtain clarifications from the Architect before starting work.

E. All requests for information shall be accompanied with Contractor’s proposed solution.

PART 3 – EXECUTION

3.1 EXAMINATION OF SITE

A. The Contract Documents do not make representations regarding the character or the extent of the subsoils, water levels, existing structural, mechanical, plumbing, and electrical installations, above or below grade, or other sub-surface conditions which may be encountered during the work.

B. Evaluate existing conditions that may affect methods or cost of performing the work, based on examination of the site or other information. Failure to examine the Drawings or other information does not relieve the Contractor of responsibility for satisfactory completion of the work.

3.2 DRAWINGS

A. Drawings show general arrangement and location of ductwork, piping, and equipment. Drawings are diagrammatic and intended to show approximate location and routing. Dimensions on drawings shall take precedence over scaled dimensions on drawings. Allow for supports, expansion, and pitch of ducts and piping. Field verify all dimensions.

B. The exact locations of equipment, ducts, piping, and registers shall be ascertained from the Architect or the Owner's representative in the field. The Architect reserves the right to make minor changes in the location of ducts, registers, piping, and equipment up to the time of installation without additional cost.

C. Furnish and install any incidental work not shown or specified which can reasonably be inferred as part of the work and necessary to provide a complete and workable system. This includes any wiring of sensors, switches, etc.

D. Execute any work or apparatus shown on the Drawings and not specifically mentioned in the Specifications, or vice versa. Omission from Drawings or Specifications of any minor details of construction, installation, materials, or essential specialties does not relieve Contractor from furnishing complete workable system.

3.3 RECORD DRAWINGS

A. Contractor shall maintain a complete set of documents on site that are marked up during the construction process indicating all changes that have been made. Record drawings shall be maintained up to date throughout construction. Indicate clearly all work installed differently from that shown.

B. Upon completion of work, certify all record drawings with a stamp including the date and name of Contractor. Submit one (1) complete, bookmarked, set of electronic record drawings to the Architect for final review.

C. Record drawings must include the following as a minimum:

1. Actual equipment locations.
2. Revisions or substitutions to equipment schedules.
3. Duct/pipe size and routing.
4. Dimensional changes to drawings.
5. Revisions to details shown on drawings.
6. Changes made by RFIs, Addenda, or Change Orders.
7. Locations of access panels and shut-off valves.
8. Locations and depths of underground utilities.
9. Controls sequence of operations.

3.4 PROTECTION OF BUILDING

A. Protect new and existing building structures and adjacent finished surfaces during construction. Patch, repair, and refinish existing work damaged by work under this Division to match adjacent undisturbed areas.

3.5 DELIVERY, DRAYAGE AND HAULING

A. Include all drayage, hauling, hoisting, shoring and placement in the building of equipment specified and be responsible for the timely delivery of equipment to the project as required by the construction schedule.

B. Provide proper protection and storage of all items and tools required.

C. If equipment is not delivered or installed at the project site in a timely manner as required by the construction schedule, the Contractor shall be responsible for disassembly, re-assembly, manufacturer's supervision, shoring, general construction modification, delays, overtime costs, etc. at no additional cost to the Owner.

3.6 EQUIPMENT AND MATERIAL PROTECTION

A. Protect the work, equipment, and material of other trades from damage by work or workers of this trade, and correct damage caused without additional cost to the Owner.

B. The Contractor shall be responsible for all work, materials, and equipment until finally inspected, tested, and accepted. Protect work against theft, injury, or damage. Carefully store material and equipment received on site that is not immediately installed.

C. Cover open ends of work with temporary covers or plugs during construction to prevent entry of dust, dirt, water or other obstructing material. Cover and protect equipment and materials from damage due to water, humidity, paint, spray-on fireproofing, construction debris, etc. Store equipment subject to moisture damage, such as insulation or electrical components in dry, heated spaces.

D. Provide adequate means for fully protecting finished parts of the materials and equipment against damage from whatever cause during the process of the work until final acceptance.

E. Do not install damaged items. Take immediate steps to obtain replacement or repair. Replace all wet or damp insulation or acoustic lining.

3.7 QUALITY OF WORK

A. The quality of work shall be of a standard generally accepted in the respective trade. Use only experienced, competent, and properly equipped workers. Replace work falling below this standard as directed by the Architect.

B. Systems shall be worked into a complete and integrated arrangement with like elements arranged neatly with adequate head room and passageway free from obstructions.

3.8 CUTTING AND PATCHING

A. Do not cut, channel or drill unfinished masonry, tile, etc. unless written permission is obtained from the Architect. Perform this work in a manner acceptable to the Architect. Cutting of structural members or footings is prohibited without the prior written consent of the Structural Engineer.

B. Where cutting, channeling or drilling of floors, walls, partitions, ceilings, or other surfaces is necessary from the proper installation, support or anchorage of ductwork, piping, or equipment, lay out the work carefully in advance. Repair any damage to the building, piping, equipment or finishes using skilled tradesmen for all required work.

C. Provide slots, chases, openings and recesses through floors, walls, ceilings and roofs as required. Where these openings are not provided, provide cutting and patching to accommodate penetrations.

D. Provide sleeves for all ductwork and piping passing through new floors, walls, partitions, and any other building construction, of adequate diameter to allow minimum of 1" clearance all around between sleeve and ductwork or piping. When ductwork or piping is insulated, insulation shall pass continuously through sleeve with 1" clearance between insulation and sleeve or hole in existing construction.

3.9 ACCESS

A. Damper operators, filters, and indicating equipment or specialties requiring reading, adjusting, inspection, repairing, removal, or replacement shall be conveniently and accessibly located with reference to finished building.

B. No dampers, controls, or equipment shall be placed in a location that will be inaccessible after the system is complete. Access panels or doors shall be provided where required whether shown on Drawings or not.

C. Access panels shall be 24" x 24" unless otherwise directed, style as selected by the Architect. Panels shall have the same acoustic barrier or rating as the construction in which panel is installed.

D. Doors shall be Milcor, Newman or equal, with concealed hinges, screwdriver locks, prime coated with rust inhibitive paint, finish painted in field to match adjacent surface. Provide key locks where required by Architect/Owner. All access doors shall be keyed the same. Doors in walls of toilet rooms shall be stainless steel.

E. Continuously check installation manuals for clearance and accessibility of equipment. No allowance of any kind will be made for negligence on part of Contractor to foresee means of installing equipment in proper position.

3.10 SEISMIC RESTRAINTS

A. All equipment, ductwork, piping, and materials shall be fastened and securely anchored to building structure as required by the Drawings, Specifications, and the California Building Code.

3.11 MANUFACTURER'S DIRECTIONS

A. Materials and equipment shall be installed in accordance with manufacturer's application and recommendations, requirements, and instructions, and in accordance with Contract Documents.

B. Conflicts between manufacturer's instructions and Contract Documents shall be brought to the Architect's attention for resolution prior to installation.

C. Where requirements indicated in Contract Documents exceed manufacturer's requirements, Contract Documents shall govern.

3.12 BELT DRIVES

A. Belt drives for fans and equipment shall consist of "V" belts and sheaves.

B. Drives that require not more than two belts shall be provided with variable pitch, driving sheaves to provide some speed adjustment above and below the normal required operating speed; the adjustments to be as near equal as practicable.

C. Belts shall be furnished in matching sets.

D. Fan drives for blower-type fans shall be selected for the proper fan speeds required for the air volumes specified or shown on the Drawings at the static pressures indicated. The static pressures indicated show estimated conditions, which may vary under actual operating conditions. Should it be necessary to adjust the fan speeds to obtain the proper air volume, the Contractor shall make the necessary changes to the drives without additional cost the Owner.

3.13 ELECTRICAL MOTORS FOR HVAC EQUIPMENT

A. Provide electric motors for driving the mechanical equipment. Motors shall be of proper power, construction and speed to suit the specified equipment.

B. Motors and motor control equipment shall conform to NEMA standards and shall be UL listed.

C. Coordinate the NEMA type of each motor with the torque and inertia load of the equipment served, and the in-rush current characteristics of the motor with the motor starter selection, so that all items furnished constitute a complete motor control and protection package. Motor shall not operate in the 15% service factor range.

D. Motors located in ducted air streams or subject to outside air elements shall be totally enclosed fan cooled; others shall be open drip-proof design.

E. Motors used with variable frequency drives shall be designed specifically for use on AC inverter power and adjustable speed applications.

F. Each motor shall be factory-wired to a junction box mounted on the motor or on the driven piece of equipment to facilitate single point of field power connection under Division 26.

G. Motors 1/2 HP and smaller shall be rated 120 VAC – single phase – 60 hertz and shall be provided with integral thermal overload protection, unless otherwise indicated.

H. Motors 3/4 HP and larger shall be rated for 208 VAC or 460 VAC – 3 phase – 60 hertz, unless otherwise indicated.

3.14 COORDINATION WITH ELECTRICAL CONTRACTOR

A. Coordinate with the Electrical Contractor on furnishing and installing of controls, motors, starters, etc. Provide copies of submittal and installation data to Electrical Contractor for all items requiring electrical connection.

B. Furnish and install all line voltage and low-voltage temperature control wiring in the Mechanical work, including all interlock wiring between motor starter coils, interlock relays, and temperature control equipment. Conduit for temperature control wiring shall be responsibility of Mechanical Contractor and shall be of type specified in Division 26.

C. Electrical Contractor shall furnish disconnect switches, motor starters, conduit and wiring for line voltage power to the equipment. See Division 26 and Drawings.

3.15 ELECTRICAL EQUIPMENT AND ELECTRICAL ROOM PRECAUTIONS

A. Do not install piping, equipment, or ductwork, plumbing, or any piping systems not included as part of the electrical work in the following rooms: switchgear, transformer, generator, elevator equipment, telephone, fire command, security, dimmer or electrical equipment rooms.

B. Do not install piping, equipment, or ductwork within the code required service space for switchboards, disconnects, panelboards, dimmers, control panels, VFDs, individual motor controllers, electronics, etc.

3.16 LUBRICATION

A. Provide means for lubricating all bearings and other machine parts. If a part requiring lubrication is concealed or inaccessible, extend a metallic lubrication tube with suitable fitting to an accessible location and identify it with permanent laminated plastic nameplates. Identify this location in the maintenance manual.

B. After installation, properly lubricate all parts requiring lubrication and keep them adequately lubricated with a lubricant recommended by the equipment manufacturer until Owner acceptance.

3.17 EQUIPMENT GUARDS

A. Provide easily (without tools) removable expanded metal guards for all hot surfaces, belts, couplings, exposed fan inlets and outlets, and other moving parts or machinery. Provide access openings for greasing, oiling, adjusting, etc. All guards shall comply with OSHA requirements and applicable codes.

3.18 CATHODIC PROTECTION

A. Install dielectric unions at points in piping where dissimilar metal pipes are connected together.

3.19 PIPING AND EQUIPMENT IDENTIFICATION

A. Furnish and install engraved nameplates with 1/4" minimum lettering at panel mounted control devices, manual control stations, power disconnects, motor starters, and pieces of equipment. Nameplates shall be white lettering on black background. For outdoor locations, provide brass engraved nameplates or plastic rated for outdoor use.

B. Label each thermostat and switch with equipment connected to the thermostat or switch with black lettering on white background.

C. Each piping system installed under this work shall be identified and the direction of flow indicated. Markings shall be applied after all painting, priming, and cleaning of the piping and insulation is completed. Labels shall be black lettering on colored backgrounds. Lettering shall be easily readable from the floor and background colors easily discernible. Furnish labels in every room and every 20' of pipe length.

D. Tag all valves with 2" diameter brass tags noting the valve number and contents in the pipe. At the completion of the project, provide Owner with a valve listing for all valves installed in the project. Valve listing shall note valve tag number, contents in the pipe and the areas (room numbers, etc.) that are impacted by valve.

3.20 GUARANTEE

A. The Contractor shall guarantee the quality of all work and the quality of the equipment and materials in accordance with the provisions of the General Conditions and Special Conditions. Should any defects occur during this period, the Contractor shall promptly repair or replace defective items as directed by the Architect, without cost to the Owner.

B. Contractor shall be responsible for damage to any part of premises during guaranteed period caused by leaks or breaks in work furnished and/or installed under this Section.

3.21 TESTING

A. Test all ductwork, equipment, piping, and systems as called for in the Specifications. Notify Architect and inspection authorities prior to testing so that they may be witnessed. Protect all personnel and equipment during testing.

3.22 OPENINGS

A. Locating and sizing of all openings for ductwork and piping through walls, roof, etc. shall be done under this Division. Framing of openings shall be done by the respective trades in whose work the opening is made.

3.23 CLEAN-UP

A. During the course of work under this Division, all rubbish, debris, surplus materials, tools, etc. resulting from this work shall be removed from work area and shall be disposed of off-site at the end of each working day. The Owner's premises shall be left clean and in a condition acceptable to the Architect.

B. Clean all work installed under this Contract to satisfaction of Owner.

C. Remove debris and trash from ductwork, fan units, and all air handling equipment. Vacuum clean fan housing, coils, and ducts in vicinity of openings before grilles and registers are installed. Replace construction filters with new filters prior to project completion.

3.24 ACCEPTANCE TESTING

A. Equipment and systems requiring acceptance testing certification for Code Compliance shall have Certificate of Acceptance completed and submitted to enforcement agency. See Drawings for equipment and systems requiring acceptance certification. Tests shall be performed by Certified Mechanical Acceptance Test Technician. Contractor shall be responsible for procuring the required test forms from the California Energy Commission website.

B. The acceptance testing procedures must be repeated, and deficiencies must be corrected by the contractor until the construction/installation of the specified systems conform and pass the required acceptance criteria.

3.25 OPERATING INSTRUCTIONS AND OPERATOR TRAINING

A. Provide the services of factory-trained specialists to supervise the operation of all equipment and train the Owner's operating and maintenance personnel.

B. Instruct the Owner's operating personnel in the basis of design, the available documentation, the proper starting sequences, operation, shut-down, minor adjustments, troubleshooting, recommended spare parts, and regular maintenance procedures.

C. Submit training agenda, schedule and list of representatives to the Owner for review ten (10) days prior to training. Confirm attendance at training by sign-in sheet. At a minimum, the training agenda shall cover all items required to be provided in the operating and maintenance manuals.

3.26 OPERATING AND MAINTENANCE MANUALS

A. Provide operating instructions and maintenance manuals for all equipment and material furnished under this Division.

B. Provide the following equipment and maintenance information where applicable:

1. Systems and Equipment Controls – describe sequence of operation and diagram controls as required.
2. Identifying equipment manufacturer, product name, and model number.
3. Locations.
4. Wiring Diagrams.
5. Lubrication Charts.
6. Manufacturer's recommended operating and maintenance instructions, with all non-applicable information deleted.
7. Assembly and disassembly instructions.
8. Startup procedures.
9. Routine and normal operating instructions.
10. Normal and emergency shutdown instructions.
11. Troubleshooting diagnostic instructions.
12. Parts list and recommended spare parts including name and address of source of supply.

C. Contractor must start compiling above data immediately upon approval of submittals for equipment and materials.

D. Submit one (1) electronic copy of operating and maintenance manuals, indexed and bookmarked, for review by Architect/Engineer.

E. Submit three (3) complete sets of bound hard copies of operating and maintenance manuals, and one (1) electronic copy to Owner within thirty (30) days of issuance of final occupancy permit.

END OF SECTION 23 00 00

SECTION 23 05 00 - HEATING, VENTILATING, AIR CONDITIONING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 01, and Division 23 Sections apply to this Section.

1.2 SCOPE OF WORK

A. Provide labor, materials, equipment, and services to furnish and install complete mechanical systems which shall include, but not limited to equipment, ductwork, piping, accessories, insulation, and supports.

1.3 SUBMITTALS

A. Submit for review, within fifteen (15) days after signing Contract, the required number of copies of a complete list of materials proposed for use. This list includes:

1. Packaged Air Conditioner.
2. Packaged Heat Pumps.
3. Furnaces.
4. Cooling Coils.
5. Condensing Units.
6. Split Systems.
7. Fans.
8. Ductwork.
9. Duct Insulation and Lining.
10. Dampers and Duct Accessories.
11. Flue Vent and Combustion Air Intake.
12. Filters.
13. Diffusers, Registers, and Grilles.
14. Louvers.
15. Refrigerant Piping.
16. Mechanical Supports.
17. Controls.

B. No substitute materials or equipment shall be installed without the written approval of the Architect.

C. No increase in the contract price will be considered to accommodate the use of alternative equipment, including revisions required by other trades.

D. Submit test reports on all systems tested. Tests required by Authorities Having Jurisdiction over the work shall be submitted on appropriate forms to the satisfaction of such authorities.

PART 2 – PRODUCTS

2.1 HVAC EQUIPMENT

A. See Schedules on Drawings for equipment data. Furnish and install all equipment in accordance with Drawings, manufacturer's recommendations, and all applicable codes.

2.2 FILTERS

A. Filters shall be 2"-thick of size and number required for equipment and selected for 300 FPM velocity.

B. Filters shall be throwaway type, Class 2 UL listed.

C. Filters shall be minimum MERV 13 based on ASHRAE Standard 52.2 test method.

2.3 DUCTWORK

A. Comply with latest edition of SMACNA HVAC Duct Construction Standards, Metal and Flexible for acceptable materials, material thicknesses, and duct construction methods, unless otherwise indicated. Comply with NFPA 90A when ducts traverse through smoke zones.

B. Comply with UL 181 and California Energy Code Section 120.4 requirements for air distribution ducts and plenums.

C. Ducts shall be minimum 24 gauge thickness. Ducts shall be constructed for 2500 FPM maximum velocity and static pressure classes as follows:

1. Supply Ducts: +3 inch w.g.
2. Return Ducts: - 2 inch w.g.
3. Exhaust Ducts: -2 inch w.g.

D. Longitudinal seams: Groove and Pittsburgh lock seams and slip joints shall be used.

E. Duct Connections: Ductmate industries "Ductmate 35" and "Ductmate 45". Ductmate "Spiralmate" for round duct. Ductmate "Ovalmate" for oval duct.

F. Duct sealing shall be DP 1010 water based duct sealant or other equal and SMACNA approved foil-backed pressure sensitive tape or other equal.

G. Flexible ducts shall be UL 181 and Class I air duct in compliance with SMACNA HVAC Duct Construction Standards, Metal and Flexible, and NFPA 90A and 90B.

H. Flexible ducts shall be two-ply vinyl film supported by helically wound spring-steel wire, R4.2 fiberglass insulation, exterior reinforced laminated vapor barrier film. Duct shall be rated for +2 inch w.g., -1 inch w.g., 4000 FPM maximum velocity, and -10°F to +160°F. Flame Spread less than 25, Smoke Developed less than 50.

2.4 DUCT INSULATION AND LINING

A. All duct insulation and lining shall comply with California Energy Code Section 120.4 requirements for air distribution ducts and plenums.

B. Insulation shall conform to NFPA 90A and 90B, and UL 181, Class I. Insulation shall have Flame Spread not over 25 and Smoke Developed of not over 50.

C. Wherever external duct insulation is specified and internal acoustic treatment of equivalent insulating effect is also required by the Drawings or Specification for the same location, the external insulation may be omitted.

D. Acceptable Manufacturers: Johns Manville, Owens Corning or approved equal.

E. Acoustic Duct Liner: 1" thick, R4.2 in directly conditioned space and 2" thick, R8.0 in unconditioned space or outdoors. Owens Corning Quiet R, or approved equal.

F. Duct Insulation: 3" thick, R8.3 in unconditioned space and 1 1/2" thick, R4.2 for indirectly conditioned space. Owens Corning SoftR Ductwrap FRK, or approved equal.

G. Duct Insulation Outdoor: 2" thick rigid board fiberglass, R8.7 with 0.016 inch thick sheet Aluminum jacket.

2.5 REGISTERS, DIFFUSERS AND GRILLES

A. Acceptable manufacturers: Titus, Krueger.

B. Registers, diffusers, and grilles shall be as indicated on Drawings. Drawings and schedules indicate specific requirements of air inlets and air outlets. Other manufacturers' products with equal quality, appearance, finish, and performance characteristics may be considered.

C. Registers shall have adjustable air pattern for setting in field to match field conditions. Redirect air pattern when required.

D. Refer to Architectural Drawings and Specifications for reflected ceiling plans, elevations, wall and ceiling type and construction. Coordinate frame and border types to accommodate the wall or ceiling specified or shown on the Architectural Drawings.

E. Registers, diffusers, and grilles in fire-rated ceilings or walls shall be all-steel construction.

2.6 DAMPERS AND DUCT ACCESSORIES

A. Acceptable manufacturers:

1. Dampers: Ruskin, Air Balance Inc, Pottorff, or approved equal.
2. Acutuators: Belimo, Honweywell, or approved equal.
3. Turning vanes: Ductmate industries, Duro Dyne, or approved equal.
4. Flexible connectors: Duro Dyne, Ventafabrics, or approved equal.
5. Duct access doors: Ductmate industries, Ward industries, or approved equal.
6. Backdraft dampers: Ruskin, Greenheck, Air Balance Inc, or approved equal.
7. Fire dampers: C&S Air products, or approved equal.

B. Provide volume dampers as specified or shown on the Drawings for proper balancing and distribution of air. Provide single blade dampers in ducts 24 inches in width or less, or 12 inches in height or less. Provide multiple blade, opposed blade design, dampers for all other duct sizes. Coordinate with the balancing contractor and provide additional dampers required for proper air balance.

C. Dampers shall be galvanized steel construction and shall be minimum 2 gauges thicker than duct gauge. Damper shall be pivoted to turn easily, provided with operating handles and locking devices mounted on the outside of the duct in an accessible location. Dampers shall be reinforced for rigidity.

D. Damper actuators for control dampers shall be modulating, 24V power supply, 0-10V DC control input, weatherproof construction.

E. Turning vanes shall comply with SMACNA HVAC Duct Construction Standards, Metal and Flexible for vanes and vane runners. Vane runners shall automatically align vanes.

F. Manufactured Turning Vanes: Fabricate 1 1/2" wide, double vane, curved blades of galvanized steel construction set to 3/4" o.c. Support with bars perpendicular to blades set 2" o.c. and set into vane runners suitable for duct mounting.

G. Flexible duct connectors shall be flame retardant fabrics, coatings, and adhesives complying with UL 181, Class I. Where exposed to weather, fabric shall be double coated with weatherproof, synthetic rubber resistant to UV rays.

H. Duct access doors shall be airtight and suitable for duct pressure class, constructed of galvanized steel with insulation fill as integral part of appropriate thickness. Include cam latches, sash locks, and hinges such that doors can easily be opened without tools. Seal around frame with neoprene or foam rubber.

I. Backdraft dampers shall be multi blade, parallel action gravity balanced, or adjustable counter-balance weighted dampers. Dampers shall have center pivoted blades of maximum 6" width, with sealed edges, assembled in rattle free manner with 90-degree stop. Provide with adjustment device to permit setting for varying differential static pressure.

J. Fire dampers shall be UL listed and conforming to NFPA 90A. Dampers shall be factory installed in sleeves. Dampers shall be arranged to close automatically upon operation of listed fusible link.

2.7 REFRIGERANT PIPING

A. Refrigerant line kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed. Factory insulated lines with flared fittings at both ends. Mueller Streamline Co., JMF Company, or approved equal.

B. Refrigerant pipe insulation shall be flexible closed cell elastomeric foam complying with ASTM C543 with UV retardant, and resistant to mold and mildew.

C. Both suction and liquid lines shall be insulated outdoors and in exposed indoor locations. Concealed Indoor liquid lines may omit insulation for cooling only units.

D. Outdoor piping shall have insulation covered with .016 inch thick aluminum jacket.

E. Indoor exposed piping shall have insulation covered with smooth PVC jacketing, painted per Architect's directions.

F. Refrigerant pipe insulation shall meet requirements of California Energy Code Section 120.3.

2.8 FLUE VENT AND COMBUSTION AIR INTAKE

A. Flue pipe at condensing gas fired equipment shall be schedule 40 PVC with solvent weld fittings per ASTM D1785.

B. Flue pipe at non-condensing gas fired equipment shall be type B double wall metal vent complying with NFPA 211.

C. Combustion air intake pipe for condensing gas fired equipment shall be schedule 40 PVC with solvent weld fittings per ASTM D1785.

D. Combustion air intake for non-condensing gas fired equipment shall be sealed single wall galvanized pipe.

E. All components and assemblies shall be UL listed. All fittings, accessories, support assemblies etc. shall be fabricated from same materials and design as vent pipe; all listed for same assembly.

2.9 LOUVERS

A. Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

B. Verify actual dimensions of openings by field measurements before fabrication.

C. Louvers shall be fixed, formed-metal. Horizontal, drainable blade:

1. Acceptable Manufacturers: Airolite Company, Construction Specialties, Pottorff, Greenheck, or approved equal.
2. Louver Depth: 4 inches.
3. Frame and Blade Material and Nominal Thickness: Aluminum or Galvanized-steel sheet not less than 20 gage (0.0359 inch) for frames and 20 gage (0.0359 inch) for blades.
4. Mullion Type: Exposed.

D. Air Performance: Not more than 0.15 inch w.g. static pressure drop.

E. Fasteners: Use types and sizes to suit installation conditions.

F. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

G. Provide bird screening at interior louver face.

1. Bird Screening: Aluminum or Galvanized steel, 0.5 inch square mesh, 0.041 inch wire.
2. Louver Screen Frames: Fabricated with mitered corners to louver sizes indicated. Non-rewirable, U-shaped frames with same kind and form of metal as indicated for louver. Same finish as louver.

2.10 HANGERS AND SUPPORTS

A. Subject to compliance with requirements, provide products by one of the following manufacturers or other approved equal:

1. B-Line.
2. Mason West.
3. Unistrut.
4. Power Strut.
5. Hilti.

B. Qualify welding processes and operators according to ASME Boiler and Pressure Vessel Code. Comply with AWS D1.1 procedures for field welding.

C. Duct attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

2.11 SLEEVES

A. Construct sleeves for pipes passing through walls, floors, partitions, hung or furred ceilings, etc. of minimum 18 gage galvanized steel, flanges on each side of wall, partition, hung or furred ceiling, etc.

B. Provide standard weight galvanized steel pipe sleeves with welded anchor flanges at foundation walls and reinforced concrete or masonry walls.

C. Provide 20 gage galvanized sheet metal sleeves for round ductwork passing through masonry or concrete construction. Rectangular ductwork shall be provided with framed openings through floor and wall construction.

D. Install escutcheons at exposed piping through floors, ceilings, walls and partitions in finished areas, within cabinets and millwork, and piping through all fire-rated separations.

2.12 CONTROLS

A. Furnish and install programmable thermostats where indicated. Coordinate exact locations with Architect.

B. If indicated on Drawings, provide thermostats by specified manufacturer.

C. Thermostats shall comply with latest edition of California Energy Code for demand responsive capabilities and occupancy monitoring if required.

D. Mount thermostats 48 inches above finished floor.

E. Control wiring shall be installed per manufacturer's instructions and wiring diagrams. Wiring in walls and exposed spaces shall be in conduit and in accordance with Division 26. Wiring above ceiling shall be plenum rated cable complying with NFPA 70.

F. Provide and install heavy duty lockable thermostat cover for assembly areas, gymnasiums, and any other public areas required by Owner.

2.13 PAINTING

A. See Division 09 for painting.

B. Prime and paint diffuser boot and duct interiors where visible through grilles with a matte black finish.

C. Prime and paint exposed ductwork, supports, and registers where required by the Architect.

D. Prime and paint louver or grille interiors where required by the Architect.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements for installation clearances, tolerances and other conditions affecting performance of work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EQUIPMENT INSTALLATION

A. Equipment shall be installed level, on curbs or supports as required and/or indicated on Drawings and in accordance with manufacturer's instructions and recommendations.

B. Equipment shall be installed in locations shown and as complete assemblies with adequate service clearances for access and maintenance as required by codes and equipment installation manuals.

3.3 AIR TERMINAL UNIT INSTALLATION

C. Install air terminal units according to NFPA 90A.

D. Install air terminal units level and plumb. Maintain sufficient clearance for normal service and maintenance.

E. Connect reheat coil to supply piping with shutoff valve, strainer, control valve, union or flange, flexible piping connectors and to return piping with shutoff valve, balancing valve, union or flange and flexible piping connectors.

F. Mount DDC controllers on air terminal units and connect low voltage wiring between unit and BMS.

G. Label each air terminal unit with drawing designation, nominal airflow, maximum and minimum factory set airflows and coil type.

3.4 DUCTWORK INSTALLATION

A. All ductwork gauges, joints, reinforcing, and other details shall be in accordance with latest edition of SMACNA manuals unless otherwise specified.

B. Duct dimensions are net, inside, clear dimensions. For internally lined ducts, add lining thickness to determine metal duct dimensions.

C. Provide minimum 24-gauge sheet metal construction for ducts. Construct ducts with NFPA 90A gauges when traversing smoke zones.

D. Construct ducts of galvanized sheet metal, except where otherwise indicated or specified.

E. Construct all ductwork to dimensions indicated, straight and smooth on the inside with neatly finished joints lapped in direction of travel.

F. Construct all ductwork to avoid sharp duct edges. Edges shall be sufficiently rounded and where not possible, sharp edges shall be covered with edge protectors.

G. Fabricate changes in direction, both horizontal and vertical, to permit easy airflow.

H. At exposed duct penetrations of walls, floors and ceilings, provide sheet metal angle type escutcheons fastened to the duct only.

I. Duct Openings: Provide openings where required to accommodate thermometers, smoke detectors, controllers, wiring, conduit, tubing, etc. insert through air-tight rubber grommets.

J. Provide pitot tube openings where required for testing of systems. Include threaded metal cap, spring loaded cap or threaded plug to eliminate any air leakage. Coordinate locations of openings with balancing contractor.

K. Install ductwork to clear all obstructions, preserve headroom, and keep openings clear. Install exposed ducts as high as possible. Coordinate with other trades to maintain minimum 7'-6" clearance above finished floor, unless otherwise indicated.

L. Install ducts unless otherwise indicated, vertically or horizontally and parallel and perpendicular to building lines; avoid diagonal runs.

M. Coordinate layout with suspended ceiling, lighting layouts, and similar finished work.

N. Install dampers in branch duct for all air inlets and outlets at accessible location. Dampers shall be capable of adjustments and of being locked into position.

O. Use radius elbows in rectangular ductwork unless otherwise indicated. Centerline radius shall be a minimum 150 percent of duct width. Where space does not permit duct radius, install square elbow with turning vanes.

P. Ends of ducts shall turn over 3/4" for airtight connections between ducts and grilles. The ducts and grilles shall have separate sets of screws. Register frames and ends of ducts shall be properly placed before finishing is begun.

Q. All ducts shall be supported per SMACNA HVAC Duct Construction Standards. Supports and seismic bracing shall be in accordance with drawings, specifications, and the California Building Code.

R. Ducts exposed to weather shall be completely waterproof with outdoor vapor barrier mastic over tape at all joints and seams. Slope entire top of duct down towards sides and coordinate duct slope with roof slope. Arrange standing seam, joints, and flanges to prevent accumulation, ponding or pooling of water.

S. Seal joints and seams of ductwork airtight to SMACNA seal classifications.

T. Protect all ductwork and interiors of ducts shall be clean and free from foreign materials until building is enclosed.

U. All ductwork and sealing shall comply with California Energy Code Section 120.4 requirements for Air Distribution System Ducts and Plenums.

3.5 DUCT SEALING

A. Duct systems shall be sealed to a leakage rate not to exceed 6 percent of the nominal air handler air flow rate.

B. Ductwork for constant volume systems that have more than 25 percent of the total duct surface area located outdoors or in unconditioned space shall have the duct leakage confirmed through HERS field verification and diagnostic testing.

C. New duct systems not subject to testing shall meet duct leakage requirements of CMC 603.9.2.

3.6 FLEXIBLE DUCTWORK INSTALLATION

A. Flexible ductwork shall be installed with no runs of more than 5'-0" in length and shall be used only at register connections.

B. Flexible duct shall be installed in fully extended condition, free of sags and kinks, using only minimum length required to make connection. Bends greater than 90° are not allowed.

C. Flexible duct shall be full size of branch. Any change in size to match terminal connection shall be made at terminal. Connect to duct collars, terminal unit connections and air inlets and outlets per manufacturer's instructions.

D. All connections shall be sealed with high pressure duct sealer and secured with 3/8" nylon straps around inside liner of flexible duct.

E. Flexible ducts shall be supported at or near mid-length with 2" wide, 28 gauge steel hanger collar attached to the structure with an approved duct hanger. Installation shall minimize sharp radius turns or offsets.

3.7 DUCT INSULATION AND LINING INSTALLATION

A. Concealed ductwork shall be insulated with fiberglass ductwrap.

B. Provide acoustic lining where indicated on Drawings.

C. All supply and return ductwork shall be insulated, or acoustically lined on the inside when ductwork is exposed.

D. Exhaust duct need not be insulated. Outside air duct indoors need not be insulated. Outside air duct installed outdoors shall be insulated.

3.8 DUCT ACCESSORIES INSTALLATION

A. Flexible connections shall be installed on inlet and outlet duct connections of fans, air conditioning units, furnaces, and all other HVAC equipment. Fabric shall be of weight and strength for service required, properly fitted to render connection airtight. Fabric of sufficient width to provide minimum 4" between connected items.

B. Install backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated. Install backdraft dampers at roof hoods or louvers connected to ductwork.

C. Install duct access doors to allow for inspecting, adjusting, and maintaining accessories and terminal units. Access doors shall be large enough for maintenance.

3.9 FILTER INSTALLATION

A. Filter boxes shall have hinged access panels and shall allow tool-less entry.

B. Filter boxes shall be installed such that they are easily accessible and allow unimpeded removal and installation of filters without interference with other obstacles.

C. Filter boxes shall accommodate 2" thick filter installation.

D. Filter boxes shall be installed with air tight seals and the access door shall fully close with a seal to prevent infiltration of air.

3.10 REGISTERS, DIFFUSERS, AND GRILLES INSTALLATION

A. Locations indicated on the Architectural Drawings shall take precedence. For lay-in ceiling panels, locate in the center of the panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.

B. Install with airtight connection to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

C. After installation of diffusers, registers, and grilles, inspect exposed finish. Clean exposed surfaces to remove burrs, dirt, and smudges. Replace diffusers, registers, and grilles that have damaged finishes.

D. Install diffusers, registers, and grilles level and plumb, according to manufacturer's written instructions.

E. All visible interior surfaces of registers, diffusers, and grilles shall be painted flat black.

F. All visible exterior surfaces of registers, diffusers, and grilles shall be factory off-white finish as standard. Where required by Architect, provide in a color as selected by Architect or provide prime-painted for field painting.

3.11 REFRIGERANT PIPING INSTALLATION

A. Refrigerant pipe installation shall comply with latest editions of ASHRAE 15 and ASME B31.5.

B. Install piping in accordance with manufacturer's instructions and good practices.

C. Install piping adjacent to unit to allow access to unit for service and maintenance.

D. Where required, provide or install additional refrigerant charge per equipment manufacturer's requirements. After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

E. Install piping as short and direct as possible, with a minimum number of joints and fittings.

F. Support exposed piping tight to wall with strut channels and pipe clamps. Support concealed pipe on hanging pipe supports, provide bracing where required.

G. Support roof piping at sufficient intervals to prevent pipe sag.

H. Route piping in orderly manner, parallel to building structure, and maintain gradient. Group piping whenever practical at common elevations and locations. Install piping to conserve space and avoid interference with use of space.

I. Slope piping one percent in direction of oil return. Provide suction traps at base of suction risers where required.

J. Piping shall be cut accurately to measurements established at job site and worked into place without springing or forcing, allowing for proper head room.

K. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

L. Install sleeves for piping and tubing penetrations of walls, ceilings, and floors. Install escutcheons for piping and tubing penetrations of walls, ceilings, and floors.

M. Install insulation without any gaps or cracks and use contact adhesive recommended by manufacturer at joints and connections.

N. When the thickness of insulation is reduced, for example at support hangers, reinforce the reduced thickness with additional insulation.

O. Seal longitudinal seams and end joints of insulation with manufacturer's recommended adhesive to eliminate openings in insulation. Installation to maintain a continuous vapor barrier.

P. Where metal jackets are indicated for insulation, install with 2 inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless steel bands 12 inches on center at end joints.

Q. Use insulated pipe clamps and insulated pipe supports to provide continuous insulation throughout. No section of bare pipe shall come in contact with other metals.

R. Brazed joints: Construct joints according to AWS C3.4M/C3.4.

1. Provide brazing for refrigerant piping system using AWS A5.8/A5.8M, Bag-1 with 15 percent silver, 80 percent copper and 5 percent phosphorous.
2. Clean surfaces to be jointed of oil, grease, rusts, and oxides.
3. Any joints showing evidence of overheating, cracking, poor penetration, or other defects of fit-up or workmanship shall be replaced as directed by the Architect at the contractor's expense.

3.12 FLUE VENT AND COMBUSTION AIR INTAKE INSTALLATION

A. Install all required flues and combustion air intake at gas fired equipment in accordance with manufacturer's instructions and applicable codes.

B. Comply with minimum clearances from combustibles and minimum termination heights according to product listing, NFPA, or local codes; whichever is most stringent.

C. Support at intervals recommended by manufacturer to support weight of pipe and all accessories.

D. Seal between sections according to manufacturer's written instructions using sealant recommended by manufacturer.

E. After completing installation, inspect finish. Remove burrs, dirt, and construction debris. Repair damaged finished.

3.13 LOUVERS INSTALLATION

A. Assemble louvers in factory to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Maintain equal louver blade spacing to produce uniform appearance.

C. Comply with SMACNA's Architectural Sheet Metal Manual for fabrication, construction details, and installation procedures.

D. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.

E. Use concealed anchorages where possible.

F. Form closely fitted joints with exposed connections accurately located and secured.

G. Protect unpainted galvanized and nonferrous metal surfaces that will be in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.

H. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses where watertight louver joints are required.

3.14 HANGERS AND SUPPORTS INSTALLATION

A. All equipment, plenums, registers, ductwork, and piping shall be securely anchored to building structure and seismically braced as required by the Drawings and Specifications. Comply with OSHPD Preapproval of Manufacturer's Certification OPM-0295-13 and OPM-0052-13, and the California Building Code.

B. Comply with SMACNA HVAC Duct Construction Standards – Metal and Flexible for hanger rod or sheet metal strap sizes and spacing for duct supports.

C. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.

D. Install lateral bracing with pipe hangers and supports to prevent swaying.

E. Install hangers and supports so piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

F. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

G. Install hangers and supports to provide indicated pipe slopes.

H. Adjust hangers to distribute loads equally on attachments.

I. Trim excess length of continuous-thread hanger and support rods to 1 1/2 inches.

J. Perform all welding in accordance with standards of the American Welding Society. Clean surfaces of loose scale, rust, paint or other foreign matter and properly align before welding. Use wire brush on welds after welding.

3.15 TESTING

A. Comply with more stringent of system manufacturer's requirements and requirement indicated herein.

B. Provide the Architect with certified copies of the test results in written format. At a minimum include the date of the test, witnesses present, sections tested, length of tests, starting and final pressures.

C. After completion of refrigerant piping installation, pressurize piping systems to a test pressure of not less than 600 psig using dry nitrogen.

D. Successful testing shall maintain the test pressure for a continuous and uninterrupted period of 24 hours.

E. After completion of pressure testing evacuate piping systems using a vacuum pump with a check valve. Maintain test pressure per manufacturer's requirements for a continuous and uninterrupted period of one (1) hour.

F. Prepare and submit test reports to the Architect for project record.

G. Charge the refrigerant piping system following system manufacturer's written instructions. Total refrigerant charge shall be recorded and permanently displayed at the system's outdoor unit.

3.16 ADJUSTING

A. Adjust equipment and components to function smoothly, and lubricate as recommended by manufacturer.

B. Adjust initial temperature setpoints. Adjust initial airflow settings and discharge airflow patterns.

C. Set field adjustable switches and circuit breaker trip ranges according to manufacturer's written instructions.

3.17 FIELD QUALITY CONTROL

A. Engage a factory authorized service representative to inspect field assembled components and equipment installation, including piping and electrical connections. Provide a written report of inspection to the Architect.

B. Engage a factory authorized service representative to perform startup service. Complete installation and startup checks according to manufacturer's written instructions. Provide completed startup sheets for each piece of equipment to the Architect.

3.18 TRAINING AND O&MS

A. Refer to Section 23 00 00 Mechanical General Requirements and Division 01 for Training requirements, Operating and Maintenance Manuals, and other Closeout procedures.

END OF SECTION 23 05 00

SECTION 23 08 00 - COMMISSIONING OF HVAC SYSTEMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 23 Specification Sections, apply to this Section.

1.2 SCOPE OF WORK

A. Work includes performing commissioning process requirements for HVAC systems including mechanical controls, assemblies, and equipment.

B. Refer to Section 01 91 00 General Commissioning Requirements for general commissioning process requirements.

1.3 DEFINITIONS

A. See 01 91 00 General Commissioning Requirements for definitions.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. See 01 91 00 General Commissioning Requirements for contractors' and subcontractors' responsibilities.

B. Provide training on each piece of commissioned equipment. See 01 91 00 for training details.

1.5 CA RESPONSIBILITIES

A. See 01 91 00 General Commissioning Requirements for CA responsibilities

1.6 COMMISSIONING DOCUMENTATION

A. Provide the following information to the CA for inclusion in the commissioning plan:

1. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase.
2. Schedule for completing construction checklists and manufacturer's prestart and startup checklists for HVAC systems, assemblies, equipment, and components to be commissioned.

B. Provide the following as discussed in Section 01 91 00, General Commissioning Requirements to General Contractor:

1. Completed system readiness checklist for each piece of commissioned equipment. Completion of system readiness checklist, O&M manual start-up checklist, and any manufacturer provided field start-up checklists.

2. Verification to GC readiness certifying that HVAC systems, subsystems, equipment, and associated controls are ready for functional testing.

3. Corrective action documents resulting from issues in the Commissioning Issues Log or deficiencies found from completing the start-up plan.

1.7 SUBMITTALS

A. Updated submittals: keep the CA informed of all changes to the control system documentation made during programming and setup.

B. Certificates of readiness (completion of the system readiness checklist) to General Contractor for review by CA.

C. Written training plan for review by A/E and CA prior to training. See Section 01 91 00 General Commissioning Requirements for specific items to be included in the training plan.

D. Provide O&M manuals to GC for submission to CA. These are required prior to development of the system readiness checklists.

PART 2 – PRODUCTS

2.1 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup and initial checkout and required functional performance testing.

B. Equipment-specific tools: where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or functional testing, provide such equipment, tools, and instruments as part of the work at no extra cost to owner; such equipment, tools, and instruments are to become the property of owner.

PART 3 – EXECUTION

3.1 PARTICIPATION

A. The contractor shall provide skilled technicians to startup and debug all systems. These same technicians shall be made available to assist the Commissioning Authority in completing the commissioning program. Contractor(s) shall ensure that the qualified technician(s) are available and present during the agreed upon schedules to complete the necessary tests, adjustments, and/or problem resolutions.

B. System performance problems and discrepancies may require additional technician time, Commissioning Authority time, reconstruction of systems, and/or replacement of system components. The additional technician time shall be made available for subsequent commissioning periods until the required system performance is obtained.

3.2 TESTING PREPARATION

A. Cooperate with the CA in development of the functional test procedures.

B. Certify that HVAC systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents.

C. Certify that HVAC instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents, and that pretest set points have been recorded.

D. Certify that testing, adjusting, and balancing procedures have been completed and that testing, adjusting, and balancing reports have been submitted, discrepancies corrected, and corrective work approved.

E. Set systems, subsystems, and equipment into operating mode to be tested (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions) as required in functional testing.

F. Provide test holes in ducts and plenums where directed by testing and balance subcontractor to allow air measurements and air balancing. Provide approved plugs.

G. Provide temperature and pressure taps according to contract documents for testing and balance, and commissioning tests.

H. Provide input to GC on construction schedule to include division pipe and duct system testing, flushing, and cleaning. Provide input on equipment start-up and testing and balance schedule to GC. Notify the CA when these items are scheduled.

I. Check safety cutouts, alarms, and interlocks with smoke control and life-safety systems during each mode of operation.

J. Testing Instrumentation: Install measuring instruments and logging devices to record test data as directed by the CA.

K. Certify that all related A/E punch list items are complete prior to commencing functional tests.

L. Correct deficiencies found from completing the start-up plan prior to conducting functional tests.

M. Provide full points list and keep CA informed of changes in list during programming and setup.

3.3 TESTING AND BALANCE VERIFICATION

A. Prior to performance of testing and balancing work, provide copies of reports, sample forms, checklists, and certificates to the CA.

B. Notify the CA at least ten (10) days in advance of testing and balancing Work, and provide access for the CA to witness testing and balancing Work.

C. Provide technicians, instrumentation, and tools to verify testing and balancing of HVAC systems at the direction of the CA.

D. Provide a qualified control system technician to operate the controls to assist the TAB technicians or provide sufficient training for the TAB technicians to operate the system without assistance.

E. The CA will notify testing and balancing Subcontractor five (5) days in advance of the date of field verification.

F. The testing and balancing subcontractor shall use the same instruments (by model and serial number) that were used when original data were collected.

G. Failure of an item includes not meeting acceptance criteria as discussed in 23 05 93 Testing, Adjusting, and Balancing for HVAC. Failure of more than 10 percent of selected items shall result in rejection of final testing, adjusting, and balancing report.

H. Remedy the deficiency and notify the CA so verification of failed portions can be performed

3.4 GENERAL TESTING REQUIREMENTS

A. System readiness checklists and functional test forms will be provided by CA, and executed by installing subcontractors. System readiness checklists are part of the start-up plan that will be provided by the CA to the GC. The GC will distribute the forms and ensure their completion prior to submitting back to the CA for review.

B. CA will oversee execution of the functional tests. Functional tests are provided early to obtain any comments or suggestions.

C. Provide installing technicians, instrumentation, and tools to perform commissioning test at the direction of the CA.

D. Provide skilled technicians who are familiar with this building to execute the functional tests as directed by the CA.

E. Scope of HVAC testing shall include entire HVAC installation, from central equipment for heat generation and air conditioning through distribution systems to each conditioned space. Testing shall include measuring capacities and effectiveness of operational and control functions.

F. Test all operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of building automation system controllers and sensors.

G. Tests will be performed using design conditions whenever possible.

H. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by the CxA and document simulated conditions and methods of simulation. After tests, return settings to normal operating conditions.

I. The CA may direct that set points be altered when simulating conditions is not practical.

J. The CA may direct that sensor values be altered when design or simulating conditions and altering set points are not practical.

K. If tests cannot be completed because of a deficiency outside the scope of the HVAC system, document the deficiency and report it to the CM and GC. After deficiencies are resolved, coordinate with CA to reschedule tests.

L. Installing subcontractor shall be present during all functional tests, whether sub-contractor's equipment is directly involved with the test or not. This is to speed the process of problem resolution as they are discovered during the testing process.

3.5 HVAC SYSTEMS, SUBSYSTEMS, AND EQUIPMENT TESTING PROCEDURES

A. HVAC Instrumentation and Control System Testing: Field testing plans and testing requirements are specified in mechanical drawings and functional tests (provided by CA) during construction phase.

B. HVAC Distribution System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of air distribution systems; including HVAC terminal equipment and unitary equipment.

C. See 01 91 00 General Commissioning Requirements for contractor's retesting procedures.

3.6 CONTROL SYSTEM TESTING PROCEDURES

A. Provide a skilled technician who is familiar with this building to execute the functional tests as directed by the CA.

B. Demonstrate the following to the CA during testing of controlled equipment:

1. Setpoint changing features and functions
2. Sensor calibrations
3. Specified functions and features are set up, debugged, and fully operable
4. Graphic screens and value readouts are completed
5. Trend monitoring and data storage is completed
6. Alarms are active

3.7 TRAINING

A. Provide training on each piece of commissioned equipment. See 01 91 00 and Division 23 for training details.

B. Trainer must be familiar with this building and equipment. Have the technicians that performed work on this building available for answering questions.

END OF SECTION 23 08 00

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Electrical identification requirements.
B. Identification nameplates and labels.
C. Wire and cable markers.
D. Voltage markers.
E. Underground warning tape.
F. Floor marking tape.
G. Warning signs and labels.

1.2 RELATED REQUIREMENTS

A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.
B. Section 26 05 36 - Cable Trays for Electrical Systems: Additional identification requirements for cable tray systems.
C. Section 26 05 73 - Power System Studies: Arc flash hazard warning labels.
D. Section 26 27 26 - Wiring Devices - Lutron: Device and wallplate finishes; factory pre-marked wallplates.
E. Section 26 31 00 - Photovoltaic Collectors: Additional identification requirements for photovoltaic systems.
F. Section 27 10 00 - Structured Cabling: Identification for communications cabling and devices.

1.3 REFERENCE STANDARDS

A. ANSI Z535.2 - American National Standard for Environmental and Facility Safety Signs; 2011 (Reaffirmed 2017).
B. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels; 2011 (Reaffirmed 2017).
C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
D. UL 969 - Marking and Labeling Systems; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
    1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.

B. Sequencing:
1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
2. Do not install identification products until final surface finishes and painting are complete.

1.5 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

1.6 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

1.7 FIELD CONDITIONS

A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

PART 2 PRODUCTS

2.1 IDENTIFICATION REQUIREMENTS

A. Identification for Equipment:
1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
a. Switchboards:
1) Identify ampere rating.
2) Identify voltage and phase.
3) Identify power source and circuit number. Include location when not within sight of equipment.
4) Use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
b. Panelboards:
1) Identify ampere rating.
2) Identify voltage and phase.
3) Identify power source and circuit number. Include location when not within sight of equipment.
4) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
5) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
6) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.

c. Transformers:
    1) Identify kVA rating.
    2) Identify voltage and phase for primary and secondary.
    3) Identify power source and circuit number. Include power source location when not within sight of equipment.
    4) Identify load(s) served. Include load location when not within sight of equipment.
d. Enclosed switches, circuit breakers, and motor controllers:
    1) Identify voltage and phase.
    2) Identify power source and circuit number. Include power source location when not within sight of equipment.
    3) Identify load(s) served. Include load location when not within sight of equipment.
e. Time Switches:
    1) Identify load(s) served and associated circuits controlled. Include location.
f. Centralized Emergency Lighting Inverters:
    1) Identify input and output voltage and phase.
    2) Identify power source and circuit number for normal power source. Include location when not within sight of equipment.
    3) Identify load(s) served. Include location.
g. Transfer Switches:
    1) Identify voltage and phase.
    2) Identify power source and circuit number for both normal power source and standby power source. Include location when not within sight of equipment.
    3) Identify load(s) served. Include location when not within sight of equipment.
    4) Identify short circuit current rating based on the specific overcurrent protective device type and settings protecting the transfer switch.
    5) Identify type of loads served (e.g. Required Emergency, Required Standby, Optional Standby)
h. Electricity Meters:
    1) Identify load(s) metered.
    2) Unique meter identifier, use identification label.

2. Service Equipment:
    a. Use identification nameplate to identify each service disconnecting means.
    b. For buildings or structures supplied by more than one service, or any combination of branch circuits, feeders, and services, use identification nameplate or means of identification acceptable to authority having jurisdiction at each service disconnecting means to identify all other services, feeders, and branch circuits supplying that building or structure. Verify format

and descriptions with authority having jurisdiction.

3. Emergency System Equipment:
   a. Use identification nameplate or voltage marker to identify emergency system equipment in accordance with NFPA 70.
   b. Use identification nameplate at each piece of service equipment to identify type and location of on-site emergency power sources.
   c. Use identification nameplate to identify emergency operating instructions for emergency system equipment.
4. Use identification nameplate to identify switchboards and panelboards utilizing a high leg delta system in accordance with NFPA 70.
5. Use identification nameplate to identify disconnect location for equipment with remote disconnecting means.
6. Use identification label on inside of door at each fused switch to identify required NEMA fuse class and size.
7. Use identification label to identify overcurrent protective devices for branch circuits serving fire alarm circuits. Identify with text "FIRE ALARM CIRCUIT".
8. Use field-painted floor markings or floor marking tape to identify required equipment working clearances.
9. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70 including but not limited to the following.
   a. Service equipment.
   b. Industrial control panels.
   c. Motor control centers.
   d. Elevator control panels.
10. Arc Flash Hazard Warning Labels: Comply with Section 26 05 73.
11. Use warning signs to identify electrical hazards for entrances to all rooms and other guarded locations that contain exposed live parts operating at 600 V nominal or less with the word message "DANGER; Electrical hazard; Authorized personnel only" or approved equivalent.
12. Use warning labels, identification nameplates, or identification labels to identify electrical hazards for equipment where multiple power sources are present with the word message "DANGER; Hazardous voltage; Multiple power sources may be present; Disconnect all electric power including remote disconnects before servicing" or approved equivalent.

B. Identification for Conductors and Cables:
   1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 05 19.
   2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has

feeders or branch circuits served by more than one nominal voltage system.

3. Use wire and cable markers to identify connected grounding electrode system components for grounding electrode conductors.

C. Identification for Raceways:
   1. Use voltage markers to identify highest voltage present for accessible conduits 2 inch (53 mm) trade size and larger at maximum intervals of 20 feet.
   2. Use factory-painted conduits or field painted conduits to identify systems other than normal power system for accessible conduits. Refer to section 26 05 33.13 for color coding and additional requirements.
   3. Use identification labels, handwritten text using indelible marker, or plastic marker tags to identify circuits enclosed for accessible conduits at wall penetrations, at floor penetrations, at roof penetrations, and at equipment terminations when source is not within sight.
   4. Use identification labels, handwritten text using indelible marker, or plastic marker tags to identify spare conduits at each end. Identify purpose and termination location.
   5. Use underground warning tape to identify underground raceways.

D. Identification for Cable Tray: Comply with Section 26 05 36.

E. Identification for Boxes:
   1. Use voltage markers to identify highest voltage present.
   2. Use identification labels or handwritten text using indelible marker to identify circuits enclosed.
      a. For exposed boxes in public areas, use only identification labels.
   3. Use warning labels to identify electrical hazards for boxes containing exposed live parts or exposed conductors operating at over 600 V nominal with the word message "DANGER; HIGH VOLTAGE; KEEP OUT".

F. Identification for Devices:
   1. Identification for Communications Devices: Comply with Section 27 10 00.
   2. Wiring Device and Wallplate Finishes: Comply with Section 26 27 26.
   3. Use identification label to identify fire alarm system devices.
      a. For devices concealed above suspended ceilings, provide additional identification on ceiling tile below device location.
   4. Use identification label to identify serving branch circuit for all receptacles.
   5. Use identification label to identify load controlled for wall-mounted control devices controlling loads that are not visible from the control location and for multiple wall-mounted control devices installed at one location.

G. Identification for Luminaires:
   1. Use permanent red dot on luminaire frame to identify luminaires connected to emergency power system.

H. Identification for Photovoltaic Systems: Comply with Section 26 31 00

2.2 IDENTIFICATION NAMEPLATES AND LABELS

A. Identification Nameplates:
1. Manufacturers:
a. Brimar Industries, Inc: www.brimar.com/#sle.
b. Seton Identification Products: www.seton.com/#sle.
2. Materials:
a. Indoor Clean, Dry Locations: Use plastic nameplates.
b. Outdoor Locations: Use plastic or aluminum nameplates suitable for exterior use.
3. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
a. Exception: Provide minimum thickness of 1/8 inch when any dimension is greater than 4 inches.
4. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch; engraved or laser-etched text.
5. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.

B. Identification Labels:
1. Manufacturers:
a. Brady Corporation: www.bradyid.com/#sle.
b. Brother International Corporation: www.brother-usa.com/#sle.
c. Panduit Corp: www.panduit.com/#sle.
2. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
a. Use only for indoor locations.
3. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

C. Format for Equipment Identification:
1. Minimum Size: 1 inch by 2.5 inches.
2. Legend:
a. System designation where applicable:
1) Emergency Power System: Identify with text "EMERGENCY".
2) Standby Power System: Identify with text "STANDBY"
3) Fire Alarm System: Identify with text "FIRE ALARM".
b. Equipment designation or other approved description.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height:

a. System Designation: 1 inch.
b. Equipment Designation: 1/2 inch.

5. Color:
a. Normal Power System: White text on black background.
b. Emergency Power System: White text on red background.

D. Format for General Information and Operating Instructions:
1. Minimum Size: 1 inch by 2.5 inches.
2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 1/4 inch.
5. Color: Black text on white background unless otherwise indicated.

E. Format for Caution and Warning Messages:
1. Minimum Size: 2 inches by 4 inches.
2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 1/2 inch.
5. Color: Black text on yellow background unless otherwise indicated.

F. Format for Receptacle Identification:
1. Minimum Size: 3/8 inch by 1.5 inches.
2. Legend: Power source and circuit number or other designation indicated.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 3/16 inch.
5. Color: Black text on clear background.

G. Format for Control Device Identification:
1. Minimum Size: 3/8 inch by 1.5 inches.
2. Legend: Load controlled or other designation indicated.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 3/16 inch.
5. Color: Black text on clear background.

H. Format for Fire Alarm Device Identification:
1. Minimum Size: 3/8 inch by 1.5 inches.
2. Legend: Designation indicated and device zone or address.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 3/16 inch.
5. Color: Red text on white background.

2.3 WIRE AND CABLE MARKERS

A. Manufacturers:

1. Brady Corporation: www.bradyid.com/#sle.
2. HellermannTyton: www.hellermanntyton.com/#sle.
3. Panduit Corp: www.panduit.com/#sle.

B. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.

C. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.

D. Legend: Power source and circuit number or other designation indicated.

E. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.

F. Minimum Text Height: 1/8 inch.

G. Color: Black text on white background unless otherwise indicated.

2.4 VOLTAGE MARKERS

A. Manufacturers:
1. Brady Corporation: www.bradyid.com/#sle.
2. Brimar Industries, Inc: www.brimar.com/#sle.
3. Seton Identification Products: www.seton.com/#sle.

B. Markers for Conduits: Use factory pre-printed self-adhesive vinyl, self-adhesive vinyl cloth, or vinyl snap-around type markers.

C. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl or self-adhesive vinyl cloth type markers.

D. Minimum Size:
1. Markers for Equipment: 1 1/8 by 4 1/2 inches.
2. Markers for Conduits: As recommended by manufacturer for conduit size to be identified.
3. Markers for Pull Boxes: 1 1/8 by 4 1/2 inches.
4. Markers for Junction Boxes: 1/2 by 2 1/4 inches.

E. Legend:
1. Markers for Voltage Identification: Highest voltage present.
2. Markers for System Identification:
a. Emergency Power System: Text "EMERGENCY".

F. Color: Black text on orange background unless otherwise indicated.

2.5 UNDERGROUND WARNING TAPE

A. Manufacturers:
1. Brady Corporation: www.bradyid.com/#sle.

2. Brimar Industries, Inc: www.brimar.com/#sle.
3. Seton Identification Products: www.seton.com/#sle.

B. Materials: Use foil-backed detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.

C. Foil-backed Detectable Type Tape: 3 inches wide, with minimum thickness of 5 mil, unless otherwise required for proper detection.

D. Legend: Type of service, continuously repeated over full length of tape.

E. Color:
1. Tape for Buried Power Lines: Black text on red background.
2. Tape for Buried Communication, Alarm, and Signal Lines: Black text on orange background.

2.6 FLOOR MARKING TAPE

A. Manufacturers:
1. Brady Corporation: www.bradyid.com/#sle.
2. Brimar Industries, Inc: www.brimar.com/#sle.
3. Seton Identification Products: www.seton.com/#sle.

B. Floor Marking Tape for Equipment Working Clearance Identification: Self-adhesive vinyl or polyester tape with overlaminate, 3 inches wide, with alternating black and white stripes.

2.7 WARNING SIGNS AND LABELS

A. Manufacturers:
1. Brimar Industries, Inc: www.brimar.com/#sle.
2. Clarion Safety Systems, LLC: www.clarionsafety.com/#sle.
3. Seton Identification Products: www.seton.com/#sle.

B. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.

C. Warning Signs:
1. Materials:
a. Indoor Dry, Clean Locations: Use factory pre-printed rigid plastic or self-adhesive vinyl signs.
b. Outdoor Locations: Use factory pre-printed rigid aluminum signs.
2. Rigid Signs: Provide four mounting holes at corners for mechanical fasteners.
3. Minimum Size: 7 by 10 inches unless otherwise indicated.

D. Warning Labels:
1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.

3. Minimum Size: 2 by 4 inches unless otherwise indicated.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
   1. Surface-Mounted Equipment: Enclosure front.
   2. Flush-Mounted Equipment: Inside of equipment door.
   3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
   4. Elevated Equipment: Legible from the floor or working platform.
   5. Branch Devices: Adjacent to device.
   6. Interior Components: Legible from the point of access.
   7. Conduits: Legible from the floor.
   8. Boxes: Outside face of cover.
   9. Conductors and Cables: Legible from the point of access.
   10. Devices: Outside face of cover.

C. Install identification products centered, level, and parallel with lines of item being identified.

D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.

E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.

F. Install underground warning tape above buried lines with one tape per trench at 3 inches below finished grade.

G. Secure rigid signs using stainless steel screws.

H. Mark all handwritten text, where permitted, to be neat and legible.

3.3 FIELD QUALITY CONTROL

A. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION

SECTION 26 05 73
POWER SYSTEM STUDIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Short-circuit study.

B. Protective device coordination study.

C. Arc flash and shock risk assessment.
   1. Includes arc flash hazard warning labels.

D. Criteria for the selection and adjustment of equipment and associated protective devices not specified in this section, as determined by studies to be performed.

1.2 RELATED REQUIREMENTS

A. Section 26 05 53 - Identification for Electrical Systems: Additional requirements for arc flash hazard warning labels.

B. Section 26 24 16 - Panelboards.

1.3 REFERENCE STANDARDS

A. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels; 2011 (Reaffirmed 2017).

B. NEMA MG 1 - Motors and Generators; 2021.

C. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.

D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. NFPA 70E - Standard for Electrical Safety in the Workplace; 2021.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Existing Installations: Coordinate with equipment manufacturer(s) to obtain data necessary for completion of studies.
   2. Coordinate the work to provide equipment and associated protective devices complying with criteria for selection and adjustment, as determined by studies to be performed.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Submit study reports prior to or concurrent with product submittals.
   2. Do not order equipment until matching study reports and product submittals have both been evaluated by Architect.

1.5 SUBMITTALS

A. Study preparer's qualifications.

B. Field testing agency's qualifications.

C. Study reports, stamped or sealed and signed by study preparer.

D. Product Data: In addition to submittal requirements specified in other sections, include manufacturer's standard catalog pages and data sheets for equipment and protective devices indicating information relevant to studies.
   1. Include characteristic time-current trip curves for protective devices.
   2. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.
   3. Include documentation of listed series ratings upon request.
   4. Identify modifications made in accordance with studies that:
      a. Can be made at no additional cost to Owner.
      b. As submitted will involve a change to the contract sum.

E. Field quality control reports.

F. Certification that field adjustable protective devices have been set in accordance with requirements of studies.

G. Project Record Documents: Revise studies as required to reflect as-built conditions.
   1. Include hard copies with operation and maintenance data submittals.
   2. Include computer software files used to prepare studies with file name(s) cross-referenced to specific pieces of equipment and systems.

1.6 POWER SYSTEM STUDIES

A. Scope of Studies:
   1. Perform analysis of new electrical distribution system.
   2. Except where study descriptions below indicate exclusions, analyze system at each bus from primary protective devices of utility source down to each piece of equipment involved, including parts of system affecting calculations being performed (e.g. fault current contribution from motors).
   3. Include in analysis alternate sources and operating modes (including known future configurations) to determine worst case conditions.

B. General Study Requirements:
   1. Comply with NFPA 70.
   2. Perform studies utilizing computer software complying with specified requirements; manual calculations are not permitted.

C. Data Collection:
   1. Compile information on project-specific characteristics of actual installed equipment, protective devices, feeders, etc. as necessary to develop single-line diagram of electrical distribution system and associated input data for use in

system modeling.

a. Utility Source Data: Include primary voltage, maximum and minimum three-phase and line-to-ground fault currents, impedance, X/R ratio, and primary protective device information.
   1) Obtain up-to-date information from Utility Company.
   2) Utility Company: Pacific Gas and Electric (PG&E).
b. Generators: Include manufacturer/model, kW and voltage ratings, and impedance.
c. Motors: Include manufacturer/model, type (e.g. induction, synchronous), horsepower rating, voltage rating, full load amps, and locked rotor current or NEMA MG 1 code letter designation.
d. Transformers: Include primary and secondary voltage ratings, kVA rating, winding configuration, percent impedance, and X/R ratio.
e. Protective Devices:
   1) Circuit Breakers: Include manufacturer/model, type (e.g. thermal magnetic, electronic trip), frame size, trip rating, voltage rating, interrupting rating, available field-adjustable trip response settings, and features (e.g. zone selective interlocking).
   2) Fuses: Include manufacturer/model, type/class (e.g. Class J), size/rating, and speed (e.g. time delay, fast acting).
f. Protective Relays: Include manufacturer/model, type, settings, current/potential transformer ratio, and associated protective device.
g. Conductors: Include feeder size, material (e.g. copper, aluminum), insulation type, voltage rating, number per phase, raceway type, and actual length.

D. Study Reports:
   1. General Requirements:
      a. Identify date of study and study preparer.
      b. Identify study methodology and software product(s) used.
      c. Identify scope of studies, assumptions made, implications of possible alternate scenarios, and any exclusions from studies.
      d. Identify base used for per unit values.
      e. Include single-line diagram and associated input data used for studies; identify buses on single-line diagram as referenced in reports, and indicate bus voltage.
      f. Include conclusions and recommendations.

1.7 QUALITY ASSURANCE

A. Study Preparer Qualifications: Professional electrical engineer licensed in the State in which the Project is located and with minimum five years experience in preparation of studies of similar type and complexity using specified computer software.

1. Study preparer may be employed by manufacturer of electrical distribution equipment.
2. Study preparer may be employed by field testing agency.
3. Study Preparers:
    a. Pioneer Power Group: www.pioneerpwr.com/#sle.

B. Field Testing Agency Qualifications: Independent testing organization specializing in testing, analysis, and maintenance of electrical systems with minimum five years experience; NETA Accredited Company.
    1. Field Supervisor: Certified electrical testing technician; NETA ETT Level III.

C. Computer Software for Study Preparation: Use the latest edition of commercially available software utilizing specified methodologies.
    1. Products:
        a. EasyPower LLC: www.easypower.com/#sle.
        b. ETAP/Operation Technology, Inc: www.etap.com/#sle.
        c. Power Analytics Corporation: www.poweranalytics.com/#sle.
        d. SKM Systems Analysis, Inc: www.skm.com/#sle.

PART 2 PRODUCTS

2.1 ARC FLASH HAZARD WARNING LABELS

A. Provide warning labels complying with ANSI Z535.4 to identify arc flash hazards for each work location analyzed by the arc flash and shock risk assessment.
    1. Materials: Comply with Section 26 05 53.
    2. Legend: Provide custom legend in accordance with NFPA 70E based on equipment-specific data as determined by arc flash and shock risk assessment.
        a. Include orange header that reads "WARNING" unless otherwise indicated.
        b. Include the text "Arc Flash and Shock Hazard; Appropriate PPE Required" or approved equivalent.
        c. Include the following information:
            1) Arc flash boundary.
            2) Available incident energy and corresponding working distance.
            3) Site-specific PPE (personnel protective equipment) requirements.
            4) Nominal system voltage.
            5) Limited approach boundary.
            6) Restricted approach boundary.
            7) Equipment identification.
            8) Study preparer, report reference, and date calculations were performed.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install arc flash warning labels in accordance with Section 26 05 53.

3.2 FIELD QUALITY CONTROL

A. Provide the services of field testing agency or equipment manufacturer's representative to perform inspection, testing, and adjusting.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Adjust equipment and protective devices for compliance with studies and recommended settings.

D. Notify Architect of any conflicts with or deviations from studies. Obtain direction before proceeding.

E. Submit detailed reports indicating inspection and testing results, and final adjusted settings.

3.3 CLOSEOUT ACTIVITIES

A. Training: Include as part of the base bid training for Owner's personnel on electrical safety pertaining to arc flash and shock hazards.
   1. Use site-specific arc flash and shock risk assessment report as training reference, supplemented with additional training materials as required.
   2. Provide minimum of four hours of training.
   3. Instructor: Representative of entity performing study.
   4. Location: At project site.

END OF SECTION

SECTION 26 08 00 - COMMISSIONING OF ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

B. Sections 26 09 23 Lighting Control System, 26 51 19 Interior Lighting, and 26 56 19 Exterior Lighting.

1.2 SCOPE OF WORK

A. Work includes performing commissioning process requirements for Lighting Control systems including assemblies and equipment.

B. Refer to Section 01 91 00 General Commissioning Requirements for general commissioning process requirements.

1.3 DEFINITIONS

A. See 01 91 00 General Commissioning Requirements for definitions.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. See 01 91 00 General Commissioning Requirements for contractors' and subcontractors' responsibilities.

B. Provide training on commissioned lighting control systems. See 01 91 00 for training details.

1.5 CA RESPONSIBILITIES

A. See 01 91 00 General Commissioning Requirements for CA responsibilities

1.6 COMMISSIONING DOCUMENTATION

A. Provide the following information to the CA for inclusion in the commissioning plan:

1. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase.
2. Schedule for completing construction checklists and manufacturer's prestart and startup checklists for all lighting control system components.

B. Provide the following as discussed in Section 01 91 00, General Commissioning Requirements to General Contractor:

1. Completed system readiness checklist for lighting control system, including completion of system readiness checklist, O&M manual start-up checklist, and any manufacturer provided field start-up checklists.
2. Verification to GC readiness certifying that all lighting controls are ready for functional testing.
3. Corrective action documents resulting from issues in the Commissioning Issues Log or deficiencies found from completing the start-up plan.

1.7 SUBMITTALS

A. Updated submittals: keep the CA informed of all changes to the control system documentation made during programming and setup.

B. Certificates of readiness (completion of the system readiness checklist) to General Contractor for review by CA.

C. Written training plan for review by A/E and CA prior to training. See Section 01 91 00 General Commissioning Requirements for specific items to be included in the training plan.

D. Provide O&M manuals to GC for submission to CA. These are required prior to development of the system readiness checklists.

PART 2 – PRODUCTS

2.1 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup and initial checkout and required functional performance testing.

B. Equipment-specific tools: where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or functional testing.

PART 3 – EXECUTION

3.1 PARTICIPATION

A. The contractor shall provide skilled technicians to startup and debug all systems. These same technicians shall be made available to assist the Commissioning Authority in completing the commissioning program. Contractor(s) shall ensure that the qualified technician(s) are available and present during the agreed upon schedules to complete the necessary tests, adjustments, and/or problem resolutions.

B. System performance problems and discrepancies may require additional technician time, Commissioning Authority time, reconstruction of systems, and/or replacement of system components. The additional technician time shall be made available for subsequent commissioning periods until the required system performance is obtained.

3.2 TESTING PREPARATION

A. Review and Complete System Readiness Checklists in accordance with Section 01 91 00.

B. Contractor's Commissioning Coordinator shall verify completion of all items, sign and return the checklist to the Commissioning Authority as an indication of final completion with all installation criteria as specified in the Project Contract Documents.

C. The initial System Readiness Checklists will be provided in the Commissioning Plan. The final checklists may be modifications of the initial checklists, and checklists may be added; modifications and additions to be made by the Commissioning Provider after equipment submittals have been accepted.

D. A separate completed checklist shall be submitted for each system and item of equipment within the commissioning scope of work, as specified in 01 91 00.

E. The Systems Readiness Checklists do not represent all the contract documents for the associated equipment. Completion of the items on this checklist does not release the contractor from requirements specified elsewhere.

3.3 STARTUP VERIFICATION

A. The Contractor shall provide a Startup Plan, which shall include the following:

1. System Readiness Checklists – provided by CxA and completed by the Contractor except as noted below.

2. Startup and testing procedures and data forms, in accordance with the project specifications, for all equipment and systems within the commissioning scope of work

B. Within 20 working days of Product Submittal approval, submit the Startup Plan with blank forms for CxA review.

C. Submit the completed Startup Plan at least ten business days prior to functional performance testing. When it is necessary to begin functional performance testing on a system (or systems) before the readiness of other systems can be documented, it may be acceptable to provide preliminary submittals of the Startup Plan that have been completed only for the system(s) that are ready for testing. Lighting and lighting control pre-functional checks include but are not limited to:

1. Ensure all labeling is affixed and accurate.

2. Verify quantity, type and location of fixtures.

3. Verify type and location of switches.

4. Check sensor placement is adequate for required duty.

5. Ensure adequate access is provided to all panels and that documentation of that panel is provided in it.

6. Ensure all circuits for the loads are energized and ready for testing.

3.4 GENERAL TESTING REQUIREMENTS

A. Before The Functional Performance Test (FPT) Procedures shall be developed, performed, and demonstrated in accordance with Section 01 91 00.

B. At a minimum, the electrical and lighting control contractors are required to participate in developing, performing, and demonstrating the indicated FPTs

C. The initial FPTs will be developed after review of the submittals. The final FPTs may be modifications of the initial FPTs, and FPTs may be added; modifications and additions to be made by the Commissioning Provider after equipment submittals have been accepted.

D. For the following systems the contractor shall provide a finalized draft of the startup and testing plan for CxA review, at least two weeks prior to system testing. The CxA shall review the contractors testing plan and results. The contractor shall submit completed testing documentation for inclusion in the final commissioning report.

E. The Contractor’s Commissioning Coordinator shall coordinate the subcontractors, with the Commissioning Provider's input, in developing, performing, and demonstrating the Working FPT.

1. Functional testing of the lighting control system shall, at a minimum, consist of the following:

2. Spot check the lighting systems Start-up and ensure that all lamps are operational and fixtures are clean.
3. Check all occupancy sensor placement and test reliability of activation/deactivation.
4. Test photocells for functionality and accuracy.
5. Check all switches to ensure proper operation and circuiting.
6. Individually check all lighting panel schedules to ensure that room numbers and areas are correctly listed and they are programmed per the Owner's direction.
7. Spot check lighting levels to ensure compliance with IES for the respective occupancy.
8. Test operation of circuits by changing system Date and Time to cause various circuits to switch modes. For rooms with occupancy sensors, validate the circuit energizes with occupancy in the space after the lights have been swept off. Test warning flicker prior to off sweep. Test cleaning and shed features.
9. Check schedules and lighting levels in all modes. Coordinate with Owner/Occupant for settings.
10. For exterior fixtures, simulate night mode to validate function. Measure and record light level to ensure they meet the requirements and are generally provide adequate security. Check for excessive light level fluctuations or dark spots

F. When an FPT applies to many similar components or systems that are not a part of a life-safety system, the contractor may demonstrate the function performance tests (FPTs) to the Commissioning Provider (CxA) as specified in Section 01 91 00. Demonstration Sampling will apply only in accordance with 01 91 00, and only for the components and systems listed in the accompanying Function Performance Test (FPT) Demonstration Sampling Table.

3.5 CONTROL SYSTEM TESTING PROCEDURES

A. Provide a skilled technician who is familiar with this building to execute the functional tests as directed by the CA.

B. Demonstrate the following to the CA during testing of controlled equipment. Interior & Exterior Lighting Controls including but not limited to:

1. Manual On/Off Switches
2. Dimming Controls
3. Occupancy Sensors
4. Photocell Sensors
5. Astronomical Timeclock

3.6 TRAINING

A. Provide training on each piece of commissioned equipment. See 01 91 00 and Division 26 for training details.

B. Trainer must be familiar with this building and equipment. Have the technicians that performed work on this building available for answering questions.

END OF SECTION 26 08 00

SECTION 26 09 43
DIGITAL LIGHTING CONTROLS

DISTRIBUTED DIGITAL LIGHTING CONTROLS

1.1 GENERAL

A. SECTION INCLUDES
1. Distributed Digital Lighting Control System, including:
a. Digital Lighting and Plug Load Controls
b. Dimming Controls
c. On/Off Controls
d. Relay Panels
e. Emergency Lighting Control

1.2 RELATED WORK:

A. See the following specification Section for work related to the work in this section:
1. Lighting
2. LED Interior Lighting
3. Lighting Poles and Standards
4. LED Exterior Lighting
5. Emergency Lighting
6. Raceways for Communications Systems

1.3 STANDARDS AND CODES:

A. Work and materials shall be in compliance and according to the requirements of the latest revision of the following Standards and Codes:
1. CEC - California Electrical Code
2. NFPA 70 - National Electrical Code; National Fire Protection Association.
3. NEMA - National Electrical Manufacturers Association
4. FCC emission standards
5. UL - Underwriters Laboratories, Inc. Listings
6. UL 2043 - Standard for Fire Test for Heat and Visible Smoke Release for Discrete Products Installed in Air-Handling Spaces.
7. UL 20 - General Use Switches, Plug Load Controls
8. UL 924 - Standard for Emergency Lighting and Power Equipment

1.4 DESIGN AND PERFORMANCE REQUIREMENTS:

A. Digital Lighting Management System shall accommodate the square-footage coverage requirements for each area controlled, utilizing room controllers, digital occupancy sensors, switches, daylighting sensors and accessories that suit the required lighting and electrical system parameters.

B. System shall conform to requirements of CEC [NFPA 70].

C. System shall comply with FCC emission standards specified in part 15, sub-part J for commercial and residential application.

D. System shall be listed under UL sections 916 and/or 508.

1.5 SUBMITTALS:

A. As specified in Division 1 and Section 26 05 00.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Catalog sheets and specifications.
   2. Ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.
   3. Storage and handling requirements and recommendations.
   4. Installation instructions.

C. Shop Drawings: Wiring diagrams a for the various components of the System specified including:
   1. Composite wiring and/or schematic diagram of each control circuit as proposed to be installed.
   2. Show location of all devices, including at minimum sensors, load controllers, and switches/dimmers for each area on reflected ceiling plans.
   3. Provide room/area details including products and sequence of operation for each room or area. Illustrate typical acceptable room/area connection topologies.
   4. Network riser diagram including floor and building level details. Include network cable specification. Illustrate points of connection to integrated systems. Coordinate integration with mechanical and/or other trades.

D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

E. Closeout Submittals:
   1. Project Record Documents: Record actual installed locations and settings for lighting control devices.
   2. Operation and Maintenance Manual:
      a. Include approved Shop Drawings and Product Data.
      b. Include Sequence of Operation, identifying operation for each room or space.
      c. Include manufacturer's maintenance information.
      d. Operation and Maintenance Data: Include detailed information on device programming and setup.
      e. Include startup and test reports.

1.6 QUALITY ASSURANCE:

A. Manufacturer Qualifications: Company specializing in manufacturing of centralized and distributed lighting control systems with a minimum of 10 years documented experience.

B. Installer Qualifications: Company certified by the manufacturer and specializing in installation of networked lighting control products with minimum three years documented experience.

C. System Components: Demonstrate that individual components have undergone quality control and testing prior to shipping.

1.7 WARRANTY:

A. Manufacturer shall provide a 5 year limited warranty on products within this installation, except where otherwise noted, and consisting of a one for one device replacement.

1.8 EXTRA MATERIALS:

A. Deliver extra sets of items for Owner's use in maintenance as follows:
   1. Occupancy Sensors: (1) of each type installed
   2. Switches: (1) of each type installed
   3. Room Controllers: (1) of each type installed
   4. Emergency Lighting Control Units: (1) of each type installed

PART 2 PRODUCTS

2.1 MANUFACTURERS:

A. Manufacturer: Wattstopper or approved equal.

2.2 DISTRIBUTED DIGITAL LIGHTING CONTROL SYSTEM:

A. Equipment Required: Lighting Control and Automation system as defined under this section covers the following equipment.
   1. Digital Lighting Management (DLM) local network: Free topology, plug-in wiring system (Cat 5e) for power and data to room devices.
   2. Digital Room Controllers: Self-configuring, digitally addressable one, two or three relay plenum-rated controllers for on/off control. Selected models include 0-10 volt or line voltage forward phase control dimming outputs and integral current monitoring capabilities.
   3. Digital Plug Load Controllers: Self-configuring, digitally addressable, single relay, plenum-rated application-specific controllers. Selected models include integral current monitoring capabilities.
   4. Digital Occupancy Sensors: Self-configuring, digitally addressable, calibrated occupancy sensors with LCD display and two-way active infrared (IR) communications.
   5. Digital Switches: Self-configuring, digitally addressable pushbutton on/off, dimming, and scene switches with two-way active infrared (IR) communications.
   6. Digital Daylighting Sensors: Single-zone closed loop, multi-zone open loop and single-zone dual-loop daylighting sensors with two-way active infrared (IR) communications for daylight harvesting using switching, bi-level, tri-level or

dimming control.

7. Configuration Tools: Handheld remote for room configuration and relay panel programming provides two way infrared (IR) communications to digital devices and allows complete configuration and reconfiguration of the device / room from up to 30 feet away.
8. Digital Lighting Management (DLM) segment network: Linear topology, BACnet MS/TP network (1.5 twisted pair, shielded) to connect multiple DLM local networks for centralized control.
9. Network Bridge: Provides BACnet MS/TP-compliant digital networked communication between rooms, panels and the Segment Manager or building automation system (BAS) and automatically creates BACnet objects representative of connected devices.
10. Segment Manager: BACnet MS/TP-based controller with web browser-based user interface for system control, scheduling, power monitoring, room device parameter administration and reporting.
11. Programming and Configuration Software: Optional PC-native application capable of accessing DLM control parameters within a room, for the local network, via a USB adapter, or globally, for many segment networks simultaneously, via BACnet/IP communication.
12. Digital Lighting Management Relay Panel and Zone Controller: Provides up to 8, 24, or 48 mechanically latching relays. Relays include a manual override and a single push-on connector for easy installation or removal from the panel. Panel accepts program changes from handheld configuration tool for date and time, location, holidays, event scheduling, button binding and group programming. Provides BACnet MS/TP-compliant digital networked communication between other lighting controls and/or building automation system (BAS). Zero relay Zone Controller primarily supports Digital Fixture Controller applications.
13. Emergency Lighting Control Unit (ELCU): Allows a standard lighting control device to control emergency lighting in conjunction with normal lighting in any area within a building

2.3 LOCAL NETWORK LMRJ-SERIES: DLM LOCAL NETWORK IS A FREE TOPOLOGY LIGHTING CONTROL PHYSICAL CONNECTION AND COMMUNICATION PROTOCOL DESIGNED TO CONTROL A SMALL AREA OF A BUILDING.

A. Features of the DLM local network include:
   1. Plug n' Go automatic configuration and binding of occupancy sensors, switches and lighting loads to the most energy-efficient sequence of operation based upon the device attached.
   2. Simple replacement of any device in the local DLM network with a standard off the shelf unit without requiring significant commissioning, configuration or setup.
   3. Push n' Learn configuration to change the automatic configuration, including binding and load parameters without tools, using only the buttons on the digital

devices in the local network.

4. Two-way infrared communications for control by handheld remotes, and configuration by a handheld tool including adjusting load parameters, sensor configuration and binding, within a line of sight of up to 30 feet from a sensor, wall switch or IR receiver.

B. Digital room devices connect to the local network using pre-terminated Cat 5e cables with RJ-45 connectors, which provide both data and power to room devices. Systems that utilize RJ-45 patch cords but do not provide serial communication data from individual end devices are not acceptable.

C. If manufacturer's pre-terminated Cat5e cables are not used for the installation each cable must be individually tested and observed by authorized service representative following installation.

2.4 DIGITAL LOAD CONTROLLERS (ROOM, PLUG LOAD, AND FIXTURE CONTROLLERS)

A. Digital Load Controllers: Digital controllers for lighting zones, fixtures and/or plug loads automatically bind room loads to the connected control devices in the space without commissioning or the use of any tools. Provide controllers to match the room lighting and plug load control requirements. Controllers are simple to install, and do not have dip switches/potentiometers, or require special configuration for standard Plug n' Go applications. Control units include the following features

1. Automatic room configuration to the most energy-efficient sequence of operation based upon the devices in the room.
2. Simple replacement using the default automatic configuration capabilities, a room controller may be replaced with an off-the-shelf device.
3. Multiple room controllers connected together in a local network must automatically arbitrate with each other, without requiring any configuration or setup, so that individual load numbers are assigned starting with load 1 to a maximum of 64, assigned based on each controller's device ID's from highest to lowest.
4. Device Status LEDs to indicate:
    a. Data transmission
    b. Device has power
    c. Status for each load
    d. Configuration status
5. Quick installation features including:
    a. Standard junction box mounting
    b. Quick low voltage connections using standard RJ-45 patch cable
6. Based on individual configuration, each load shall be capable of the following behavior on power up following the loss of normal power:
    a. Turn on to 100 percent
    b. Turn off

c. Turn on to last level

7. Each load be configurable to operate in the following sequences based on occupancy:
   a. Auto-on/Auto-off (Follow on and off)
   b. Manual-on/Auto-off (Follow off only)
8. Polarity of each load output shall be reversible, via digital configuration, so that on is off and off is on.
9. BACnet object information shall be available for the following objects:
   a. Load status
   b. Schedule state, normal or after-hours
   c. Demand Response enable and disable
   d. Room occupancy status
   e. Total room lighting and plug loads watts
   f. Electrical current
   g. Total watts per controller
   h. Total room watts/sq ft.
   i. Force on/off all loads
10. UL 2043 plenum rated
11. Manual override and LED indication for each load
12. Zero cross circuitry for each load
13. All digital parameter data programmed into an individual room controller or plug load controller shall be retained in non-volatile FLASH memory within the controller itself. Memory shall have an expected life of no less than 10 years.
14. Dimming Room Controllers shall share the following features:
15. Each load shall have an independently configurable preset on level for Normal Hours and After Hours events to allow different dimmed levels to be established at the start of both Normal Hours and After Hours events.
16. Fade rates for dimming loads shall be specific to bound switch buttons, and the load shall maintain a default value for any bound buttons that do not specify a unique value.
17. The following dimming attributes may be changed or selected using a wireless configuration tool:
   a. Establish preset level for each load from 0-100 percent
   b. Set high and low trim for each load
   c. Initiate lamp burn in for each load of either 0, 12 or 100 hours
18. Override button for each load provides the following functions:
   a. Press and release for on/off control
   b. Press and hold for dimming control
19. Each dimming output channel shall have an independently configurable minimum and maximum calibration trim level to set the dimming range to match the true dynamic range of the connected ballast or driver. LED level indicators on bound

dimming switches shall utilize this new maximum and minimum trim.

20. Each dimming output channel shall have an independently configurable minimum and maximum trim level to set the dynamic range of the output within the new 0-100 percent dimming range defined by the minimum and maximum calibration trim.
21. Calibration and trim levels must be set per output channel. Devices that set calibration or trim levels per controller (as opposed to per load) are not acceptable.
22. All configuration shall be digital. Devices that set calibration or trim levels per output channel via trim pots or dip-switches are not acceptable.

B. Plug Load Controllers shall include:
1. 120 VAC, 60 Hz rated for 20A total load. Controller carries application-specific UL 20 rating for receptacle control.
2. One relay configuration with additional connection for unswitched load
3. Configurable additive time delay to extend plug load time delay beyond occupancy sensor time delay (e.g. a 10 minute additive delay in a space with a 20 minute occupancy sensor delay ensures that plug loads turn off 30 minutes after the space is vacated).
4. Factory default operation is Auto-on/Auto-off, based on occupancy
5. Real time current monitoring of both switched and un-switched load (LMPL-201 only)
6. Switching power supply
   a. Simple 150mA - Only 4 100 series devices on a Cat 5e local network (LMPL-101)
   b. Smart 250mA (LMPL-201)
7. RJ-45 DLM local network ports
   a. Three RJ-45 ports (LMPL-101)
   b. Four RJ-45 ports (LMPL-201)
8. WattStopper product numbers:
   a. Plug Load Controllers: LMPL-101, LMPL-201.
   b. Wireless Transceiver and Receptacles: WRC-TX-LM, WRC-15-1/2, WRC-20-1/2

2.5 DIGITAL WALL OR CEILING MOUNTED OCCUPANCY SENSOR SYSTEM

A. Wall or ceiling mounted (to suit installation) passive infrared, ultrasonic or dual technology digital (passive infrared and ultrasonic) occupancy sensor. Furnish the Company's system which accommodates the square footage coverage requirements for each area controlled, utilizing Room Controller modules and accessories which suits the lighting and electrical system parameters.

B. Digital Occupancy Sensors shall provide graphic LCD display for digital calibration and electronic documentation. Features include the following:
1. Digital calibration and LCD entry for the following variables:

a. Sensitivity 0-100% in 10% increments
b. Time Delay – Fixed (1-30 minutes in 1 minute increments), and automatic
c. Test mode – Five second time delay
d. PIR, Ultrasonic or Dual Technology activation and/or re-activation.
e. Walk-through mode
f. Load parameters including auto/manual ON, blink warning, and daylight enable/disable.

2. One or two RJ-45 digital connections for DLM local network.
3. Two-way infrared communications port to allow remote programming through hand held commissioning tool.
4. Device Status LED's including:
   a. PIR Detection
   b. Ultrasonic detection
   c. Configuration mode
   d. Load binding
5. Assignment of occupancy sensor to a specific load within the room without wiring or special tools.
6. Manual override of controlled loads.

C. Units will provide for digital calibration and commissioning and will not have any dip switches or potentiometers for field settings

D. Multiple occupancy sensors may be installed in a room by simply connecting them to the free topology DLM local network. No additional configuration will be required

E. Manufacturer: The Watt Stopper LMPX, LMDX, LMPC, LMUC, LMDC or approved equal.

2.6 SINGLE / DUAL RELAY WALL SWITCH VACANCY SENSORS

A. Passive infrared sensing technology- Type PW: Manual ON, Automatic OFF Wall switch type passive infrared occupancy sensor with built-in override control (off-auto). Furnish the Company's model which suits the electrical system parameters, and accommodates the square footage coverage and wattage requirement for each area (and type of lighting) controlled; Watt Stopper PW-100, PW-200 PW-103, PW-203 or approved equal.

B. Ultrasonic sensing technology- Type UW: Manual ON, Automatic OFF Wall switch type ultrasonic occupancy sensor with built-in override control (off-auto). Furnish the Company's model which suits the electrical system parameters, and accommodates the square footage coverage and wattage requirement for each area (and type of lighting) controlled; Watt Stopper UW-100, UW-200 or approved equal.

C. Dual-tech (utilizing both passive infrared and ultrasonic) sensing technology- Type DW: Manual ON, Automatic OFF Wall switch type dual technology, passive Infrared and ultrasonic occupancy sensor with built-in override control (off-auto). Furnish the Company's model which suits the electrical system parameters, and accommodates the

square footage coverage and wattage requirement for each area (and type of lighting) controlled; Watt Stopper DW-100, DW-200, DW-103, DW-203 or approved equal.

2.7 DIGITAL WALL SWITCHES:

A. Low voltage momentary pushbutton switches in 1, 2, 3, 4, 5 and 8 button configuration. Wall switches shall include the following features:
   1. Two-way infrared (IR) transceiver for use with personal and configuration remote controls.
   2. Removable buttons for field replacement with engraved buttons and/or alternate color buttons. Button replacement may be completed without removing the switch from the wall.
   3. Configuration LED on each switch that blinks to indicate data transmission.
   4. Load/Scene Status LED on each switch button with the following characteristics:
      a. Bi-level LED
      b. Dim locator level indicates power to switch
      c. Bright status level indicates that load or scene is active
      d. Dimming switches shall include seven bi-level LEDs to indicate load levels using 14 steps.
   5. Programmable control functionality including:
      a. Button priority may be configured to any BACnet priority level, from 1-16, corresponding to networked operation allowing local actions to utilize life safety priority
      b. Scene patterns may be saved to any button other than dimming rockers. Once set, buttons may be digitally locked to prevent overwriting of the preset levels.
   6. All digital parameter data programmed into an individual wall switch shall be retained in non-volatile FLASH memory within the wall switch itself. Memory shall have an expected life of no less than 10 years.

B. BACnet object information shall be available for the following objects:
   1. Button state
   2. Switch lock control
   3. Switch lock status

C. Two RJ-45 ports for connection to DLM local network.

D. Multiple digital wall switches may be installed in a room by simply connecting them to the free topology DLM local network. No additional configuration shall be required to achieve multi-way switching.

E. Load and Scene button function may be reconfigured for individual buttons from Load to Scene, and vice versa.
   1. Individual button function may be configured to Toggle, On only or Off only.
   2. Individual scenes may be locked to prevent unauthorized change.

3. Fade Up and Fade Down times for individual scenes may be adjusted from 0 seconds to 18 hours.
4. Ramp rate may be adjusted for each dimmer switch.
5. Switch buttons may be bound to any load on any load controller or relay panel and are not load type dependent; each button may be bound to multiple loads.
6. WattStopper product numbers: LMSW-101, LMSW-102, LMSW-103, LMSW-104, LMSW-105, LMSW-108, LMDM-101. Available in white, light almond, ivory, grey, red and black; compatible with wall plates with decorator opening.

2.8 DIGITAL DAYLIGHT SENSORS:

A. Digital daylighting sensors shall work with load controllers and relay panels to provide automatic switching, bi-level, or tri-level or dimming daylight harvesting capabilities for any load type connected to the controller or panel. Daylighting sensors shall be interchangeable without the need for rewiring.
   1. Closed loop sensors measure the ambient light in the space and control a single lighting zone.
   2. Open loop sensors measure incoming daylight in the space, and are capable of controlling up to three lighting zones.
   3. Dual loop sensors measure both ambient and incoming daylight in the space to insure that proper light levels are maintained as changes to reflective materials are made in a single zone

B. Digital daylighting sensors shall include the following features:
   1. Sensor's internal photodiode shall only measure lightwaves within the visible spectrum. The photodiode's spectral response curve shall closely match the entire photopic curve. Photodiode shall not measure energy in either the ultraviolet or infrared spectrums. Photocell shall have a sensitivity of less than 5 percent for any wavelengths less than 400 nanometers or greater than 700 nanometers.
   2. Sensor light level range shall be from 1-6,553 foot-candles (fc).
   3. Capability of ON/OFF, bi-level or tri-level switching, or dimming, for each controlled zone, depending on the selection of load controller(s) and load binding to controller(s).
   4. For switching daylight harvesting, the photosensor shall provide a field-selectable deadband, or a separation, between the "ON Setpoint" and the "OFF Setpoint" that will prevent the lights from cycling excessively after they turn off.
   5. For dimming daylight harvesting, the photosensor shall provide the option, when the daylight contribution is sufficient, of turning lights off or dimming lights to a field-selectable minimum level.
   6. Photosensors shall have a digital, independently configurable fade rate for both increasing and decreasing light level in units of percent per second.
   7. Photosensors shall provide adjustable cut-off time. Cut-off time is defined by the number of selected minutes the load is at the minimum output before the load

turns off. Selectable range between 0-240 minutes including option to never cut-off.

8. Integral infrared (IR) transceiver for configuration and/or commissioning with a handheld configuration tool, to transmit detected light level to wireless configuration tool, and for communication with personal remote controls.
9. Configuration LED status light on device that blinks to indicate data transmission.
10. Status LED indicates test mode, override mode and load binding.
11. Recessed switch on device to turn controlled load(s) ON and OFF.
12. BACnet object information shall be available for the following daylighting sensor objects, based on the specific photocell's settings:
    a. Light level
    b. Day and night setpoints
    c. Off time delay
    d. On and off setpoints
    e. Up to three zone setpoints
    f. Operating mode - on/off, bi-level, tri-level or dimming
13. One RJ-45 port for connection to DLM local network.
14. A choice of accessories to accommodate multiple mounting methods and building materials. Photosensors may be mounted on a ceiling tile, skylight light well, suspended lighting fixture or backbox. Standard tube photosensors accommodate mounting materials from 0-0.62 inch thick (LMLS-400, LMLS-500). Extended tube photosensors accommodate mounting materials from 0.62 to 1.25 inches thick (LMLS-400-L, LMLS-500-L). Mounting brackets are compatible with J boxes (LMLS-MB1) and wall mounting (LMLS-MB2). LMLS-600 photosensor to be mounted on included bracket below skylight well.
15. Any load or group of loads in the room can be assigned to a daylighting zone
16. Each load within a daylighting zone can be individually enabled or disabled for discrete control (load independence).
17. All digital parameter data programmed into a photosensor shall be retained in non-volatile FLASH memory within the photosensor itself. Memory shall have an expected life of no less than 10 years.

2.9 HANDHELD CONFIGURATION TOOLS:

A. Provide a wireless configuration tool to facilitate customization of DLM local networks using two-way infrared communications, and/or PC software that connects to each local network via a USB interface.

B. Features and functionality of the wireless configuration tool shall include but not be limited to:
    1. Two-way infrared (IR) communication with DLM IR-enabled devices within a range of approximately 30 feet.

2. High visibility organic LED (OLED) display, pushbutton user interface and menu-driven operation.
3. Must be able to read and modify parameters for load controllers and relay panels, occupancy sensors, wall switches, daylighting sensors, network bridges, and identify DLM devices by type and serial number.
4. Save up to eight occupancy sensor setting profiles, and apply profiles to selected sensors.
5. Temporarily adjust light level of any load(s) on the local network, and incorporate those levels in scene setting. Set room mode for testing of Normal Hours (NH) and After Hours (AH) parameter settings.
6. Adjust or fine-tune daylighting settings established during auto-configuration, and input light level data to complete configuration of open loop daylighting controls.
7. Set room mode for testing of Normal Hours (NH) and After Hours (AH) parameter settings.
8. Verify status of building level network devices.

C. WattStopper Product Numbers: Handheld LMCT-100

2.10 DLM SEGMENT NETWORK

A. Provide a segment network using linear topology, BACnet-based MS/TP subnet to connect DLM local networks (rooms) and LMCP relay panels for centralized control.
1. Each connected DLM local network shall include a single network bridge (LMBC-300), and the network bridge is the only room-based device that is connected to the segment network.
2. Network bridges, relay panels and segment managers shall include terminal blocks, with provisions for separate "in" and "out" terminations, for segment network connections.
3. Segment network utilizes 1.5 twisted pair, shielded, cable supplied by the lighting control manufacturer. Maximum cable run for each segment is 4,000 feet. Conductor-to-conductor capacitance of the twisted pair shall be less than 30 pf/ft and have a characteristic impedance of 120 Ohms.
4. Network wire jacket is available in high visibility green, white, or black.
5. Substitution of manufacturer-supplied cable is not permitted and may void the warranty, if non-approved cable is installed, and if terminations are not completed according to manufacturer's specific requirements.
6. Network signal integrity requires that each conductor and ground wire be correctly terminated at every connected device.
7. Segment networks shall be capable of connecting to any of the following: BACnet-compliant BAS (provided by others) directly via MS/TP, or BACnet/IP via an NB-ROUTER or LMSM Unit. Systems whose room-connected network infrastructure require gateway devices to provide BACnet data to a BAS are unacceptable

B. WattStopper Product Number: LM-MSTP, LM-MSTP-W, LM-MSTP-B, LM-MSTP-DB

2.11 NETWORK BRIDGE:

A. Network bridge module connects a DLM local network to a BACnet-compliant segment network for communication between rooms, relay panels and a segment manager or BAS. Each local network shall include a network bridge component to provide a connection to the local network room devices. Network bridge shall use industry standard BACnet MS/TP network communication and an optically isolated EIA/TIA RS-485 transceiver.
   1. Network bridge shall be provided as a separate module connected on the local network through an available RJ-45 port.
   2. Provide Plug n' Go operation to automatically discover room devices connected to the local network and make all device parameters visible to the segment manager via the segment network. No commissioning shall be required for set up of the network bridge on the local network.
   3. Network bridge shall automatically create standard BACnet objects for selected DLM devices to allow any BACnet-compliant BAS to include lighting control and power monitoring features as provided by the DLM devices on each local network. BACnet objects will be created for the addition or replacement of any given DLM device for the installed life of the system. Products requiring that an application-specific point database be loaded to create or map BACnet objects are not acceptable. Systems not capable of providing BACnet data for control devices via a dedicated BACnet Device ID and physical MS/TP termination per room are not acceptable. Standard BACnet objects shall be provided as follows:
      a. Read/write the normal or after hours schedule state for the room
      b. Read the detection state of each occupancy sensor
      c. Read the aggregate occupancy state of the room
      d. Read/write the On/Off state of loads
      e. Read/write the dimmed light level of loads
      f. Read the button states of switches
      g. Read total current in amps, and total power in watts through the load controller
      h. Read/write occupancy sensor time delay, PIR sensitivity and ultrasonic sensitivity settings
      i. Activate a preset scene for the room
      j. Read/write daylight sensor fade time and day and night setpoints
      k. Read the current light level, in foot-candles, from interior and exterior photosensors and photocells
      l. Set daylight sensor operating mode
      m. Read/write wall switch lock status
      n. Read watts per square foot for the entire controlled room

o. Write maximum light level per load for demand response mode
p. Read/write activation of demand response mode for the room
q. Activate/restore demand response mode for the room

4. WattStopper product numbers: LMBC-300

2.12 LMCP LIGHTING CONTROL PANELS AND LMZC ZONE CONTROLLER:

A. Hardware: Provide LMCP lighting control panels in the locations and capacities as indicated on the Drawing and schedules. Each panel shall be of modular construction and consist of the following components:

1. Enclosure/Tub shall be NEMA 1, sized to accept an interior with 1 - 8 relays, 1 - 24 relays and 6 four-pole contactors, or 1 - 48 relays and 6 four-pole contactors.
2. Cover shall be configured for surface or flush wall mounting of the panel as indicated on the plans. LMCP panel cover shall have a hinged and lockable door with restricted access to line voltage section of the panel.
3. Interior assembly shall be supplied as a factory assembled component specifically designed and listed for field installation. Interior construction shall provide total isolation of high voltage (Class 1) wiring from low voltage (Class 2) wiring within the assembled panel. Interior assembly shall include intelligence boards, power supply, DIN rails for mounting optional Class 2 control devices, and individually replaceable latching type relays. Panel interiors shall include the following features:
   a. Removable, plug-in terminal blocks with connections for all low voltage terminations.
   b. Individual terminal block, override pushbutton, and LED status light for each relay.
   c. Direct wired switch inputs associated with each relay shall support 2-wire momentary switches only.
   d. Digital inputs (four RJ-45 jacks) shall support 1-, 2-, 3-, 4-, and 8-button digital switches; digital IO modules capable of receiving 0-5V or 0-10V analog photocell inputs; digital IO modules capable of receiving momentary or maintained contact closure inputs or analog sensor inputs; digital daylighting sensors; and digital occupancy sensors. Inputs are divided into two separate digital networks, each capable of supplying 250mA to connected devices.
   e. True relay state shall be indicated by the on-board LED and shall be available to external control devices and systems via BACnet.
   f. Automatically sequenced operation of relays to reduce impact on the electrical distribution system when large loads are controlled simultaneously.
   g. Group and pattern control of relays shall be provided through a simple keypad interface from a handheld IR programmer. Any set of relays can be associated with a group for direct on/off control or pattern (scene) control via a simple programming sequence using the relay override pushbuttons and LED displays for groups 1-8 or a handheld IR programmer for groups 1-99.

h. Relay group status for shall be provided through LED indicators for groups 1-8 and via BACnet for groups 1-99. A solid LED indicates that the last group action called for an ON state and relays in the group are on or in a mixed state.

4. Single-pole latching relays with modular plug-in design. Relays shall provide the following ratings and features:
   a. Electrical:
   b. 30 amp ballast at 277V
   c. 20 amp ballast at 347V
   d. 20amp tungsten at 120V
   e. 30 amp resistive at 347V
   f. HP motor at 120V
   g. 14,000 amp short circuit current rating (SCCR) at 347V
   h. Relays shall be specifically UL 20 listed for control of plug-loads
   i. Mechanical:
   j. Replaceable, 1/2 inch KO mounting with removable Class 2 wire harness.
   k. Actuator on relay housing provides manual override and visual status indication, accessible from Class 2 section of panel.
   l. Dual line and load terminals each support two #14 - #12 solid or stranded conductors.
   m. Tested to 300,000 mechanical on/off cycles.
5. Isolated low voltage contacts provide for true relay status feedback and pilot light indication.
6. Power supply shall be a multi-voltage transformer assembly with rated power to supply all electronics, occupancy sensors, switches, pilot lights, and photocells as necessary to meet the project requirements. Power supply to have internal over-current protection with automatic reset and metal oxide varistor protection.
7. Where indicated, lighting control panels designated for control of emergency lighting shall be provided with factory installed provision for automatic by pass of relays controlling emergency circuits upon loss of normal power. Panels shall be properly listed and labeled for use on emergency lighting circuits and shall meet the requirements of UL924 and NFPA 70 - Article 700.
8. Integral system clock shall provide scheduling capabilities for panel-only projects without DLM segment networks or BAS control.
   a. Each panel shall include digital clock capability able to issue system wide automation commands to up to 11 other panels for a total of 12 tnetworked lighting control panels. Clock shall provide capability for up to 254 independent schedule events per panel for each of the ninety-nine system wide channel groups.
   b. Clock capability of each panel shall support the time-based energy saving requirements of applicable local energy codes.

c. Clock module shall provide astronomic capabilities, time delays, blink warning, daylight savings, and holiday functions and will include a battery back up for clock function and program retention in non-volatile FLASH memory. Clocks that require multiple events to meet local code lighting shut off requirements shall not be allowed.
d. Clock capability of each panel shall operate on a basis of ON/OFF or Normal Hours/After Hours messages to automation groups that implement pre-configured control scenarios. Scenarios shall include:
e. Scheduled ON / OFF
f. Manual ON / Scheduled OFF
g. Astro ON / OFF (or Photo ON / OFF)
h. Astro and Schedule ON / OFF (or Photo and Schedule ON / OFF)
i. User interface shall be a portable IR handheld remote control capable of programming any panel in the system (LMCT-100)
j. Clock capability of each panel shall employ non-volatile memory and shall retain user programming and time for a minimum of 10 years.
k. Schedules programmed into the clock of any one panel shall be capable of executing panel local schedule or Dark/Light (photocell or Astro) events for that panel in the event that global network communication is lost. Lighting control panels that are not capable of executing events independently of the global network shall not be acceptable.

9. Lighting control panel can operate as a stand-alone system, or can support schedule, group, and photocell control functions, as configured in a Segment Manager controller, via a segment network connection.
10. Lighting control panel shall support digital communications to facilitate the extension of control to include interoperation with building automation systems and other intelligent field devices. Digital communications shall be RS485 MS/TP-based using the BACnet protocol.
    a. Panel shall have provision for an individual BACnet device ID and shall support the full 222 range (0 - 4,193,304). The device ID description property shall be writable via the network to allow unique identification of the lighting control panel on the network.
    b. Panel shall support MS/TP MAC addresses in the range of 0 - 127 and baud rates of 9600k, 38400k, 76800k, and 115.2k bits per second.
    c. Lighting control relays shall be controllable as binary output objects in the instance range of 1 - 64. The state of each relay shall be readable and writable by the BAS via the object present value property.
    d. Lighting control relays shall report their true on/off state as binary input objects in the instance range of 1 - 64.
    e. The 99 group Normal Hours/After Hours control objects associated with the panel shall be represented by binary value objects in the instance range of

201 - 299. The occupancy state of each channel group shall be readable and writable by the BAS via the object present value property. Commanding 1 to a channel group will put all relays associated with the channel into the normal hours mode. Commanding 0 or NULL shall put the relays into the after hours mode.

f. Setup and commissioning of panel shall not require manufacturer-specific software or a computer. All configuration of the lighting control panel shall be performed using standard BACnet objects or via the handheld IR programming remote. Provide BACnet objects for panel setup and control as follows:
g. Binary output objects in the instance range of 1 - 64 (one per relay) for on/off control of relays.
h. Binary value objects in the instance range of 1 - 99 (one per channel) for normal hours/after hours schedule control.
i. Binary input objects in the instance range of 1 - 64 (one per relay) for reading true on/off state of the relays.
j. Analog value objects in the instance range of 101 - 199 (one per channel group) shall assign a blink warn time value to each channel. A value of 5 shall activate the blink warn feature for the channel and set a 5-minute grace-time period. A value of 250 shall activate the sweep feature for the channel and enable the use of sweep type automatic wall switches.
k. Description property for all objects shall be writable via the network and shall be saved in non-volatile memory within the panel.
l. BO and BV 1 - 99 objects shall support BACnet priority array with a relinquish default of off and after hours respectively. Prioritized writes to the channel BV objects shall propagate prioritized control to each member relay in a way analogous to the BACnet Channel object described in addendum aa. (http://www.bacnet.org/Addenda/Add-135-2010aa.pdf)
m. Panel-aggregate control of relay Force Off at priority 2 shall be available via a single BV5 object. Force On at priority 1 shall be available via a single BV4 object.
n. Lockout of all digital switch buttons connected to a given panel shall be command-able via a single BV2 object. The lock status of any connected switch station shall be represented as BV101-196.

11. In addition to the LMCP Relay Panels, an LMZC Zone Controller panel shall be available for zero-relay applications. The panel is designed for applications where LMFC-011 Fixture Controllers or other distributed load controllers are used to switch and/or dim the controlled loads. Key similarities to and differences from the LMCP panel design shall include:
    a. Use the same intelligence board as the LMCP relay panel.
    b. Shall not include relay driver boards or relays.

c. Have a removable interior section to facilitate installation, and a Tub/Cover. Cover is for surface mounting applications only.
d. Tub shall have two interior KOs to allow installation of LMPB-100 Power Boosters. Each installed Power Booster can provide an additional 150 mA for either of the two available DLM local networks provided by the LMZC.
e. All programming and networking (whether DLM Local Network and/or Segment Network) capabilities in the LMZC Zone Controller shall be similar to capabilities for LMCP relay panels, except for functions designed for panel-mounted HDR relays.

12. To aid in project start up, if LMFC Fixture Controllers are connected to an LMZC Zone Controller, Plug n' Go automatic configuration will establish a unique sequence of operation so that all LMFC-controlled fixtures will turn on to 50 percent output when any digital occupancy sensor detects motion.
13. WattStopper Product Number: Relay Panels: LMCP8, LMCP24 or LMCP48, Zone Controller: LMZC-301.

B. User Interface: Each lighting control panel system shall be supplied with at least one handheld configuration tool (LMCT-100). As a remote programming interface the configuration tool shall allow setup, configuration, and diagnostics of the panel without the need for software or connection of a computer. User interface shall have the following panel-specific functions as a minimum:
1. Set network parameters including panel device ID, MS/TP MAC address, baud rate and max master range.
2. Relay Group creation of up to 99 groups. Group creation shall result in programming of all seven key relay parameters for member relays. The seven parameters are as follows: After-hours Override Time Delay, Normal Hours Override Time Delay, Action on Transition to Normal Hours, Action on Transition to After Hours, Sensor Action During Normal Hours, Sensor Action During After Hours, Blink-Warn Time for After Hours.
3. Program up to 254 separate scheduled events. Events shall occur on seven day intervals with each day selectable as active or inactive, and shall be configurable as to whether the event is active on holidays. Holidays are also defined through the User Interface.
4. Program up to 32 separate Dark/Light events. Events shall have a selectable source as either calculated Astro with delay, or a digital IO module with an integral 0-5V or 0-10V analog photocell. Dark/Light events shall occur on seven day intervals with each day selectable as active or inactive, and shall be configurable as to whether the event is active on holidays.
5. Button binding of digital switches to groups shall be accessible via the handheld IR remote and accomplished from the digital switch station.
6. Programming of panel location information shall be accomplished by the handheld IR remote and include at a minimum LAT, LON, DST zone, and an

approximate city/state location.

7. WattStopper Product Number: LMCT-100

2.13 SEGMENT MANAGER:

A. For networked applications, the Digital Lighting Management system shall include at least one segment manager to manage network communication. It shall be capable of serving up a graphical user interface via a standard web browser utilizing either unencrypted TCP/IP traffic via a configurable port (default is 80) or 256 bit AES encrypted SSL TCP/IP traffic via a configurable port (default is 443).

B. Each segment manager shall have integral support for at least three segment networks. Segment networks may alternately be connected to the segment manger via external BACnet-to-IP interface routers and switches, using standard Ethernet structured wiring. Each router shall accommodate one segment network. Provide the quantity of routers and switches as shown on the Drawings.

C. Operational features of the Segment Manager shall include the following:
   1. Connection to PC or LAN via standard Ethernet TCP/IP via standard Ethernet TCP/IP with the option to use SSL encrypted connections for all traffic.
   2. Easy to learn and use graphical user interface, compatible with Internet Explorer 8, or equal browser. The Segment Manager shall not require installation of any lighting control software on an end-user PC.
   3. Log in security capable of restricting some users to view-only or other limited operations.
   4. Segment Manager shall provide two main sets of interface screens - those used to initially configure the unit (referred to as the config screens), and a those used to allow users to dynamic monitor the performance of their system, and provide a centralized scheduling interface. Capabilities using the Config Screens shall include:
      a. Automatic discovery of DLM devices and relay panels on the segment network(s). Commissioning beyond activation of the discovery function shall not be required to provide communication, monitoring or control of all local networks and lighting control panels.
      b. Allow information for all discovered DLM devices to be imported into the Segment Manager via a single XML based site file from the WattStopper LMCS Software, significantly reducing the time needed to make a system usable by the end user. Importable information can include text descriptions of every DLM component and individual loads, and automatic creation of room location information and overall structure of DLM network. Info entered into LMCS should not have to be re-entered manually via keystrokes into the Segment Manager
      c. After discovery, all rooms and panels shall be presented in a standard navigation tree format. Selecting a device from the tree will allow the device

settings and operational parameters to be viewed and changed by the user.

d. Ability to view and modify DLM device operational parameters. It shall be possible to set device parameters independently for normal hours and after hours operation including sensor time delays and sensitivities, and load response to sensor including Manual-On or Auto-On.

e. Provide capabilities for integration with a BAS via BACnet protocol. At a minimum, the following points shall be available to the BAS via BACnet IP connection to the segment manager: room occupancy state; room schedule mode; room switch lock control; individual occupancy sensor state; room lighting power; room plug-load power; load ON/OFF state; load dimming level; panel channel schedule state; panel relay state; and Segment Manager Group schedule state control. Any of above items shall be capable of being moved into an "Export Table" that will provide any integrator with only the data they need, and by using the Export Table effectively create a firewall between the integrator's request for info and the overall system performance.

5. Capabilities using the Segment Manager's Dashboard Screens shall include:

a. A dynamic "tile" based interface that allows easy viewing of each individual room's lighting and plug load power consumption, and lighting and plug load power density (power consumption information requires Enhanced DLM Room and Plug Load Controllers with integral current transducers such as LMRC-21x).Tiles will be automatically organized according to location so a single tile for the building summarizes all information for tiles beneath it on every floor, in every area, in every room. Tiles use three color coded energy target parameters, allowing an owner to quickly identify rooms that are not performing efficiently. Tiles for rooms with occupancy sensors shall include an icon to indicate whether that room is occupied. Tiles shall be clickable, and when clicked the underlying hierarchical level of tiles shall become visible. Tile interface shall be accessible via mouse, or touch screen devices. Tiles shall be created automatically by the segment manager, based on the information found during the device discovery and/or information included in a file imported in from LMCS (such as tagged descriptions for each room) without any custom programming.

b. Ability to set up schedules for DLM local networks (rooms) and panels. Schedules shall be capable of controlling individual rooms with either on/off or normal hours/after hours set controlled zones or areas to either a normal hours or after hours mode of operation. Support for annual schedules, holiday schedules and unique date-bound schedules, as well as astro On or astro Off events with offsets. Schedules shall be viable graphically as time bars in a screen set up to automatically show scheduled events by day, week or month.

c. Ability to provide a simple time vs. power graph based on information stored in each Segment Manager's memory (typically two to three days' data).

6. If shown on the Drawings, Segment Managers shall be integrated into a larger control network by the addition of a Network Supervisor package. The Supervisor is a server level computer running a version of the Segment Manager interface software with dedicated communication and networking capability, able to pull information automatically from each individual Segment Manager in the network. By using a Supervisor, information for individual Segment Managers can be accessed and stored on the Supervisor's hard drive, eliminating the risk of data being overwritten after a few days because of Segment Manager memory limits.
7. Segment Manager shall allow access and control of the overall system database via Native Niagara AX FOX connectivity. Systems that must utilize a Tridium Niagara controller in addition to the programming, scheduling and configuration server are not acceptable.

D. Segment Manager shall support multiple DLM rooms as follows:
   1. Support up to 120 network bridges and 900 digital in-room devices (LMSM-3E).
   2. Support up to 300 network bridges and 2,200 digital in room devices, connected via network routers and switches (LMSM-6E).

E. WattStopper Product Numbers: LMSM-3E, LMSM-6E, LM-SUPERVISOR, NB-ROUTER, NB-SWITCH, NB-SWITCH-8, NB-SWITCH-16.

2.14 PROGRAMMING, CONFIGURATION, AND DOCUMENTATION SOFTWARE:

A. PC-native application for optional programming of detailed technician-level parameter information for all DLM products, including all parameters not accessible via BACnet and the handled IR configuration tool. Software must be capable of accessing room-level parameter information locally within the room when connected via the optional LMCI-100 USB programming adapter, or globally for many segment networks simultaneously utilizing standard BACnet/IP communication.
   1. Additional parameters exposed through this method include but are not limited to:
      a. Occupancy sensor detection LED disable for performance and other aesthetic spaces where blinking LEDs present a distraction.
      b. Six occupancy sensor action behaviors for each controlled load, separately configurable for normal hours and after hours modes. Modes include: No Action, Follow Off Only, Follow On Only, Follow On and Off, Follow On Only with Override Time Delay, Follow Off Only with Blink Warn Grace Time, Follow On and Off with Blink Warn Grace Time.
      c. Separate fade time adjustments per load for both normal and after hours from 0 - 4 hours.
      d. Configurable occupancy sensor re-trigger grace period from 0 - 4 minutes separate for both normal hours and after hours.
      e. Separate normal hours and after hours per-load button mode with modes including: Do nothing, on only, off only, on and off.

f. Load control polarity reversal so that on events turn loads off and vice versa.
g. Per-load DR (demand response) shed level in units of percent.
h. Load output pulse mode in increments of 1second.
i. Fade trip point for each load for normal hours and after hours that establishes the dimmer command level at which a switched load closes its relay to allow for staggered On of switched loads in response to a dimmer.

2. Generation of reports at the whole file, partial file, or room level. Reports include but are not limited to:
   a. Device list report: All devices in a project listed by type.
   b. Load binding report: All load controller bindings showing interaction with sensors, switches, and daylighting.
   c. BACnet points report: Per room Device ID report of the valid BACnet points for a given site's BOM.
   d. Room summary report: Device manifest for each room, aggregated by common BOM, showing basic sequence of operations.
   e. Device parameter report: Per-room lists of all configured parameters accessible via hand held IR programmer for use with O&M documentation.
   f. Scene report: All project scene pattern values not left at defaults (i.e. 1 = all loads 100 percent, 2 = all loads 75 percent, 3 = all loads 50 percent, 4 = all loads 25 percent, 5-16 = same as scene 1).
   g. Occupancy sensor report: Basic settings including time delay and sensitivities for all occupancy sensors.
3. Network-wide programming of parameter data in a spreadsheet-like programming environment including but not limited to the following operations:
   a. Set, copy/paste an entire project site of sensor time delays.
   b. Set, copy/paste an entire project site of sensor sensitivity settings.
   c. Search based on room name and text labels.
   d. Filter by product type (i.e. LMRC-212) to allow parameter set by product.
   e. Filter by parameter value to search for product with specific configurations.
4. Network-wide firmware upgrading remotely via the BACnet/IP network.
   a. Mass firmware update of entire rooms.
   b. Mass firmware update of specifically selected rooms or areas.
   c. Mass firmware upgrade of specific products

B. WattStopper Product Number: LMCS-100, LMCI-100

2.15 EMERGENCY LIGHTING CONTROL DEVICES:

A. Emergency Lighting Control Unit - A UL 924 listed device that monitors a switched circuit providing normal lighting to an area. The unit provides normal ON/OFF control of emergency lighting along with the normal lighting. Upon normal power failure the emergency lighting circuit will close, forcing the emergency lighting ON until normal power is restored. Features include:

1. 120/277 volts, 50/60 Hz, 20 amp ballast rating
2. Push to test button
3. Auxiliary contact for remote test or fire alarm system interface

B. WattStopper Product Numbers: ELCU-100, ELCU-200.

PART 3 EXECUTION

3.1 PRE-INSTALLATION MEETINGS:

A. Convene minimum two weeks prior to commencing Work of this section. Meeting to be attended by Contractor, Architect, system installer, factory authorized manufacturer's representative, and representative of all trades related to the system installation.

B. Review installation procedures and coordination required with related Work and the following:
1. Confirm the location and mounting of all devices, with special attention to placement of switches, dimmers, and any sensors.
2. Review the specifications for low voltage control wiring and termination.
3. Discuss the functionality and configuration of all products, including sequences of operation, per design requirements.
4. Discuss requirements for integration with other trades

C. Inspect and make notes of job conditions prior to installation:
1. Record minutes of the conference and provide copies to all parties present.
2. Identify all outstanding issues in writing designating the responsible party for follow-up action and the timetable for completion.
3. Installation shall not begin until all outstanding issues are resolved to the satisfaction of the Architect.

3.2 DELIVERY, STORAGE, AND HANDLING:

A. Store products in a clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation

3.3 PROJECT CONDITIONS:

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Do not install equipment until following conditions can be maintained in spaces to receive equipment:
1. Ambient temperature: 32 to 104 degrees F (0 to 40 degrees C).
2. Relative humidity: Maximum 90 percent, non-condensing.

3.4 PREPARATION:

A. Do not begin installation until measurements have been verified and work areas have been properly prepared.

B. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that required pre-installation meeting has been completed, recorded meeting minutes have been distributed and all outstanding issues noted have been resolved prior to the start of installation.

3.5 INSTALLATION:

A. Install system in accordance with the approved system shop drawings and manufacturer's instructions.

B. Install all room/area devices using manufacturer's factory-tested Cat 5e cable with pre-terminated RJ-45 connectors.
   1. If pre-terminated cable is not used for room/area wiring, each field-terminated cable shall be tested following installation and testing results submitted to the Manufacturer's Representative for approval prior to proceeding with the Work.
   2. Install all room to room network devices using manufacturer-supplied LM-MSTP network wire. Network wire substitution is not permitted and may result in loss of product warranty.
   3. Low voltage wiring topology must comply with manufacturer's specifications.
   4. Route network wiring as indicated on the Drawings as closely as possible. Document final wiring location, routing and topology on as built drawings.

C. All line voltage connections shall be tagged to indicate circuit and switched legs.

D. Test all devices to ensure proper communication.

E. Calibrate all sensor time delays and sensitivity to guarantee proper detection of occupants and energy savings. Adjust time delay so that controlled area remains lighted while occupied.

F. Provide written or computer-generated documentation on the configuration of the system including room by room description including:
   1. Sensor parameters, time delays, sensitivities, and daylighting setpoints.
   2. Sequence of operation, (e.g. manual ON, Auto OFF. etc.)
   3. Load Parameters (e.g. blink warning, etc.)

G. Post start-up tuning - Adjust sensor time delays and sensitivities to meet the Owner's requirements 30 days from beneficial occupancy. Provide a detailed report to the Architect / Owner of post start-up activity.

H. Tighten all panel Class I conductors from both circuit breaker and to loads to torque ratings as marked on enclosure UL label.

I. All Class II cabling shall enter enclosures from within low-voltage wiring areas and shall remain within those areas. No Class I conductors shall enter a low-voltage area.

J. Run separate neutrals for any phase dimmed branch load circuit. Different types of dimming loads shall have separate neutral.

K. Verify all non-panel-based lighting loads to be free from short circuits prior to connection to room controllers.

3.6 FIELD QUALITY CONTROL:

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing. Notify Architect and Manufacturer in writing a minimum of 3 weeks prior to system start-up and testing.

B. Tests and Inspections: Manufacturer's service representative shall perform the following inspections and prepare reports.
   1. Verify Class I and II wiring connections are terminated properly by validating system performance.
   2. Set IP addresses and other network settings of system front end hardware per facilities IT instructions.
   3. Verify / complete task programming for all switches, dimmers, time clocks, and sensors.
   4. Verify that the control of each space complies with the Sequence of Operation.
   5. Correct any system issues and retest..

C. Provide a report in table format with drawings, or using a software file that can be opened in the manufacturer's system software including each room or space that has lighting control installed. Indicate the following:
   1. Date of test or inspection.
   2. Loads per space, or Fixture Address identification.
   3. Quantity and Type of each device installed
   4. Reports providing each device's settings.

3.7 DEMONSTRATION AND TRAINING:

A. Before Substantial Completion, arrange and provide a one-day Owner instruction period to designated Owner personnel. Set-up, starting of the lighting control system and Owner instruction includes:
   1. Confirmation of entire system operation and communication to each device.
   2. Confirmation of operation of individual relays, switches, and sensors.
   3. Confirmation of system Programming, photocell settings, override settings, etc.
   4. Provide training to cover installation, programming, operation, and troubleshooting of the lighting control system.

3.8 PRODUCT SUPPORT AND SERVICE:

A. Factory telephone support shall be available at no cost to the Owner following acceptance. Factory assistance shall consist of assistance in solving application issues pertaining to the control equipment.

END OF SECTION

SECTION 26 24 16
PANELBOARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Power distribution panelboards.

B. Lighting and appliance panelboards.

C. Overcurrent protective devices for panelboards.

1.2 RELATED REQUIREMENTS

A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

B. Section 26 05 29 - Hangers and Supports for Electrical Systems.

C. Section 26 05 48 - Vibration and Seismic Controls for Electrical Systems.

D. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

E. Section 26 05 73 - Power System Studies: Additional criteria for the selection and adjustment of equipment and associated protective devices specified in this section.

1.3 REFERENCE STANDARDS

A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; 2013e, with Amendments (2022).

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

C. NECA 407 - Standard for Installing and Maintaining Panelboards; 2015.

D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.

E. NEMA PB 1 - Panelboards; 2011.

F. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 1000 Volts or Less; 2023.

G. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.

H. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

J. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

K. UL 67 - Panelboards; Current Edition, Including All Revisions.

L. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.

M. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

N. UL 1699 - Arc-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.
4. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.

B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

1. Include dimensioned plan and elevation views of panelboards and adjacent equipment with all required clearances indicated.
2. Include wiring diagrams showing all factory and field connections.
3. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.
4. Include documentation of listed series ratings upon request.
5. Identify mounting conditions required for equipment seismic qualification.

C. Manufacturer's equipment seismic qualification certification.

D. Source Quality Control Test Reports: Include reports for tests designated in NEMA PB 1 as routine tests.

E. Field Quality Control Test Reports.

F. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

G. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.

H. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Panelboard Keys: Two of each different key.

1.6 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years documented experience.

C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.

B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

1.8 FIELD CONDITIONS

A. Maintain ambient temperature within the following limits during and after installation of panelboards:
   1. Panelboards Containing Circuit Breakers: Between 23 degrees F and 104 degrees F.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. ABB/GE; _____: www.electrification.us.abb.com/#sle.

B. Eaton Corporation; _____: www.eaton.com/#sle.

C. Schneider Electric; Square D Products; _____: www.schneider-electric.us/#sle.

D. Siemens Industry, Inc; _____: www.usa.siemens.com/#sle.

2.2 PANELBOARDS - GENERAL REQUIREMENTS

A. Provide products listed, classified, and labeled as suitable for the purpose intended.

B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
   1. Altitude: Less than 6,600 feet.
   2. Ambient Temperature:
      a. Panelboards Containing Circuit Breakers: Between 23 degrees F and 104 degrees F.

C. Short Circuit Current Rating:
   1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as determined by short circuit study performed in accordance with Section 26 05 73.

D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.

E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.

F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
   1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
   2. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.

G. Conductor Terminations: Suitable for use with the conductors to be installed.

H. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
   1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
      a. Indoor Clean, Dry Locations: Type 1.
      b. Outdoor Locations: Type 3R.
      c. Indoor or Outdoor where subject to directional water or severe corrosion (e.g. hose-down areas in kitchens or where subject to salt water): Type 4X
      d. Class 1, Division 1 (Groups A, B, C, or D) Locations: Type 7 or 8.
   2. Boxes: Galvanized steel unless otherwise indicated.
      a. Provide wiring gutters sized to accommodate the conductors to be installed.
      b. Increase gutter space as required where sub-feed lugs, feed-through lugs, gutter taps, or oversized lugs are provided.
      c. Provide painted steel boxes for surface-mounted panelboards where indicated, finish to match fronts.
   3. Fronts:
      a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
      b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.

c. Finish for Painted Steel Fronts: Manufacturer's standard grey unless otherwise indicated.

4. Lockable Doors: All locks keyed alike unless otherwise indicated.

I. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

J. Selectivity: Where the requirement for selectivity is indicated, furnish products as required to achieve selective coordination.

K. Multi-Section Panelboards: Provide enclosures of the same height, with feed-through lugs or sub-feed lugs and feeders as indicated or as required to interconnect sections.

L. Provide the following features and accessories where indicated or where required to complete installation:
1. Feed-through lugs.
2. Sub-feed lugs.

2.3 POWER DISTRIBUTION PANELBOARDS

A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.

B. Conductor Terminations:
1. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
2. Main and Neutral Lug Type: Mechanical.

C. Bussing:
1. Phase and Neutral Bus Material: Copper.
2. Ground Bus Material: Copper.

D. Circuit Breakers:
1. Provide bolt-on type.
2. Provide thermal magnetic circuit breakers unless otherwise indicated.

E. Enclosures:
1. Provide surface-mounted enclosures unless otherwise indicated.
2. Fronts: Provide door-in-door trim with hinged cover for access to load terminals and wiring gutters, and separate lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
3. Provide clear plastic circuit directory holder mounted on inside of door.

2.4 LIGHTING AND APPLIANCE PANELBOARDS

A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.

B. Conductor Terminations:

1. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
2. Main and Neutral Lug Type: Mechanical.

C. Bussing:
1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
2. Phase and Neutral Bus Material: Copper.
3. Ground Bus Material: Copper.

D. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.

E. Enclosures:
1. Provide surface-mounted or flush-mounted enclosures as indicated.
2. Fronts: Provide door-in-door trim with hinged cover for access to load terminals and wiring gutters, and separate lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
3. Provide clear plastic circuit directory holder mounted on inside of door.

2.5 OVERCURRENT PROTECTIVE DEVICES

A. Molded Case Circuit Breakers:
1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
2. Interrupting Capacity:
a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated.
b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
3. Conductor Terminations:
a. Provide mechanical lugs unless otherwise indicated.
b. Lug Material: Copper, suitable for terminating copper conductors only.
4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
a. Provide field-adjustable magnetic instantaneous trip setting for circuit breaker frame sizes 225 amperes and larger.
b. Provide interchangeable trip units for circuit breaker frame sizes 600 amperes and larger.
5. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
6. Provide the following circuit breaker types where indicated:
a. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.

b. Ground Fault Equipment Protection Circuit Breakers: Designed to trip at 30 mA for protection of equipment.
c. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Combination type listed as complying with UL 1699.
d. 100 Percent Rated Circuit Breakers: Listed for application within the panelboard where installed at 100 percent of the continuous current rating.
e. Current Limiting Circuit Breakers: Without using fusible elements, designed to limit the let-through energy to a value less than the energy of a one-half cycle wave of the symmetrical prospective current when operating within its current limiting range.

7. Do not use tandem circuit breakers.
8. Do not use handle ties in lieu of multi-pole circuit breakers.
9. Provide multi-pole circuit breakers for multi-wire branch circuits as required by NFPA 70.
10. Provide the following features and accessories where indicated or where required to complete installation:
    a. Shunt Trip: Provide coil voltage as required for connection to indicated trip actuator.
    b. Handle Pad-Lock Provision: For locking circuit breaker handle in OFF position.
    c. Auxiliary Switch: SPDT switch suitable for connection to system indicated for indicating when circuit breaker has tripped or been turned off.
    d. Undervoltage Release: For tripping circuit breaker upon predetermined drop in coil voltage with field-adjustable time delay to prevent nuisance tripping.
    e. Alarm Switch: SPDT switch suitable for connection to system indicated for indicating when circuit breaker has tripped.

2.6 SOURCE QUALITY CONTROL

A. Factory test panelboards according to NEMA PB 1.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.
B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.
C. Verify that mounting surfaces are ready to receive panelboards.
D. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Perform work in accordance with NECA 1 (general workmanship).
B. Install products in accordance with manufacturer's instructions.
C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.

D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

E. Provide required support and attachment in accordance with Section 26 05 29.

F. Install panelboards plumb.

G. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.

H. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches above the floor or working platform.

I. Mount floor-mounted power distribution panelboards on properly sized 6 inch high concrete pad.

J. Provide minimum of six spare 1 inch trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling and below floor.

K. Provide grounding and bonding in accordance with Section 26 05 26.

L. Install all field-installed branch devices, components, and accessories.

M. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.

N. Multi-Wire Branch Circuits: Group grounded and ungrounded conductors together in the panelboard as required by NFPA 70.

O. Set field-adjustable circuit breaker tripping function settings as determined by overcurrent protective device coordination study performed according to Section 26 05 73.

P. Provide filler plates to cover unused spaces in panelboards.

Q. Provide circuit breaker lock-on devices to prevent unauthorized personnel from de-energizing essential loads where indicated. Also provide for the following:
   1. Fire detection and alarm circuits.

R. Identify panelboards in accordance with Section 26 05 53.

3.3 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for all main circuit breakers and circuit breakers larger than 225 amperes. Tests listed as optional are not required.

D. Ground Fault Protection Systems: Test in accordance with manufacturer's instructions as required by NFPA 70.

E. Test GFCI circuit breakers to verify proper operation.

F. Test AFCI circuit breakers to verify proper operation.

G. Test shunt trips to verify proper operation.

H. Procure services of a qualified manufacturer's representative to observe installation and assist in inspection, testing, and adjusting. Include manufacturer's reports with field quality control submittals.

I. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.4 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

B. Adjust alignment of panelboard fronts.

C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each measured steady state phase load does not exceed 20 percent and adjust circuit directories accordingly. Maintain proper phasing for multi-wire branch circuits.

3.5 CLEANING

A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 26 51 00
INTERIOR LIGHTING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Interior luminaires.
B. Emergency lighting units.
C. Exit signs.
D. Ballasts and drivers.
E. Accessories.

1.2 RELATED REQUIREMENTS

A. Section 26 05 29 - Hangers and Supports for Electrical Systems.
B. Section 26 05 33.16 - Boxes for Electrical Systems.
C. Section 26 05 48 - Vibration and Seismic Controls for Electrical Systems.
D. Section 26 27 26 - Wiring Devices: Manual wall switches and wall dimmers.

1.3 REFERENCE STANDARDS

A. IEC 60529 - Degrees of Protection Provided by Enclosures (IP Code); 2013 (Corrigendum 2019).
B. IES LM-63 - Approved Method: IES Standard File Format for the Electronic Transfer of Photometric Data and Related Information; 2019.
C. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products; 2019.
D. IES LM-80 - Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources; 2021.
E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
F. NECA/IESNA 500 - Standard for Installing Indoor Lighting Systems; 2006.
G. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; 2006.
H. NEMA 410 - Performance Testing for Lighting Controls and Switching Devices with Electronic Drivers and Disharge Ballasts; 2020.
I. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility; 2012 (Reaffirmed 2018).
J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
K. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

L. UL 924 - Emergency Lighting and Power Equipment; Current Edition, Including All Revisions.

M. UL 1598 - Luminaires; Current Edition, Including All Revisions.

N. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
   2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
   3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
   4. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.5 SUBMITTALS

A. Shop Drawings:
   1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
   2. Provide photometric calculations where luminaires are proposed for substitution.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
   1. LED Luminaires:
      a. Include estimated useful life, calculated based on IES LM-80 test data.
      b. Include IES LM-79 test report upon request.

C. Certificates for Dimming Ballasts: Manufacturer's documentation of compatibility with dimming controls to be installed.

D. Field quality control reports.

E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

F. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Extra Lenses and Louvers: Two percent of total quantity installed for each type, but not less than one of each type.

H. Project Record Documents: Record actual connections and locations of luminaires and any associated remote components.

1.6 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND PROTECTION

A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.8 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.9 WARRANTY

A. Provide five year manufacturer warranty for LED luminaires, including drivers.

B. Provide 5-year pro-rata warranty for batteries for emergency lighting units.

C. Provide 10-year pro-rata warranty for batteries for self-powered exit signs.

PART 2 PRODUCTS

2.1 LUMINAIRE TYPES

A. Furnish products as indicated in luminaire schedule included on the drawings.

2.2 LUMINAIRES

A. Provide products that comply with requirements of NFPA 70.

B. Provide products that are listed and labeled as complying with UL 1598, where applicable.

C. Provide products listed, classified, and labeled as suitable for the purpose intended.

D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.

F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

G. Recessed Luminaires:
   1. Ceiling Compatibility: Comply with NEMA LE 4.
   2. Luminaires Recessed in Insulated Ceilings: Listed and labeled as IC-rated, suitable for direct contact with insulation and combustible materials.
   3. Luminaires Recessed in Sloped Ceilings: Provide suitable sloped ceiling adapters.

H. LED Luminaires:
   1. Components: UL 8750 recognized or listed as applicable.
   2. Tested in accordance with IES LM-79 and IES LM-80.
   3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

I. LED Tape Lighting Systems: Provide all power supplies, drivers, cables, connectors, channels, covers, mounting accessories, and interfaces as necessary to complete installation.
   1. LED Tape - General Requirements:
      a. Listed.
      b. Designed for field cutting in accordance with listing.
      c. Wet Location Applications: IEC 60529, IP 68 (waterproof) rated.

J. Track Lighting Systems: Provide track compatible with specified track heads, with all connectors, power feed fittings, dead ends, hangers and canopies as necessary to complete installation.

K. Luminaires Mounted in Continuous Rows: Provide quantity of units required for length indicated, with all accessories required for joining and aligning.

2.3 EXIT SIGNS

A. Description: Exit signs complying with NFPA 101 and applicable state and local codes, and listed and labeled as complying with UL 924.
   1. Number of Faces: Single- or double-face as indicated or as required for installed location.
   2. Directional Arrows: As indicated or as required for installed location.

B. Powered Exit Signs: Internally illuminated with LEDs unless otherwise indicated.
   1. Self-Powered Exit Signs:

a. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
b. Battery: Sealed, maintenance-free, nickel cadmium unless otherwise indicated.
c. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
d. Provide low-voltage disconnect to prevent battery damage from deep discharge.
e. Self-Diagnostics: Provide units that self-monitor functionality and automatically perform testing required by NFPA 101 where indicated; provide indicator light(s) to report test and diagnostic status.

2.4 BALLASTS AND DRIVERS

A. Ballasts/Drivers - General Requirements:
1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.
3. Electronic Ballasts/Drivers: Inrush currents not exceeding peak currents specified in NEMA 410.

B. Dimmable LED Drivers:
1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
2. Control Compatibility: Fully compatible with the dimming controls to be installed.

2.5 ACCESSORIES

A. Stems for Suspended Luminaires: Steel tubing, minimum 1/2" size, factory finished to match luminaire or field-painted as directed.

B. Threaded Rods for Suspended Luminaires: Zinc-plated steel, minimum 1/4" size, field-painted as directed.

C. Provide accessory plaster frames for luminaires recessed in plaster ceilings.

D. Fire-Rated Luminaire Enclosures:
1. Manufacturers:
a. Fire Rated Product Specialties Corp: www.frpsonline.com/#sle.
b. Specialty Products & Insulation (SPI); SafeLite: www.spi-co.com/#sle.
2. Provide as required to preserve fire resistance rating of building elements.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.

C. Verify that suitable support frames are installed where required.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.3 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 26 05 33.16 as required for installation of luminaires provided under this section.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Install products in accordance with manufacturer's instructions.

D. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).

E. Provide required support and attachment in accordance with Section 26 05 29.

F. Provide required seismic controls in accordance with Section 26 05 48.

G. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.

H. Suspended Ceiling Mounted Luminaires:

1. Do not use ceiling tiles to bear weight of luminaires.
2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
3. Secure surface-mounted and recessed luminaires to ceiling support channels or framing members or to building structure.
4. Secure pendant-mounted luminaires to building structure.
5. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
6. In addition to ceiling support wires, provide two galvanized steel safety wire(s), minimum 12 gauge, connected from opposing corners of each recessed luminaire to building structure.

7. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.

I. Recessed Luminaires:
   1. Install trims tight to mounting surface with no visible light leakage.
   2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
   3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.

J. Suspended Luminaires:
   1. Unless otherwise indicated, specified mounting heights are to bottom of luminaire.
   2. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
   3. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet nominal length, with no more than 4 feet between supports.
   4. Install canopies tight to mounting surface.
   5. Unless otherwise indicated, support pendants from swivel hangers.

K. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.

L. Install accessories furnished with each luminaire.

M. Bond products and metal accessories to branch circuit equipment grounding conductor.

N. Exit Signs:
   1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.

3.4 FIELD QUALITY CONTROL

A. Inspect each product for damage and defects.

B. Operate each luminaire after installation and connection to verify proper operation.

C. Test self-powered exit signs, emergency lighting units, and fluorescent emergency power supply units to verify proper operation upon loss of normal power supply.

D. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.5 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect or authority having jurisdiction.

C. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Architect or authority having jurisdiction.

3.6 CLEANING

A. Clean surfaces according to NECA 500 (commercial lighting) and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.7 CLOSEOUT ACTIVITIES

A. Demonstration: Demonstrate proper operation of luminaires to Architect, and correct deficiencies or make adjustments as directed.

3.8 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

SECTION 26 56 00
EXTERIOR LIGHTING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Exterior luminaires.

B. Ballasts.

C. Poles and accessories.

D. Luminaire accessories.

1.2 RELATED REQUIREMENTS

A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

B. Section 26 05 29 - Hangers and Supports for Electrical Systems.

C. Section 26 05 33.16 - Boxes for Electrical Systems.

D. Section 26 05 48 - Vibration and Seismic Controls for Electrical Systems.

E. Section 26 27 26 - Wiring Devices: Receptacles for installation in poles.

F. Section 26 28 13 - Fuses.

1.3 REFERENCE STANDARDS

A. ANSI C136.10 - American National Standard for Roadway and Area Lighting Equipment - Locking-Type Photocontrol Devices and Mating Receptacles - Physical and Electrical Interchangeability and Testing; 2017.

B. IEC 60529 - Degrees of Protection Provided by Enclosures (IP Code); 2013 (Corrigendum 2019).

C. IEEE C2 - National Electrical Safety Code(R) (NESC(R)); 2023.

D. IEEE C62.41.2 - IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits; 2002 (Corrigendum 2012).

E. IES LM-63 - Approved Method: IES Standard File Format for the Electronic Transfer of Photometric Data and Related Information; 2019.

F. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products; 2019.

G. IES LM-80 - Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources; 2021.

H. IES RP-8 - Recommended Practice: Lighting Roadway and Parking Facilities; 2021.

I. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

J. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems; 2000 (Reaffirmed 2006).

K. NEMA 410 - Performance Testing for Lighting Controls and Switching Devices with Electronic Drivers and Disharge Ballasts; 2020.

L. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility; 2012 (Reaffirmed 2018).

M. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

N. UL 1598 - Luminaires; Current Edition, Including All Revisions.

O. UL 1598C - Light-Emitting Diode (LED) Retrofit Luminaire Conversion Kits; Current Edition, Including All Revisions.

P. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate placement of poles and associated foundations with utilities, curbs, sidewalks, trees, walls, fences, striping, etc. installed under other sections or by others. Coordinate elevation to obtain specified foundation height.
   2. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.5 SUBMITTALS

A. Shop Drawings:
   1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
   2. Provide photometric calculations where luminaires are proposed for substitution.
   3. Provide structural calculations for each pole proposed for substitution.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.
   1. LED Luminaires:
      a. Include estimated useful life, calculated based on IES LM-80 test data.
      b. Include IES LM-79 test report upon request.
   2. Poles: Include information on maximum supported effective projected area (EPA) and weight for the design wind speed.

C. Certificates for Poles and Accessories: Manufacturer's documentation that products are suitable for the luminaires to be installed and comply with designated structural design criteria.

D. Field Quality Control Reports.
   1. Include test report indicating measured illumination levels.

E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

F. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Extra Fuses: Five percent of total quantity installed for each type, but not less than two of each type.

H. Project Record Documents: Record actual connections and locations of pole foundations, luminaires, and any pull or junction boxes.

1.6 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.8 WARRANTY

A. Provide three year manufacturer warranty for all LED luminaires, including drivers.

PART 2 PRODUCTS

2.1 LUMINAIRE TYPES

A. Furnish products as indicated in luminaire schedule included on the drawings.

2.2 LUMINAIRES

A. Provide products that comply with requirements of NFPA 70.

B. Provide products that are listed and labeled as complying with UL 1598, where applicable.

C. Provide products listed, classified, and labeled as suitable for the purpose intended.

D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.

F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

G. Provide luminaires listed and labeled as suitable for wet locations unless otherwise indicated.

H. Recessed Luminaires:
   1. Ceiling Compatibility: Comply with NEMA LE 4.
   2. Luminaires Recessed in Insulated Ceilings: Listed and labeled as IC-rated, suitable for direct contact with insulation and combustible materials.
   3. Luminaires Recessed in Sloped Ceilings: Provide suitable sloped ceiling adapters.

I. Luminaires Mounted in Continuous Rows: Provide quantity of units required for length indicated, with all accessories required for joining and aligning.

J. LED Luminaires:
   1. Components: UL 8750 recognized or listed as applicable.
   2. Tested in accordance with IES LM-79 and IES LM-80.
   3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

K. LED Tape Lighting Systems: Provide all power supplies, drivers, cables, connectors, channels, covers, mounting accessories, and interfaces as necessary to complete installation.
   1. LED Tape - General Requirements:
      a. Listed.
      b. Designed for field cutting in accordance with listing.
      c. Wet Location Applications: IEC 60529, IP 68 (waterproof) rated.

2.3 BALLASTS AND DRIVERS

A. Ballasts/Drivers - General Requirements:
   1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
   2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.
   3. Electronic Ballasts/Drivers: Inrush currents not exceeding peak currents specified in NEMA 410.

B. Dimmable LED Drivers:

1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
2. Control Compatibility: Fully compatible with the dimming controls to be installed.

2.4 POLES

A. All Poles:
   1. Provide poles and associated support components suitable for the luminaire(s) and associated supports and accessories to be installed.
   2. Material: Steel, unless otherwise indicated.
   3. Shape: Square straight, unless otherwise indicated.
   4. Finish: Match luminaire finish, unless otherwise indicated.
   5. Mounting: Install on concrete foundation, height as indicated on the drawings, unless otherwise indicated.
   6. Unless otherwise indicated, provide with the following features/accessories:
      a. Handhole, 3" x 5" in size.
      b. Anchor bolts with leveling nuts or leveling shims.
      c. Anchor base cover.

B. Metal Poles: Provide ground lug, accessible from handhole or transformer base.

2.5 ACCESSORIES

A. Stems for Suspended Luminaires: Steel tubing, minimum 1/2" size, factory finished to match luminaire or field-painted as directed.

B. Threaded Rods for Suspended Luminaires: Zinc-plated steel, minimum 1/4" size, field-painted as directed.

C. Provide accessory plaster frames for luminaires recessed in plaster ceilings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.

C. Verify that suitable support frames are installed where required.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.3 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 26 05 33.16 as required for installation of luminaires provided under this section.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Install products in accordance with manufacturer's instructions.

D. Install luminaires in accordance with NECA/IESNA 501.

E. Provide required support and attachment in accordance with Section 26 05 29.

F. Provide required seismic controls in accordance with Section 26 05 48.

G. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.

H. Recessed Luminaires:
   1. Install trims tight to mounting surface with no visible light leakage.
   2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
   3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.

I. Suspended Luminaires:
   1. Unless otherwise indicated, specified mounting heights are to bottom of luminaire.
   2. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
   3. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet in length, with no more than 4 feet between supports.
   4. Install canopies tight to mounting surface.
   5. Unless otherwise indicated, support pendants from swivel hangers.

J. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.

K. Pole-Mounted Luminaires:
   1. Foundation-Mounted Poles:
      a. Install foundations plumb.
      b. Install poles plumb, using leveling nuts or shims as required to adjust to plumb.
      c. Tighten anchor bolt nuts to manufacturer's recommended torque.
      d. Install non-shrink grout between pole anchor base and concrete foundation, leaving small channel for condensation drainage.
      e. Install anchor base covers as indicated.
   2. Embedded Poles: Install poles plumb as indicated.
   3. Grounding:

a. Bond luminaires, metal accessories, metal poles, and foundation reinforcement to branch circuit equipment grounding conductor.

4. Install separate service conductors, 12 AWG copper, from each luminaire down to handhole for connection to branch circuit conductors.

L. Install accessories furnished with each luminaire.

M. Bond products and metal accessories to branch circuit equipment grounding conductor.

N. Install lamps in each luminaire.

3.4 FIELD QUALITY CONTROL

A. Inspect each product for damage and defects.

B. Operate each luminaire after installation and connection to verify proper operation.

C. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.5 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

B. Luminaires with Field-Rotatable Optics: Position optics according to manufacturer's instructions to achieve lighting distribution as indicated or as directed by Architect.

3.6 CLEANING

A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.7 CLOSEOUT ACTIVITIES

A. Demonstration: Demonstrate proper operation of luminaires to Architect, and correct deficiencies or make adjustments as directed.

3.8 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

SECTION 27 21 00
DATA COMMUNICATIONS NETWORK EQUIPMENT

PART I - GENERAL

1.01 SUMMARY

A. This section specifies equipment, accessories, materials, installation, configuration, and testing requirements for a complete and operable data network system. The system shall provide reliable and high-performance data communication throughout the site.

1.02 SCOPE

A. The work will include but not be limited to the following objectives:

Provide, coordinate, and install all required equipment and accessories as outlined in the design documents for a complete and operable system.

Labor and Materials: The Contractor shall provide and pay for all labor, supervision, materials, accessories, components, equipment, tools, utilities, construction equipment and machinery, transportation, and other facilities and services necessary for the proper execution, operation, and completion of a turn-key system to the District.

Data Communications Network Equipment: Includes, but is not limited to:
Routers
Firewalls
Networking Switches
Wireless Access Points
VoIP Phone Equipment
Uninterruptible Power Supplies (UPS)

1.03 RELATED REQUIREMENTS

A. Division 01 - General Requirements

B. Section 27 00 00 - Communications

C. Section 27 05 00 - Common Work Results for Communication Systems.

D. Section 27 10 00 - Structured Cabling

1.04 QUALIFICATIONS

A. Contractor shall be located within 50 miles or less from the project site to support 2-hour response time.

B. Five years' experience installing data network equipment and systems.

1.05 SYSTEM REQUIREMENTS

A. Any new installations or existing system modifications shall seamlessly integrate into the site's existing data network infrastructure.

1.06 CONTRACTOR "SHOP DRAWINGS" DESIGN REQUIREMENTS

A. See section 27 00 00 for requirements.

B. Shop Drawings shall be required for this section.

1.07 SUBMITTALS

A. See section 27 00 00 for requirements.

B. Submittals shall be required for this section.

1.08 WARRANTY

A. Refer to Division 01 Warranty section.

B. See section 27 00 00 for additional requirements.

1.09 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. See Appendix A at the end of this document for pre-approved materials.

B. All products shall be new, unused and without blemishes and shall be of manufacturer's current and standard production.

C. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. Contractor shall provide all components needed for complete and satisfactory installation/operation.

D. Product Availability

1. Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.

2. Subject to compliance with these specifications, products and systems included in this section are to be installed as specified by the manufacturer of the system or engineer approved equal.

2.02 EQUIPMENT

A. The District's preferred manufacturer for:
1. Routers - Aruba
2. Firewalls - Aruba
3. Networking Switches – Aruba
4. Wireless Access Points - Aruba
6. UPS – N1C

B. Substitutions require proof of equivalence and approval by District and/or its representative.

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. The equipment shall only be installed by Contractors who are qualified to install and maintain the system.

B. The Contractor (or subcontractor listed at time of bid) must have at least five (5) years' experience installing data network equipment before the Bid Opening Date.

3.02 EXAMINATION

A. The Contractor shall be required to visit the installation site(s) prior to bidding for the job. The Contractor acknowledges that the failure to visit the site(s) will not relieve the Contractor of the responsibility for observing and considering those conditions which a Contractor would have observed and considered during a site visit, estimating properly the difficulty

and cost of successfully performing the Work or proceeding to perform the Work without additional cost to District.

B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

A. The Contractor shall verify materials are readily available prior to submitting product submittals and notify the Project Manager of long lead time items.

B. The Contractor shall order all required parts and equipment only after receipt of approved product submittals from the Project Manager.

C. The Contractor shall coordinate with the District's Technology Services department for needed IP addresses at least 2 weeks prior to configuration/installation.

3.04 SHOP DRAWINGS

A. The Contractor shall create "Shop Drawings" per section 27 00 00.

3.05 WORKMANSHIP

A. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship.

B. The District's Project or Construction Manager will have the authority to reject Work which does not conform to the Drawings and Specifications.

C. Comply with highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.

D. Perform Work with persons experienced and qualified to produce workmanship specified.

E. Maintain quality control over suppliers and Subcontractors.

3.06 PATHWAY AND EQUIPMENT INSTALLATION

A. Install all conduit and pathway per design documents. Refer to 27 05 00 for additional information/requirements.

B. Install all Cat6A cable per design documents. Refer to 27 10 00 for additional information/requirements.

C. Equipment to be installed per manufacturer's instructions.

D. Devices requiring PoE power shall be connected to a PoE switch in the MDF/IDF data rack – verify with Technology Services for available PoE power.

3.07 CONFIGURATION

A. Any information needed from the District for configuration of equipment (i.e. VLAN, etc.) needs to be requested in writing 2 weeks prior.

B. All equipment to be fully configured and tested for functionality by the Contractor prior to District acceptance testing.

3.08 FIELD QUALITY CONTROL AND TESTING

A. Upon reaching substantial completion, perform a complete test and inspection of the system. If found to be installed and operating properly, notify the District of readiness to perform the formal Test & Inspection of the complete system by the District or its representative. Make all adjustments/changes required from District/representative review.

B. Submit the Record Drawings (as-builts) to District for review prior to inspection.

C. During the formal Test & Inspection (Commissioning) of the system and have personnel available with tools and equipment to inspect wiring, devices, and system operation.

D. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. Perform the needed corrections in a timely fashion.

E. Notify the District when ready to perform a re-inspection of the installation.

3.10 AS-BUILT DRAWINGS

A. See section 27 00 00 for requirements.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MFG	PART NUMBER
Network Switch (48G/4SFP+)	**Aruba**	**OFCI**
SFP+ Transceiver	**Aruba**	**OFCI**
SFP+ DAC Cable (1 meter)	**Aruba**	**OFCI**
Core Switch	**Aruba**	**OFCI**
Wireless Access Point (Indoor, Ceiling)	**Aruba**	**OFCI**
Wireless Access Point (Indoor, Ceiling, High Density)	**Aruba**	**OFCI**
Wireless Access Point (Outdoor)	**Aruba**	**OFCI**
Mount for indoor Wireless Access Point (ceiling)	**Aruba**	**S0J40A**
Mount for outdoor Wireless Access Point	**Aruba**	**R9H97A**
UPS (MDF and IDF)	**N1C**	**OFCI**

SECTION 27 51 23.50
EDUCATIONAL INTERCOM SYSTEMS

PART I - GENERAL

1.01 SUMMARY

A. This section specifies equipment, accessories, materials, wire, installation, configuration, and testing requirements for a complete and operable Intercom/Public Address/Bell system. This system shall provide the ability to bi-directionally communicate with an individual room, broadcast to defined speaker zone(s) and ring bell tones on a predefined schedule. For sites that utilize IP clock/speaker combination devices, this section will supplant the use of section 27 53 13 Clock Systems.

1.02 SCOPE

A. The work will include but not be limited to the following objectives:

1. Labor and Materials: The Contractor shall provide and pay for all labor, supervision, materials, accessories, components, equipment, tools, transportation, and other facilities and services necessary for the proper installation of a turn-key Educational Intercom system to the District.

2. The contractor will coordinate with the District in writing for any needed information (i.e. IP addresses, etc.) 10 business days prior to the date the information is needed.

B. The District has standardized on the Informacast IP-based intercom system, utilizing Atlas IP endpoint hardware. The contractor shall be an authorized dealer for Atlas products. For existing construction, the contractor shall be a servicing dealer of the existing Intercom system.

C. For existing construction – provide and install all components and accessories to modify the existing system while maintaining code compliance and to seamlessly integrate the new components into the existing campus' system. Prior to beginning any work, the Contractor is responsible for identifying any existing system errors or faults and bring these issues to the attention of the District Project Manager.

D. The Contractor shall be responsible for furnishing and installing all pathway, cabling, terminations, signal terminal cabinets, backboard, mounts, and backboxes.

E. The Contractor shall be responsible for installing for District-provided and configured IP endpoint devices including speakers, clocks, console phones, and legacy system interface components.

F. After completion of the installation and pretest of the system a satisfactory final test of the entire system shall be made in the presence of the inspector of record (IOR) and District or the District's representative.

G. The Contractor shall adjust any analog (25V) speaker levels to the appropriate level as determined in system testing.

H. Existing systems shall remain operable until the new system is accepted and approved by the District or the District's representative.

I. The Contractor shall complete all required project closeout documentation in a timely fashion.

1.03 RELATED REQUIREMENTS

A. Division 01 – General Requirements

B. Section 27 00 00 - Communications

C. Section 27 05 00 – Common Work Results for Communication Systems.

E. Section 27 10 00 – Structured Cabling

1.04 REFERENCES

A. See section 27 00 00 for requirements.

1.05 DEFINITIONS

A. See section 27 00 00 for requirements.

1.06 SYSTEM REQUIREMENTS

A. Any new installations or existing system modifications shall seamlessly integrate into the site's existing intercom system when applicable.

1.07 SUBMITTALS

A. See section 27 00 00 for requirements.
B. Submittals shall be required for this section.

1.08 CONTRACTOR "SHOP DRAWINGS" DESIGN REQUIREMENTS

A. See section 27 00 00 for requirements.
B. Shop drawings are required for this section.

1.09 QUALIFICATIONS

A. Contractor shall be located within 50 miles or less from the project site to support 2-hour response time.

B. Five (5) years' experience installing educational intercom equipment.

C. The contractor shall possess a California a C7 or C10 license.

D. The Contractor or Subcontractor shall be Atlas authorized to provide and install equipment with 5 years documented experience.

1.10 CERTIFICATIONS

A. Installers shall be manufacturer certified.

1.11 WORKMANSHIP

A. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship.

B. The District's Project or Construction Manager will have the authority to reject Work which does not conform to the Drawings and Specifications.

C. Comply with highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.

D. Perform Work with persons experienced and qualified to produce workmanship specified.

E. Maintain quality control over suppliers and Subcontractors.

F. Contractor shall be responsible for scheduling Subcontractors in a timely fashion.

1.12 WARRANTY

A. Refer to Division 01 Warranty section.

B. See section 27 00 00 for additional requirements.

1.13 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

PART 2 – PRODUCTS

2.01 GENERAL

A. The approved manufacturers for the project are:
1. Control unit and related accessories: Informacast Fusion
2. Speakers: See Appendix A for different installation types
3. Wire, cable, and accessories: See Appendix A.

B. All products shall be new, unused and without blemishes and shall be of manufacturer's current and standard production.

C. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. The Contractor shall provide all components needed for complete and satisfactory installation and operation.

D. Product Availability

1. The Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.

2. Subject to compliance with these specifications, products and systems included in this section are to be installed as specified by the manufacturer of the system or engineer approved equal.

2.02 EQUIPMENT

A. See Appendix A at the end of this document for pre-approved materials.

B. Substitutions require proof of equivalence and prior approval by District and/or it's representative before ordering.

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. The equipment shall only be installed by Contractors who are qualified and certified by the manufacturer to install and maintain the system.

B. The Contractor (or subcontractor listed at time of bid) must have at least five (5) years' experience installing educational intercom equipment before the Bid Opening Date.

3.02 EXAMINATION

A. The Contractor shall be required to visit the installation site(s) prior to bidding the job. The Contractor acknowledges that the failure to visit the site(s) will not relieve the Contractor of the responsibility for observing and considering those conditions which a Contractor would have observed and considered during a site visit, estimating properly the difficulty and cost of successfully performing the Work or proceeding to perform the Work without additional cost to District.

B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

A. The Contractor shall verify materials are readily available prior to submitting product submittals and notify the District's Project Manager of long lead time items.

B. The Contractor shall order all required parts and equipment only after receipt of approved product submittals from the District's Project Manager.

C. Submit and receive approval for shop drawings prior to work commencement.

3.04 PATHWAY INSTALLATION

A. See Division 26 and Section 27 05 00 for requirements and more information.

B. Existing Construction:
   1. Refer to design documents.
   2. Surface raceway and components shall be Wiremold 2300.

3.05 EQUIPMENT INSTALLATION

A. Equipment to be wired and installed per manufacturer's instructions.

B. Installation shall be in accordance with applicable codes (i.e. NEC, NFPA 72) local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.

C. Perform all Work as indicated in the Drawings and Specifications.

D. All low voltage cables shall be kept away from power circuits.

3.06 LABELING/SCHEDULES

A. All labels are to be machine generated black letters on white adhesive label stock that is appropriate for the installation environment (interior/exterior).

B. Label all analog speaker cables with port ID.

C. Label all analog speakers with speaker ID.

D. Label all IP speakers with MDF/IDF, patch panel and jack numbers.

3.09 CONFIGURATION

A. All equipment to be fully configured and tested for functionality prior to testing.

3.10 FIELD QUALITY CONTROL AND TESTING

A. Upon reaching substantial completion, perform a complete test and inspection of the system. If found to be installed and operating properly, notify District of your readiness to perform the formal Test & Inspection of the complete system.

B. Submit the Record Drawings (as-builts) to District for review prior to inspection.

C. During the formal Test & Inspection (Commissioning) of the system the Contractor shall have personnel available with tools and equipment to inspect wiring, devices, and system operation.

D. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. Perform the needed corrections in a timely fashion.

E. Notify the District when ready to perform a re-inspection of the installation.

F. District or its representative to provide final sign-off for acceptance.

3.11 AS-BUILT DRAWINGS

A. See section 27 00 00 for requirements.

B. As-built drawings shall be required for this section.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MFG	PART NUMBER
Fusion Appliance **(Site Controller)**	**Informacast**	**OFCI**
Surface IP Clock/Speaker Combo **a. Clock/Speaker** **b. Backbox**	**Atlas**	**a. OFCI** **b. IP-SEST-SD**
Surface IP Speaker (Exterior) **a. Clock/Speaker** **b. Backbox**	**Atlas**	**a. OFCI** **b. IP-SEST-HVP**
Surface IP Speaker (Interior) **a. Clock/Speaker** **b. Backbox**	**Atlas**	**a. OFCI** **b. IP-SEST-SD**
Drop Ceiling IP Speaker	**Atlas**	**OFCI**
IP Console Phone	**Atlas**	**OFCI**

SECTION 27 51 26
ASSISTIVE LISTENING SYSTEMS

PART I - GENERAL

1.01 SUMMARY

A. This section specifies equipment, accessories, materials, wire, installation, configuration, and testing requirements for a complete and operable Assistive Listening system. The system shall be provided in each assembly area, including conference and meeting rooms, in accordance with ADA Accessibility Guidelines for Buildings and Facilities (ADAAG) 2010 section(s) 216.10, 219, 706, and CBC section(s) 11B-216.10, 11B-219, 11B-706.

1.02 SCOPE

A. The work will include but not be limited to the following objectives:

1. Labor and Materials: The Contractor shall provide and pay for all labor, supervision, materials, accessories, components, equipment, tools, transportation, and other facilities and services necessary for the proper installation of a turn-key Assistive Listening system to the District.

2. The contractor will coordinate with the District in writing for any needed information (i.e. IP addresses, etc.) at least 2 weeks prior to date the information is needed.

B. The Assistive Listening System shall be FM (72 MHz) for large venue systems, and IR for classroom and portable systems.

C. Assistive Listening equipment: Includes, but is not limited to:
   a. Transmitters
   b. Receivers
   c. Earpiece/Neck loops
   d. Chargers
   e. Signs

D. Typical installation includes a transmitter with audio source input or microphone and portable rechargeable receivers with either neck loops or earpieces.

E. Permanently installed assistive-listening systems are required in areas if (1) they accommodate at least 50 persons or if they have audio-amplification systems, and (2) they have fixed seating. If portable assistive-listening systems are used for conference or meeting rooms, the system may serve more than one room. An adequate number of electrical outlets

or other supplementary wiring necessary to support a portable assistive-listening system shall be provided.

F. The minimum number of receivers to be provided shall be equal to 4 percent of the total number of seats, but in no case less than two. Twenty-five percent minimum of receivers provided, but no fewer than two, shall be hearing aid compatible.

G. Receivers required to be hearing-aid compatible shall interface with telecoils in hearing aids through the provision of neck loops.

E. Classroom assistive listening systems shall be fully integrated with the classroom audio-visual system or mobile TV cart such that program audio is provided via the assistive listening system.

1.03 RELATED REQUIREMENTS

A. Division 01 – General Requirements

B. Section 27 00 00 - Communications

C. Section 27 05 00 – Common Work Results for Communication Systems.

D. Section 27 10 00 – Structured Cabling

1.04 REFERENCES

A. See section 27 00 00 for requirements.

1.05 DEFINITIONS

A. See section 27 00 00 for requirements.

1.06 SYSTEM REQUIREMENTS

A. Any new installations or existing system modifications shall seamlessly integrate into the site's existing AV system

1.07 SUBMITTALS

A. See section 27 00 00 for requirements.

1.08 CONTRACTOR "SHOP DRAWINGS" DESIGN REQUIREMENTS

A. See section 27 00 00 for requirements.

B. Shop drawings are required for this section.

1.09 QUALIFICATIONS

A. Contractor shall be located within 50 miles or less from the project site to support 2-hour response time.

B. Five (5) years' experience installing Assistive Listening/AV equipment systems.

1.10 CERTIFICATIONS

A. See section 27 00 00 for requirements.

1.11 WORKMANSHIP

A. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship.

B. The District's Project or Construction Manager will have the authority to reject Work which does not conform to the Drawings and Specifications.

C. Comply with highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.

D. Perform Work with persons experienced and qualified to produce workmanship specified.

E. Maintain quality control over suppliers and Subcontractors.

F. Contractor shall be responsible for scheduling Subcontractors in a timely fashion.

1.12 WARRANTY

A. Refer to Division 01 Warranty section.

B. See section 27 00 00 for additional requirements.

1.13 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Manufacturers – The District has standardized on Listen Technologies.

B. All products shall be new, unused and without blemishes and shall be of manufacturer's current and standard production.

C. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. The contractor shall provide all components needed for complete and satisfactory installation and operation.

D. Product Availability

1. Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.

2. Subject to compliance with these specifications, products and systems included in this section are to be installed as specified by the manufacturer of the system or engineer approved equal.

2.02 EQUIPMENT

A. See Appendix A at the end of this document for pre-approved materials.

B. Substitutions require proof of equivalence and prior approval by District and/or its representative before ordering.

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. The equipment shall only be installed by Contractors who are qualified to install and maintain the system.

B. The Contractor (or subcontractor listed at time of bid) must have at least five (5) years' experience installing electronic assistive listening equipment before the Bid Opening Date.

3.02 EXAMINATION

A. The Contractor shall be required to visit the installation site(s) prior to bidding the job. The Contractor acknowledges that the failure to visit the site(s) will not relieve the Contractor of the responsibility for observing and considering those conditions which a Contractor would have observed and considered during a site visit, estimating properly the difficulty and cost of successfully performing the Work or proceeding to perform the Work without additional cost to District.

B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

A. The Contractor shall verify materials are readily available prior to submitting product submittals and notify the District's Project Manager of long lead time items.

B. The Contractor shall order all required parts and equipment only after receipt of approved product submittals from the District's Project Manager.

C. Submit and receive approval for shop drawings prior to work commencement.

3.04 PATHWAY INSTALLATION

A. See Division 26 and Section 27 05 00 for requirements and more information.

B. Existing Construction:
   1. Refer to design documents.
   2. Surface raceway and components shall be Wiremold 2300.

3.05 EQUIPMENT INSTALLATION

A. Equipment to be wired and installed per manufacturer's instructions.

B. BASE TRANSMITTER (provide 1 for each permanent sound system).

1. Provide base transmitter with rack mount kit. Install where specified in the sound equipment rack and connect to content source.
2. Install antenna where specified and cabling from the Base Transmitter to the antenna location.
3. Program the transmitter to an interference-free transmit frequency in coordination with any adjacent systems

C. RECEIVERS (provide a quantity equal to or greater than 4% of the total number of seats, but in no case less than 2)

1. Install rechargeable batteries, if applicable
2. Program receivers to the broadcast frequency of the Base Transmitter

D. SIGN

1. Provide Assistive Listening System sign per ADA requirements to indicate equipment available for the hearing impaired. Verify location with the architect prior to installation. Submit sample for approval. The sign shall include wording that states "Assistive-Listening System Available" and shall be posted in a prominent place at or near the assembly area entrance, or ticket booth window as applicable. Verify location with architect prior to installation. Assistive listening signs shall include the International Symbol of Access for Hearing Loss.

E. PORTABLE SYSTEMS

1. Contractor shall provide programming and configuration for each Assistive Listening System portable system to ensure interference-free operation between adjacent systems.

3.06 LABELING/SCHEDULES

A. All labels are to be machine generated black letters on white adhesive label stock that is appropriate for the installation environment (interior/exterior).

B. Cables shall be identified with a machine-printed tag identifying the system type, source or head end location, and destination location in all access points (i.e. junction boxes, ground boxes, MDF, IDF, etc.) and as they enter or exit and conduit pathway.

3.09 CONFIGURATION

A. All equipment to be fully configured and tested for functionality prior to testing.

3.10 FIELD QUALITY CONTROL AND TESTING

A. Upon reaching substantial completion, perform a complete test and inspection of the system. If found to be installed and operating properly, notify District of your readiness to perform the formal Test & Inspection of the complete system.

B. Submit the Record Drawings (as-builts) to District for review prior to inspection.

C. During the formal Test & Inspection (Commissioning) of the system, the Contractor shall have personnel available with tools and equipment to inspect wiring, devices, and system operation.

D. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. Perform the needed corrections in a timely fashion.

E. Notify the District when ready to perform a re-inspection of the installation.

F. The District or its representative to provide final sign-off for acceptance.

3.11 AS-BUILT DRAWINGS

A. See section 27 00 00 for requirements.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MFG	PART NUMBER
Portable ListenIR System	Listen Technologies	LS-88-01

END OF APPENDIX
END OF SECTION

SECTION 28 20 00

VIDEO SURVEILLANCE

PART I - GENERAL

1.01 SUMMARY

A. This section specifies software, equipment, accessories, wire, materials, installation, configuration, and testing requirements for a complete and operable Video Surveillance system. The system shall provide electronic recording/playback and monitoring of digital cameras installed at the site.

1.02 SCOPE

A. The work will include but not be limited to the following objectives:
1. Labor and Materials: The Contractor shall provide and pay for all labor, supervision, materials, accessories, wire, components, equipment, tools, transportation, and other facilities and services necessary for the proper installation of a turn-key Video Surveillance system to District.

1.03 RELATED REQUIREMENTS

A. Division 01 - General Requirements

B. Section 27 00 00 - Communications

C. Section 27 05 00 - Common Work Results for Communication Systems.

C. Section 27 10 00 - Structured Cabling

1.04 QUALIFICATIONS

A. Contractor shall be located within 50 miles or less from the project site to support 2-hour response time.

B. Five years' experience installing Video Surveillance equipment systems.

1.05 SYSTEM REQUIREMENTS

A. Any new installations or existing system modifications shall seamlessly integrate into the site's existing Video Surveillance system.

1.06 CONTRACTOR "SHOP DRAWINGS" DESIGN REQUIREMENTS

A. See section 27 00 00 for requirements.

B. Shop drawings are required for this section.

1.07 SUBMITTALS

A. See section 27 00 00 for requirements.

B. Submittals are required for this section.

1.08 WARRANTY

A. Refer to Division 01 Warranty section.

B. See section 27 00 00 for additional requirements.

1.09 CLOSEOUT DOCUMENTS

A. See section 27 00 00 for requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. See Appendix A at the end of this document for pre-approved materials.

B. All products shall be new, unused and without blemishes and shall be of manufacturer's current and standard production.

C. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. Contractor shall provide all components needed for complete and satisfactory installation/operation.

D. Product Availability

1. Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.

2. Subject to compliance with these specifications, products and systems included in this section are to be installed as specified by the manufacturer of the system or engineer approved equal.

2.02 EQUIPMENT

A. The District’s preferred manufacturer for CCTV equipment is Axis.

B. The District’s preferred manufacturer for video intercom is Aiphone.

C. Substitutions require proof of equivalence and approval by District and/or its representative.

D. All exterior cameras to be IP67 rated or better.

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. The equipment shall only be installed by Contractors who are qualified to install and maintain the system.

B. The Contractor (or subcontractor listed at time of bid) must have at least five (5) years' experience installing Video Surveillance equipment before the Bid Opening Date.

3.02 EXAMINATION

A. The Contractor shall be required to visit the installation site(s) prior to job bidding. The Contractor acknowledges that the failure to visit the site(s) will not relieve the Contractor of the responsibility for observing and considering those conditions which a Contractor would have observed and considered during a site visit, estimating properly the difficulty and cost of successfully performing the Work or proceeding to perform the Work without additional cost to District.

B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

A. The Contractor shall verify materials are readily available prior to submitting product submittals and notify the Project Manager of long lead time items.

B. The Contractor shall order all required parts and equipment only after receipt of approved product submittals from the Project Manager.

C. The Contractor shall coordinate with the District's Technology Services department for needed IP addresses at least 2 weeks prior to configuration/installation.

3.04 SHOP DRAWINGS

A. The Contractor shall create "Shop Drawings" per section 27 00 00.

3.05 WORKMANSHIP

A. Quality workmanship is a high priority for the District and the Contractor shall be held to a high-level of professional workmanship.

B. The District's Project or Construction Manager will have the authority to reject Work which does not conform to the Drawings and Specifications.

C. Comply with highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.

D. Perform Work with persons experienced and qualified to produce workmanship specified.

E. Maintain quality control over suppliers and Subcontractors.

3.06 PATHWAY AND EQUIPMENT INSTALLATION

A. Install all conduit and pathway per design documents. Refer to 27 05 00 for additional information/requirements.

B. Install all Cat6A cables per design documents. Refer to Section 27 10 00 for additional information/requirements.

B. Equipment to be installed per manufacturer's instructions.

C. Devices requiring PoE power shall be connected to a PoE switch in the MDF/IDF data rack – verify for adequate PoE power capacity.

3.07 CONFIGURATION

A. Program cameras and/or NVR with network IP address using information provided by the District's Technology Services department.

B. All equipment to be fully configured and tested for functionality prior to District acceptance testing.

3.08 CAMERA VIEW

A. Adjust view aim, zoom, and focus camera to show intended view from design documents. Contractor to coordinate with District for final acceptance of camera views.

3.09 FIELD QUALITY CONTROL AND TESTING

A. Upon completion of network programming and initial view setting, notify District of your readiness to perform the formal camera view review with District or its representative. Make all adjustments required from District review.

B. Submit the Record Drawings (as-builts) to District for review prior to inspection.

C. During the formal Test & Inspection (Commissioning) of the system, Contractor to have personnel available with tools and equipment to inspect wiring, devices, and system operation.

D. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. Perform the needed corrections in a timely fashion.

E. Notify the District when ready to perform a re-inspection of the installation.

3.10 AS-BUILT DRAWINGS

A. See section 27 00 00 for requirements.

APPENDIX A – Pre-Approved Materials

DESCRIPTION	MFG	PART NUMBER
Multidirectional Network Camera (4x2MP)	**Axis**	**OFCI**
Panoramic Network Camera (2x5MP)	**Axis**	**OFCI**
Dome Network Camera, Outdoor (5MP)	**Axis**	**OFCI**
Pendant Kit for Multidirectional Camera	**Axis**	**T94N01D**
Wall Mount for Multidirectional Camera	**Axis**	**T91H61**
Corner Bracket for Multidirectional Network Camera	**Axis**	**T91A64**
Conduit Adapter 3/4" for Pano-ramic Network Camera	**Axis**	**5505-541**

SECTION 28 46 00
FIRE DETECTION AND ALARM

PART 1 GENERAL

1.1 DESCRIPTION OF WORK:

A. Furnish and install all materials and equipment including all required equipment, panels, raceways, conductors and connections, and provide all labor required and necessary to complete the work shown on the drawings and/or specified and all other work and miscellaneous items, not specifically mentioned, but reasonably inferred for a complete addressable fire alarm installation including all accessories and appurtenances required for testing the systems. It is the intent of the drawings and specifications that all systems be complete, and ready for operation. No extra charge will be paid for furnishing items required by regulations, but not specified herein, or on drawings.

B. The fire alarm system shall comply with requirements of NFPA Standard 72 for Protected Premises Signaling Systems except as modified and supplemented by this specification. The system shall be electrically supervised and monitor the integrity of all conductors.

C. Each designated zone shall transmit separate and different alarm, supervisory and trouble signals to the FACP and designated personnel in other buildings at the site via a multiplex communication network.

D. See site drawings for specific requirements for the site.

1.2 RELATED WORK:

A. Refer to the General Conditions, Supplementary General Conditions, and Division 1 General Requirements.

B. See the following specification sections for work related to the work in this section:
   1. 28 05 00 - General Requirements for Electronic Safety and Security
   2. 26 05 33.13 - Raceways and Fittings for Electrical Systems
   3. 26 05 33.16 - Boxes for Electrical Systems
   4. 28 05 13 - Wire and Cable for Electronic Safety and Security

1.3 STANDARDS AND CODES:

A. Devices and equipment for fire alarm system shall be U.L. listed. Underwriters Laboratories (UL) Standards:
   1. UOJZ Control Units
   2. 38 Manual Operation Signal Boxes
   3. 268 Smoke Detectors for Fire Alarm Signaling Systems
   4. 268A Smoke Detectors for Duct Application
   5. 464 Audible Signal Appliances
   6. 521 Heat Detectors for Fire Protective Signaling Systems

7. 864 Control Units and Accessories for Fire Alarm Systems
8. 1635 Digital Alarm Communicator System Units
9. 1971 Signaling Devices for Hearing Impaired

B. Devices and equipment for fire alarm system shall be listed by the California State Fire Marshal for the specific purpose the device or equipment is used.

C. Work and material shall be in compliance with and according to the requirements of the latest revision of the following standards and codes:
1. California Building Code (CBC), Volumes #1 and #2 (Part 2, Title 24, CCR).
2. California Electrical Code (Part 3, Title CCR).
3. California Mechanical Code (CMC) (Part 4, Title 24, CCR).
4. California Plumbing Code (CPC) (Part 5, Title 24, CCR).
5. California Energy Code (Part 6, Title 24, CCR).
6. California Fire Code (CFC) (Part 9, Title 24).
7. California Green Code (Part 11, Title 24, CCR).
8. California Referenced Standards Code (Part 12, title 24, CCR).
9. NFPA 72 National Fire Alarm Code.
10. NFPA 13 Standards for Fire Sprinkler Systems.
11. ADA Standards for Accessible Design: ADA Accessibility Guidelines (ADAAG) 28, Part 36 Appendix A.
12. ADA Standards for Accessible Design: Code of Regulations (Including Amendments)

1.4 SUBMITTALS:

A. In accordance with Section 28 05 00.

B. Submit the following items:
1. Manufacturer's Catalog Data: Manufacturer's original catalog cuts and original description of data of all material and equipment with sufficient information provided so that the exact function of each device is known. Each item supplied shall be clearly identified including both U.L. number and a copy of the State Fire Marshal's listing.
2. Description of conductors to be used with a statement that all wire shall be in conduit.
3. Voltage drop calculations: Verify that voltage drop on signal device circuits does not exceed 10%.
4. Battery Calculations: Verify that battery capacity exceeds supervisory and alarm power requirements, minimum twenty-four (24) hours supervisory plus 15 minutes at full alarm.
5. Floor plan of the point to point connections.
6. Diagram of the power circuitry.
7. Riser diagram.

8. Copy of California State DIR Fire/Life Safety Certificate of installer.
9. Letter on contractor's letterhead certifying that contractor has at least 3 years experience successfully installing fire alarm systems of similar type and design, or that there is a contractual agreement with a subcontractor having at least 3 years experience successfully installing fire alarm systems of similar type and design.

1.5 SUBSTITUTIONS:

A. Fire Alarm System Manufacturer is an Owner Standard no substitutions allowed.

1.6 QUALIFICATIONS OF INSTALLER:

A. NICET level 2 or greater.

B. Prior to installation, submit data for review showing that the contractor has at least 3 years experience successfully installing fire alarm systems of similar type and design, or that there is a contractual agreement with a subcontractor having at least 3 years experience successfully installing fire alarm systems of similar type and design.

C. One contractor shall furnish and install a complete Fire Alarm and Smoke Detection System as described herein and drawn. Installation shall be by a factory authorized installer of the fire alarm system.

1.7 WARRANTIES:

A. The contractor shall warrant all equipment and wiring free from inherent mechanical and electrical defects for one year (365 days) from the date of final acceptance. The contractor shall without additional expense to the owner, replace any defective materials or equipment provided by him under this contract within the warranty period.

B. FACP shall have a five year manufacturer's warranty from the date of final acceptance.

C. Signaling devices shall have a two year manufacturer's warranty from the date of final acceptance.

PART 2 PRODUCTS

2.1 MANUFACTURER:

A. (E) Fire Alarm Control Panel (FACP):
   1. Edwards EST-3, CSFM listed at time of installation

B. Smoke Detector (Photoelectric):
   1. Edwards SIGA-PCD, CSFM 7275-1657:0334

C. Heat Detector (Fixed Temp, 190°):
   1. Edwards SIGA-HFD, CSFM 7270-1657:0333

D. Addressable Relay Module:
   1. Edwards SIGA-CR, CSFM 7300-1657:0121

E. Remote Notification Power Supply:
   1. Edwards 3-PPS, CSFM listed at time of installation

F. Strobe:
   1. Edwards G1VRF, CSFM 7125-1657:0506

2.2 COMPONENTS:

A. Colors: Provide finish colors under this section in accordance with FED-STD-595.

2.3 FIRE ALARM CONTROL PANEL:

A. Main FACP or network node shall contain a microprocessor based Central Processing Unit (CPU) and power supply. The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent addressable smoke and thermal (heat) detectors, addressable modules, printer, annunciators, and other system controlled devices.

B. In conjunction with intelligent Loop Control Modules and Loop Expander Modules, the main FACP shall perform the following functions:
   1. Supervise and monitor all intelligent addressable detectors and monitor modules connected to the system for normal, trouble and alarm conditions.
   2. Supervise all initiating signaling and notification circuits throughout the facility by way of connection to addressable monitor and control modules.
   3. Detect the activation of any initiating device and the location of the alarm condition. Operate all notification appliances and auxiliary devices as programmed. In the event of CPU failure, all SLC loop modules shall fallback to degrade mode. Such degrade mode shall treat the corresponding SLC loop control modules and associated detection devices as conventional two-wire operation. Any activation of a detector in this mode shall automatically activate associated Notification Appliance Circuits.

C. The FACP shall be capable of communicating over a Local Area Network (LAN) or Wide Area Network (WAN) utilizing a peer-to-peer, inherently regenerative communication format and protocol. The network shall support communication speed up to 100 Mb and support up to 200 panels / nodes per network.

D. The control panel shall be capable of expansion via up to 10 SLC loops. Each module shall support up to 318 analog/addressable devices for a maximum system capacity of 3180 points. The Fire Alarm Control Panel shall include a full featured operator interface control and annunciation panel that shall include a backlit 640-character liquid crystal display, individual, color coded system status LEDs, and a keypad for the control of the fire alarm system. Said LCD shall also support graphic bit maps.

E. All programming or editing of the existing program in the system shall be achieved without interrupting the alarm monitoring functions of the fire alarm control panel.

F. The FACP shall be able to provide the following software and hardware features:
   1. Pre-signal and Positive Alarm Sequence: The system shall provide means to cause alarm signals to only sound in specific areas with a delay of the alarm from 60 to up to 180 seconds after start of alarm processing. In addition, a Positive Alarm

Sequence selection shall be available that allows a 15-second time period for acknowledging an alarm signal from a fire detection/initiating device. If the alarm is not acknowledged within 15 seconds, all local and remote outputs shall automatically activate immediately.

2. Smoke Detector Pre-alarm Indication at Control Panel: To obtain early warning of incipient or potential fire conditions, the system shall support a programmable option to determine system response to real-time detector sensing values above the programmed setting. Two levels of Pre-alarm indication shall be available at the control panel: alert and action.
3. Alert: It shall be possible to set individual smoke detectors for pre-programmed pre-alarm thresholds. If the individual threshold is reached, the pre-alarm condition shall be activated.
4. Action: If programmed for Action and the detector reaches a level exceeding the pre-programmed level, the control panel shall indicate an action condition. Sounder bases installed with either heat or smoke detectors shall automatically activate on action Pre-Alarm level, with general evacuation on Alarm level.
5. The system shall support a detector response time to meet world annunciation requirements of less than 3 seconds.
6. Device Blink Control: Means shall be provided to turn off detector/module LED strobes for special areas.
7. NFPA 72 Smoke Detector Sensitivity Test: The system shall provide an automatic smoke detector test function that meets the sensitivity testing requirements of NFPA 72.
8. Programmable Trouble Reminder: The system shall provide means to automatically initiate a reminder that troubles exist in the system. The reminder will appear on the system display and (if enabled) will sound a piezo alarm.
9. On-line or Off-line programming: The system shall provide means to allow panel programming either through an off-line software utility program away from the panel or while connected and on-line. The system shall also support upload and download of programmed database and panel executive system program to a Personal Computer/laptop. A single change to one CPU database shall not require a database download to other CPUs.
10. History Events: The panel shall maintain a history file of the last 4000 events, each with a time and date stamp. History events shall include all alarms, troubles, operator actions, and programming entries. The control panels shall also maintain a 1000 event Alarm History buffer, which consists of the 1000 most recent alarm events from the 4000-event history file.
11. Smoke Control Modes: The system shall provide means to perform FSCS mode Smoke Control to meet NFPA-92A and 90B and HVAC mode to meet NFPA 90A.
12. The system shall provide means for all SLC devices on any SLC loop to be auto programmed into the system by specific address. The system shall recognize specific device type ID's and associate that ID with the corresponding address of

the device.

13. Passwords and Users: The system shall support two password levels, master and user. Up to 9 user passwords shall be available, each of which may be assigned access to the programming change menus, the alter status menus, or both. Only the master password shall allow access to password change screens.
14. Block Acknowledge: The system shall support a block Acknowledge for Trouble Conditions
15. Sensitivity Adjust: The system shall provide Automatic Detector Sensitivity Adjust based on Occupancy schedules including a Holiday list of up to 15 days.
16. Environmental Drift Control: The system shall provide means for setting Environmental Drift Compensation by device. When a detector accumulates dust in the chamber and reaches an unacceptable level but yet still below the allowed limit, the control panel shall indicate a maintenance alert warning. When the detector accumulates dust in the chamber above the allowed limit, the control panel shall indicate a maintenance urgent warning.
17. Custom Action Messages: The system shall provide means to enter up to 100 custom action messages of up to 160 characters each. It shall be possible to assign any of the 100 messages to any point.
18. Local Mode: If communication is lost to the central processor the system shall provide added survivability through the intelligent loop control modules. Inputs from devices connected to the SLC and loop control modules shall activate outputs on the same loop when the inputs and outputs have been set with point programming to participate in local mode or when the type codes are of the same type: that is, an input with a fire alarm type code shall activate an output with a fire alarm type code.
19. Read status preview - enabled and disabled points: Prior to re-enabling points, the system shall inform the user that a disabled device is in the alarm state. This shall provide notice that the device must be reset before the device is enabled thereby avoiding activation of the notification circuits.
20. Custom Graphics: When fitted with an LCD display, the panel shall permit uploading of a custom bit-mapped graphic to the display screen.
21. Multi-Detector and Cooperating Detectors: The system shall provide means to link one detector with up to two detectors at other addresses on the same loop in cooperative multi-detector sensing. There shall be no requirement for sequential addresses on the detectors and the alarm event shall be a result of all cooperating detectors chamber readings.
22. ACTIVE EVENT: The system shall provide a Type ID called FIRE CONTROL for purposes of air-handling shutdown, which shall be intended to override normal operating automatic functions. Activation of a FIRE CONTROL point shall cause the control panel to (1) initiate the monitor module Control-by-Event, (2) send a message to the panel display, history buffer, installed printer and annunciators, (3) shall not light an indicator at the control panel, (4) Shall display ACTIVE on the

LCD as well a display a FIRE CONTROL Type Code and other information specific to the device.

23. NON-FIRE Alarm Module Reporting: A point with a type ID of NON-FIRE shall be available for use for energy management or other non-fire situations. NON-FIRE point operation shall not affect control panel operation nor shall it display a message at the panel LCD. Activation of a NON-FIRE point shall activate control by event logic but shall not cause any indication on the control panel.
24. Mass Notification Override: The system shall be UL 2572 listed for Mass Notification and shall be capable, based on the Risk Analysis, of being programmed so that Mass Notification/Emergency Communications events take precedence over fire alarm events.
25. Security Monitor Points: The system shall provide means to monitor any point as a type security.
26. One-Man Walk Test: The system shall provide both a basic and advanced walk test for testing the entire fire alarm system. The basic walk test shall allow a single operator to run audible tests on the panel. All logic equation automation shall be suspended during the test and while annunciators can be enabled for the test, all shall default to the disabled state. During an advanced walk test, field-supplied output point programming will react to input stimuli such as CBE and logic equations. When points are activated in advanced test mode, each initiating event shall latch the input. The advanced test shall be audible and shall be used for pull station verification, magnet activated tests on input devices, input and output device and wiring operation/verification.
27. Control By Event Functions: CBE software functions shall provide means to program a variety of output responses based on various initiating events. The control panel shall operate CBE through lists of zones. A zone shall become listed when it is added to a point's zone map through point programming. Each input point such as detector, monitor module or panel circuit module shall support listing of up to 10 zones into its programmed zone map.
28. Permitted zone types shall be general zone, releasing zone and special zone. Each output point (control module, panel circuit module) can support a list of up to 10 zones including general zone, logic zone, releasing zone and trouble zone. It shall be possible for output points to be assigned to list general alarm. Non-Alarm or Supervisory points shall not activate the general alarm zone.
29. 1000 General Zones: The system shall support up to 1000 general purpose software zones for linking inputs to outputs. When an input device activates, any general zone programmed into that device's zone map will be active and any output device that has an active general zone in its map will be active. It shall also be possible to use general zone as arguments in logic equations.
30. 1000 Logic Equations: The system shall support up to 1000 logic equations for AND, OR, NOT, ONLY1, ANYX, XZONE or RANGE operators that allow conditional I/O linking. When any logic equation becomes true, all output points mapped to

the logic zone shall activate.

31. 100 trouble equations per device: The system shall provide support for up to 100 trouble equations for each device, which shall permit programming parameters to be altered, based on specific fault conditions. If the trouble equation becomes true, all output points mapped to the trouble zone shall activate.
32. Control-By-Time: A time based logic function shall be available to delay an action for a specific period of time based upon a logic input with tracking feature. A latched version shall also be available. Another version of this shall permit activation on specific days of the week or year with ability to set and restore based on a 24 hour time schedule on any day of the week or year.
33. Multiple agent releasing zones: The system shall support up to 10 releasing zones to protect against 10 independent hazards. Releasing zones shall provide up to three cross-zone and four abort options to satisfy any local jurisdiction requirements.
34. Alarm Verification, by device, with timer and tally: The system shall provide a user-defined global software timer function that can be set for a specific detector. The timer function shall delay an alarm signal for a user-specified time period and the control panel shall ignore the alarm verification timer if another alarm is detected during the verification period. It shall also be possible to set a maximum verification count between 0 and 20 with the "0" setting producing no alarm verification. When the counter exceeds the threshold value entered, a trouble shall be generated to the panel.

G. Central Processing Unit
    1. The Central Processing Unit shall contain and execute all control-by-event (including Boolean functions including but not limited to AND, OR, NOT, ANYx, and CROSSZONE) programs for specific action to be taken if an alarm condition is detected by the system. Such control-by-event programs shall be held in non-volatile programmable memory, and shall not be lost with system primary and secondary power failure.
    2. The Central Processing Unit shall also provide a real-time clock for time annotation, to the second, of all system events. The time-of-day and date shall not be lost if system primary and secondary power supplies fail.
    3. The CPU shall be capable of being programmed on site without requiring the use of any external programming equipment. Systems that require the use of external programmers or change of EPROMs are not acceptable.
    4. The CPU shall provide an EIA-232 interface between the fire alarm control panel and the UL Listed Electronic Data Processing (EDP) peripherals.
    5. The CPU shall provide two EIA-485 ports for the serial connection to annunciation and control subsystem components.
    6. The EIA-232 serial output circuit shall be optically isolated to assure protection from earth ground.

H. Display
   1. The system display shall provide a 640-character backlit alphanumeric Liquid Crystal Display (LCD). It shall also provide eleven Light-Emitting-Diodes (LEDs) that indicate the status of the following system parameters: AC POWER, FIRE ALARM, PREALARM, SECURITY, SUPERVISORY, SYSTEM TROUBLE, OTHER EVENT, SIGNALS SILENCED, POINT DISABLED, CONTROLS ACTIVE, and CPU FAILURE.
   2. The system display shall provide a keypad with control capability to command all system functions, entry of any alphabetic or numeric information, and field programming. Two different password levels with up to ten (one Master and nine User) passwords shall be accessible through the display interface assembly to prevent unauthorized system control or programming.

I. Loop (Signaling Line Circuit) Control Module
   1. The Loop Control Module shall monitor and control a minimum of 318 intelligent addressable devices. This includes 159 intelligent detectors (Ionization, Photoelectric, or Thermal) and 159monitor or control modules.
   2. The Loop Control Module shall contain its own microprocessor and shall be capable of operating in a local/degrade mode (any addressable device input shall be capable of activating any or all addressable device outputs) in the unlikely event of a failure in the main CPU.
   3. Each Loop shall be capable of operating as a NFPA Style 4 (Class B) circuit.
   4. The SLC interface board shall receive analog or digital information from all intelligent detectors and shall process this information to determine whether normal, alarm, or trouble conditions exist for that particular device. Each SLC Loop shall be isolated and equipped to annunciate an Earth Fault condition. The SLC interface board software shall include software to automatically maintain the detector's desired sensitivity level by adjusting for the effects of environmental factors, including the accumulation of dust in each detector. The analog information may also be used for automatic detector testing and the automatic determination of detector maintenance requirements.

J. Digital Voice Command Center
   1. The Digital Voice Command Center located with the FACP, shall contain all equipment required for all audio control, emergency telephone system control, signaling and supervisory functions. This shall include speaker zone indication and control, telephone circuit indication and control, digital voice units, microphone and main telephone handset.
   2. Function: The Voice Command Center equipment shall perform the following functions:
      a. Operate as a supervised multi-channel emergency voice communication system.
      b. Operate as a two-way emergency telephone system control center.

c. Audibly and visually annunciate the active or trouble condition of every speaker circuit and emergency telephone circuit.
d. Audibly and visually annunciate any trouble condition for digital tone and voice units required for normal operation of the system.
e. Provide all-call Emergency Paging activities through activation of a single control switch.
f. As required, provide vectored paging control to specific audio zones via dedicated control switches.
g. Provide a factory recorded "library" of voice messages and tones in standard WAV. File format, which may be edited and saved on a PC running a current Windows® operating system.
h. Provide a software utility capable of off-line programming for the DVC operation and the audio message files. This utility shall support the creation of new programs as well as editing and saving existing program files. Uploading or downloading the DVC shall not inhibit the emergency operation of other nodes on the fire alarm network.
i. Support an optional mode of operation with four analog audio outputs capable of being used with UL 864 fire-listed analog audio amplifiers and SLC controlled switching.
j. The Digital Voice Command shall be modular in construction, and shall be capable of being field programmable without requiring the return of any components to the manufacturer and without requiring use of any external computers or other programming equipment.
k. The Digital Voice Command and associated equipment shall be protected against unusually high voltage surges or line transients.

K. Power Supply
1. The Main Power Supply shall operate on 120/240 VAC, 50/60 Hz, and shall provide all necessary power for the FACP.
2. The Main Power Supply shall provide the required power to the CPU using a switching 24 VDC regulator and shall incorporate a battery charger for 24 hours of standby power using dual-rate charging techniques for fast battery recharge.
3. The Main Power Supply shall provide a battery charger for 24 hours of standby using dual-rate charging techniques for fast battery recharge. The supply shall be capable of charging batteries ranging in capacity from 7-200 amp-hours within a 48-hour period.
4. The Main Power Supply shall provide a very low frequency sweep earth detect circuit, capable of detecting earth faults.
5. The Main Power Supply shall be power-limited per UL864 requirements.
6. The Main Power Supply shall communicate power supply, line voltage, battery status and charger status to the local LCD display. Any abnormal condition shall be annunicated and logged to the system alarm history log.

7. Addressable Charger Power SupplyThe auxiliary addressable power supply is a remote 24 VDC power supply used to power Notification Devices and field devices that require regulated 24 VDC power. . NOTIFIER model # ACPS-610
8. The addressable power supply for the fire detection system shall provide up to a minimum of 6.0 amps of 24 volt DC regulated power for Notification Appliance Circuit (NAC) power or 10.0 amps of 24 volt DC general power. The power supply shall have an additional 0.5 amp of 24 VDC auxiliary power for use within the same cabinet as the power supply. It shall include an integral charger designed to charge 12 - 200 amp hour batteries.
9. The addressable power supply shall provide four individually addressable Notification Appliance Circuits that may be configured as Class "A" or Class "B" circuits. All circuits shall be power-limited per UL 864 requirements.
10. The addressable power supply shall provide built-in synchronization for certain Notification Appliances on each circuit without the need for additional synchronization modules. The power supply's output circuits shall be individually selected for synchronization. A single addressable power supply shall be capable of supporting both synchronized and non-synchronized Notification Devices at the same time.
11. The addressable power supply shall operate on 120 or 240 VAC, 50/60 Hz.
12. The interface to the power supply from the Fire Alarm Control Panel (FACP) shall be via the Signaling Line Circuit (SLC) or other multiplexed means Power supplies that do not use an intelligent interface are not suitable substitutes. The required wiring from the FACP to the addressable power supply shall be a single unshielded twisted pair wire.
13. The addressable power supply shall supervise for battery charging failure, AC power loss, power brownout, battery failure, NAC loss, and optional ground fault detection. In the event of a trouble condition, the addressable power supply shall report the incident and the applicable address to the FACP via the SLC.
14. The addressable power supply shall have an AC Power Loss Delay option. If this option is utilized and the addressable power supply experiences an AC power loss, reporting of the incident to the FACP will be delayed. A delay time of zero, two, eight or sixteen hours shall be programmable.
15. The addressable power supply shall have an option for Canadian Trouble Reporting and this option shall be programmable.
16. The addressable power supply mounts in either the FACP backbox or it's own dedicated surface mounted backbox with cover.
17. Each of the power supply's four output circuits shall be programmed- for Notification Appliance Circuit or General Purpose 24 VDC power. Any output circuit shall be able to provide up to 2.5 amps of 24 VDC power.
18. The addressable power supply's output circuits shall be individually supervised when they are selected to be either a Notification Appliance Circuit when wired

Class "A" or by the use of and end-of-line resistor. When the power supply's output circuit is selected as General 24 VDC power, the circuit shall be individually supervised when an end-of-line relay is used.

19. When selected for Notification Appliance Circuits, the output circuits shall be individually programmable for Steady, March Time, Dual Stage or Temporal.
20. When selected as a Notification Appliance Circuit, the output circuits of the addressable power supply shall have the option to be coded by the use of a universal zone coder.
21. The addressable power supply shall interface and synchronize with other power supplies of the same type. The required wiring to interface multiple addressable power supplies shall be a single unshielded, twisted pair wire.
22. An individual or multiple interfaced addressable power supplies shall have the option to use an external charger for battery charging. Interfaced power supplies shall have the option to share backup battery power.

L. Audio Message Generator (Prerecorded Voice)/Speaker Control
   1. Each initiating zone or intelligent device shall interface with an emergency voice communication system capable of transmitting a prerecorded voice message to all speakers in the building.
   2. Actuation of any alarm initiating device shall cause a prerecorded message to sound over the speakers. The message shall be repeated four (4) times. Pre- and post-message tones shall be supported.
   3. A built-in microphone shall be provided to allow paging through speaker circuits.
   4. System paging from emergency telephone circuits shall be supported.
   5. The audio message generator shall have the following indicators and controls to allow for proper operator understanding and control:
      a. Lamp Test
      b. Trouble
      c. Off-Line Trouble
      d. Microphone Trouble
      e. Phone Trouble
      f. Busy/Wait
      g. Page Inhibited
      h. Pre/Post Announcement Tone

M. Controls with associated LED Indicators
   1. Speaker Switches/Indicators
      a. The speaker circuit control switches/indicators shall include visual indication of active and trouble status for each speaker circuit in the system.
      b. The speaker circuit control panel shall include switches to manually activate or deactivate each speaker circuit in the system.
   2. Emergency Two-Way Telephone Control Switches/Indicators

a. The emergency telephone circuit control panel shall include visual indication of active and trouble status for each telephone circuit in the system.
b. The telephone circuit control panel shall include switches to manually activate or deactivate each telephone circuit in the system.

N. Remote Transmissions
1. Provide local energy or polarity reversal or trip circuits as required.
2. The system shall be capable of operating a polarity reversal or local energy or fire alarm transmitter for automatically transmitting fire information to the fire department.
3. Provide capability and equipment for transmission of zone alarm and trouble signals to remote operator's terminals, system printers and annunciators.
4. Transmitters shall be compatible with the systems and equipment they are connected to such as timing, operation and other required features.

O. Field Programming
1. The system shall be programmable, configurable and expandable in the field without the need for special tools, laptop computers, or other electronic interface equipment. There shall be no firmware changes required to field modify the system time, point information, equations, or annunciator programming/information.
2. All field defined programs shall be stored in non-volatile memory.

P. Specific System Operations
1. Smoke Detector Sensitivity Adjust: A means shall be provided for adjusting the sensitivity of any or all addressable intelligent detectors in the system from the system keypad. Sensitivity range shall be within the allowed UL window and have a minimum of 9 levels.
2. Alarm Verification: Each of the intelligent addressable smoke detectors in the system may be independently selected and enabled to be an alarm verified detector. The alarm verification delay shall be programmable from 0 to 60 seconds and each detector shall be able to be selected for verification. The FACP shall keep a count of the number of times that each detector has entered the verification cycle. These counters may be displayed and reset by the proper operator commands.

Q. System Point Operations
1. Any addressable device in the system shall have the capability to be enabled or disabled through the system keypad or video terminal.
2. System output points shall be capable of being turned on or off from the system keypad or the video terminal.
3. Point Read: The system shall be able to display the following point status diagnostic functions without the need for peripheral equipment. Each point shall be annunciated for the parameters listed:

a. Device Status.
b. Device Type.
c. Custom Device Label.
d. Software Zone Label.
e. Device Zone Assignments.
f. Analog Detector Sensitivity.
g. All Program Parameters.

4. System History Recording and Reporting: The fire alarm control panel shall contain a history buffer that will be capable of storing up to 4000 system events. Each of these events will be stored, with time and date stamp, until an operator requests that the contents be either displayed or printed. The contents of the history buffer may be manually reviewed; one event at a time, and the actual number of activations may also be displayed and or printed. History events shall include all alarms, troubles, operator actions, and programming entries.
5. The history buffer shall use non-volatile memory. Systems which use volatile memory for history storage are not acceptable.
6. Automatic Detector Maintenance Alert: The fire alarm control panel shall automatically interrogate each intelligent system detector and shall analyze the detector responses over a period of time.
7. If any intelligent detector in the system responds with a reading that is below or above normal limits, then the system will enter the trouble mode, and the particular Intelligent Detector will be annunciated on the system display, and printed on the optional system printer. This feature shall in no way inhibit the receipt of alarm conditions in the system, nor shall it require any special hardware, special tools or computer expertise to perform.
8. The system shall include the ability (programmable) to indicate a "pre-alarm" condition. This will be used to alert maintenance personal when a detector is at 80% of its alarm threshold in a 60 second period.

R. Universal Digital Alarm Communicator Transmitter (UDACT):
1. The UDACT is an interface for communicating digital information between a fire alarm control panel and an UL-Listed central station.
2. The UDACT shall be compact in size, mounting in a standard module position of the fire alarm control cabinet. Optionally, the UDACT shall have the ability for remote mounting, up to 6,000 feet from the fire alarm control panel. The wire connections between the UDACT and the control panel shall be supervised with one pair for power and one pair for multiplexed communication of overall system status. Systems that utilize relay contact closures are not acceptable.
3. The UDACT shall include connections for dual telephone lines (with voltage detect), per UL/NFPA/FCC requirements. It shall include the ability for split reporting of panel events up to two different telephone numbers.
4. The UDACT shall be capable of transmitting events in 4+2, SIA, and Contact ID.

5. Communication shall include vital system status such as:
    a. Independent Zone (Alarm, trouble, non-alarm, supervisory)
    b. Independent Addressable Device Status
    c. AC (Mains) Power Loss
    d. Low Battery and Earth Fault
    e. System Off Normal
    f. 12 and 24 Hour Test Signal
    g. Abnormal Test Signal (per UL requirements)
    h. EIA-485 Communications Failure
    i. Phone Line Failure
6. The UDACT shall support independent zone/point reporting when used in the Contact ID format. In this format the UDACT shall support transmission of up to 3,064 points. This enables the central station to have exact details concerning the origin of the fire or response emergency.
7. The UDACT shall be capable of being programmed with the same programming utility as the host FACP, and saved, edited and uploaded and downloaded using the utility. UDACT shall be capable of being programmed online or offline. The programming utility shall also support upgrading UDACT operating firmware.
8. The UDACT shall be capable of generating Central Station reports providing detailed programming information for each point along with the central station point address.
9. An IP or IP/GSM Communicator option shall be available to interface to the UDACT and be capable of transmitting signals over the internet/intranet or Cellular (GSM) network to a compatible receiver.

S. Printer
1. The printer shall provide hard-copy printout of all changes in status of the system and shall time-stamp such printouts with the current time-of-day and date. The printer shall be standard carriage with 80-characters per line and shall use standard pin-feed paper. The printer shall be enclosed in a separate cabinet suitable for placement on a desktop or table. The printer shall communicate with the control panel using an interface complying with Electrical Industries Association standard EIA-232D. Power to the printer shall be 120 VAC @ 60 Hz.
2. The system shall have a strip printer capable of being mounted directly in the main FACP enclosure. Alarms shall be printed in easy-to-read RED, other messages, such as a trouble, shall be printed in BLACK. This printer shall receive power from the system power supply and shall operate via battery back-up if AC mains are lost. The strip printer shall be UL 864 listed.
3. The system shall have a strip printer capable of being mounted directly in the main FACP enclosure. Alarms shall be printed in easy-to-read RED, other messages, such as a trouble, shall be printed in BLACK. This printer shall receive power from the system power supply and shall operate via battery back-up if AC

mains are lost. The strip printer shall be UL 864 listed.

T. Smoke Control Annunciator
   1. On/Auto/Off switches and status indicators (LEDS) shall be provided for monitoring and manual control of each fan, damper, HVAC control unit, stairwell pressurization fan, and smoke exhaust fan. To ensure compliance the units supplied shall meet the following UL categories: UUKL, PAZX, UDTZ, QVAX as well as the requirements of NFPA 90A, HVAC, and NFPA 92A & 92B, Smoke Control. The control System shall be field programmable for either 90A operation or 92A/B operation to allow for future use and system expansion.
   2. The OFF LED shall be Yellow, the ON LED shall be green, the Trouble/Fault LED shall be Amber/Orange for each switch. The Trouble/Fault indicator shall indicate a trouble in the control and/or monitor points associated with that switch. In addition, each group of eight switches shall have two LEDS and one momentary switch which allow the following functions: An Amber LED to indicate an OFF-NORMAL switch position, in the ON or OFF position; A Green LED to indicate ALL AUTO switch position; A Local Acknowledge/Lamp Test momentary switch.
   3. Each switch shall have the capability to monitor and control two addressable inputs and two addressable outputs. In all modes, the ON and OFF indicators shall continuously follow the device status not the switch position. Positive feedback shall be employed to verify correct operation of the device being controlled. Systems that indicate on/off/auto by physical switch position only are not acceptable.
   4. All HVAC switches (i.e., limit switches, vane switches, etc.) shall be provided and installed by the HVAC contractor.
   5. It shall be possible to meet the requirements mentioned above utilizing wall mounted custom graphic.

2.4 ADDRESSABLE DEVICES – GENERAL

A. Addressable devices shall provide an address-setting means using rotary decimal switches. Addressable devices that require the address be programmed using a programming utility are not an allowable substitute.

B. Addressable devices shall use simple to install and maintain decade, decimal address switches. Devices shall be capable of being set to an address in a range of 001 to 159.

C. Addressable devices, which use a binary-coded address setting method, such as a DIP-switch, are not an allowable substitute. Addressable devices that require the address be programmed using a special tool or programming utility are not an allowable substitute.

D. Addressable devices, which use a binary-coded address setting method, such as a DIP-switch, are not an allowable substitute. Addressable devices that require the address be programmed using a special tool or programming utility are not an allowable substitute.

E. Detectors shall be intelligent (analog) and addressable, and shall connect with two wires to the fire alarm control panel Signaling Line Circuits.

F. Addressable smoke and thermal detectors shall provide dual alarm and power/polling LEDs. Both LEDs shall flash green under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady red illumination by the control panel, indicating that an alarm condition has been detected. If required, the LED flash shall have the ability to be removed from the system program. An output connection shall also be provided in the base to connect an external remote alarm LED.

G. The fire alarm control panel shall permit detector sensitivity adjustment through field programming of the system. The panel on a time-of-day basis shall automatically adjust sensitivity.

H. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72.

I. The detectors shall be ceiling-mount and shall include a separate twist-lock base with tamper proof feature. Base options shall include a sounder base with a built-in (local) sounder rated at 85 DBA minimum, a relay base and an isolator base designed for Style 7 applications. The system shall also support an intelligent programmable sounder base, the programmable sounder base shall be capable of providing multiple tones based on programming and at a minimum be capable of providing a Temp-4 tone for CO (Carbon Monoxide) activation and a Temp-3 tone for fire activations and be capable of being synchronized with other programmable sounder bases and common area notification appliances; 85 DBA minimum.

J. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (ION, PHOTO, THERMAL).

K. Detectors will operate in an analog fashion, where the detector simply measures its designed environment variable and transmits an analog value to the FACP based on real-time measured values. The FACP software, not the detector, shall make the alarm/normal decision, thereby allowing the sensitivity of each detector to be set in the FACP program and allowing the system operator to view the current analog value of each detector.

L. Addressable devices shall store an internal identifying code that the control panel shall use to identify the type of device.

M. A magnetic test switch shall be provided to test detectors and modules. Detectors shall report an indication of an analog value reaching 100% of the alarm threshold.

N. Addressable modules shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box. An optional surface mount Lexan enclosure shall be available.

2.5 SMOKE DETECTOR (PHOTOELECTRIC):

A. The intelligent photoelectric smoke detector shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.

2.6 HEAT DETECTOR (FIXED TEMP, 135° OR 190°):

A. The intelligent thermal detectors shall be addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius). A high heat thermal detector rated at 190 degrees Fahrenheit shall also be available. The thermal detectors shall connect via two wires to the fire alarm control panel signaling line circuit.

2.7 ADDRESSABLE RELAY MODULE:

A. Addressable Relay Modules shall be available for HVAC control and other network building functions.

B. The module shall provide two form C relays rated at up to 3 Amps resistive and up to 2.0 Amps inductive.

C. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary devices energize at the same time on the same pair of wires;

D. For multiple relay control a module shall be available that provides 6 programmable Form-C relays.

2.8 REMOTE NOTIFICATION POWER SUPPLY:

A. RNPS shall provide additional supervised, notification appliances circuits to the fire alarm system.

B. Primary Power:

1. Provide 120 VAC service to each RNPS, transformed through a two-winding isolation-type transformer and rectified to 24 VDC for operation of alarm notification circuits. All primary power supplies for the system shall be via separate, lockable, circuit breakers, dedicated to fire alarm equipment. The circuit breakers shall be identified "Fire Alarm System" with a red and white engraved plastic sign permanently affixed to the face of the circuit breaker.

C. Auxiliary Power:

1. Provide 24 VDC auxiliary power for system operation in the event of a primary power source failure. Independent auxiliary power systems shall be located in each RNPS. Transfer from normal to auxiliary power or restoration from auxiliary to normal power shall be automatic and shall not cause transmission of a false alarm.

D. RNPS shall be provided with sufficient battery capacity to operate all output circuits upon loss of normal 120 VAC power in a normal supervisory mode for a period of twenty four (24) hours followed by 5 minutes of alarm operation at the end of this

period. The system shall automatically transfer to the standby batteries upon power failure.

E. Battery Charger:
   1. Provide solid state, automatic, variable type, battery charger, capable of recharging completely discharged batteries to fully charged condition in 24 hours or less.
      a. Batteries 24 V, rechargeable, gelled electrolyte, totally sealed, fully charged with all interconnections ready for service. Maintenance free, long-life.

F. RNPS shall be modular with solid state microprocessor based electronics. RNPS shall provide stand alone power supply for powering notification appliance circuits. RNPS shall have capacity for up to four class "B" notification appliances circuits. RNPS shall contain built in synchronization to synchronize Code 3 Temporal horns and flashes of strobes. RNPS shall provide the ability to silence horns while maintaining strobe functions. RNPS shall interface with the addressable fire alarm system by means of a Notification Appliance Circuit Module connected to the initiation circuits.

G. RNPS shall provide up to 200 milliamps of continuous auxiliary output for control functions.

2.9 STROBE:

A. The strobe shall be listed to UL 1971 and UL 1480 and be approved for fire protective signaling systems. It shall be a dual-voltage transformer strobe capable of operation at 12.0 or 24.0 nominal Vrms. It shall have an operating temperature between 32°F and 120°F. It shall mount to a 4 x 4 x 2 1/8-inch back box.

B. A universal mounting plate shall be used for mounting ceiling and wall strobe products. The notification appliance circuit wiring shall terminate at the universal mounting plate. Strobes and the Sync Circuit Module accessory, if used, shall be powered from a non-coded notification appliance circuit output and shall operate on a nominal 12 or 24 volts (includes fire alarm panels with built in sync). When used with the Sync Circuit Module, 12-volt rated notification appliance circuit outputs shall operate between 8.5 and 17.5 volts; 24-volt rated notification appliance circuit outputs shall operate between 16.5 to 33 volts. If the notification appliances are not UL 9th edition listed with the corresponding panel or power supply being used, then refer to the compatibility listing of the panel to determine maximum devices on a circuit.

C. Strobes shall be plug-in and shall have the ability to check wiring continuity via a shorting spring on the universal mounting plate. The shorting spring shall also provide tamper resistance via an open circuit if the device is removed.

D. The strobe shall consist of a xenon flash tube with associated lens/reflector system and operate on either 12V or 24V. The strobe shall also feature selectable candela output, providing options for 15 or 15/75 candela when operating on 12V and 15, 15/75, 30, 75, 110, or 115 when operating on 24V. The strobe shall comply with NFPA 72 and the Americans with Disabilities Act requirement for visible signaling appliances, flashing at

1 Hz over the strobe's entire operating voltage range.

E. All notification appliances shall be backward compatible.

2.10 WEATHERPROOF SPEAKER:

A. The speaker shall be listed to UL 1480 for Fire Protective Signaling Systems. It shall be a dual-voltage transformer speaker capable of operation at 25.0 or 70.7 nominal Vrms. The speaker shall have a frequency range of 400 to 4,000 Hz and shall have an operating temperature between 32°F and 120°F. It shall mount to a 4 x 4 x 2 1/8-inch back box.

B. A universal mounting plate shall be used for mounting ceiling and wall speaker products. The notification appliance circuit and amplifier wiring shall terminate at the universal mounting plate.

C. Speakers shall be plug-in and shall have the ability to check wiring continuity via a shorting spring on the universal mounting plate. The shorting spring shall also provide tamper resistance via an open circuit if the device is removed. Speaker design shall isolate speaker components to reduce ground fault incidents.

D. The speaker shall have power taps (from ¼ watt to 2 watts) and voltage that are selected by rotary switches. All models shall have a maximum sound output of 86 dB at 10 feet and shall incorporate an open back construction.

E. All notification appliances shall be backward compatible.

F.

2.11 SIGNAL CONTROL ELEMENT (SCE):

A. Signal control element shall be provided to create an additional supervised notification circuit from an addressable loop. All supervision and trouble reporting to the FACP shall be via the addressable loop.

B. Power for the device and any indicating devices shall be provided via the associated RNPS.

2.12 DUAL SYNC MODULES (DSM):

A. DSM's shall be capable of synchronizing both horns and strobes on a single pair of wires. DSM's shall synchronize two class "B" notification circuits. Horns shall be synchronized to sound in a temporal (code 3) pattern. Provide DSM's for all notification circuits supplied directly by the FACP.

2.13 WIRING:

A. See section 28 05 13. Provide wiring in accordance with NFPA 72. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.

B. Conductors shall be solid copper. Wiring shall be in accordance with local, state and national codes and as recommended by the manufacturer of the fire alarm system.

Conductors for 120 volt circuits shall be No. 12 AWG minimum; conductors for low-voltage DC circuits shall be No. 14 AWG minimum for annunciation circuits and No. 18 AWG minimum for initiation circuits.

C. Provide color-coded conductors. Identify conductors by plastic-coated, self-sticking, printed markers or by heat-shrink type sleeves. Each conductor used for the same specific function shall be distinctively color coded. Use different color codes for each interior alarm circuit. Each circuit color code wire shall remain uniform throughout the circuit.

D. Wire and cable not installed in conduit shall have a fire resistance rating suitable for the installation as indicated in NFPA 70 (e.g., FPLR).

E. Pigtail or "T" tap connections to evacuation alarm horns, horn/strobes and strobes are not acceptable.

2.14 CONDUITS:

A. See section 28 05 13. All fire alarm wiring from the FACP to final devices shall be run in conduit unless other wise noted.

B. Identification of Conduit: New conduits containing fire alarm system conductors shall be permanently painted with red paint at the factory. Junction boxes, covers, gutters, and terminal cabinets, containing fire alarm system conductors, shall be painted red or provided with engraved plastic identification signs permanently attached to the equipment.

C. Fire alarm circuits shall not be run in the same conduit with non-fire alarm circuits. AC circuits shall not be run in the same conduit with DC circuits.

D. Provide wiring in rigid metal conduit, except electrical metallic tubing conduit may be provided in dry locations not enclosed in concrete or where not subject to mechanical damage or vandalism.

E. Conceal conduit in finished areas of new construction and wherever practical in existing construction. Conduit runs shall be straight, neatly arranged, properly supported, and parallel or perpendicular to walls and partitions. Identify conductors within each enclosure where a tap, splice, or termination is made.

F. Underground circuit or circuits in wet areas shall be Type UF or USE cable in schedule 40 PVC conduit

PART 3 EXECUTION

3.1 INSTALLATION:

A. Equipment, materials, installation, workmanship, inspection, and testing shall be in accordance with the NFPA publications and as modified herein.

B. Follow manufacturers' directions in all cases for installation, testing and energizing.

C. Accurately set, level, support and fasten all equipment.

D. Batteries:
   1. All batteries shall have the date of installation hand written on the side in a location clearly visible to service personnel.
   2. Replace any existing batteries over 4 years old or of unknown age with new compatible, rechargeable, gelled electrolyte, totally sealed, fully charged batteries.

E. Smoke and heat detectors:
   1. Locate detectors in accordance with NFPA 72. If the proposed type of detector has an area coverage capability less than required by NFPA 72, revise detector layout and submit for approval with the detail drawings. Mount detectors at the underside of ceiling or roof decks unless otherwise indicated.
   2. No detector shall be located closer than 12 inches to any part of any lighting fixture. Detectors, located in areas subject to moisture or exterior atmospheric conditions, or hazardous locations as defined by NFPA 70, shall be approved for such locations.
   3. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.

F. Conduit where exposed shall be installed parallel with walls or structural elements; vertical runs to be plumb; horizontal runs level or parallel with structure; conduit grouped neatly together with straight runs, all bends parallels and uniformly spaced.

G. Earthquake Resistant installation/fastening of all electrical equipment shall conform to seismic code requirements. Where anchorage details are shown or not shown on the Drawings, the field installation shall be approved by a Structural Engineer.

H. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.

I. Manual fire alarm boxes shall be suitable for surface mounting or semi-flush mounting as shown on the plans, and shall be installed not less than 42 inches (1067 mm), nor more than 48 inches (122 mm) above the finished floor.

3.2 PRELIMINARY TESTS:

A. Before final acceptance of the work, pre-test system to demonstrate compliance with the contract requirements. System shall be subjected to complete functional and operational tests, including tests in place for each detector. Correct deficiencies pertaining to these requirements prior to formal functional and operational tests of the system. When tests have been completed and corrections made, submit test results and a signed and dated request for formal inspection and final test witnessing.

B. Conduct the following tests during installation of wiring and system components. Preliminary test shall be performed in the presence of the Local Fire Authority and Project Inspector of Record to determine conformance with the specified requirements:

1. Visually inspect all strobes and horn/strobes to ensure that strobe settings are as shown on the drawings.
2. Ground Resistance:
   a. Measure the resistance of each connection to ground. Ground resistance shall not exceed 10 ohms.
3. Dielectric Strength and Insulation Resistance:
   a. Test the dielectric strength and the insulating resistance of the system interconnecting wiring by means of an instrument capable of generating 500 volts DC and equipped to indicate leakage current in megohms. For the purpose of this test, connect the instrument between each conductor on the line and between each conductor and ground at the control panel end of the line, with the other extremity open circuited and all series-connected devices in place. The system shall withstand the test without breakdown and shall indicate a resistance of not less than 50 megohms, the measurement being taken after an electrification of 1.0 minute with a DC potential of 500 volts.
4. Standby Battery Test:
   a. Prior to formal inspection and tests, place the fire alarm system on standby battery power for twenty-four (24) hours; immediately thereafter, sound the building evacuation alarm signaling devices for 5 minutes. When the test is complete, allow fire alarm system battery charger to recharge the standby batteries for 24 hours and place the fire alarm system on standby battery power for an additional twenty-four (24) hours; immediately thereafter, sound the building evacuation alarm signaling devices for 5 minutes. Certify that the Fire Alarm System has satisfactorily sounded building evacuation alarms for 5 minutes after the second twenty-four (24) hours on battery power.

3.3 FIELD INSPECTION AND FINAL TEST:

A. Perform the formal inspection and final test in the presence of the in the presence of the manufacturer's representative, the owners representative, Local Fire Authority and Project Inspector of Record (IOR). NFPA 72 "Inspection and Testing Form" shall be filled out completely and signed by those performing and witnessing the final test:
   1. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
   2. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.
   3. Verify activation of all waterflow switches.
   4. Open initiating device circuits and verify that the trouble signal actuates.
   5. Open and short signaling line circuits and verify that the trouble signal actuates.
   6. Open and short notification appliance circuits and verify that trouble signal actuates.
   7. Ground all circuits and verify response of trouble signals.
   8. Check presence and audibility of tone at all alarm notification devices.

9. Check installation, supervision, and operation of all intelligent smoke detectors using the walk test.
10. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
11. When the system is equipped with optional features, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.
12. Test 100% of all automatic fire detection devices:
    a. Where application of heat would destroy any heat detector, it may be manually activated.
13. The communication loops and the indicating appliance circuits shall be opened in at least two (2) locations per zone to check for the presence of correct supervisory circuitry.

B. Test Equipment: It shall be the responsibility of the installing Contractor to furnish tools, instruments, and materials required for the thorough test of the system. This includes, but is not limited to, the following:
1. VOM meter
2. Manufacturers recommended smoke detector testing device and sensitivity test equipment.
3. Heat source for testing rate of rise heat detectors.
4. Keys to all control panels
5. Ladders

3.4 TRAINING:

A. Provide minimum four hours on site training by FACP manufacturer factory trained and authorized personnel.

B. Training sessions shall provide:
1. Instruction on operating the fire alarm system.
2. "Hands-on" demonstrations of the operations of all system components.
3. Instruct process for changing program and functions.

C. Permanently attach Sequence of Operation for fire alarm panel on wall next to FACP. Coordinate exact location with Owner.

3.5 PROJECT CLOSEOUT:

A. As Built Drawings:
1. Provide in accordance with section 28 05 00.
2. Provide a complete set of reproducible "as-built" drawings showing installed wiring, color coding, and wire tag notations for exact locations of all installed equipment, specific interconnections between all equipment, and internal wiring

of the equipment upon completion of system:

a. Drawings shall include actual voltage drop calculations as installed for all new or modified notifications circuits.
b. Drawings shall include actual battery calculations as installed for any new FACP's or RNPS's or any FACP's or RNPS's whose loads have been modified.

B. Operating and Instruction Manuals:
1. Operating and instruction manuals shall be submitted prior to testing of the system. Four (4) complete sets of operating and instruction manuals shall be delivered to the owner upon completion.
2. Complete, accurate, step-by-step testing instructions giving recommended and required testing frequency of all equipment, methods for testing each individual piece of equipment, and a trouble shooting manual explaining how to test the primary internal parts of each piece of equipment shall be delivered to the owner upon completion of the system.
3. Maintenance instructions shall be complete, easy to read, understandable, and shall provide the following information:
a. Instruction on replacing any components of the system, including internal parts.
b. Instructions on periodic cleaning and adjustment of equipment with a schedule of these functions.
c. A complete list of all equipment and components with information as to the address and telephone number of both the manufacturer and local supplier of each item.
d. User operating instructions shall be provided prominently displayed on a separate sheet located next to the control unit in accordance with U.L. Standard 864.

END OF SECTION

SECTION 31 05 13 - SOILS FOR EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. All grading, earthwork, excavations, backfills, compaction, and other grading operations shall be accomplished in accordance with the soils report (which shall be a part of the contract documents). Contractor shall be responsible for securing a copy of the soils report. The project soils engineer shall be present during all grading operations. The soils engineer shall direct samples to be submitted and tests to be taken. Contractor shall cooperate with the requirements of the soils engineer.

B. Related Sections:
1. Section 31 22 13 - Rough Grading.
2. Section 31 23 00 - Excavation and Fill.
3. Section 31 23 23.13 - Backfill.
4. Section 32 12 16 - Asphalt Pavement.
5. Section 32 11 23 - Aggregate Base Course.

1.2 REFERENCES

A. The project Soils Report and any supplements to the Soils Report.

PART 2 - PRODUCTS

2.1 TOPSOIL MATERIALS

A. Class II Permeable Material shall meet the requirement of Caltrans Standard Specifications 68-1.025.

PART 3 - EXECUTION

3.1 SOIL REMOVAL

A. Conduct earthwork operations in accordance with the provisions of the Soils Report and any supplements to the Soils Report, and as directed by the Soils Engineer.

END OF SECTION 31 05 13

SECTION 31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes removal of surface debris; removal of paving, curbs, sidewalks; removal of trees, shrubs, and other plant life; removal of underground storage tanks; and removal of abandoned utilities.

B. Related Sections:
   1. Section 31 05 13 – Soils for Earthwork.
   2. Section 31 22 13 - Rough Grading.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify that existing plant life designated to remain is tagged or identified.

B. Removed materials are to be removed from the site and disposed of in a lawful manner.

3.2 PROTECTION

A. Locate, identify, and protect utilities from damage that are to remain.

B. Protect trees, plant growth, and features designated to remain.

C. Protect benchmarks, survey control points, and existing structures from damage or displacement.

3.3 CLEARING

A. Clear areas required for access to site and execution of Work.

B. Remove trees and shrubs indicated and in a manner specified on the drawings or in these specifications. Remove tree and shrub root bulbs in their entirety and to a maximum root diameter of one inch.

3.4 REMOVAL

A. Remove debris, rock, and extracted plant life from site to the limits indicated on the drawings.

B. Remove paving, curbs, and concrete from the site to the limits indicated on the drawings.

C. Neatly saw cut edges at limits indicated for all pavement, curbs, and walkways to be removed.

D. Excavate and remove any underground storage tanks and associated plumbing piping, as indicated on the drawings.

3.5 TOPSOIL EXCAVATION

A. Excavate topsoil from areas to be further excavated, relandscaped, or regraded, without mixing with foreign materials for use in finish grading.

B. Stockpile on site and protect from erosion.

C. Remove excess topsoil not intended for reuse, from site.

END OF SECTION 31 10 00

SECTION 31 22 13 – ROUGH GRADING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes removal of topsoil and cutting, grading, filling, rough contouring, and compacting as indicated on the drawings.

B. Related Sections:
1. Section 31 05 13 - Soils for Earthwork.
2. Section 31 10 00 - Site Clearing.
3. Section 31 23 00 - Excavation and Fill.
4. Section 31 23 23.13 - Backfill.

1.2 REFERENCES

A. The provisions of the project Soils Report and any supplements to the Soils Report shall be adhered to for rough grading of the site.

1.3 CLOSEOUT SUBMITTALS

A. Section 01 77 00 – Closeout Procedures.

B. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Other Fill Materials: shall adhere to the provisions of the project Soils Report and any supplements to the Soils Report.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 06 00 – Product Requirements.

B. Verify site conditions.

C. Verify that survey benchmark and intended elevations for the Work are as indicated.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect from damage utilities that are to remain.

D. Notify affected utility companies to remove or relocate public utilities indicated on the plans to be removed or relocated by the utility company.

E. Protect above and below grade utilities that are to remain.

F. Protect plant life, lawns, and other features remaining as a portion of final landscaping.

G. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.3 SOIL EXCAVATION

A. Excavate soil from areas to be further excavated, relandscaped, or regraded. as shown on the drawings.

B. When excavating through roots, for trees to remain, perform work by hand and cut roots with sharp axe.

C. Remove excess soil from site.

D. Benching Slopes: Horizontally bench existing slopes steeper than 1:4 (vertical:horizontal) to key placed fill material to slope to provide firm bearing as required by the Soils Report and any supplements to the Soils Report. Minimum horizontal bench shall be 2 feet wide.

E. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

3.4 FILLING

A. Install Work in accordance with the project Soils Report and any supplements to the Soils Report.

B. Fill areas to contours and elevations with suitable materials.

C. Place fill material on continuous layers and compact in accordance with the project Soils Report and any supplements to the Soils Report.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Slope grade away from buildings at a minimum slope of two (2%) percent unless noted otherwise.

F. Make grade changes gradual. Blend slope into level areas.

G. Remove surplus fill materials from site.

3.5 TOLERANCES

A. Section 01 40 00 - Quality Requirements.

B. Top Surface of Subgrade: Plus or minus 0.05 feet from required elevation on paved or walkway areas and zero (0) feet to minus 0.10 foot in building pad areas.

3.6 FIELD QUALITY CONTROL

A. Testing and inspection shall be provided by the project soils engineer.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at the Contractor's sole expense.

END OF SECTION 31 22 13

SECTION 31 23 00 – EXCAVATION AND FILL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes excavating for building foundations, roads, parking areas, site grading, slabs-on-grade, landscaping areas, and for site structures.

B. Related Sections:
1. Section 31 05 13 – Soils for Earthwork.
2. Section 31 22 13 - Rough Grading.
3. Section 31 23 23.13 - Backfill.

1.2 REFERENCES

A. The project Soils Report and any supplements to the Soils Report.

B. Local utility standards when working within 24 inches of the respective utility lines.

PART 2 - PRODUCTS

A. Bio-Retention Soils

1. Permeable Class II Aggregate Base or crushed drain rock.

2. Planting soil is 60% sand, 40% compost mix allowing 5”/hour percolation.

PART 3 - EXECUTION

3.1 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

3.2 EXCAVATING

A. Underpin adjacent structures which may be damaged by excavating work.

B. Excavate subsoil to accommodate building foundations, slabs-on-grade, paving and site

structures.

C. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 31 23 23.13 and 31 23 16.13.

D. Slope banks with machine to angle of repose or less until shored.

E. Do not interfere with 45 degree bearing splay of foundations.

F. Grade top perimeter of excavating to prevent surface water from draining into excavation.

G. Hand trim excavation. Remove loose matter.

H. Remove lumped subsoil, boulders, and rock in accordance with the provisions of the Soils Report and any supplements to the Soils Report.

I. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume Work.

J. Correct areas over excavated with backfill and compact replacement as specified for authorized excavation.

K. Remove excess excavated material from site.

3.3 FIELD QUALITY CONTROL

A. The project Soils Engineer shall provide testing and inspection services.

3.4 PROTECTION

A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.

B. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION 31 23 00

SECTION 31 23 23.13 - BACKFILL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes building perimeter and site structure, filling and backfilling to subgrade elevations; fill under slabs-on-grade, paving; fill for over-excavation; consolidation and compaction as specified in the Soils Report and any supplements to the Soils Report.

B. Related Sections:
1. Section 31 05 13 – Soils for Earthwork.
2. Section 31 23 00 - Excavation and Fill.
3. Section 03 30 00 – Cast-in-Place Concrete.

1.2 REFERENCES

A. The project Soils Report and any supplements to the Soils Report.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

A. Fill and Structural Fill as specified in the Soils Report and any supplements to the Soils Report.

2.2 ACCESSORIES

A. Geotextile Fabric: Non-biodegradable, woven as manufactured by TC Mirafi, Tensar Earth Technologies, Inc. or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 31 00 – Project Management and Coordination.

B. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.

C. Verify structural ability of unsupported walls to support loads imposed by the fill.

3.2 PREPARATION

A. Compact subgrade to density requirements for subsequent backfill materials.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill and compact to density equal to or greater than requirements for subsequent fill material.

C. Roll subgrade surface to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

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3.3 BACKFILLING

A. Backfill areas to contours and elevations shown on drawings.

B. Employ a placement method that does not disturb or damage other work.

C. Maintain optimum moisture content of backfill materials to attain required compaction density.

D. Backfill against supported walls and structures. Do not backfill against unsupported walls or structures.

E. Backfill simultaneously on each side of unsupported walls and structures until supports are in place.

F. Slope grade away from building at a minimum slope of two (2%) percent, unless noted otherwise.

G. Make gradual grade changes. Blend slope into level areas.

H. Remove surplus backfill materials from site.

3.4 TOLERANCES

A. Section 01 40 00 - Quality Requirements.

B. Top Surface of Backfilling Under Paved Areas: Plus or minus 0.05 feet from required elevations.

C. Top Surface of General Backfilling: Plus or minus 1/10 feet from required elevations.

3.5 FIELD QUALITY CONTROL

A. The project Soils Engineer shall provide testing and inspection services.

3.6 PROTECTION OF FINISHED WORK

A. Section 01 77 00 – Closeout Procedures.

B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION 31 23 23.13

SECTION 31 23 23.14 – CONTROLLED LOW STRENGTH MATERIAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes material for use in trench backfill where conditions require controlled density fill.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, general and supplementary conditions and Division 1 Specification Sections apply to this Section.

B. Related Sections
   1. Section 31 23 23.13 – Backfill
   2. Section 32 11 23 – Aggregate Base Course
   3. Divisions 14, 15 and 16, as applies to excavating, trenching and backfill.

1.3 REFERENCES

A. ASTM C-33
B. ASTM C-231
C. ASTM C-150, Type II
D. ASTM C-260
E. ASTM C-618, Class F
F. California Building Code Section 1806A.11 – Pipes and Trenches.
G. Soils Report

1.4 SUBMITTALS

A. Refer to Section 01 33 00 for submittal procedures.

B. Contractor shall submit concrete, mortar and grout mix designs, recent test data for submitted mixes, and test data for mix components confirming that the mixes meet the requirements of this section.

PART 2 - GENERAL

2.1 COMPONENTS

A. Controlled Low Strength Material (CLSM) mix shall be composed of a cementitious material, water, fine and course aggregate, and an admixture.

B. The cementitious materials shall be Portland cement in combination with fly ash.

C. The admixture shall be an air-entraining agent.

D. The proportions of all material used in the CLSM shall conform to the mix design.

E. CLSM shall have an unconfined compressive 28-day strength from 50 psi to a maximum of 150 psi. CLSM with a 28-day compressive strength in excess of 200 psi shall be removed and replaced by the contractor as directed by the Engineer/IOR at no cost to the School District.

F. CLSM shall have a minimum set time of 24 hours.

2.2 AGGREGATE CONTENT

A. Aggregate need not conform to ASTM C-33. Any aggregates which produce performance characteristics of the CLSM may be submitted for approval.

B. CLSM mixture shall contain no aggregate that is larger than 3/8 inch.

C. The amount of material passing No. 200 sieve shall not exceed 12.0 percent.

D. No plastic fines shall be present.

2.3 AIR CONTENT

A. The air content by volume based on measurement immediately after discharge from the mixer shall be determined by ASTM C-231.

B. The total calculated air content of the sample prepared in accordance with ASTM C-231 shall not exceed 6.0 percent.

2.4 COMPONENT MATERIALS

Material	Weight	Sp. Gr.	Abs. Vol.
Cement	30 lb	3.15	0.152
Fly Ash	300 lb	2.30	2.09
Water	317 lb	1.00	5.08
Course Aggregate	1645 lb	2.68	8.76
Fine Aggregate	1465 lb	2.68	9.835
Admixture	4 oz	===	1.08
Total	3757 lb	===	27.0 cu ft

2.5 COMPONENT STANDARDS

A. Cement shall conform to ASTM C-150, Type II

B. Fly Ash shall conform to ASTM C-618, Class F. The fly ash shall not inhibit the entrainment of air.

C. Air entrainment admixture shall conform to ASTM C-260.

D. Aggregates:
   1. Fine aggregate: #1 concrete sand.
   2. Course aggregate: #2 concrete sand – 3/8 pea gravel.

E. Water shall conform to California State Specifications 90-2.03.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Division 1 – Administrative Requirements: Coordination and project conditions.

B. Verify trench is ready to receive work.

3.2 DELIVERY TO SITE

A. Provide the Engineer/IOR with delivery tickets for each truck load that show the CLSM mix, the batch quantity and time batched.

3.3 BATCHING, MIXING AND DELIVERING

A. CLSM shall be batched at a Ready-Mix Concrete Plant and delivered to the job site by means of transit mixing trucks.

3.4 INSTALLATION

A. CLSM shall be discharged from transit mix trucks by any reasonable means into the excavation to be backfilled.

B. The CLSM shall be brought uniformly to the elevation of the:

1. Underside of subgrade or asphalt concrete pavement.
2. Underside of structural concrete.

3.5 FIELD QUALITY CONTROL

A. The project Soils Engineer shall provide testing and inspection services.

B. No equipment or traffic shall be allowed on the CLSM until the surface of the CLSM will withstand the weight of the equipment or traffic without damage or displacement.

C. To prevent damage or displacement in traffic areas, provide steel plates that will span the trench until such time as the CLSM has obtained sufficient strength to support equipment and traffic loads.

3.6 FORMING

A. Forms shall conform to the requirements of Section 51 of Caltrans Standard Specifications, July 92 edition.

END OF SECTION 31 23 23.14

SECTION 32 11 23 - AGGREGATE BASE COURSE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes aggregate base course.

B. Related Sections:
1. Section 31 05 13 - Soils for Earthwork.
2. Section 31 22 13 - Rough Grading.
3. Section 31 23 23.13 - Backfill.
4. Section 32 12 16 - Asphalt Pavement.
5. Section 32 13 13 - Concrete Paving.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Class II Aggregate Base per Caltrans Standard Specifications, or Local Municipality.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 31 00 – Project Management and Coordination: Coordination and project conditions.

B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.2 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place fill on soft, muddy, or frozen surfaces.

3.3 AGGREGATE PLACEMENT

A. Place aggregate in maximum 6-inch layers and compact to specified density.

B. Level and contour surfaces to elevations and gradients indicated.

C. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.

D. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.4 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances

B. Flatness: Maximum variation of 1/4 inch measured with 10-foot straight edge.

C. Scheduled Compacted Thickness: Within 1/4 inch.

D. Variation From Design Elevation: Within 1/2 inch.

3.5 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing and inspection services.

B. Compaction testing will be performed in accordance with ASTM D1557.

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to owner.

END OF SECTION 32 11 23

SECTION 32 12 16 - ASPHALT PAVEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes asphaltic concrete paving, wearing, binder and base course; surface sealer; and aggregate base course.

B. Related Sections:
1. Section 31 05 13 - Soils for Earthwork.
2. Section 31 22 13 - Rough Grading: Preparation of site for paving and base.
3. Section 31 23 23.13 - Backfill: Compacted subbase for paving.
4. Section 32 11 23 - Aggregate Base Course.

1.2 REFERENCES

A. ASTM D946 - Penetration-Graded Asphalt Cement for Use in Pavement Construction.

B. ASTM D3381 - Viscosity Graded Asphalt Cement for Use in Pavement Construction.

C. TAI - (The Asphalt Institute) - MS-2 Mix Design Methods for Asphalt Concrete and Other Hot Mix Types.

D. TAI - (The Asphalt Institute) - MS-3 Asphalt Plant Manual.

E. TAI - (The Asphalt Institute) - MS-8 Asphalt Paving Manual.

F. TAI - (The Asphalt Institute) - MS-19 Basic Asphalt Emulsion Manual.

G. Caltrans Standard Specifications, 2010 Edition, Section 39.

1.3 SUBMITTALS

A. Product Data: Submit product information and mix design.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Caltrans Standard Specifications.

B. Mixing Plant: Conform to Caltrans Standard Specifications.

C. Obtain materials from same source throughout.

D. Maintain one copy of each document on site.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Asphalt Pavement: In accordance with Caltrans Standard Specifications.

2.2 SOURCE QUALITY CONTROL AND TESTS

A. Section 01 40 00 - Quality Requirements: Testing and Inspection Services: Provide mix design for asphalt.

B. Submit proposed mix design for review prior to beginning of Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 31 00 – Project Management and Coordination: Coordination and project conditions.

B. Verify compacted granular base is dry and ready to support paving and imposed loads.

C. Verify gradients and elevations of base are correct.

3.2 SUBBASE

A. Section 32 11 23 - Aggregate Base Course forms the base construction for Work of this section.

3.3 PREPARATION - PRIMER

A. Apply primer in accordance with Caltrans Standard Specifications.

3.4 PREPARATION - TACK COAT

A. Apply tack coat in accordance with Caltrans Standard Specifications.

B. Apply tack coat to contact surfaces of curbs and gutters.

C. Coat surfaces of manhole and catch basin frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.5 PLACING ASPHALT PAVEMENT - SINGLE COURSE

A. Install Work in accordance with Caltrans Standard Specifications.

B. Asphalt paving for pedestrian/non-vehicular paving shall be 3/8" mix.
Asphalt paving for vehicular paving shall be ½" mix.

3.6 PLACING FOG SEAL

3.7 CURBS

A. Install extruded asphalt curbs of profile as indicated on drawings.

3.8 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Flatness: Maximum variation of 1/4 inch measured with 10-foot straight edge.

C. Scheduled Compacted Thickness: Within 1/4 inch.

D. Variation from True Elevation: Within 1/2 inch.

3.9 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requiremetns: Testing and inspection services
Section 01 77 00 – Closeout Procedures: Testing, adjusting, and balancing.

3.10 PROTECTION OF FINISHED WORK

A. Section 01 77 00 – Closeout Procedures: Protecting finished work.

B. Immediately after placement, protect pavement from mechanical injury for 24 hours or until surface temperature is less than 140 degrees F.

3.11 SCHEDULES

A. Pavement sections for various locations and uses are to be as shown on the drawings.

END OF SECTION 32 12 16

SECTION 32 12 36 - SLURRY SEAL EXISTING ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

B. All grading, earthwork, excavations, backfills, compaction, and other grading operations shall be accomplished in accordance with the soils report (which shall be part of the Contract Documents). Contractor shall be responsible for securing a copy of the soils report. The project soils engineer shall be present during all grading operations. The soils engineer shall direct samples to be submitted and tests to be taken. Contractor shall cooperate with the requirements of the soils engineer.

1.2 DESCRIPTION OF WORK:

A. Extent of asphalt slurry work is shown on drawings.

1.3 SUBMITTALS:

A. Material Certificates: Provide copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

1.4 SITE CONDITIONS:

A. Weather Limitations: Do not apply when base is wet or contains an excess of moisture.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. General: Use locally available materials and gradations which exhibit a satisfactory record of previous installations.

B. OverKote Seal: Asphalt pavement coating as manufactured by Reed & Graham, Inc. or approved equal.

C. OverKote Crackfiller as manufactured by Reed & Graham, Inc. or approved equal.

D. OverKote Oil Spot Sealer as manufactured by Reed & Graham, Inc. or approved equal.

E. 30 Mesh Sand

PART 3 - EXECUTION

3.1 CRACK FILLING AND SURFACE PREPARATION:

A. Cracks 1/8" or larger shall be cleaned and filled to a level surface with OverKote Crackfiller. A "V" shaped squeegee is recommended for this application. Mix and apply per manufacturer recommendations.

B. All areas to be sealed shall be thoroughly cleaned. Dirt, loose pieces and other obstructions in joints or cracks shall be removed with an air jet and/or pressurized water.

C. Excessive oil spots shall be removed with a scraper, stiff brush and detergent. OverKote Oil Spot Sealer shall be applied to prepared oil spots.

D. In exceptionally hot weather, dampen the surface with water. Remove any excess water to leave the surface only slightly damp.

3.2 SLURRY SEAL APPLICATION –OverKote Asphalt Paving Coating

A. Prior to bidding, consult manufacturer for recommendations on mix and number of applications required to result in a smooth and uniform surface for this application. A minimum of two applications shall be required, more if necessary.

B. Depending on the surface, one or more applications may be required at the rate of 25 to 35 gallons per 1,000 square feet of surface area. The surface shall be smooth and uniform upon completion. For excessively rough areas, add 2 to 3 pounds of 30 mesh sand per gallon of OverKote Sealer. Additional sand may be added per custom specification request.

C. Apply OverKote slurry seal to surface course in accordance with manufacturer recommendations. Spread immediately by machine, squeegee, stiff plastic bristle or soft hair push broom. Spread poured parallel lines by pulling material at an angle toward operator. Tools shall be wet before using. Repeat as necessary to spread sealer uniformly, eliminating all laps and ridges. Apply 2nd coat as soon as first coat is dry.

D. A second application shall be made after first coat has dried to the touch. When sand is added to the first seal coat, two additional coats without extra sand shall be applied.

E. Protect from trespass until sealed area is dry.

F. Allow slurry seal to dry before permitting traffic or striping.

3.3 FIELD QUALITY CONTROL:

A. Contractor shall obtain approval of surface preparation from Owner's Representative prior to application of slurry seal.

B. Contractor shall obtain approval of slurry seal application finish surfaces from Owner's Representative prior to completion and prior to striping.

END OF SECTION 32 12 36

SECTION 32 13 13 – CONCRETE WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

B. All grading, earthwork, excavations, backfills, compaction, and other grading operations shall be accomplished in accordance with the soils report (which shall be part of the Contract Documents). Contractor shall be responsible for securing a copy of the soils report. The project soils engineer shall be present during all grading operations. The soils engineer shall direct samples to be submitted and tests to be taken. Contractor shall cooperate with the requirements of the soils engineer.

C. Specification Division 31, Earthwork, Soils and Earthwork, Rough Grading, and Excavation and Fill.

D. Specification 32 11 23 Aggregate Base Course.

1.2 DESCRIPTION OF WORK:

A. The extent of concrete work is shown on the landscape architectural drawings and details and shall include, but is not limited to, pedestrian concrete walkways, steps, ramps, curbs, mowbands, footings and walls.

1.3 QUALITY ASSURANCE:

A. Codes and Standards: Comply with provisions of following codes, specifications and standards, except where more stringent requirements are shown or specified:

1. Concrete Reinforcing Steel Institute, "Manual of Standard Practice".
2. ACI 318 Building Code Requirements for Structural Concrete.
3. ASTM C150, for Type I, Type II or Type III Portland cement concrete.
4. Chapter 19A, 2022 C.B.C.

B. Certification: Weighmaster Certificate

C. Duties of the Inspector: The inspector shall notify the Architect, Structural Engineer and the Division of State Architect at least 48 hours in advance of the first pour of concrete and sufficiently in advance of subsequent pours. Comply with Section 4-333.1 and Chapter 7, Part I, Title 24, California Code of Regulations (CCR).

D. Installer Qualifications:

1. Experience: The concrete installing firm shall have contracted for and successfully completed construction of a minimum of five (5) California public school district construction projects, approved by the Division of the State Architect (DSA), within the past five (5) years of similar size, complexity, budget and scope.
2. Licensure: The concrete installation firm shall hold a current, active C8 "Concrete Contractor" license classification by the California State License Board that has been consistently active for at least five (5) years and that has not been suspended or revoked.
3. Supervision: The concrete installing firm shall have a qualified and experienced concrete technician on site during concrete installation.

E. "Colored" Concrete Installer Qualifications: Installer of "colored" concrete shall be qualified by Scofield. Contact local Scofield Representative or the Division Office (323) 720-3055 for a list of locally qualified installers.

1.4 SUBMITTALS:

A. Shop Drawings Reinforcement: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars, arrangement of concrete reinforcement. Include special reinforcement required and openings through concrete structures.

B. Design Mixes Submittal: Submit written reports of design mixes to the Architect of each proposed mix for each class of concrete within thirty-five (35) days after the issuance of the "Notice to Proceed", but no later than ten (10) days prior to the first scheduled concrete pour. Do not begin concrete production until all design mixes have been reviewed by the Architect and independent testing facility.

Separate submittal data shall be submitted for each mixture for the following:

1) Concrete Paving – Pedestrian, steps, curbs, walls and footings.
2) Concrete Paving – Vehicular.

C. Job-site Samples: Contractor shall pour concrete samples as indicated below for each concrete color and finish specified on Drawings for written approval from Owner's Representative prior to installation as follows:

1. Two (2) foot by two (2) foot concrete flatwork.
2. Two linear feet by width and height detailed for each concrete wall specified to include decorative tile if specified.

PART 2 - PRODUCTS

2.1 FORM MATERIALS:

A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection.

B. Forms for Unexposed Finish Concrete: Form concrete surfaces which will be unexposed in finished structure with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

C. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments.

D. Expansion Joint for flatwork that does not have a stamp pattern: Asphalt impregnated felt fiber expansion material, one half inch (1/2") thick by full depth of concrete, in compliance with ASTM D1751.

E. Expansion Joint for poured-in-place walls: Asphalt impregnated felt fiber expansion material, one half inch (1/2") thick by full depth of concrete, in compliance with ASTM D1751.

2.2 REINFORCING MATERIALS:

A. Reinforcing Bars (Rebar): ASTM A 615, Grade 60, deformed, except #3 and smaller may be Grade 40. Test in accordance with Section 1903A and 1910A.2, 2016 C.B.C.

B. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place.

2.3 CONCRETE MATERIALS:

A. Portland Cement: ASTM C 150, Type V, conforming to ACI 318-14 and test in accordance with Section 1903A, 2016 C.B.C.

B. Fly Ash or other pozzolan can be used as a partial substitute for ASTM 150 Portland cement as follows:

1. Fly Ash conforming to ASTM C618, Class F, the maximum Loss on Ignition (LOI) shall be less than 3%. Class C is not permitted.

2. Slag, Ground Granulated Blast Furnace Slag Cement (GGBFS) shall conform to ASTM C989 or AASHTO M 302 Grade 100 or 120.

3. Silica Fume: ASTM C1240, Standard Specification for Silica Fume used in cementitious mixtures.

4. High-Reactivity Metakaolin (HRM): ASTM C618, aluminosilicate pozzolan.

C. Water: Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials or other substances that may be deleterious to concrete or reinforcement and shall be tested and verified through ASTM C1602.

D. Admixtures: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.

1. Air-Entraining Admixture: ASTM C 260.
2. Water-Reducing Admixture: ANSI/ASTM C 494, Type A, and contain not more than 1% chloride ions.
3. High-Range, Water-Reducing Admixture: ASTM C 494, Type F
4. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E
5. Water-Reducing and Retarding Admixture: ASTM C 494, Type D

E. Crushed Aggregate Base Rock: Shall be coarse aggregate for regular weight concrete. Aggregate shall be hard, durable, uncoated, graded, cleaned and screened crushed rock or gravel conforming to current requirements of ASTM C33. Crusher-run stone or bank-run gravel will not be permitted.

F. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C-309, Type I, Class A unless other type acceptable to Architect. Comply with Volatile Organic Compounds (VOC) content limits, as required by Air Pollution Control Regulations on Architectural Coatings (less than 350 g/l).

G. Curing Methods:

1. Moist Curing: continuous misting, sprinkling or ponding.
2. Moisture-retaining cover curing: After wetting the concrete surface, cover with wet-curing blanket. Lay blanket in accordance with manufacturer's instructions, over-lapping edges and extending edges twelve (12) inches beyond area of concrete to be cured. Remove air pockets. Repair any holes or tears that occur using sheeting material and waterproof tape.
3. Compound curing: Apply specified curing compound as soon as final finishing operations are complete. Use as recommended by the manufacturer's written instructions.

H. Color Materials:

1. Liquid lamp black shall be default color for concrete not specified on drawings as "Natural" or "Colored". Add one pint of liquid lamp black per cubic yard of exterior concrete.
2. Concrete specified as "Natural" shall have no color added.
3. Concrete specified as "Colored" shall be LM Scofield Systems Chromix Admixtures for Color-Conditioned Concrete and/or Scofield Integral Color SG Standard Grade, to include Standard Colors, Custom Colors and Special Order Colors for all concrete specified on drawing as "colored". Colored concrete shall be sealed per manufacturer with LM Scofield Cureseal-W with matte gloss finish, LM Scofield Cureseal-100 with glossy, wet-look, LM Scofield Lithochrome Colorwax concrete curing compound or equal as selected by Architect or Owner's Representative. Contractor shall pour samples on site as necessary for architect and/or owner's representative to select final color(s) for project.

2.4 PROPORTIONING AND DESIGN OF MIXES:

A. Prepare design mixes for each type and strength of concrete. Use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Architect.

B. Comply with Section ACI 318-14. The compressive strength of concrete shall be proportioned by one of the following methods: Design Mix (Method B) or Pre-Test Mix (Method C).

C. Submit written reports to Architect of each proposed mix for each class of concrete at least 10 days prior to the first scheduled concrete pour. Do not begin concrete production until mixes have been reviewed by Architect.

D. Design mixes to provide normal weight concrete with the following properties:

1. Concrete Paving – Pedestrian, steps, curbs, walls and footings:
   a. 3,000 psi 28-day compressive strength
   b. 0.60, maximum, water to cement (W/C) ratio
   c. Minimum cementitious content shall be 470 pounds, minimum, per cubic yard.
   d. Aggregate to be 1" maximum.
   e. 28-day shrinkage, SEAONC Method: 0.050 maximum.

2. Concrete Paving – Vehicular:
   a. 4,000 psi 28-day compressive strength
   b. 0.50, maximum, water to cement (W/C) ratio
   c. Minimum cementitious content shall be 470 pounds, minimum, per cubic yard.
   d. Aggregate to be 1" maximum.
   e. 28-day shrinkage, SEAONC Method: 0.050 maximum.

E. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

F. Admixtures: Use only as indicated by approved design mix.

G. Color Additive for concrete not specified as "colored": add one pint of liquid lamp black per cubic yard of all exterior concrete which will be visible when cured.

H. Color for concrete specified as "colored": Color mixture as determined by manufacturer in accordance with color selected and sealed per manufacturer recommendations.

I. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:

All concrete: Shall be four (4) inches, plus or minus one (1) inch.

2.5 CONCRETE MIXES:

Ready-Mix Concrete: Comply with ASTM C94. Measure, batch and mix concrete materials and concrete according to ASTM C-94. Furnish batch certificates, indicating project identification, name and number, date, mixture type, mixing time, quantity and amount of water added for each batch discharged and used in the Work to the Architect.

2.6 SACK FINISH MORTAR

A. Mortar shall be composed of Portland cement, sand, and water proportioned and mixed as specified in this Section 51-1.135.

B. Mortar shall be furnished and placed in recesses and holes, on surfaces, under structural members, and at other locations specified in these specifications, the special provisions or shown on the plans.

C. The proportion of cement to sand, measured by volume, shall be one to two (1:2) unless otherwise specified.

D. Materials shall conform to the provisions in Section 90, "Portland Cement Concrete."

E. The maximum size of sand shall not be larger than 0.5 of the size of the recess, hole or space where the mortar is to be placed.

F. The mortar shall contain only enough water to permit placing and packing.

G. Concrete areas to be in contact with the mortar shall be cleaned of all loose or foreign material that would in any way prevent bond between the mortar and the concrete surfaces and shall be flushed with water and allowed to dry to a surface dry condition immediately prior to placing the mortar.

H. The mortar shall completely fill and shall be tightly packed into recesses and holes, on surfaces, under structural members, and at other locations specified. After placing, all surfaces of mortar shall be cured by the water method as provided in Section 90-7, "Curing Concrete," for a period of not less than 3 days.

I. Keyways, spaces between structural members, holes, spaces under structural members and other locations where mortar could escape shall be mortar-tight before placing mortar.

J. No load shall be allowed on mortar that has been in place less than 72 hours, unless otherwise permitted by the Engineer.

K. All improperly cured or otherwise defective mortar shall be removed and replaced by the Contractor at the Contractor's expense.

2.7 WATERPROOF MEMBRANE:

Rolled, self-adhering waterproof membrane, composed of nominally 56 millimeter thick layer of polymeric waterproofing membrane on a heavy duty, four-millimeter thick, cross-laminated polyethylene carrier film laminated together, MEL-ROL, product of W. R. Meadows/Sea Tight, or equal conforming to A.R.E.M.A. Specifications Chapter 29, Waterproofing.

PART 3 - EXECUTION

3.1 FORMS:

A. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.

B. Form removal shall comply with ACI 318 Section 26.11.2.

C. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.

D. Construct forms to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent leakage of cement paste.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.

F. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses and chases from trades providing such items. Accurately place and securely support items build into forms. Comply with ACI 318 Section 26.11.2.

G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retighten forms and bracing after concrete placement is required to eliminate mortar leaks and maintain proper alignment.

3.2 PLACING REINFORCEMENT:

A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

C. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

D. Place reinforcement to obtain at least minimum coverage for concrete protection. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

E. Where concrete is installed at door thresholds and/or transitions to building interior spaces, 24″ length, #3 smooth rebar dowels shall be installed12″ into the new concrete paving and 12″ into the adjacent building structure, spaced at 18″ on center with a minimum of two in each location. Epoxy to secure end of dowel set into building and lubricate end cast into new concrete paving.

F. Where concrete is installed at door thresholds of modular buildings with steel framing, #5 rebar shall be welded securely to building floor plate, extending 12″ into new concrete paving, spaced 18″ on center with a minimum of two at each door threshold. Lubricate end cast into new concrete paving.

G. Where concrete is installed adjacent to concrete walkways that are part of the building structural pad, 24″ length, #3 smooth rebar dowels shall be installed12″ into the new concrete paving and 12″ into the adjacent building structure pad, spaced at 18″ on center spacing. Epoxy to secure end of dowel set into building structural pad and lubricate end cast into new concrete paving.

3.3 EXPANSION AND CONTROL JOINTS:

A. Locate and install joints so as not to impair strength and appearance of the structure, and as acceptable to Architect.

B. Continue reinforcement across expansion and control joints or install smooth rebar dowels.

C. Control/score joints (for walkways, steps, ramps and curbs): Unless shown otherwise on plan, install ½" radius score joints evenly spaced at a maximum of eight feet in two perpendicular directions, continuous and one third the depth of the slab.

D. Control/score joints (for walls, steps and vertical surfaces): Unless shown otherwise on plan, install ½" radius score joints evenly spaced at a maximum of eight feet in on center. Align vertical wall score joints with horizontal paving joints whenever possible. Install ½" radius or chamfered edge at each side of joint as called for in drawings, continuous and 1 ½" in depth.

E. Expansion Joints (for walkways, steps, ramps and curbs): Unless shown otherwise on plan, install expansions joints where walkways meet existing or proposed structures and evenly spaced at a maximum of 24 feet in two perpendicular directions. Install ½" asphalt saturated felt expansion joint material 1/4" below the finish surface and continuously throughout the full depth of slab.

F. Expansion Joints (for walls, steps and vertical surfaces): Unless shown otherwise on plan, install expansions joints where walls meet existing or proposed structures and evenly spaced at a maximum of 24 feet in two perpendicular directions. Align vertical wall expansion joints with horizontal paving joints whenever possible. Install ½" asphalt saturated felt expansion joint material ½" below the finish surface where ½" radius concrete edges are indicated and flush with base of chamfer were chamfer edges are indicated and continuously throughout the concrete section. Install ½" radius or chamfered edge at each side of joint as called for in drawings.

3.4 INSTALLATION OF EMBEDDED ITEMS:

A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto.

B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds.

3.5 PREPARATION OF FORM SURFACES:

A. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.

3.6 CONCRETE PLACEMENT:

A. Pre-placement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in, in accordance with ACI 318-08. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood dorms immediately before placing concrete where form coatings are not used.

B. Coordinate the installation of joint materials with placement of forms and reinforcing steel.

C. General: Comply with ACI 304, and as herein specified.

D. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.

E. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

F. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.

G. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" in to preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate

concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

H. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction (expansion) joints, until the placing of a panel or section is completed.

I. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

J. Bring slab surfaces to correct level with straightedge and strikeoff. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

K. Maintain reinforcing in proper position during concrete placement operations.

L. Cold Weather Placing: Do not place concrete when air temperature is below 40 degrees F., or expected to fall below within 24 hours. Comply with ACI 306.

M. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305.

N. Concrete flatwork over-pour: Over-pour is excess concrete spilling beyond the limits of the concrete forms. Contractor shall remove over-pour to allow for installation of tree root barriers, irrigation and similar landscape improvements.

3.7 FINISH OF FORMED SURFACES:

A. Rough Form Finish: For formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture impaired by form facing material used, with tie holes and defective areas repaired and patched and fine and other projections exceeding 1/4" in height rubbed down or chipped off.

B. Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, damp proofing, painting or other similar system. For "as-cast" concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams, repair and patch defective areas with fins or other projections completely removed and smoothed

C. Related Unformed Surfaces: At tops of walls, horizontal offsets surfaces occurring adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.8 CONCRETE EXTERIOR FLATWORK FINISHES:

A. Float Finish: Apply float finish to concrete slab surfaces to receive trowel finish and other finishes as hereinafter specified.

B. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to a tolerance not exceeding 1/8" in 10' when tested with a 10' straightedge. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

C. Round top edges of all exposed slabs, nosing, etc. with 3/8" radius edging tool, unless chamfered or otherwise noted.

D. Non-Slip Broom Finish (NSBrm-Fn): Unless specified otherwise, apply non-slip broom finish to exterior concrete walks, platforms, steps and ramps, and elsewhere as indicated. Slopes less than 6% shall have a medium broom finish. Slopes 6% and greater shall be heavy broom slip resistant. Concrete finish to be stable, firm and slip resistant per CBC Section 11B-302 and 11B-403.

E. Immediately after trowel finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.9 CONCRETE CURING AND PROTECTION:

A. General: Protect freshly placed concrete from premature drying and excessive hot temperatures. Comply with ACI 305R-10, Guide to Hot Weather Concreting.

B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days and above 50 deg. F.

C. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

D. Curing Method: Perform curing of concrete by moist curing, by moisture-retaining cover curing, by curing compound, and/or by combinations thereof, at contractor's option except as noted during hot weather.

E. Cold Weather Requirements: Protect concrete from freezing conditions during the first seven (7) days after placement.

F. Hot Weather Requirements: When hot weather conditions will cause an evaporation rate exceeding 0.2 pounds of water per square foot per hour, as determined by Figure 2.1.5 of ACI 305, cure for initial 24 hours minimum by moisture retaining cover methods.

3.10 REMOVAL OF FORMS:

A. Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

3.11 RE-USE OF FORMS:

A. Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Architect.

3.12 MISCELLANEOUS CONCRETE ITEMS:

A. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections and terminations slightly rounded.

C. Equipment and Enclosure Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.

3.13 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Owner's Representative.

B. Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water and brush-coat the area to be patched with specified bonding agent. Place patching mortar, colored to match surrounding surfaces after bonding compound has dried. Surfaces exposed-to-view shall be sacked with colored mortar as directed by Owner's Representative.

C. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Owner's Representative. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and other discolorations that cannot be removed by cleaning.

D. Flush out form tie holes, fill with dry pack mortar.

E. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

F. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having required slope.

G. Repair finished unformed surfaces that contain defects, which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions. Color of repair shall match surrounding surface color.

H. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.

I. Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Owner's Representative.

J. Repair methods not specified above may be used, subject to acceptance of Owner's Representative.

3.14 WATERPROOFING SITE RETAINING WALLS:

A. Contractor shall apply waterproof membrane to site retaining walls. Membrane shall continuously cover the surface in contact with soil, vertically from the footing to 2" above the finished grade level of the soil retained.

B. Prepare surface as recommended by manufacturer by filling cracks, priming, filling joint and voids, penetrations and corners.

C. Apply waterproof membrane as recommended by manufacturer.

3.15 SACK FINISH WALLS, STEP SEATING AND CURBS

A. Sack finish shall consist of filling holes or depressions in the surface of the concrete, repairing all rock pockets, removing fins, and removing stains and discolorations visible from traveled ways. Sack finish, unless otherwise specified, shall be considered as a final finish where designated on the plans and details.

B. Except as provided herein, form bolts and any metal placed for the convenience of the Contractor shall be removed to a depth of at least one inch below the surface of the concrete. All rock pockets and other unsound concrete shall be removed. The resulting holes or depressions shall be cleaned and filled with mortar. Form bolts projecting into the cells of box girders need not be removed unless deck forms are removed from the cells, in which case the bolts shall be removed flush with the surface of the concrete.

C. Mortar used to fill bolt holes shall conform to the provisions in this Section for "Mortar." Other depressions and pockets shall be filled with packed mortar as directed by the Architect and the mortar shall be cured in conformance with the provisions in this Section.

D. For exposed surfaces, integral concrete color (LM Scofield Chromix) cement shall be added to the mortar in an amount sufficient to result in a patch which, when dry, matches the surrounding concrete.

E. If rock pockets, in the opinion of the Architect, are of such an extent or character as to affect the strength of the structure materially or to endanger the life of the steel reinforcement, the Architect may declare the concrete defective and require the removal and replacement of the portions of the structure affected.

3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION:

A. The Owner will employ a testing laboratory to perform other tests and to submit test reports.

B. Reinforcing steel shall be supplied with heat number and mill analysis per ACI 318-89.

C. Shrinkage Limitation: All concrete shall meet drying shrinkage limitations as follows:

D. 0.032 percent at age 21 days, with tolerance of +25% for specimens taken during the course of the work.

E. The use of aggregates with a proven history of compliance with the above limitations will be accepted as fulfilling this requirement. In the absence of satisfactory evidence, the laboratory shall prepare specimens (4" x 4" prisms 10" gage length, ASTM C-157-64T) and test for compliance prior to approval.

PROJECT CLOSE-OUT: (not applicable)

END OF SECTION 32 13 13

SECTION 32 17 00 - PAVEMENT SPECIALTIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Parking lot striping.
B. Disabled loading zone striping and disabled parking symbol.
C. Traffic symbols.
D. Curb painting.
E. Traffic and parking control signage.
F. Sport Court striping.

1.2 RELATED SECTIONS

A. Section 32 12 16 - Asphalt Pavement.
B. Section 32 13 13 - Concrete Paving.
C. Section 10 14 00 – Signage.

1.3 QUALITY ASSURANCE

A. Materials and work of this section shall conform with Local Municipality Public Works standards and specifications.

1.4 REGULATORY REQUIREMENTS

A. Conform to regulations of Bay Area Air Quality Management District and California Air Resources Board regarding use of paint.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Do no painting when surface and air temperatures are below 40 degrees F or below those temperatures recommended by the paint manufacturer.

PART 2 - PRODUCTS

2.1 STANDARD CATALOG PRODUCTS

A. Striping and pavement markings to be textured, slip-resistant coating, complying with CBC 11B-302.1.

B. Symbol Marking Paint and Traffic Marking Paint: Water borne product conforming to State Specification 8010-426-30; Dunn-Edwards Traffic Paint W801, Sinclair 160 Vinyl Traffic Paint, or equal product.

1. ISA Symbol Background: Color - Blue. Size: As indicated in the drawings.

2. Parking Stall Striping, Traffic Symbols and Disabled Loading Zone Striping and Lettering: Color - White. Width for all striping: Three inches, or as indicated in the drawings. Blue border around access aisle.

3. Disabled Stall Curbs: Color - Blue. Width for all striping: Three inches, or as indicated in the drawings.

4. Sport Court Striping: Color - White.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine receiving surfaces and verify that surfaces are proper for installation.

B. Do not start work until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove dirt, oil, grease, and other foreign matter from the areas of the pavement and curbs to be painted.

B. Do not apply traffic paint to surfaces which are excessively dirty, damp, and cold.

3.3 INSTALLATION

A. Apply parking lot as a 4 inch wide solid line. Apply loading zone striping as 8 inch wide solid line.

B. Stripe parking stalls to the dimensions as shown on the Drawings; traffic symbols shall be as shown. Stripe loading zone to dimensions shown on Drawings.

C. Paint the ISA parking symbol in each accessible parking stall as indicated on the Drawings and in accordance with the American National Standard Institute Figure A117.1.

D. Paint horizontal and vertical face of curbs abutting accessible parking stalls. See Drawings for extent of painted curbs.

E. Apply traffic paint with atomizing spray type striping machine equipped with separate thermostatically controlled heating devices for each paint pot and capable of applying paint whereby the lines and markings have clear-cut edges, true and smooth alignments and uniform thicknesses.

F. Apply paint with completed lines and marking clean, sharp and to dimensions.

1. Ragged ends of segments, fogginess along the sides or objectionable dribbling of paint along the unpainted portions of the strips will not be permitted.

2. The finished paint shall have an opaque, well painted appearance with no black or other discolorations showing through.

G. Set posts for parking sign plumb in minimum 12 inch diameter concrete footings with top of footing 6 inches below finished grade and bottom of footing minimum 36 inches below finished grade. Slope top of concrete for water runoff. Cap top of pipe.

H. Secure signs to posts with saddles and vandal-proof nuts.

I. Install parking control signs with bottom of upper sign 60 inches above finished grade. Install accessible parking signs with bottom of upper sign 80 inches above finished grade. Install lower signs in two sign assemblies with top within 1 inch of bottom of upper sign.

3.4 PROTECTION

A. Exercise reasonable precautions to protect the paint, as applied, during drying time. Remove objectionable tracking.

END OF SECTION 32 17 00

SECTION 32 33 00: SITE FURNISHINGS

PART 1 - GENERAL

1.01 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.
B. Coordinate the work of this Section with related trades.
C. Verify applicable extents of work and dimensions at the jobsite.
D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:
   1. Site Benches
   2. Wheel Stops
   3. Skate Deterrents

1.02 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.
B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code
   1. Non-residential new construction
      a. All occupancy types
C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.
D. American Society For Testing and Materials (ASTM)
   1. ASTM A53/A53M-04a Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated and Welded and Seamless.
   2. ASTM A36/A36M-05
   3. ASTM A366 Standard Specification for Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
   4. ASTM A500 Specification for Cold-Formed Welded and Seamless Carbon Tubing in Rounds and Shapes.
E. American Welding Society (AWS), www.aws.org
F. Consumer Product Safety Commission (CPSC)

1.03 PERFORMANCE, TESTING AND INSPECTION

A. **General:**
   1. Comply with manufacturer's standards.
   2. Comply with Building Code.

B. **Sustainability:**
   1. Refer to Division 1 sustainability requirements.
   2. Refer to product criteria identified herein.

1.04 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.
B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.
C. Refer to Division 1 for sustainability requirements Submit Manufacturers' data and shop drawings.
   1. List of materials proposed to be used including fasteners, sealants and adhesives.

1.05 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.
B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.
C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid
E. Stipulations:
   1. Confirm proper backing is installed for all secured components
F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
   Agenda for meeting shall include, but not be limited to;
   1. Finish grading
   2. Installation procedures
   General Contractor shall request meeting 5 days in advance of construction.
G. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the Miscellaneous criteria.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING
A. Refer to Division 1 for product delivery, storage and handling requirements.
B. Coordinate storage of materials with other trades.
C. Store materials safely and securely, protected from weather, theft, vandalism or other damage. Prevent damage to or staining of site surfaces on other materials.

1.07 JOB CONDITIONS
A. Field-verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

1.08 PROTECTION
A. Protect finish surfaces at all times from surfaces and material adjacent to them.
B. Finish work defaced with other materials on surface shall be replaced.
C. Protect work under this section from damage by other trades.

1.09 GUARANTEE/WARRANTY
A. Refer to Division 1 for closeout submittal procedures.
B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.
   1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.
C. Furnish manufacturer's additional extended warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.
   1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner.**

1.10 RELATED WORK/SECTIONS
A. The following is related work including, but not limited to the following:
   1. Flatwork
   2. Vehicular Paving
   3. Cast in Place Concrete
   4. Irrigation
   5. Landscaping
B. Related Sections include, but are not limited to the following:
   1. Division 1
   2. Section 02 41 13 – Selective Building Demolition and Protection
   3. Section 03 30 00 – Cast in Place Concrete
   4. Section 32 12 16 – Asphalt Paving
   5. Section 32 13 13 – Concrete Paving

1.11 OPERATION AND MAINTENANCE DATA
A. Submit as part of project closeout:

1. Complete instructions regarding operation of the equipment.
2. Complete instructions regarding maintenance of the equipment, materials, and finishes, etc.
3. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.
B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type..
B. Acceptable manufacturers shall be one of the following, as listed herein and in Drawings:
   1. Refer to documents and as herein specified.
   2. Reviewed Equivalent by **Architect**.
      a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
      b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
      c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.
C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.
D. Refer to drawings, details, and other related specification section whether listed or not.
E. Details shall set basic requirements for size and configuration of systems.

2.02 MATERIALS

A. Site Benches:
   1. "Terraquartz" fiberglass matrix, Environmental Technology Group, Design BF (6'). Finish/color to be determined by **Architect**. Manufactured by Environmental Tech Group, Duncanville, Texas (214) 780-7212 or as otherwise specified.

B. Wheel Stops:
   1. Concrete:
      a. Mfgr: Ultrablock, www.ultrablock.com
      b. Product: Precast Wheel Stop
      c. Material: Concrete
      d. Color: Concrete Grey
      e. Accessories: Rebar driven anchors by others
      f. Size:
         1. Length: 6'-0"
         2. Base width: 9"
         3. Height: 4.5"
         4. Top width: 5" wide top after sides taper
      g. Construction: Precast concrete with (2) #5 rebar reinforcing
      h. Installation:
         1. Asphalt: Drive anchor into substrate thru each of the precast ¾" diameter holes and set bar at wheel stop in two part epoxy.
         2. Concrete: Drill holes into substrate to set 5/8" dia. rebar into two part epoxy thru holes in wheel stop and epoxy at concrete
C. Skate Deterrents:
   1. Specifications:
      a. Mfgr: Barrett Robinson, Skate Stoppers, www.barrettrobinson.com
      b. Product Line: Skate Stoppers
      c. Type: Skate Deterrents
      d. Series: Model: Type: Angle Edge Radius

1.	FI	Deterrent	Cast in Place	90 degree	1/8”
2.	FA-FR	FA 90	Two Surface applied/secured	90 degree	1/8”
3.	FA-FR	FA 90A	Two Surface applied/secured	90 degree	1/8”
4.	FA-FR	FRO.12	Two Surface applied/secured	90 degree	1/8”
5.	FA-FR	FA 135	Two Surface applied/secured	45 degree	1/8”
6.	FA-FR	FRO.12	Two Surface applied/secured	90 degree	1/8”
7.	FA-FR	FA 135	Two Surface applied/secured	45 degree	1/8”
8.	FA-FR	FR O.5	Two Surface applied/secured	N/A	1/2”
9.	FA-FR	FR 902.5	Two Surface applied/secured	90 degree	1/2”
10.	FA-FR	FR 1.0	Two Surface applied/secured	2” Bullnose	1”
11.	FA-FR	FR 1.25	Two Surface applied/secured	2-1/2” Bullnose	1.25”
12.	FA-FR	FR 1.0	Two Surface applied/secured	3” Bullnose	1.50”
13.	FA-FR	FR 1.0	Two Surface applied/secured	6” Bullnose	3”
14.	FA Clip	FA 90CC	Top Surface applied/secured	N/A	½”
	a. Do not use on Precast Benches				
15.	FA Clip	FRO.25PC	Front Surface applied/secured	N/A	¼”
16.	FA Clip	FA .12BC	Top Surface applied/secured	N/A	½”

e. Material: Cast Aluminum, 6061-T6
f. Color:
   1. Clear
   2. Bronze
   3. Brass
g. Spacing: 24” o.c. maximum and evenly spaced with joints
h. Mounting: Per mfgr’s recommendations

2.03 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - EXECUTION

3.01 INSPECTION / EXAMINATION

A. Verification of Conditions:
   1. Examine areas and conditions under which work is to be performed.
   2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.
B. Surface:
   1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.02 COORDINATION

A. Refer to Division 1 for project coordination requirements.
B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.
C. Coordinate delivery and installation of items to be embedded in concrete work.
D. Furnish to other trades details, dimensional tolerances and other information required for coordination of Work.

3.03 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer’s recommendations.

3.04 INSTALLATION

A. General:
   1. Perform work in accordance with manufacturer’s recommendations, as herein specified and in accordance with drawings.

2. Coordinate work with related work.
3. Install where indicated on Drawings.
4. Install quantity as indicated on Drawings.
5. Coordinate work where applicable with agencies having jurisdiction.

B. Site Benches:
1. Locate and anchor plumb and true.
2. Anchor with drilled expansion anchors.

C. Wheel Stops:
1. Locate and anchor plumb and true.
2. Installation:
a. Concrete:
1. Drill hole into concrete to set a 5/8" dia. anchor flush with top of wheel stop.
2. Adhere to substrate with:
a. Mfgr: Liquid Nails
b. Model: Heavy Duty
c. Number: LN-901/LNP-901

3.05 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.
B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.
C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.
D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.
F. After completion of work in this section, remove all erection equipment and implements of service, and debris.
Leave entire area in a neat, clean, acceptable condition.
G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.
H. Provide record drawings in accordance with Division 1 closeout submittal procedures.
I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION

MOUNT DIABLO UNIFIED SCHOOL DISTRICT

MEADOW HOMES ES MODERNIZATION

INCREMENT 02
01-121400

AGENCY APPROVAL DSA# 01-121400

196

991 W HEDDING ST., SUITE 101
SAN JOSE, CA 95126
TEL (408) 715-4470

SYMBOLS

DRAFTING ITEMS

- DATUM - CONTROL POINT
- DIMENSION LINE AND TICK
- MATCHLINE - SEE: 1 / A101
- BREAK LINE
- 01.23.A KEYNOTE
- Name / Elevation PROJECT LEVEL MARKER
- 0 COLUMN GRID MARKER
- REVISION CLOUD
- 1 CMNT # REVISION TAG
- PROJECT NORTH / PROJECT NORTH ARROW

VIEW REFERENCES

- 1 / A101 SIM — VIEW REFERENCE / SHEET REFERENCE
- 1 / A101 SIM — DETAIL VIEW
- 1 / A101 TYP. — SECTION VIEW
- 1 / A101 SIM — ENLARGED VIEW
- 1A / A-101 / 1A — INTERIOR ELEVATION / VIEW REFERENCE / SHEET REFERENCE
- 99 / A1-100 — EXTERIOR ELEVATION

ABBREVIATIONS

@	AT	ID	INSIDE DIAMETER
℄	CENTER LINE	INSUL	INSULATION OR INSULATED
d	PENNY	INV	INVERT
#	POUND	LAV	LAVATORY
⊥	PERPENDICULAR	MATL	MATERIAL
∠	ANGLE	MAX	MAXIMUM
AB	ANCHOR BOLT	MB	MACHINE BOLT
AC	ASPHALTIC CONCRETE	MECH	MECHANICAL
ACT	ACOUSTICAL CEILING TILE	MFR	MANUFACTURE OR MANUFACTURER
AFF	ABOVE FINISH FLOOR	MH	MAN HOLE
ALT	ALTERNATE	MIN	MINIMUM
ALUM	ALUMINUM	MISC	MISCELLANEOUS
ANOD	ANODIZED	MO	MASONRY OPENING
APPROX	APPROXIMATE	N	NORTH
ARCH	ARCHITECT OR ARCHITECTURAL	(N)	NEW
BD	BOARD	NIC	NOT IN CONTRACT
BLDG	BUILDING	NO OR #	NUMBER
BLK(G)	BLOCK(ING)	NTS	NOT TO SCALE
BOB	BOTTOM OF BEAM	OC	ON CENTER
BM	BEAM	OD	OUTSIDE DIAMETER
CB	CATCH BASIN	OPNG	OPENING
CI	CAST IRON	PL	PLATE OR PROPERTY LINE
CJ	CONSTRUCTION JOINT	PLAM	PLASTIC LAMINATE
CLG	CEILING	PLAS	PLASTER (NUMBER - SEE SPECS)
CLR	CLEAR	PLYWD	PLYWOOD
CMU	CONCRETE MASONRY UNIT	PNT	PAINT (NUMBER - SEE SPECS)
CO	CLEAN OUT	PTDF	PRESSURE TREATED DOUGLAS FUR
COL	COLUMN	QT	QUARRY TILE
CONC	CONCRETE	RD	ROOF DRAIN
CONT	CONTINUOUS	REF	REFRIGERATOR
CSK	COUNTERSINK	REINF	REINFORCE OR REINFORCING
CW	COLD WATER	RH	ROUND HEAD
[	CHANNEL	RM	ROOM
DBL	DOUBLE	RO	ROUGH OPENING
DEPT	DEPARTMENT	RWD	REDWOOD
DET	DETAIL	S	SOUTH
DF	DRINKING FOUNTAIN	S.C.D.	SEE CIVIL DRAWINGS
DIA	DIAMETER	SCH	SCHEDULE
DIAG	DIAGONAL	SD	STORM DRAIN
DN	DOWN	S.E.D.	SEE ELECTRICAL DRAWINGS
DS	DOWNSPOUT	S.FA.D.	SEE FIRE ALARM DRAWINGS
DWG	DRAWING	SHR	SHOWER
E	EAST	SHT	SHEET
(E)	EXISTING	SHTHG	SHEATHING
EB	EXPANSION BOLT	SIM	SIMILAR
EJ	EXPANSION JOINT	SMACNA	THE ARCH SHEET METAL MANUAL
ELEV	ELEVATION	S.MP.D	SEE MECHANICAL & PLUMBING DRAWINGS
ELEC	ELECTRICAL)	SPEC	SPECIFICATION
EP	EDGE OF PAVING	SQ	SQUARE
EQ	EQUAL	S.S.D.	SEE STRUCTURAL DRAWINGS
EQUIP	EQUIPMENT	SSTL	STAINLESS STEEL
FD	FLOOR DRAIN	STD	STANDARD
FE(C)	FIRE EXTINGUISHER (& CABINET)	S.T.D.	SEE TECHNOLOGY DRAWINGS
FF	FINISHED FLOOR	STL	STEEL
FG	FINISHED GRADE	SUSP	SUSPENDED
FH	FLAT HEAD OR FIRE HYDRANT	SYM	SYMMETRICAL
FIN	FINISH	TOB	TOP OF BEAM
FL	FLOW LINE	TOC	TOP OF CURB OR TOP OF CONCRETE
FLG	FLASHING	TCB	TOP OF CATCH BASIN
FLR	FLOOR	TEL	TELEPHONE
FOC	FACE OF CONCRETE	TEMP	TEMPERATURE OR TEMPERED
FOF	FACE OF FINISH	T&G	TONGUE & GROOVE
FOM	FACE OF MASONRY	TP	TOP OF PAVING
FOS	FACE OF STUD	TS	STRUCTURAL TUBING
FRP	FIBERGLASS REINFORCED PANEL	TV	TELEVISION
FT	FOOT OR FEET	TOW	TOP OF WALL
FTG	FOOTING	TYP	TYPICAL (ITEMS TYPICAL UNLESS SHOWN
GA	GAUGE		OR NOTED OTHERWISE)
GALV	GALVANIZED	UON	UNLESS OTHERWISE NOTED
GB	GRAB BAR, GRADE BREAK	VCT	VINYL COMPOSITION TILE
GL	GLASS	VERT	VERTICAL
GLB	GLUE LAMINATED BEAM	VGDF	VERTICAL GRAIN DOUGLAS FIR
GYP	GYPSUM	VTR	VENT THRU ROOF
GWB	GYPSUM WALL BOARD	W	WEST
HB	HOSE BIBB	WC	WATER CLOSET
HDR	HEADER	W.C.	WHEELCHAIR ACCESSIBLE
HGT	HEIGHT	WD	WOOD
HORIZ	HORIZONTAL	WF	WIDE FLANGE
HTR	HEATER	WH	WATER HEATER
HVAC	HEATING/VENTILATING/AIR CONDITIONING	WP	WATERPROOF
		WS	WOOD SCREW
		WSCT	WAINSCOT
		WWF	WELDED WIRE FABRIC
		W/	WITH
		W/O	WITHOUT

GENERAL PROJECT NOTES - K12

1. ALL WORK SHALL CONFORM TO 2022 TITLE 24 CALIFORNIA CODE OF REGULATIONS (CCR).
2. THE PROJECT MANUAL AND SPECIFICATIONS IN CONJUNCTION WITH THESE DRAWINGS AND REFERENCES SHALL FORM A PART OF THE CONTRACT AND SHALL BE REFERRED TO AS THE "DOCUMENTS." THE DOCUMENTS DEFINE THE WORK TO BE PERFORMED AS AGREED TO IN THE CONTRACT
3. CHANGES TO APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY AN ADDENDUM OR A CONSTRUCTION CHANGE DOCUMENT (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT AS REQUIRED BY SECTION 4-338, PART 1, T24 CCR.
4. A DSA CERTIFIED **INSPECTOR CLASS 3** SHALL BE EMPLOYED BY THE DISTRICT AND SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTION ARE DEFINED IN SECTION 4-342, PART 1, T24, CCR.
5. APPARENT DISCREPANCIES ON DRAWINGS AND/OR SPECIFICATIONS SHALL BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
6. ANY DIFFERENCE BETWEEN THE EXISTING CONSTRUCTION AS OBSERVED IN THE FIELD AND AS SHOWN ON THE DRAWING SHALL BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
7. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING WORK. THE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING AND COORDINATING DIMENSIONS.
8. IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO ENSURE THAT ALL APPLICABLE SAFETY LAWS ARE STRICTLY ENFORCED AND TO MAINTAIN A SAFE CONSTRUCTION PROJECT.
9. IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE SUPERVISION OF THE CONSTRUCTION WORK TO ENSURE THAT IT IS BUILT IN CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. THE ARCHITECT WILL PROVIDE ONLY PERIODIC OBSERVATION OF THE WORK. SEE NOTE 4 FOR DSA INSPECTION REQUIREMENTS.
10. ANY DAMAGE DONE TO THE EXISTING CONSTRUCTION DURING THE COURSE OF THIS WORK SHALL BE REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE WITH NO ADDITIONAL COST TO THE OWNER.
11. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD & ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
12. THE SEISMIC ANCHORAGE OF MECHANICAL AND ELECTRICAL EQUIPMENT SHALL CONFORM TO CCR TITLE 24, 2022 CBC SECTION 1616A.1.18 AND ASCE-7-16 SECTION 13.6 ANCHORAGE DETAILS FOR ROOF/FLOOR MOUNTED EQUIPMENT SHALL BE SHOWN ON PLANS.
13. CUTTING, BORING, SAW CUTTING OR DRILLING THROUGH THE NEW OR EXISTING STRUCTURAL ELEMENTS TO BE DONE ONLY WHEN SO DETAILED IN THE DRAWINGS OR ACCEPTED BY THE ARCHITECT AND THE STRUCTURAL ENGINEER WITH THE APPROVAL OF DSA REPRESENTATIVE. ALL WELDING SHALL BE SPECIALLY INSPECTED BY AN AWS-CWI QUALIFIED INSPECTOR APPROVED BY DSA. ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED AS APPROVED BY DSA. WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWINGS, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT, MECHANICAL ENGINEER AND FIELD ENGINEER. A COPY OF THE DRAWINGS APPROVED BY DSA SHALL BE PROVIDED BY THE CONTRACTOR AND KEPT ON THE JOB AT ALL TIMES.
14. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CONSTRUCTION CHANGE DOCUMENT, OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
15. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE SCHOOL DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
16. IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO COMPLY WITH CBC & CFC CHAPTER 33 - FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION.
17. DO NOT SCALE DRAWINGS, DIMENSIONS SHOWN SHALL TAKE PRECEDENCE OVER DRAWING SCALE. WHENEVER DSA FINDS ANY CONSTRUCTION WORK IS BEING PERFORMED IN A MANNER CONTRARY TO THE PROVISIONS OF THE CALIFORNIA BUILDING CODE AND THAT WOULD COMPROMISE THE STRUCTURAL INTEGRITY OF THE BUILDING, THE DEPARTMENT OF GENERAL SERVICES, STATE OF CALIFORNIA, IS AUTHORIZED TO ISSUE A STOP WORK ORDER PER SECTION 4-334.1 CALIFORNIA ADMINISTRATIVE CODE (PART 1, TITLE 24, CCR).
18. TITLE 24 PARTS 1-5 AND 9 MUST BE KEPT ON SITE DURING CONSTRUCTION
19. ALL STRUCTURAL, ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING MATERIALS INSTALLATION TO COMPLY WITH APPLICABLE CODES, STANDARDS, AND MANUFACTURER'S RECOMMENDATIONS.
20. PROJECT INSPECTION (PI) SHALL WITNESS AND VERIFY GROUNDING.
21. SUBSTITUTION OF PRODUCTS OR CONSTRUCTION PROCESS WHICH AFFECT THE STRUCTURAL SAFETY, FIRE AND LIFE-SAFETY OR ACCESSIBILITY OF THIS PROJECT SHALL BE SUBMITTED TO DSA FOR REVIEW AND APPROVAL AS AN ADDENDUM OR CONSTRUCTION CHANGE DOCUMENT.
22. THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE.
    - A. LIGHTING CONTROLS ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT).
    - B. MECHANICAL SYSTEM ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECTS SUBMITTED ON OR AFTER OCTUBER 1, 2021.
    - C. ENVELOPE AND PROCESS EQUIPMENT ACCEPTANCE TEST SHALL BE PERFORMED BY THE INSTALLING CONTRACTOR, ENGINEER / ARCHITECT OF RECORD OR THE OWNER'S AGENT.
    - D. THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION / INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.
    - E. PROJECT INSPECTORS WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.
    - F. A LISTING OF CERTIFIED ATT CAN BE FOUND AT: HTTPS://WWW.ENERGY.CA.GOV/PROGRAMS-AND-TOPICS/PROGRAMS/ACCEPTANCE-TEST-TECHNICIAN-CERTIFICATION-PROVIDER-PROGRAM/ACCEPTANCE

PROJECT DESCRIPTION

INCREMENT 2

GENERAL ALTERATION OF CLASSROOM BUILDINGS A, B.1, B.2, C, D.1, D.2, E & MULTI-USE, CONSISTING OF:

- RECONFIGURATION OF LIBRARY & ADMIN REMODEL IN BUILDING B1.
- RECONFIGURATION/ACCESSIBILITY UPGRADES AT TWO RESTROOMS IN BUILDING E.
- FLOORING IN-KIND REPLACEMENT
- FLOORING REPLACEMENT WITH NEW MATERIAL
- NEW CASEWORK WITH NEW ACCESSIBLE SINKS
- NEW LIGHTING
- NEW INTERIOR AND EXTERIOR PAINTING
- REPLACEMENT OF GLUE-UP TILES WITH NEW CEILING
- REPLACEMENT OF TACKABLE BOARDS
- REPLACEMENT OF ALL EXTERIOR DOORS WITH NEW FRP DOORS
- HARDWARE REPLACEMENT AT ALL EXTERIOR DOORS
- WINDOWS AND CLERESTORY REPLACEMENT WITH NEW
- REPLACEMENT IN-KIND OF HVAC EQUIPMENT IN MULTI USE, B1 AND C.

ACCESSIBILITY UPGRADES

- NEW OUTDOOR DRINKING FOUNTAINS WITH WATER BOTTLE FILLER
- ACCESSIBILITY UPGRADES AT STAFF PARKING LOT, AND CONCRETE WALKWAYS.

INCREMENT 1
GENERAL ALTERATION TO CLASSROOM BUILDINGS G.1, G.2, G.3, G.4, H.1, H.2, H.3, H.4, I.1, I.2, J.1, & J.2 CONSISTING OF:
- FLOORING REPLACEMENT WITH NEW MATERIAL
- REPLACEMENT OF ALL EXTERIOR DOORS WITH NEW FRP DOORS
- REPLACEMENT IN-KIND OF HVAC EQUIPMENT
- NEW INTERIOR PAINTING
- NEW FIRE ALARM AT BUILDING H.1
- NEW IDF AND DATA NETWORK REPLACEMENT
- NEW CLOCK/SPEAKERS

ACCESSIBILITY UPGRADES
- ACCESSIBILITY UPGRADES AT CONCRETE WALKWAYS.
- ADA MODIFICATIONS TO WOMENS STAFF BATHROOM AT BLDG D.1

BUILDING AREAS

Name	Area
BUILDING A	4,093 SF
BUILDING B.1	3,674 SF
BUILDING B.2	2,720 SF
BUILDING C	1,521 SF
BUILDING D.1	4,093 SF
BUILDING D.2	2,720 SF
BUILDING E	5,223 SF
BUILDING F	2,728 SF
BUILDING G.1	868 SF
BUILDING G.2	2,090 SF
BUILDING G.3	1,839 SF
BUILDING G.4	1,839 SF
BUILDING H.1	901 SF
BUILDING H.2	2,776 SF
BUILDING H.3	416 SF
BUILDING H.4	883 SF
BUILDING I.1	599 SF
BUILDING I.2	1,262 SF
BUILDING I.3	4,539 SF
BUILDING J.1	1,262 SF
BUILDING J.2	4,513 SF
MULTI-USE BUILDING	5,386 SF

APPLICABLE CODES AND STANDARDS

PARTIAL LIST OF APPLICABLE CODES AS OF JANUARY 1, 2023
ALL PARTS OF THE TITLE 24 CODE SHOWN BELOW HAVE AN EFFECTIVE DATE OF **JANUARY 1, 2023** EXCEPT:
- CALIFORNIA ADMINISTRATIVE CODE - EFFECTIVE **MARCH 5, 2022**

CALIFORNIA ADMINISTRATIVE CODE (CAC) - CCR, TITLE 24, PART 1

CALIFORNIA BUILDING CODE (CBC) - CCR, TITLE 24, PART 2
(2021 INTERNATIONAL BUILDING CODE, VOL. 1 & 2, AND 2022 CALIFORNIA AMENDMENTS)

CALIFORNIA ELECTRICAL CODE (CEC) - CCR, TITLE 24, PART 3
(2021 NATIONAL ELECTRICAL CODE AND 2022 CALIFORNIA AMENDMENTS)

CALIFORNIA MECHANICAL CODE (CMC) - CCR, TITLE 24, PART 4
(2021 IAPMO UNIFORM MECHANICAL CODE AND 2022 CALIFORNIA AMENDMENTS

CALIFORNIA PLUMBING CODE (CPC) - CCR, TITLE 24, PART 5
(2021 IAPMO UNIFORM PLUMBING CODE AND 2022 CALIFORNIA AMENDMENTS)

CALIFORNIA ENERGY CODE (CEC) - CCR, TITLE 24, PART 6

CALIFORNIA FIRE CODE (CFC) - CCR, TITLE 24, PART 9
(2021 INTERNATIONAL FIRE CODE AND 2022 CALIFORNIA AMENDMENTS)

CALIFORNIA EXISTING BUILDING CODE (CEBC) - CCR, TITLE 24, PART 10

CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN) - CCR, TITLE 24, PART 11

CALIFORNIA REFERENCED STANDARDS CODE - CCR, TITLE 24, PART 12
(PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS)

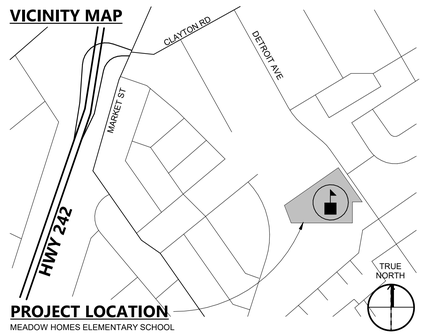
2019 A17.1/CSA B44-13 SAFETY CODE FOR ELEVATORS AND ESCALATORS *PER 2022 CBC PART 2 CH 35) - CAL/OSHA ELEVATOR UNIT ENFORCES CCR TITLE 8 AND USES THE 2004 ASME A17.1 BY ADOPTION*

PARTIAL LIST OF APPLICABLE STANDARDS AS OF JANUARY 1, 2023*

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2022 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80. SEE CALIFORNIA BUILDING CODE CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO THE NFPA STANDARDS.

NFPA 10-21 - STANDARD FOR PORTABLE FIRE EXTINGUISHERS
NFPA 13-22 - STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (AS AMENDED)
NFPA 14-19 - STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS
NFPA 24-19 - STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES (AS AMENDED)
NFPA 72-22 - NATIONAL FIRE ALARM AND SIGNALING CODE (AS AMENDED)
ICC 300-17 - STANDARD FOR BLEACHERS, FOLDING AND TELESCOPIC SEATING, AND GRANDSTANDS
UL 464-03 - AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES
UL 521-99 - STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS

VICINITY MAP



PROJECT LOCATION
MEADOW HOMES ELEMENTARY SCHOOL

CONSULTANTS

CIVIL ENGINEER
CARROLL ENGINEERING
1101 South Winchester Blvd., Suite H184
San Jose, CA 95128
TEL (408) 261-9800

STRUCTURAL ENGINEER
BASE Design Inc.
582 Market St. Ste 1402
San Francisco, CA 94104
TEL (415) 466-2997

MECHANICAL ENGINEER
CYPRESS ENGINEERING GROUP
9 Harris Court, Suite A8
Monterey, CA 93940
TEL (831) 218-1802

ELECTRICAL ENGINEER
ATIUM ENGINEERING
3533 York Ln.
San Ramon, CA 94582
TEL (913) 961-1658

TECHNOLOGY ENGINEER
KMM Services Inc.
5433 El Camino Ave. Ste 5
Carmichael, CA 95608
TEL (916) 359-4000

PROFESSIONAL STAMP

LICENSED ARCHITECT — MARISHA ALVAREZ PARRA — C-36107 — REN. 01-31-25 — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
TITLE SHEET

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2G-001

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:50:21 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023\23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt

SHEET INDEX INCREMENT 1

SHEET #	SHEET NAME
1. OVERALL GENERAL INFORMATION	
1G-001	TITLE SHEET
1G-002	CALGREEN CODE COMPLIANCE
1G-100	CODE SITE PLAN
1G-900	ACCESSIBILITY CLEARANCES
GENERAL SHEETS TOTAL: 4	
2. CIVIL ENGINEERING	
1C1.1	DEMOLITION PLAN
1C2.1	DRAINAGE & GRADING PLAN
1C3.1	NOTES, DETAILS & LEGEND
1C3.2	DETAILS
CIVIL SHEETS TOTAL: 4	
3. ARCHITECTURAL DRAWINGS	
1A-021	DEMOLITION PLAN - BLDG F, G
1A-022	DEMOLITION PLAN - BLDG H, I
1A-023	DEMOLITION PLAN - BLDG J & D
1A-101	ENLARGED SITE PLAN
1A-111	SITE DETAILS
1A-201	FLOOR PLAN - BLDG F, G
1A-202	FLOOR PLAN - BLDG H, I
1A-203	FLOOR PLAN - BLDG J
1A-221	DEMO&NEW ROOF PLAN - BLDG H1
1A-251	FINISH PLAN - BLDG F, G
1A-252	FINISH PLAN - BLDG H, I
1A-253	FINISH PLAN - BLDG J & D
1A-301	EXTERIOR ELEVATIONS
1A-302	EXTERIOR ELEVATIONS
1A-501	ENLARGED PLANS
1A-502	ENLARGED PLANS
1A-601	INTERIOR ELEVATIONS
1A-801	DOOR SCHEDULE
1A-901	WALL AND DOOR DETAILS
1A-921	INTERIOR DETAILS
1A-923	SIGNAGE DETAILS
ARCHITECTURAL SHEETS TOTAL: 21	
4. STRUCTURAL ENGINEERING	
1S-100	GENERAL NOTES
1S-201	BLDG H1 ROOF FRAMING PLAN & DETAILS
STRUCTURAL SHEETS TOTAL: 2	
5. ELECTRICAL ENGINEERING	
1E000	GENERAL INFORMATION
1E001	SCHEDULES
1E100	SITE PLAN
1E301	POWER & SIGNAL PLANS
1E302	POWER & SIGNAL PLANS
1E303	POWER & SIGNAL PLANS
1E304	POWER & SIGNAL PLANS
1E305	POWER & SIGNAL PLANS
1F000	GENERAL INFORMATION
1F001	SCHEDULES
1F100	SITE PLAN
1F301	POWER & SIGNAL PLAN
1F302	DIAGRAMS
1F401	DETAILS
ELECTRICAL SHEETS TOTAL: 14	
6. MECHANICAL & PLUMBING ENGINEERING	
1MP-001	LEGEND & NOTES - MECHANICAL & PLUMBING
1MP-002	SCHEDULES - MECHANICAL & PLUMBING
1MP-003	SCHEDULES - MECHANICAL & PLUMBING
1MP-201	BLDG F - DEMO & NEW FLOOR PLANS
1MP-202	BLDGS G.1 - G.4 - DEMO & NEW FLOOR PLANS
1MP-203	BLDGS H.1-H.4 - DEMO & NEW FLOOR PLANS - MECH. & PLUMB.
1MP-204	BLDG 1.2, 1.3 - DEMO & NEW FLOOR PLANS
1MP-205	BLDG J.1, J.2 - DEMO & NEW FLOOR PLANS
1MP-301	BLDG H.1 DEMO & NEW ROOF PLANS
1MP-601	DETAILS - MECHANICAL & PLUMBING
1MP-602	DETAILS - MECHANICAL & PLUMBING
1MP-801	T24 - MECHANICAL
1MP-802	T24 - MECHANICAL
MECHANICAL & PLUMBING SHEETS TOTAL: 13	
7. TECHNOLOGY	
1T-000	TECHNOLOGY INFRASTRUCTURE COVER SHEET
1T-010	TECHNOLOGY INFRASTRUCTURE SITE PLAN DEMO
1T-020	TECHNOLOGY INFRA. FLOOR PLANS DEMO
1T-021	TECHNOLOGY INFRA. FLOOR PLANS DEMO
1T-100	TECHNOLOGY INFRA. SITE PLAN NEW
1T-200	TECHNOLOGY INFRA. FLOOR PLANS NEW
1T-201	TECHNOLOGY INFRA. FLOOR PLANS NEW
1T-700	TECHNOLOGY INFRA. SINGLE LINES
1T-701	TECHNOLOGY INFRA. CCTV VIEWS
1T-800	TECHNOLOGY INFRA. DETAILS
1T-801	TECHNOLOGY INFRA. DETAILS
1T-802	TECHNOLOGY INFRA. DETAILS
TECHNOLOGY SHEETS TOTAL: 12	
OVERALL SHEET TOTAL: 70	

SHEET #	SHEET NAME
1. OVERALL GENERAL INFORMATION	
1G-001	TITLE SHEET
1G-002	CALGREEN CODE COMPLIANCE
1G-100	CODE SITE PLAN
1G-900	ACCESSIBILITY CLEARANCES
GENERAL SHEETS TOTAL: 4	
2. CIVIL ENGINEERING	
1C1.1	DEMOLITION PLAN
1C2.1	DRAINAGE & GRADING PLAN
1C3.1	NOTES, DETAILS & LEGEND
1C3.2	DETAILS
CIVIL SHEETS TOTAL: 4	
3. ARCHITECTURAL DRAWINGS	
1A-021	DEMOLITION PLAN - BLDG F, G
1A-022	DEMOLITION PLAN - BLDG H, I
1A-023	DEMOLITION PLAN - BLDG J & D
1A-101	ENLARGED SITE PLAN
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1A-203	FLOOR PLAN - BLDG J
1A-221	DEMO&NEW ROOF PLAN - BLDG H1
1A-251	FINISH PLAN - BLDG F, G
1A-252	FINISH PLAN - BLDG H, I
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1A-923	SIGNAGE DETAILS
ARCHITECTURAL SHEETS TOTAL: 21	
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1S-201	BLDG H1 ROOF FRAMING PLAN & DETAILS
STRUCTURAL SHEETS TOTAL: 2	
5. ELECTRICAL ENGINEERING	
1E000	GENERAL INFORMATION
1E001	SCHEDULES
1E100	SITE PLAN
1E301	POWER & SIGNAL PLANS
1E302	POWER & SIGNAL PLANS
1E303	POWER & SIGNAL PLANS
1E304	POWER & SIGNAL PLANS
1E305	POWER & SIGNAL PLANS
1F000	GENERAL INFORMATION
1F001	SCHEDULES
1F100	SITE PLAN
1F301	POWER & SIGNAL PLAN
1F302	DIAGRAMS
1F401	DETAILS
ELECTRICAL SHEETS TOTAL: 14	
6. MECHANICAL & PLUMBING ENGINEERING	
1MP-001	LEGEND & NOTES - MECHANICAL & PLUMBING
1MP-002	SCHEDULES - MECHANICAL & PLUMBING
1MP-003	SCHEDULES - MECHANICAL & PLUMBING
1MP-201	BLDG F - DEMO & NEW FLOOR PLANS
1MP-202	BLDGS G.1 - G.4 - DEMO & NEW FLOOR PLANS
1MP-203	BLDGS H.1-H.4 - DEMO & NEW FLOOR PLANS - MECH. & PLUMB.
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1MP-602	DETAILS - MECHANICAL & PLUMBING
1MP-801	T24 - MECHANICAL
1MP-802	T24 - MECHANICAL
MECHANICAL & PLUMBING SHEETS TOTAL: 13	
7. TECHNOLOGY	
1T-000	TECHNOLOGY INFRASTRUCTURE COVER SHEET
1T-010	TECHNOLOGY INFRASTRUCTURE SITE PLAN DEMO
1T-020	TECHNOLOGY INFRA. FLOOR PLANS DEMO
1T-021	TECHNOLOGY INFRA. FLOOR PLANS DEMO
1T-100	TECHNOLOGY INFRA. SITE PLAN NEW
1T-200	TECHNOLOGY INFRA. FLOOR PLANS NEW
1T-201	TECHNOLOGY INFRA. FLOOR PLANS NEW
1T-700	TECHNOLOGY INFRA. SINGLE LINES
1T-701	TECHNOLOGY INFRA. CCTV VIEWS
1T-800	TECHNOLOGY INFRA. DETAILS
1T-801	TECHNOLOGY INFRA. DETAILS
1T-802	TECHNOLOGY INFRA. DETAILS
TECHNOLOGY SHEETS TOTAL: 12	
OVERALL SHEET TOTAL: 70	

SHEET INDEX INCREMENT 2 - THIS SUBMITTAL

SHEET #	SHEET NAME
1. OVERALL GENERAL INFORMATION	
2G-001	TITLE SHEET
2G-002	SHEET INDEX & OVERALL EGRESS PLAN
2G-003	CALGREEN CODE COMPLIANCE
2G-100	CODE SITE PLAN
2G-201	BLDG A, B, C - EXIT ANALYSIS
2G-202	BLDG D, E - EXIT ANALYSIS
2G-900	ACCESSIBILITY CLEARANCES
GENERAL SHEETS TOTAL: 7	
2. CIVIL ENGINEERING (*)	
2C1.1	DEMOLITION PLAN
2C2.1	GRADING & DRAINAGE PLAN
2C3.1	HORIZONTAL CONTROL PLAN
2C4.1	NOTES, DETAILS & LEGEND
2C4.2	DETAILS
CIVIL SHEETS TOTAL: 5	
3. ARCHITECTURAL DRAWINGS	
2A-021	DEMOLITION PLAN - BLDG A, C
2A-022	DEMOLITION PLAN - BLDG B
2A-023	DEMOLITION PLAN - BLDG D, E
2A-031	DEMO REFLECTED CEILING PLAN - BLDG A, B
2A-032	DEMO REFLECTED CEILING PLAN - BLDG D, E
2A-041	DEMO EXTERIOR ELEVATIONS - BLDG A, B1, B2
2A-042	DEMO EXTERIOR ELEVATIONS - BLDG C, D1, D2
2A-043	DEMO EXTERIOR ELEVATIONS - BLDG E
2A-101	ENLARGED SITE PLANS
2A-104	PC SHADE STRUCTURE PLANS & ELEVATION
2A-111	SITE DETAILS
2A-201	FLOOR PLAN - BLDG A, B, C
2A-202	FLOOR PLAN - BLDG D, E
2A-211	REFLECTED CEILING PLAN - BLDG A, B, C
2A-212	REFLECTED CEILING PLAN - BLDG D, E
2A-221	DEMO & NEW ROOF PLAN - BLDG B
2A-222	DEMO & NEW ROOF PLAN - BLDG C, MULTI-USE
2A-251	SIGNAGE & FINISH PLANS - BLDG A, B, C
2A-252	SIGNAGE & FINISH PLANS - BLDG D, E
2A-301	EXTERIOR ELEVATIONS - BLDG A, B1
2A-302	EXTERIOR ELEVATIONS - BLDG B2, C, D1& MPR
2A-303	EXTERIOR ELEVATIONS - BLDG D2, E
2A-401	BUILDING SECTIONS A, B.1
2A-402	BUILDING SECTIONS D.2, E
2A-403	WALL SECTIONS
2A-501	RESTROOM PLAN ENLARGEMENTS
2A-502	RESTROOM PLAN ENLARGEMENTS
2A-601	INTERIOR ELEVATIONS
2A-602	INTERIOR ELEVATIONS
2A-603	INTERIOR ELEVATIONS
2A-604	INTERIOR ELEVATIONS
2A-605	INTERIOR ELEVATIONS
2A-606	INTERIOR ELEVATIONS
2A-607	CASEWORK PLANS & ELEVATIONS
2A-608	CASEWORK PLANS & ELEVATIONS
2A-701	EXTERIOR DETAILS
2A-801	DOOR SCHEDULE
2A-811	WINDOW SCHEDULE
2A-821	DOOR AND WINDOW DETAILS
2A-911	WALL TYPES & DETAILS
2A-921	INTERIOR DETAILS
2A-923	CEILING DETAILS
2A-924	CEILING DETAILS
2A-925	SIGNAGE DETAILS
2A-931	CASEWORK DETAILS
ARCHITECTURAL SHEETS TOTAL: 45	

SHEET #	SHEET NAME
4. PC SHADE STRUCTURE DRAWINGS DSA # 04-122195	
S-1	COVER SHEET
S-2	GENERAL DATA
S-3	GENERAL NOTES
S-5	PROPERTIES & REBARS DETAILS
S-6	VC14, VC18, VC20, VC24, VC28 & VC30 FRAMING PLAN & ELEVATIONS
S-7	VC14, VC18, VC20, VC24, VC28 & VC30 FRAMING SCHEDULES
S-10	PIER FOUNDATION & SPREAD FOOTING SCHEDULES
S-11	STANDARD DETAILS 1
S-13	STANDARD DETAILS 3
PC SHADE STRUCTURE SHEETS TOTAL: 9	
5. STRUCTURAL ENGINEERING (*)	
2S-100	GENERAL NOTES
2S-201	BUILDING E - FOUNDATION BUILDING PLAN
2S-202	ROOF FRAMING PLAN - BLDG B.1, C AND MULTIUSE BUILDING
2S-501	TYPICAL CONCRETE DETAILS
2S-800	NAILING SCHEDULE
2S-801	FRAMING DETAILS
STRUCTURAL SHEETS TOTAL: 6	
6. MECHANICAL & PLUMBING ENGINEERING (*)	
2MP-001	LEGENDS & NOTES - MECHANICAL & PLUMBING
2MP-002	SCHEDULES - MECHANICAL & PLUMBING
2MP-201	BLDG A & C - DEMO & NEW FLOOR PLANS
2MP-202	BLDG B.1, B.2 - DEMO & NEW FLOOR PLANS
2MP-203	BLDG D.1, D.2 - DEMO & NEW FLOOR PLANS
2MP-204	BLDG E - DEMO & NEW FLOOR PLANS
2MP-205	MULTI-USE - DEMO & NEW FLOOR PLANS
2MP-301	BLDGS B.1, C & MU - DEMO & NEW ROOF PLAN
2MP-401	BLDG B.1& E - DEMO & NEW RESTROOM PLANS
2MP-402	BLDG E - DEMO & NEW RESTROOM PLANS
2MP-501	CONTROLS - MECHANICAL
2MP-601	DETAILS - MECHANICAL & PLUMBING
2MP-602	DETAILS - MECHANICAL & PLUMBING
2MP-801	T24 - MECHANICAL
MECHANICAL & PLUMBING SHEETS TOTAL: 14	
7. ELECTRICAL ENGINEERING (*)	
2E000	GENERAL INFORMATION
2E001	SCHEDULES
2E002	SCHEDULES
2E003	SCHEDULES
2E100	SITE PLAN
2E201	LIGHTING PLANS BLDG A
2E202	LIGHTING PLANS BLDG B.1
2E203	LIGHTING PLANS BLDG D.1
2E204	LIGHTING PLANS BLDG B.2 & D.2
2E205	LIGHTING PLANS BLDG E
2E300	POWER & SIGNAL PLANS BLDG C
2E301	POWER & SIGNAL PLANS BLDG A
2E302	POWER & SIGNAL PLANS BLDG B.1
2E303	POWER & SIGNAL PLANS BLDG D.1
2E304	POWER & SIGNAL PLANS BLDG D.2
2E305	POWER & SIGNAL PLANS BLDG E
2E306	POWER & SIGNAL PLANS MPR
2E401	DETAILS
2E402	DETAILS
2E501	GENERAL INFORMATION
2E502	SCHEDULES
2E503	SCHEDULES
2E504	SCHEDULES
2E505	SCHEDULES
ELECTRICAL SHEETS TOTAL: 24	

SHEET #	SHEET NAME
8. FIRE ALARM (*)	
2F000	GENERAL INFORMATION
2F001	VOLTAGE DROP CALCULATIONS
2F002	VOLTAGE DROP CALCULATIONS
2F100	SITE PLAN
2F200	FIRE ALARM PLANS BLDG C
2F201	FIRE ALARM PLANS BLDG A
2F202	FIRE ALARM PLANS BLDG B.1
2F203	FIRE ALARM PLANS BLDG D.1
2F204	FIRE ALARM PLANS BLDG D.2
2F205	FIRE ALARM PLANS BLDG E
2F301	RISER DIAGRAM
2F401	DETAILS
FIRE ALARM SHEETS TOTAL: 12	
9. TECHNOLOGY (*)	
2T-000	TECHNOLOGY INFRASTRUCTURE COVER SHEET
2T-010	TECHNOLOGY INFRASTRUCTURE SITE PLAN DEMO
2T-020	TECHNOLOGY INFRASTRUCTURE FLOOR PLANS DEMO
2T-021	TECHNOLOGY INFRASTRUCTURE FLOOR PLANS DEMO
2T-100	TECHNOLOGY INFRASTRUCTURE SITE PLAN NEW
2T-200	TECHNOLOGY INFRASTRUCTURE FLOOR PLANS NEW
2T-201	TECHNOLOGY INFRASTRUCTURE FLOOR PLANS NEW
2T-300	TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLANS NEW
2T-301	TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLANS NEW
2T-700	TECHNOLOGY INFRASTRUCTURE SINGLE LINES
2T-701	TECHNOLOGY INFRASTRUCTURE CCTV VIEWS
2T-800	TECHNOLOGY INFRASTRUCTURE DETAILS
2T-801	TECHNOLOGY INFRASTRUCTURE DETAILS
2T-802	TECHNOLOGY INFRASTRUCTURE DETAILS
2T-803	TECHNOLOGY INFRASTRUCTURE DETAILS
TECHNOLOGY SHEETS TOTAL: 15	
OVERALL SHEET TOTAL: 137	

STATEMENT OF GENERAL CONFORMANCE

(*) THE DRAWINGS LISTED ON THE SHEET INDEX OF THIS COVER HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:

1) DESIGN INTENT, AND IT APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS, AND THE PROJECT SPECIFICATIONS PREPARED BY ME, AND
2) COORDINATION WITH MY PLANS AND SPECIFICATIONS, AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES, AND RESPONSIBILITIES UNDER SECTIONS 17302 AND 81138 OF EDUCATION CODE, AND SECTIONS 4-336, 4-341 AND 4-334 OF TITLE 24, PART 1 (*TITLE 24, PART 1, SECTION 4-317 [b]*).

I FIND THAT: ■ ALL DRAWINGS OR SHEETS LISTED ON THE COVER OR INDEX SHEET

■ THIS DRAWING OR PAGE

■ IS/ARE IN GENERAL CONFORMANCE WITH THE PROJECT DESIGN INTENT, AND

■ HAS/HAVE BEEN COORDINATED WITH THE PROJECT PLANS AND SPECIFICATIONS.

SIGNATURE — 10-25-2024 DATE

ARCHITECT OR ENGINEER DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE

MARIANA ALVAREZ PARGA
PRINT NAME

C-36107 — 01-31-2025
LICENSE NUMBER — EXPIRATION DATE

OVERALL EGRESS PLAN

LEGEND

- SCHOOL PROPERTY LINE.
- (E) FENCE
- PATH OF EGRESS
- PROJECT BUILDING INCREMENT 2
- PROJECT BUILDING INCREMENT 1 - NOT IN SCOPE
- (E) BUILDING - N.I.C.

NOTE: THE PURPOSE OF THIS SITE PLAN IS TO ILLUSTRATE THE OVERALL LAYOUT, INCLUDING THE ENCLOSED PROPERTY LINES AND THE PATH OF EGRESS.



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PROFESSIONAL STAMP

LICENSED ARCHITECT — MARIANA ALVAREZ PARGA — C-36107 — REN. 01-31-25 — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
SHEET INDEX & OVERALL EGRESS PLAN

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2G-002

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:50:25 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt

CODE SECTION & DESCRIPTION	LOCATION IN DOCUMENTS/ COMPLIANCE
5.106 SITE DEVELOPMENT	
5.106.4.2 BICYCLE PARKING. *For public schools and community colleges comply with Sections 5.106.4.2.1 and 5.106.4.2.2*	N/A - NO NEW BUILDINGS
5.106.4.2.1 STUDENT BICYCLE PARKING *Provide permanently anchored bicycle racks conveniently accessed with a minimum of four two-bike capacity racks per new building.*	N/A
5.106.4.2.2 STAFF BICYCLE PARKING *Provide permanent, secure bicycle parking conveniently accessed with a minimum of two staff bicycle parking spaces per new building. Acceptable bicycle parking facilities shall be convenient from the street or staff parking area and shall meet one of the following:* *1. Covered, lockable enclosures with permanently anchored racks for bicycles;* *2. Lockable bicycle rooms with permanently anchored racks; or* *3. Lockable, permanently anchored bicycle lockers.*	N/A
5.106.5.3 ELECTRIC VEHICLE (EV) CHARGING [N] *Construction shall comply with Section 5.106.5.3.1 or Section 5.106.5.3.2 to facilitate future installation of electric vehicle supply equipment (EVSE). When EVSE(s) is/are installed, it shall be in accordance with the California Building Code, the California Electrical Code and as follows:*	N/A - NO NEW BUILDINGS
5.106.5.3.1 SINGLE CHARGING SPACE REQUIREMENTS [N] *When only a single charging space is required per Table 5.106.5.3.3, a raceway is required to be installed at the time of construction and shall be installed in accordance with the California Electrical Code. Construction plans and specifications shall include, but are not limited to, the following:* *1. The type and location of the EVSE.* *2. A listed raceway capable of accommodating a 208/240-volt dedicated branch circuit.* *3. The raceway shall not be less than trade size 1."* *4. The raceway shall originate at a service panel or a subpanel serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into a listed suitable cabinet, box, enclosure or equivalent.* *5. The service panel or subpanel shall have sufficient capacity to accommodate a minimum 40-ampere dedicated branch circuit for the future installation of the EVSE.*	N/A
5.106.5.3.2 MULTIPLE CHARGING SPACE REQUIREMENTS [N] *When multiple charging spaces are required per Table 5.106.5.3.3 raceway(s) is/are required to be installed at the time of construction and shall be installed in accordance with the California Electrical Code Construction plans and specifications shall include, but are not limited to, the following:* *1. The type and location of the EVSE.* *2. The raceway(s) shall originate at a service panel or a subpanel(s) serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into listed suitable cabinet(s), box(es), enclosure(s) or equivalent.* *3. Plan design shall be based upon 40-ampere minimum branch circuits.* *4. Electrical calculations shall substantiate the design of the electrical system, to include the rating of equipment and any on-site distribution transformers and have sufficient capacity to simultaneously charge all required EVs at its full rated amperage.* *5. The service panel or subpanel(s) shall have sufficient capacity to accommodate the required number of dedicated branch circuit(s) for the future installation of the EVSE.*	N/A
5.106.5.3.3 EV CHARGING SPACE CALCULATION [N] *Table 5.106.5.3.3 shall be used to determine if single or multiple charging space requirements apply for the future installation of EVSE.* *Exceptions: On a case-by-case basis where the local enforcing agency has determined EV charging and infrastructure is not feasible based upon one or more of the following conditions:* *1. Where there is insufficient electrical supply.* *2. Where there is evidence suitable to the local enforcing agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.*	N/A

TABLE 5.106.5.3.3

TOTAL NUMBER OF ACTUAL PARKING SPACES	NUMBER OF REQUIRED EV CHARGING SPACES
0-9	0
10-25	1
26-50	2
51-75	4
76-100	5
101-150	7
151-200	10
201-OVER	6% OF TOTAL

5.106.5.3.4 [N] IDENTIFICATION
The service panel or subpanel(s) circuit directory shall identify the reserved overcurrent protective device space(s) for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE."

5.106.5.3.5 [N] FUTURE CHARGING SPACES *Future charging spaces qualify as designated parking as described in Section 5.106.5.2 Designated parking for clean air vehicles.*	N/A
5.106.8 LIGHT POLLUTION REDUCTION *[N] Outdoor lighting systems shall be designed and installed to comply with the following:* *1. The minimum requirements in the California Energy Code for Lighting Zones 0-4 as defined in Chapter 10, Section 10-114 of the California Administrative Code; and* *2. Backlight (B) ratings as defined in IES TM-15-11 (shown in Table A-1 in Chapter 8);* *3. Uplight and Glare ratings as defined in California Energy Code (shown in Tables 130.2-A and 130.2-B in Chapter 8) and* *4. Allowable BUG ratings not exceeding those shown in Table 5.106.8 [N], or* *Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.* *Exceptions: [N]* *1. Luminaires that qualify as exceptions in Section 140.7 of the California Energy Code* *2. Emergency lighting.* *3. Building facade meeting the requirements in Table 140.7-B of the California Energy Code, Part 6.* *4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction.* *Notes:* *1. [N] See also California Building Code, Chapter 12, Section 1205.7 for college campus lighting requirements for parking facilities and walkways.* *2. Refer to Chapter 8 (Compliance Forms, Worksheets and Reference Material) for IES TM-15-11 Table A1, California Energy Code Tables 130.2-A and 130.2-B.* *3. Refer to the California Energy Code for requirements for additions and alterations.*	N/A - NO NEW BUILDINGS
5.106.10 GRADING AND PAVING *Construction plans shall indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:* *1. Swales.* *2. Water collection and disposal systems.* *3. French drains.* *4. Water retention gardens.* *5. Other water measures which keep surface water away from buildings and aid in groundwater recharge. Exception: Additions and alterations not altering the drainage path.*	N/A - NO CHANGE TO EXISTING DRAINAGE
5.106.12 SHADE TREES *[DSA-SS] Shade trees shall be planted to comply with Sections 5.106.12.1, 5.106.12.2, and 5.106.12.3. Percentages shown shall be measured at noon on the summer solstice. Landscape irrigation necessary to establish and maintain tree health shall comply with Section 5.304.6.*	N/A - NO NEW BUILDINGS
5.106.12.1 SURFACE PARKING AREAS *Shade tree plantings, minimum No. 10 container size or equal, shall be installed to provide shade over 50 percent of the parking area within 15 years.* *Exceptions: The surface parking area covered by solar photovoltaic shade structures, or shade structures, with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5, are not included in the total area calculation.*	N/A
5.106.12.2 LANDSCAPE AREAS *Shade tree plantings, minimum No. 10 container size or equal shall be installed to provide shade of 20% of the landscape area within 15 years.* *Exception: Playfields for organized sport activity are not included in the total area calculation.*	N/A
5.106.12.3 HARDSCAPE AREAS *Shade tree plantings, minimum No. 10 container size or equal shall be installed to provide shade over 20 percent of the hardscape area within 15 years.* *Exception: Walks, hardscape areas covered by solar photovoltaic shade structures, and hardscape areas covered by shade structures with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5, are not included in the total area calculation.*	N/A
5.201 ENERGY EFFECIENCY	
5.201.1 SCOPE. CALIFORNIA ENERGY CODE *For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory building standards.*	PER DSA PR 07-01: PRE-CHECK APPROVAL
5.3 WATER EFFICIENCY AND CONSERVATION	
5.303.3.1 WATER CLOSETS *The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-Type Toilets.* *Note: The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.*	SEE PLUMBING DRAWINGS
5.303.3.2 URINALS **5.303.3.2.1 WALL-MOUNTED URINALS** *The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush.*	N/A - NO NEW FIXTURES
5.303.3.2.2 FLOOR-MOUNTED URINALS *The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush.*	N/A
5.303.3.3 SHOWERHEADS **5.303.3.3.1 SINGLE SHOWERHEAD** *Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.*	N/A
5.303.3.3.2 MULTIPLE SHOWERHEADS SERVING ONE SHOWER *When a shower is served by more than one showerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time.* *Note: A hand-held shower shall be considered a showerhead.*	N/A

CODE SECTION & DESCRIPTION	LOCATION IN DOCUMENTS/ COMPLIANCE
5.3 WATER EFFICIENCY AND CONSERVATION (CONT.)	
5.303.3.4 FAUCETS AND FOUNTAINS **5.303.3.4.1 NONRESIDENTIAL LAVATORY FAUCETS** *Lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi.*	SEE PLUMBING DRAWINGS
5.303.3.4.2 KITCHEN FAUCETS *Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.*	N/A
5.303.3.4.3 WASH FOUNTAINS *Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute/20 [rim space (inches) at 60 psi].*	N/A
5.303.3.4.4 METERING FAUCETS *Metering faucets shall not deliver more than 0.20 gallons per cycle.*	N/A
5.303.3.4.5 METERING FAUCETS FOR WASH FOUNTAINS *Metering faucets for wash fountains shall have a maximum flow rate of not more than 0.20 gallons per cycle/ 20 [rim space (inches) at 60 psi].* *Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.*	N/A
5.303.6 STANDARDS FOR PLUMBING FIXTURES AND FITTINGS *Plumbing fixtures and fittings shall be installed in accordance with the California Plumbing Code, and shall meet the applicable standards referenced in Table 1701.1 of the California Plumbing Code and in Chapter 6 of this code.*	SEE PLUMBING DRAWINGS
5.304.6 OUTDOOR POTABLE WATER USE IN LANDSCAPE AREAS *For public schools and community colleges, landscape projects as described in Sections 5.304.6.1 and 5.304.6.2 shall comply with the California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO) commencing with Section 490 of Chapter 2.7, Division 2, Title 23, California Code of Regulations, except that the evapotranspiration adjustment factor (ETAF) shall be 0.65 with an additional water allowance for special landscape areas (SLA) of 0.35.* *Exception: Any project with an aggregate landscape area of 2,500 square feet or less may comply with the prescriptive measures contained in Appendix D of the MWELO.*	PER DSA PR 15-03 SEE DSA 1-L
5.304.6.1 NEWLY CONSTRUCTED LANDSCAPES *New construction projects with an aggregate landscape area equal to or greater than 500 square feet.*	N/A
5.304.6.2 REHABILITATED LANDSCAPES *Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 1,200 square feet.*	N/A
5.4 MATERIAL CONSERVATION AND RESOURCE EFFECIENCY	
5.407 WATER RESISTANCE AND MOISTURE MANAGEMENT **5.407.1 WEATHER PROTECTION** *Provide a weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1402.2 (Weather Protection), manufacturer's installation instructions or local ordinance, whichever is more stringent.*	N/A - NO NEW BUILDINGS
5.407.2 MOISTURE CONTROL *Employ moisture control measures by the following methods.*	N/A
5.407.2.1 SPRINKLERS *Design and maintain landscape irrigation systems to prevent spray on structures.*	N/A
5.407.2.2 ENTRIES AND OPENINGS *Design exterior entries and/or openings subject to foot traffic or wind-driven rain to prevent water intrusion into buildings as follows:*	N/A
5.407.2.2.1 EXTERIOR DOOR PROTECTION *Primary exterior entries shall be covered to prevent water intrusion by using nonabsorbent floor and wall finishes within at least 2 feet around and perpendicular to such openings plus at least one of the following:* *1. An installed awning at least 4 feet in depth.* *2. The door is protected by a roof overhang at least 4 feet in depth.* *3. The door is recessed at least 4 feet.* *4. Other methods which provide equivalent protection.*	N/A
5.407.2.2.2 FLASHING *Install flashings integrated with a drainage plane.*	N/A
5.408.1 CONSTRUCTION WASTE MANAGEMENT *Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.*	N/A
5.408.1.1 CONSTRUCTION WASTE MANAGEMENT PLAN *Where a local jurisdiction does not have a construction and demolition waste management ordinance that is more stringent, submit a construction waste management plan that* *1. Identifies the construction and demolition waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.* *2. Determines if construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed (single stream).* *3. Identifies diversion facilities where construction and demolition waste material collected will be taken.* *4. Specifies that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.*	N/A
5.408.1.2 WASTE MANAGEMENT COMPANY *Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with this section.* *Note: The owner or contractor shall make the determination if the construction and demolition waste material will be diverted by a waste management company.* *Exceptions to Sections 5.408.1.1 and 5.408.1.2:* *1. Excavated soil and land-clearing debris.* *2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.* *3. Demolition waste meeting local ordinance or calculated in consideration of local recycling facilities and markets.*	N/A
5.408.1.3 WASTE STREAM REDUCTION ALTERNATIVE *The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65 percent minimum requirement as approved by the enforcing agency.*	N/A
5.408.1.4 DOCUMENTATION *Documentation shall be provided to the enforcing agency which demonstrates compliance with Sections 5.408.1.1 through 5.408.1.3. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.* *Notes:* *Sample forms found in "A Guide to the California Green Building Standards Code (Nonresidential)" located at https://www.dgs.ca.gov/BSC/Resources/ Page-Content/Building-Standards-CommissionResources-List-Folder/CALGreen may be used to assist in documenting compliance with the waste management plan.* *Mixed construction and demolition debris (C&D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).*	N/A
5.410.1 RECYCLING BY OCCUPANTS *Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive.* *Exception: Rural jurisdictions that meet and apply for the exemption in Public Resources Code 42649.82 (a)(2)(A) et seq. shall also be exempt from the organic waste portion of this section.*	N/A - NO NEW BUILDINGS
5.410.1.1 ADDITIONS *All additions conducted within a 12-month period under single or multiple permits, resulting in an increase of 30 percent or more in floor area, shall provide recycling areas on site.* *Exception: Additions within a tenant space resulting in less than a 30-percent increase in the tenant space floor area.*	N/A
5.410.1.2 SAMPLE ORDINANCE *Space allocation for recycling areas shall comply with Chapter 18, Part 3, Division 30 of the Public Resources Code. Chapter 18 is known as the California Solid Waste Reuse and Recycling Access Act of 1991 (Act).* *Note: A sample ordinance for use by local agencies may be found in Appendix A of the document at the CalRecycle's web site.*	N/A - NO NEW BUILDINGS
5.5 ENVIRONMENTAL QUALITY	
5.504.3 COVERING OF DUCT OPENINGS AND PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION *At the time of rough installation and during storage on the construction site until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of dust, water and debris which may enter the system.*	SEE MECHANICAL DRAWINGS
5.504.4 FINISH MATERIAL POLLUTANT CONTROL *Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.6.*	SEE SPECIFICATIONS
5.504.4.1 ADHESIVES, SEALANTS AND CAULKS *Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards:* *1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified in subsection 2, below.* *2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with Section 94507.*	SEE SPECIFICATIONS
SEE TABLE 5.504.4.1 ADHESIVE VOC LIMIT	SEE SPECIFICATIONS
SEE TABLE 5.504.4.2 SEALANT VOC LIMIT	

CODE SECTION & DESCRIPTION	LOCATION IN DOCUMENTS/ COMPLIANCE
5.5 ENVIRONMENTAL QUALITY (CONT.)	
5.504.4.3 PAINTS AND COATINGS *Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.*	SEE SPECIFICATIONS
SEE TABLE 5.504.4.3 VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS	SEE SPECIFICATIONS
5.504.4.3.1 AEROSOL PAINTS AND COATINGS *Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of California Code of Regulations, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.*	SEE SPECIFICATIONS
5.504.4.3.2 VERIFICATION *Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:* *1. Manufacturer's product specification* *2. Field verification of on-site product containers*	SEE SPECIFICATIONS
5.504.4.4 CARPET SYSTEMS *All carpet installed in the building interior shall meet at least one of the following testing and product requirements:* *1. Carpet and Rug Institute's Green Label Plus Program;* *2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350);* *3. NSF/ANSI 140 at the Gold level or higher;* *4. Scientific Certifications Systems Sustainable Choice; or* *5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database.*	N/A
5.504.4.4.1 CARPET CUSHION *All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label program.*	N/A
5.504.4.4.2 CARPET ADHESIVE *All carpet adhesive shall meet the requirements of Table 5.504.4.1.*	N/A
5.504.4.5 COMPOSITE WOOD PRODUCTS *Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.) Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.*	SEE SPECIFICATIONS
SEE TABLE 5.504.4.5 FORMALDEHYDE LIMITS	
5.504.4.6 RESILIENT FLOORING SYSTEMS *For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:* *1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;* *2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;* *3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or* *4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).*	SEE SPECIFICATIONS
5.504.5.3 FILTERS *In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.* *Exception: Existing mechanical equipment.*	SEE MECHANICAL SHEETS
5.505.1 INDOOR MOISTURE CONTROL *Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.*	SEE MECHANICAL SHEETS
5.506.1 OUTSIDE AIR DELIVERY *For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the California Energy Code, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.*	SEE MECHANICAL SHEETS
5.507.4 ACOUSTICAL CONTROL *Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E90 and ASTM E413 or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.* *Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.* *Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.*	N/A - NO NEW BUILDINGS
5.507.4.1 EXTERIOR NOISE TRANSMISSION, PRESCRIPTIVE METHOD *Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:* *1. Within the 65 CNEL noise contour of an airport.* *Exceptions:* *A. Ldn or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.* *B. Ldn or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.* *2. Within the 65 CNEL or Ldn noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.*	N/A
5.507.4.1.1 NOISE EXPOSURE WHERE NOISE CONTOURS ARE NOT READILY AVAILABLE *Buildings exposed to a noise level of 65 dB Leq-1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).*	N/A
5.507.4.2 PERFORMANCE METHOD *For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.*	N/A
5.507.4.2.1 SITE FEATURES *Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.*	N/A
5.507.4.2.2 DOCUMENTATION OF COMPLIANCE *An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.*	N/A
5.507.4.3 INTERIOR SOUND TRANSMISSION *Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.* *Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: http://www.toolbase.org/PDF/CaseStudies/stc_icc_ratings.pdf.*	N/A
5.508.1 OZONE DEPLETION AND GREENHOUSE GAS REDUCTIONS *Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.*	SEE MECHANICAL SHEETS
5.508.1.1 CHLOROFLUOROCARBONS (CFCS) *Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.*	SEE MECHANICAL SHEETS
5.508.1.2 HALONS *Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.*	SEE MECHANICAL SHEETS

CALGREEN CODE COMPLIANCE

THIS PROJECT IS SUBJECT TO THE REQUIREMENTS OF THE 2022 CALGREEN CODE (TITLE 24CCR, PART II) AS ADOPTED BY DSA FOR APPLICATION TO PUBLIC SCHOOLS [DSA-SS]. MANDATORY MEASURES ARE LOCATED ON THIS SHEET.

THIS PROJECT IS SUBJECT TO THE REQUIREMENTS OF THE 2022 CALGREEN CODE (TITLE 24CCR, PART II) AS ADOPTED BY THE CITY OF CONCORD WITH APPLICABLE CITY CODE AMMENDMENTS. MANDATORY MEASURES ARE LOCATED AT DRAWING SHEET 1G-002.

SIGNATURE OF THE ARCHITECT/ENGINEER	DATE	LICENSE NUMBER	EXPIRATION DATE
	10-25-2024	C-36107	01-31-25

AGENCY APPROVAL DSA# 01-121400

991 W HEDDING ST., SUITE 101
SAN JOSE, CA 95126
TEL (408) 715-4470

CONSULTANTS

CIVIL ENGINEER
CARROLL ENGINEERING
1101 South Winchester Blvd., Suite H184
San Jose, CA 95128
TEL (408) 261-9800

STRUCTURAL ENGINEER
BASE Design Inc.
582 Market St. Ste 1402
San Francisco, CA 94104
TEL (415) 466-2997

MECHANICAL ENGINEER
CYPRESS ENGINEERING GROUP
9 Harris Court, Suite A8
Monterey, CA 93940
TEL (831) 218-1802

ELECTRICAL ENGINEER
ATIUM ENGINEERING
3533 York Ln.
San Ramon, CA 94582
TEL (913) 961-1658

TECHNOLOGY ENGINEER
KMM Services Inc.
5433 El Camino Ave. Ste 5
Carmichael, CA 95608
TEL (916) 359-4000

PROFESSIONAL STAMP

LICENSED ARCHITECT · MARINA ALVAREZ-PEREA · C-36107 · REN. 01-31-25 · STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
CALGREEN CODE COMPLIANCE

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2G-003

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:50:27 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt

LEGEND - SITE PLAN

- PROPERTY LINE
- LIMITS OF WORK
- PROJECT BUILDING INCREMENT 1 - NOT IN SCOPE
- (E) BUILDING - N.I.C.
- (N) CONCRETE PAVING PER CIVIL DRAWINGS
- (N) AC PAVEMENT PER CIVIL DRAWINGS
- X—X—X—X (E) FENCE LINE
- PROJECT BUILDING INCREMENT 2
- (E) LANDSCAPING
- (E) CONCRETE PAVING
- (E) AC PAVEMENT PER CIVIL DRAWINGS
- (N) SLURRY SEAL

PATH OF TRAVEL (P.O.T.)

- AS INDICATED, IS A COMMON BARRIER FREE ACCESS ROUTE
- IS AT LEAST 48" WIDE.
- NO ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAXIMUM SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL.
- THE PATH SURFACE IS SLIP RESISTANT, STABLE, FIRM, AND SMOOTH.
- PASSING SPACES (11B-403.2) AT LEAST 60"x60" ARE LOCATED NOT MORE THAN 200' APART.
- PARTS OF P.O.T. WITH CONTINUOUS GRADIENTS HAVE 60" LEVEL AREAS (11B-403.7) NOT MORE THAN 400' APART.
- THE CROSS-SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED.
- (POT) SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM (11B-307.4) AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80" (11B-307).
- ARCHITECT SHALL VERIFY PATH OF TRAVEL CONFORMS WITH THE ABOVE.

PATH OF TRAVEL (P.O.T.) - INC01

- (E) EXTERIOR LIGHTING ALONG P.O.T.
- FH (E) FIRE HYDRANT
- DF ACCESSIBLE HI-LOW DRINKING FOUNTAIN
- T ACCESSIBLE ADULT/STAFF SINGLE-USER TOILET ROOM
- M W ACCESSIBLE ADULT/STAFF MULTI-USER TOILET ROOM
- ST ACCESSIBLE STUDENT SINGLE-USER TOILET
- B G ACCESSIBLE STUDENT MULTI-USER TOILET
- KT ACCESSIBLE KINDERGARTEN STUDENT TOILET

LEGEND - CODE SITE GENERAL NOTES

1. ALL NEW CONCRETE AND AC PAVING IN P.O.T. SHALL HAVE 2% MAX. SLOPE IN ALL DIRECTIONS U.N.O. AND SHALL HAVE FLUSH TRANSITIONS TO ALL ADJACENT NEW AND EXISTING WALK SURFACES IN P.O.T .
2. ALL LANDSCAPE EDGES ALONG ALL NEW OR EXISTING WALK SURFACES IN P.O.T. SHALL BE PER CIVIL DRAWINGS.
3. FOR GRATINGS OR STRAINERS LOCATED IN THE SURFACE OF ANY PEDESTRIAN WAY OR IN P.O.T., THE MAXIMUM GRATE OR STRAINER OPENINGS SHALL NOT EXCEED 1/2" IN THE DIRECTION OF TRAFFIC FLOW.
4. SAFETY DISPERSAL AREA PER CBC 1028.5:OCCUPANTS: 180+54+136+181+113+249+262= 1175x5= 5875 SF REQUIRED.
5. THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR THE PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS, AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NON-COMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NON-COMPLIANT ELEMENTS, COMPONENTS, OR PORTIONS OF THE P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS. DURING CONSTRUCTION, IF POT ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NON-CONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.
6. THE OCCUPANCY OF EXISTING STRUCTURES (BLDG A, C, D, E & MPR) AS DESCRIBED IN THE PROJECT INFORMATION CONTINUE WITHOUT CHANGE PER THE APPROVED DSA APPLICATION NUMBER (CBC 102.6).
7. NO OCCUPANCY CHANGE, SIGNIFICANT ALTERATION, OR INCREASE IN SQUARE FOOTAGE IS PROPOSED FOR THIS PROJECT SCOPE OF WORK. BUILDINGS DO NOT REQUIRE THE ADDITION OF SPRINKLERS. EXISTING BUILDING CONSTRUCTION TYPE WILL BE MAINTAINED.

KEYNOTES

01.33.A	DISTANCE BETWEEN MULTI USE BUILDING AND BUILDING D.1 IS 10'-0"
01.41.A	(E) ACCESSIBLE PARKING STALL A#01-105340
01.41.B	(E) ACCESSIBLE VAN PARKING STALL A#01-105340
01.41.C	(E) TOW SIGN A#01-105340
01.41.D	(E) STUDENT DROP-OFF
01.41.E	(E) ACCESSIBLE EGRESS GATE W/ PANIC HARDWARE
01.41.J	(E) ACCESSIBLE STUDENT TOILET ROOM A#01-115297
01.41.K	(E) ACCESSIBLE STUDENT TOILET ROOM A#01-121400
01.41.L	(E) DRINKING FOUNTAIN SERVING AREA OF WORK
01.41.N	(N) ACCESSIBLE STAFF TOILET ROOM
01.41.O	(N) ACCESSIBLE STUDENT TOILET ROOM
02.24.A	REMOVE AND REINSTALL (E) GATE, SEE DETAIL 15/2A-111
10.12.B	TUBULAR RAIL LOW PARAPET ACCESS ALUMINUM LADDER WITH PLATFORM.
10.73.A	METAL SHADE STRUCTURE, PC APPLICATION 04-119563
22.47.A	(E) HI-LOW DRINKING FOUNTAIN TO REMAIN
26.00.A	(E) ELECTRICAL EQUIPMENT TO REMAIN
32.12.B	(N) CONCRETE PAVING, S.C.D.
32.12.C	(E) CONCRETE PAVING, S.C.D.
32.12.D	SLURRY SEAL (E) ASPHALT. S.C.D.
32.12.G	(N) ASPHALT PAVING, S.C.D.
32.17.L	(N) VAN ACCESSIBLE PARKING STALL AND SIGNAGE
32.21.A	(E) PLAY STRUCTURE TO REMAIN
32.32.F	(E) KNOX BOX
32.51.A	(N) GAME STRIPING. FOR ADDITIONAL NOTES REFER TO DETAIL 5/2A-101
32.51.B	(E) BASKETBALL HOOP TO REMAIN, PROVIDE (N) POWDER COAT WITH BLUE FINISH

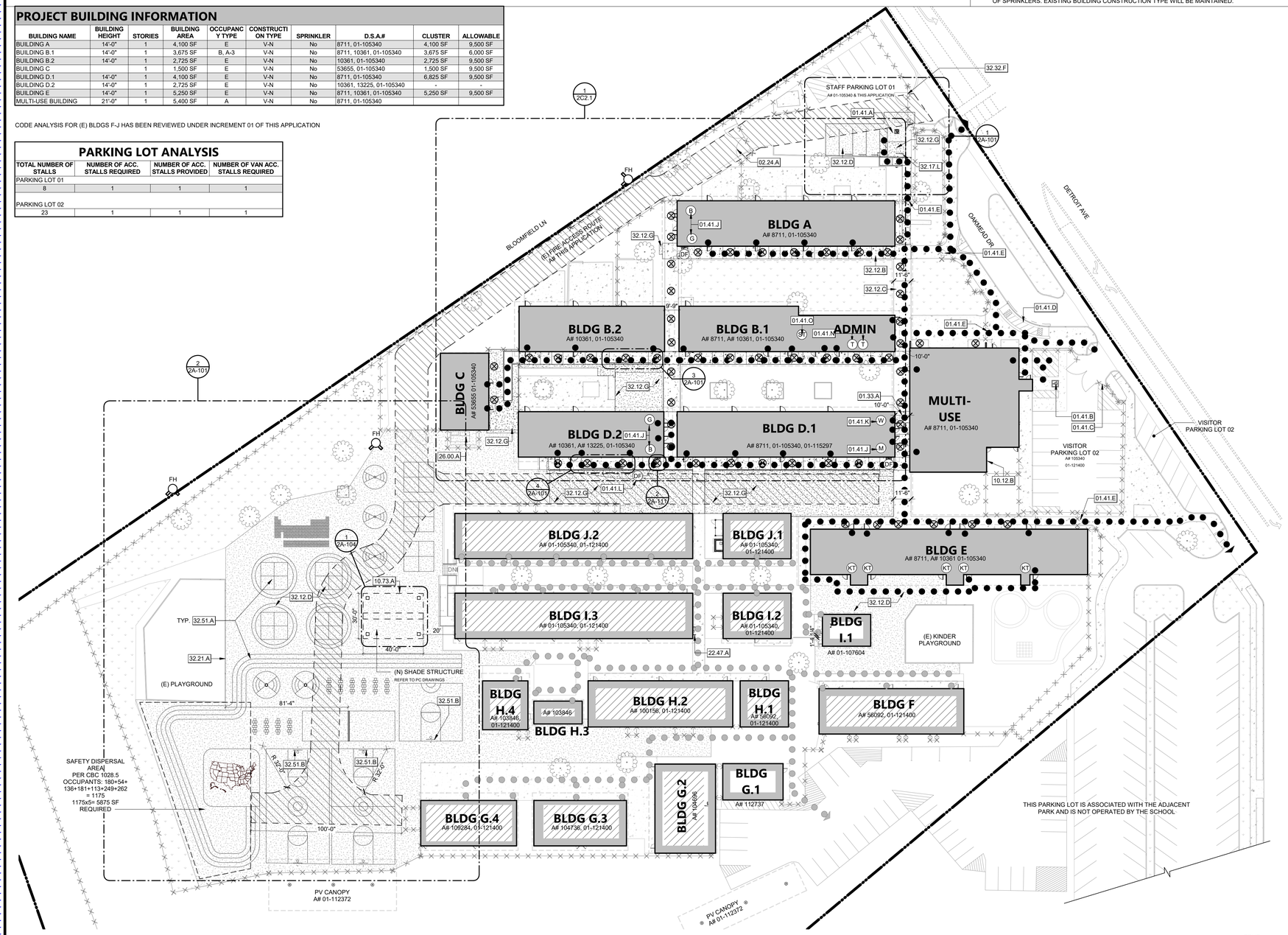
PROJECT BUILDING INFORMATION

BUILDING NAME	BUILDING HEIGHT	STORIES	BUILDING AREA	OCCUPANCY TYPE	CONSTRUCTION TYPE	SPRINKLER	D.S.A.#	CLUSTER	ALLOWABLE
BUILDING A	14'-0"	1	4,100 SF	E	V-N	No	8711, 01-105340	4,100 SF	9,500 SF
BUILDING B.1	14'-0"	1	3,675 SF	B, A-3	V-N	No	8711, 10361, 01-105340	3,675 SF	6,000 SF
BUILDING B.2	14'-0"	1	2,725 SF	E	V-N	No	10361, 01-105340	2,725 SF	9,500 SF
BUILDING C		1	1,500 SF	E	V-N	No	53655, 01-105340	1,500 SF	9,500 SF
BUILDING D.1	14'-0"	1	4,100 SF	E	V-N	No	8711, 01-105340	6,825 SF	9,500 SF
BUILDING D.2	14'-0"	1	2,725 SF	E	V-N	No	10361, 13225, 01-105340	-	-
BUILDING E	14'-0"	1	5,250 SF	E	V-N	No	8711, 10361, 01-105340	5,250 SF	9,500 SF
MULTI-USE BUILDING	21'-0"	1	5,400 SF	A	V-N	No	8711, 01-105340		

CODE ANALYSIS FOR (E) BLDGS F-J HAS BEEN REVIEWED UNDER INCREMENT 01 OF THIS APPLICATION

PARKING LOT ANALYSIS

TOTAL NUMBER OF STALLS	NUMBER OF ACC. STALLS REQUIRED	NUMBER OF ACC. STALLS PROVIDED	NUMBER OF VAN ACC. STALLS REQUIRED
PARKING LOT 01			
8	1	1	1
PARKING LOT 02			
23	1	1	1



SITE PLAN - CODE ANALYSIS

1" = 30'-0" | 1

DSA 810

FIRE & LIFE SAFETY SITE CONDITIONS SUBMITTAL

Division of the State Architect (DSA) documents referenced within this publication are available on the DSA Forms or DSA Publications webpages.

To facilitate the Division of the State Architect's (DSA) fire and life safety plan review of project site conditions, DSA requires the design professional to provide the following information at time of project submittal for projects consisting of construction of a new campus, construction of new building(s), additions to existing buildings, and for site alternate design means for fire department emergency vehicle access, and fire suppression water supply.

Information associated with compliance items 1 through 3 below is to be provided for all project types indicated above. Information associated with items 4 through 7 is to be completed when an alternate means is utilized. Acknowledgement by the school district and signature from the Local Fire Authority (LFA) is only required when an alternate design means is being requested.

The Project Information and Fire & Life Safety Information sections are to be completed for all projects and imaged onto the fire access site plan. When an alternate design/means is proposed, all sections on pages 1 and 2 are to be completed and imaged on the fire access site plan.

For additional information refer to the instructions at the end of this form and DSA Policy *PL 09-01: Fire Flow for Buildings*.

PROJECT INFORMATION

School District/Owner:	Mt Diablo Unified School District
Project Name/School:	Meadow Homes Elementary School
Project Address:	1371 Detroit Ave, Concord, CA 94520

FIRE & LIFE SAFETY INFORMATION

1.	Has a fire hydrant flow test been performed within the past 12 months? *(If yes, provide a copy of the test data.)*	Yes ☐		No ☑
2.	Was the fire hydrant water flow test performed as part of this LFA review?	Yes ☐		No ☑
3.	Is the project located within a designated fire hazard severity zone (FHSZ) as established by Cal-Fire? *(If yes, indicate FHSZ classification below.)*	Yes ☐		No ☑
	Refer to the following website for FHSZ locations: Fire Hazard Severity Zones in State Responsibility Area	Moderate ☐	High ☐	Very High ☐
	Wildland Interface Area (WIFA) *(If any designations are checked, project design must meet the requirements of CBC Chapter 7A.)*			WIFA ☐

DSA 810
FIRE & LIFE SAFETY SITE CONDITIONS SUBMITTAL

CONDITION MEANS AND METHODS RESOLUTION		ALTERNATE ACCEPTED Yes	No	N/A	N/R
4.	Emergency vehicle access roadways do not meet CFC requirements.			✔	
4a.	**Acceptable Alternate:** Emergency vehicle and personnel access as proposed by the project architect is acceptable for providing fire suppression and protection of life and property.				
5.	**Fire Hydrants:** Number and spacing does not meet CFC requirements.			✔	
5a.	**Acceptable Alternate:** Number of fire hydrants and spacing as proposed by the project architect is acceptable for fire suppression and protection of life and property.				
6.	**Fire Hydrants:** Water flow and pressure are less than CFC minimum.			✔	
6a.	**Acceptable Alternate:** The available flow and pressure is acceptable for providing fire suppression and protection of life and property.				
7.	Location of fire department connection(s) serving fire sprinkler systems or standpipe systems does not meet CFC requirements.			✔	
7a.	**Acceptable Alternate:** The location of fire department connection serving the fire sprinkler system and/or standpipe system is acceptable for providing fire suppression and protection of life and property.				

School District Acceptance of Acceptable Design Alternates

By signing this form, the school district acknowledges and accepts the proposed design as an alternative to California Building Code (CBC) and California Fire Code (CFC) minimum requirements, as indicated by one or more of the conditions indicated at items 4a, 5a, 6a or 7a, for providing fire and life safety protection of life and property.

Accepted by: _____ Title: _____

Signature: _____ Date: _____

LOCAL FIRE AUTHORITY (LFA) INFORMATION

LFA Agency Name:	
LFA Review Official:	
Title:	Work Phone:
Work Email:	

LFA Reviewer's Signature: _____ Date: _____

AGENCY APPROVAL DSA# 01-121400

196
991 W HEDDING ST., SUITE 101
SAN JOSE, CA 95126
TEL (408) 715-4470

CONSULTANTS

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TEL (916) 359-4000

PROFESSIONAL STAMP

LICENSED ARCHITECT MARINA ALVAREZ PARRA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
CODE SITE PLAN

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

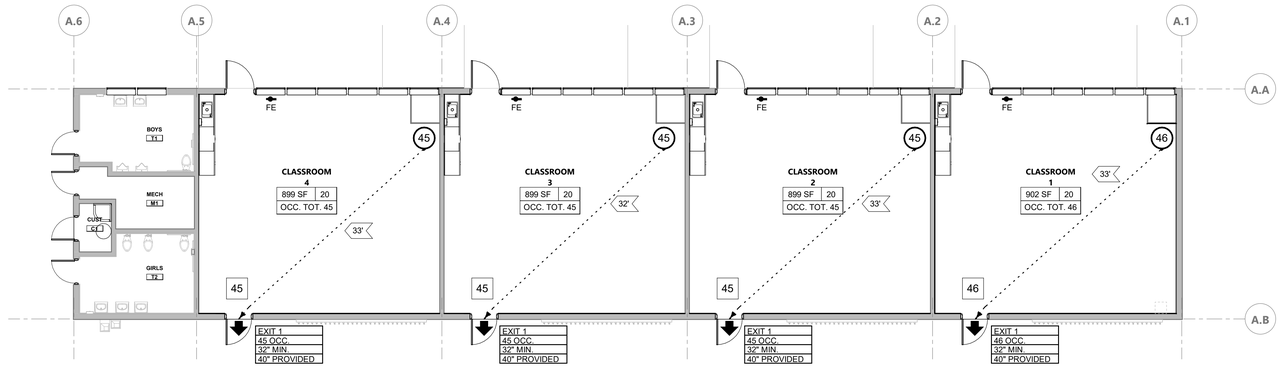
SHEET NO.

2G-100

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:50:32 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_v1

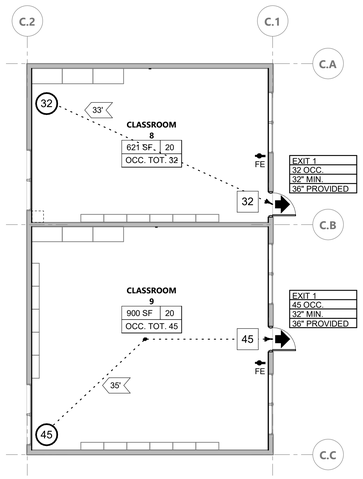


OCCUPANT CHART PER 2022 CBC TABLE 1004.5 - BUILDING A

ROOM #	ROOM NAME	FUNCTION	N SF	SF/OCC.	OCC. #	OCCUPANCY TYPE	MAXIMUM OCCUPANT LOAD W/ 1 EXIT TABLE 1006.2.1	MIN. CLR. DOOR EXIT WIDTH	# EXITS REQUIRED	# EXITS PROVIDED
BUILDING A										
1	CLASSROOM	EDUCATIONAL CLASSROOM AREA	902 SF	20 SF	46	E	49	2'-8"	1	2
2	CLASSROOM	EDUCATIONAL CLASSROOM AREA	899 SF	20 SF	45	E	49	2'-8"	1	2
3	CLASSROOM	EDUCATIONAL CLASSROOM AREA	899 SF	20 SF	45	E	49	2'-8"	1	2
4	CLASSROOM	EDUCATIONAL CLASSROOM AREA	899 SF	20 SF	45	E	49	2'-8"	1	2
OCCUPANT TOTAL:					181					

TRUE NORTH

EXIT ANALYSIS PLAN - BUILDING A — 1/8" = 1'-0" — 1

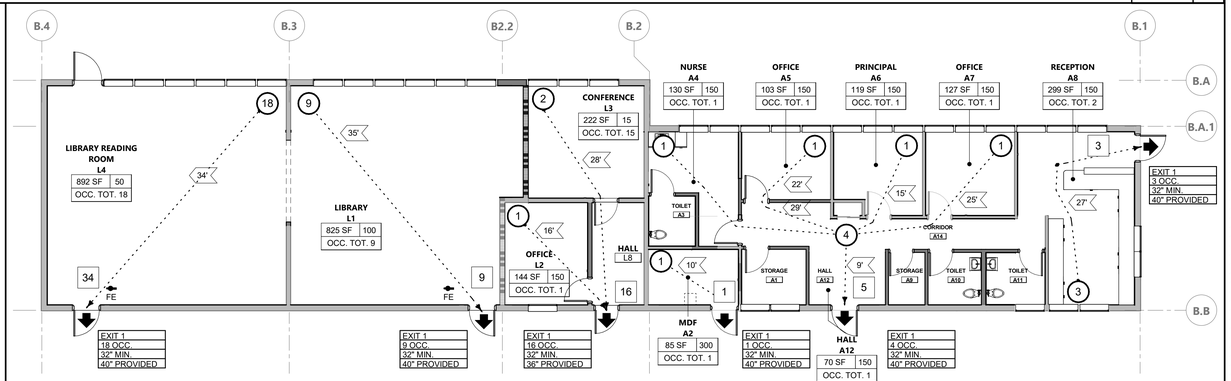


TRUE NORTH

OCCUPANT CHART PER 2022 CBC TABLE 1004.5 - BUILDING C

ROOM #	ROOM NAME	FUNCTION	N SF	SF/OCC.	OCC. #	OCCUPANCY TYPE	MAXIMUM OCCUPANT LOAD W/ 1 EXIT TABLE 1006.2.1	MIN. CLR. DOOR EXIT WIDTH	# EXITS REQUIRED	# EXITS PROVIDED
BUILDING C										
8	CLASSROOM	EDUCATIONAL CLASSROOM AREA	621 SF	20 SF	32	E	49	2'-8"	1	1
9	CLASSROOM	EDUCATIONAL CLASSROOM AREA	900 SF	20 SF	45	E	49	2'-8"	1	1
OCCUPANT TOTAL:					77					

EXIT ANALYSIS PLAN - BUILDING C — 1/8" = 1'-0" — 4

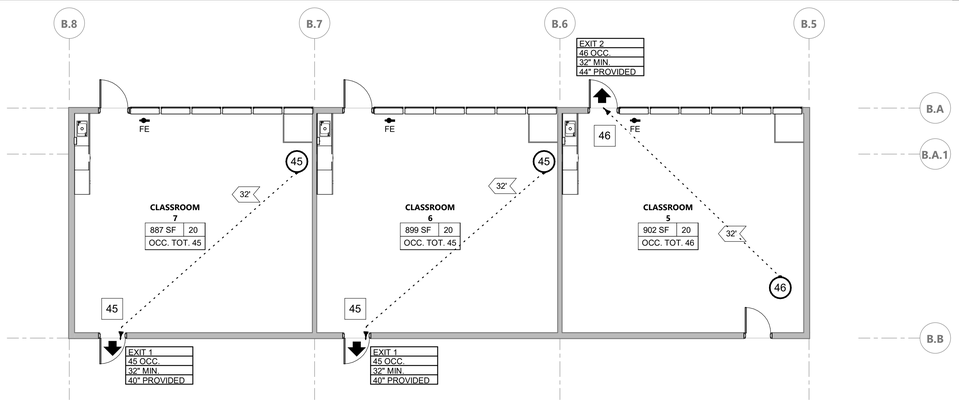


OCCUPANT CHART PER 2022 CBC TABLE 1004.5 - BUILDING B.1

ROOM #	ROOM NAME	FUNCTION	N SF	SF/OCC.	OCC. #	OCCUPANCY TYPE	MAXIMUM OCCUPANT LOAD W/ 1 EXIT TABLE 1006.2.1	MIN. CLR. DOOR EXIT WIDTH	# EXITS REQUIRED	# EXITS PROVIDED
BUILDING B.1										
A1	STORAGE	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	61 SF	300 SF	1	B	49	2'-8"	1	1
A2	MDF	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	85 SF	300 SF	1	B	49	2'-8"	1	1
A4	NURSE	BUSINESS AREAS	130 SF	150 SF	1	B	49	2'-8"	1	1
A5	OFFICE	BUSINESS AREAS	103 SF	150 SF	1	B	49	2'-8"	1	1
A6	PRINCIPAL	BUSINESS AREAS	119 SF	150 SF	1	B	49	2'-8"	1	1
A7	OFFICE	BUSINESS AREAS	127 SF	150 SF	1	B	49	2'-8"	1	1
A8	RECEPTION	BUSINESS AREAS	299 SF	150 SF	2	B	49	2'-8"	1	1
A9	STORAGE	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	33 SF	300 SF	1	B	49	2'-8"	1	1
L1	LIBRARY	LIBRARY STACK AREA	825 SF	100 SF	9	A-3	49	2'-8"	1	1
L2	OFFICE	BUSINESS AREAS	144 SF	150 SF	1	B	49	2'-8"	1	1
L3	CONFERENCE	ASSEMBLY WITHOUT FIXED SEATS UN-CONCENTRATED (TABLES AND CHAIRS)	222 SF	15 SF	15	B	49	2'-8"	1	1
L4	LIBRARY READING ROOM	LIBRARY READING ROOMS	892 SF	50 SF	18	A-3	49	2'-8"	1	2
OCCUPANT TOTAL:					52					

TRUE NORTH

EXIT ANALYSIS PLAN - BUILDING B.1 — 1/8" = 1'-0" — 2



OCCUPANT CHART PER 2022 CBC TABLE 1004.5 - BUILDING B.2

ROOM #	ROOM NAME	FUNCTION	N SF	SF/OCC.	OCC. #	OCCUPANCY TYPE	MAXIMUM OCCUPANT LOAD W/ 1 EXIT TABLE 1006.2.1	MIN. CLR. DOOR EXIT WIDTH	# EXITS REQUIRED	# EXITS PROVIDED
BUILDING B.2										
5	CLASSROOM	EDUCATIONAL CLASSROOM AREA	902 SF	20 SF	46	E	49	2'-8"	1	2
6	CLASSROOM	EDUCATIONAL CLASSROOM AREA	899 SF	20 SF	45	E	49	2'-8"	1	2
7	CLASSROOM	EDUCATIONAL CLASSROOM AREA	887 SF	20 SF	45	E	49	2'-8"	1	2
OCCUPANT TOTAL:					136					

TRUE NORTH

EXIT ANALYSIS PLAN - BUILDING B.2 — 1/8" = 1'-0" — 3

LEGEND - CODE ANALYSIS

1 HR RATED SEPERATION
2 HR RATED SEPERATION

OCCUPANCY TAG

ROOM NAME
101
150 SF | 15
OCC. TOT. 25

- ROOM NUMBER
- OCCUPANT LOAD FACTOR
- TOTAL OCCUPANCY CALCULATED
- ROOM AREA

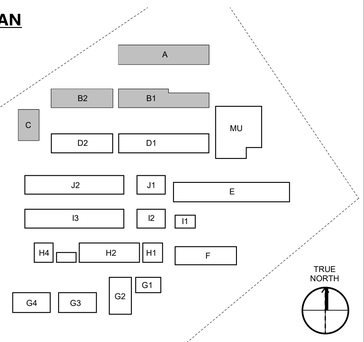
EGRESS WIDTH TAG

EXIT 01
123 OCC.
38" MIN.
36" PROVIDED

- EXIT LOCATION
- TOTAL OCCUPANTS CALCULATED
- MINIMUM EXIT WIDTH CALCULATED
- EXIT WIDTH PROVIDED

- BUILDING EXIT
- EGRESS DISTANCE
- PH — PANIC HARDWARE
- FE — FIRE EXTINGUISHER (FE)
- ### — OCCUPANTS EXITING, OR TOTAL OCCUPANTS THIS ROOM
- ### — OCCUPANTS ALONG PATH
- ILLUMINATED EXIT SIGN WALL MOUNTED. SEE ALSO ELECTRICAL LIGHTING PLANS

KEY PLAN



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PROFESSIONAL STAMP

LICENSED ARCHITECT — MARIANA ALVAREZ PARRA — C-36107 — REN. 01-31-25 — STATE OF CALIFORNIA

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SHEET TITLE
BLDG A, B, C - EXIT ANALYSIS

INCREMENT: INC.2

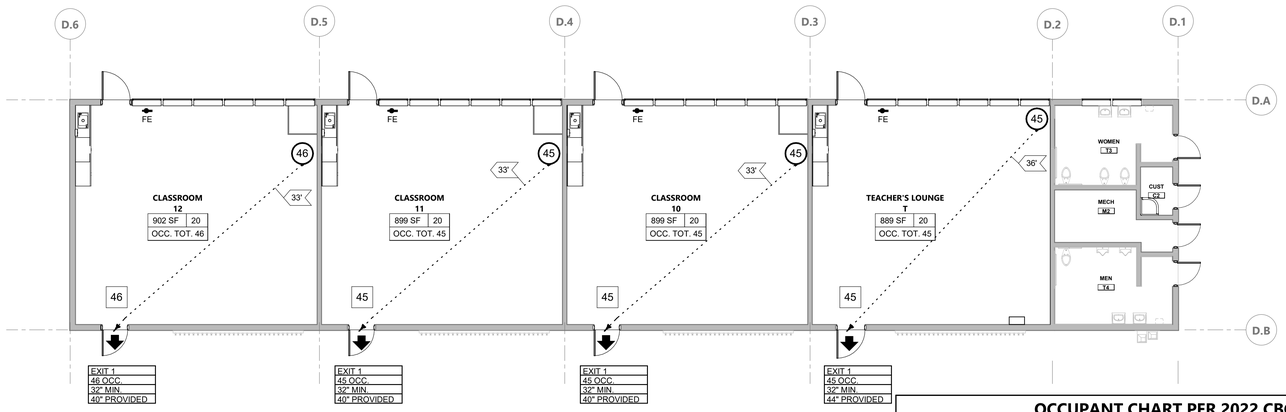
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2G-201

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 4:42:05 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



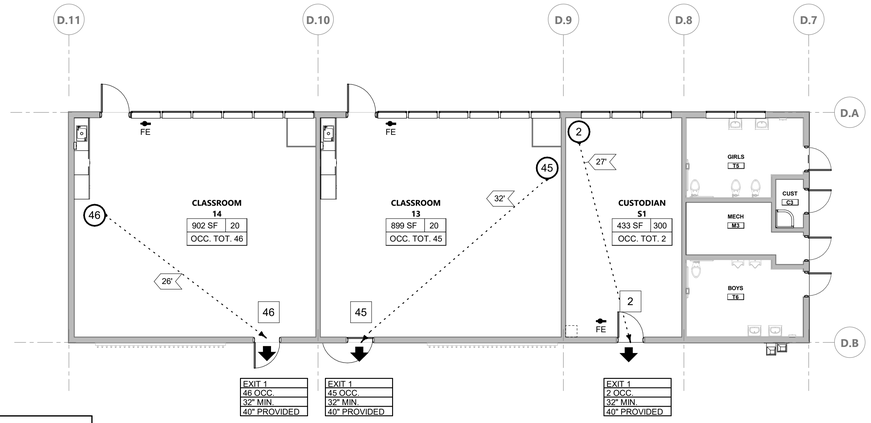
OCCUPANT CHART PER 2022 CBC TABLE 1004.5 - BUILDING D.1

ROOM #	ROOM NAME	FUNCTION	N SF	SF/OCC.	OCC. #	OCCUPANCY TYPE	MAXIMUM OCCUPANT LOAD W/ 1 EXIT TABLE 1006.2.1	MIN. CLR. DOOR EXIT WIDTH	# EXITS REQUIRED	# EXITS PROVIDED
BUILDING D.1										
10	CLASSROOM	EDUCATIONAL CLASSROOM AREA	899 SF	20 SF	45	E	49	2'-8"	1	2
11	CLASSROOM	EDUCATIONAL CLASSROOM AREA	899 SF	20 SF	45	E	49	2'-8"	1	2
12	CLASSROOM	EDUCATIONAL CLASSROOM AREA	902 SF	20 SF	46	E	49	2'-8"	1	2
T	TEACHER'S LOUNGE	EDUCATIONAL CLASSROOM AREA	886 SF	20 SF	45	E	49	2'-8"	1	2
OCCUPANT TOTAL:					181					

TRUE NORTH

EXIT ANALYSIS PLAN - BUILDING D.1

1/8" = 1'-0" | 1



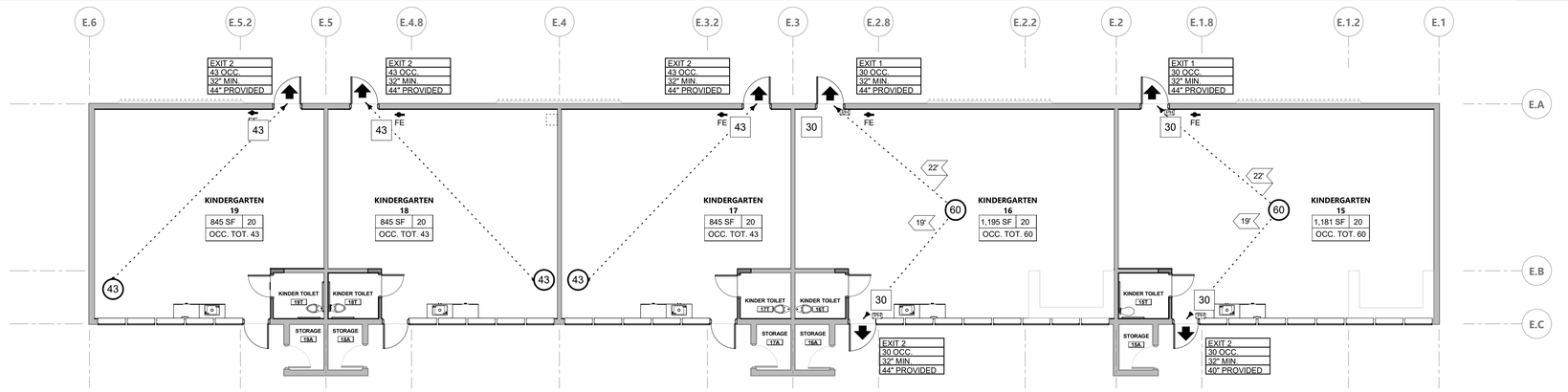
OCCUPANT CHART PER 2022 CBC TABLE 1004.5 - BUILDING D.2

ROOM #	ROOM NAME	FUNCTION	N SF	SF/OCC.	OCC. #	OCCUPANCY TYPE	MAXIMUM OCCUPANT LOAD W/ 1 EXIT TABLE 1006.2.1	MIN. CLR. DOOR EXIT WIDTH	# EXITS REQUIRED	# EXITS PROVIDED
BUILDING D.2										
13	CLASSROOM	EDUCATIONAL CLASSROOM AREA	899 SF	20 SF	45	E	49	2'-8"	1	1
14	CLASSROOM	EDUCATIONAL CLASSROOM AREA	902 SF	20 SF	46	E	49	2'-8"	1	1
S1	CUSTODIAN	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	433 SF	300 SF	2	E	49	2'-8"	1	1
OCCUPANT TOTAL:					93					

TRUE NORTH

EXIT ANALYSIS PLAN - BUILDING D.2

1/8" = 1'-0" | 2



OCCUPANT CHART PER 2022 CBC TABLE 1004.5 - BUILDING E

ROOM #	ROOM NAME	FUNCTION	N SF	SF/OCC.	OCC. #	OCCUPANCY TYPE	MAXIMUM OCCUPANT LOAD W/ 1 EXIT TABLE 1006.2.1	MIN. CLR. DOOR EXIT WIDTH	# EXITS REQUIRED	# EXITS PROVIDED
BUILDING E										
15	KINDERGARTEN	EDUCATIONAL CLASSROOM AREA	1,181 SF	20 SF	60	E	49	2'-8"	2	2
16	KINDERGARTEN	EDUCATIONAL CLASSROOM AREA	1,195 SF	20 SF	60	E	49	2'-8"	2	2
17	KINDERGARTEN	EDUCATIONAL CLASSROOM AREA	845 SF	20 SF	43	E	49	2'-8"	1	2
18	KINDERGARTEN	EDUCATIONAL CLASSROOM AREA	845 SF	20 SF	43	E	49	2'-8"	1	2
19	KINDERGARTEN	EDUCATIONAL CLASSROOM AREA	845 SF	20 SF	43	E	49	2'-8"	1	2
OCCUPANT TOTAL:					249					

TRUE NORTH

EXIT ANALYSIS PLAN - BUILDING E

1/8" = 1'-0" | 3

LEGEND - CODE ANALYSIS

1 HR RATED SEPERATION

2 HR RATED SEPERATION

OCCUPANCY TAG

ROOM NAME
101
150 SF | 15
OCC. TOT. 25

- ROOM NUMBER
- OCCUPANT LOAD FACTOR
- TOTAL OCCUPANCY CALCULATED
- ROOM AREA

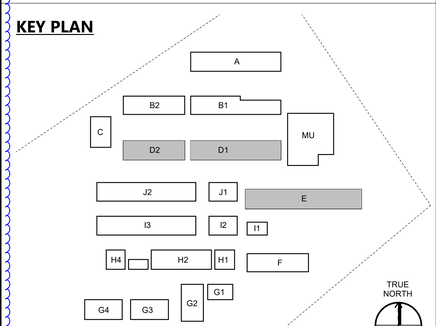
EGRESS WIDTH TAG

EXIT 01
123 OCC.
38" MIN.
36" PROVIDED

- EXIT LOCATION
- TOTAL OCCUPANTS CALCULATED
- MINIMUM EXIT WIDTH CALCULATED
- EXIT WIDTH PROVIDED

- BUILDING EXIT
- EGRESS DISTANCE
- PH — PANIC HARDWARE
- FE — FIRE EXTINGUISHER (FE)
- ### — OCCUPANTS EXITING, OR TOTAL OCCUPANTS THIS ROOM
- ### — OCCUPANTS ALONG PATH
- EXIT SIGN WALL MOUNTED. SEE ALSO ELECTRICAL LIGHTING PLANS

KEY PLAN



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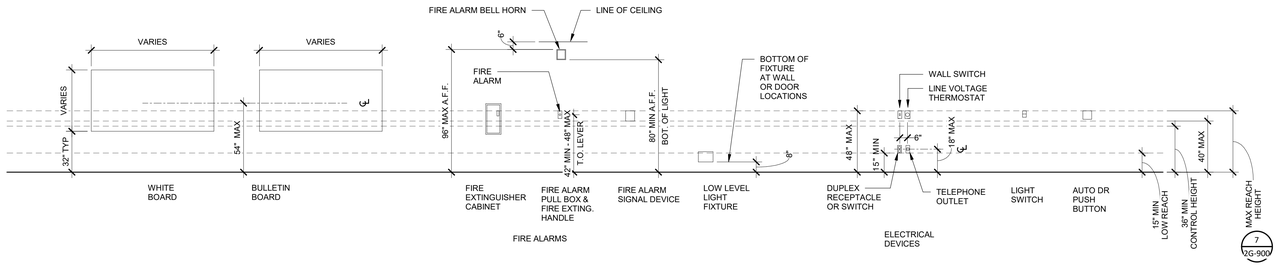
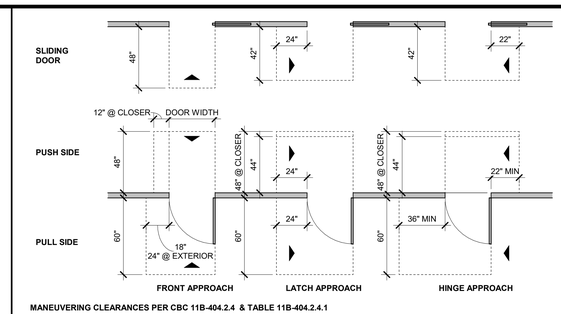
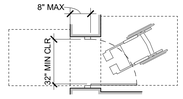


TYPICAL MOUNTING HEIGHTS

1/4" = 1'-0" | 11



MANEUVERING CLEARANCES PER CBC 11B-404.2.4 & TABLE 11B-404.2.4.1



CLEAR WIDTH PER CBC 11B-404.2.3 DOOR OPENINGS SHALL PROVIDE A CLEAR WIDTH OF 32 INCHES (813 MM) MINIMUM. CLEAR OPENINGS OF DOORWAYS WITH SWINGING DOORS SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90 DEGREES. OPENINGS MORE THAN 24 INCHES (610 MM) DEEP SHALL PROVIDE A CLEAR OPENING OF 36 INCHES (914 MM) MINIMUM. THERE SHALL BE NO DOORWAY, OR WITH THE REQUIRED CLEAR OPENING WIDTH LOWER THAN 34 INCHES (864 MM) ABOVE THE FINISH FLOOR OR GROUND. PROJECTIONS INTO THE CLEAR OPENING WIDTH BETWEEN 34 INCHES (864 MM) AND 80 INCHES (2032 MM) ABOVE THE FINISH FLOOR OR GROUND SHALL NOT EXCEED 4 INCHES (102 MM).

RECESSED DOORS PER CBC 11B-404.2.4.3 MANEUVERING CLEARANCES FOR FORWARD APPROACH SHALL BE PROVIDED WHEN ANY OBSTRUCTION WITHIN 18 INCHES (457 MM) OF THE LATCH SIDE AT AN INTERIOR DOORWAY, OR WITHIN 24 INCHES (610 MM) OF THE LATCH SIDE OF AN EXTERIOR DOORWAY, PROJECTS MORE THAN 8 INCHES (203 MM) BEYOND THE FACE OF THE DOOR, MEASURED PERPENDICULAR TO THE FACE OF THE DOOR OR GATE.

CLEAR AREA AT DOORS

1/4" = 1'-0" | 1

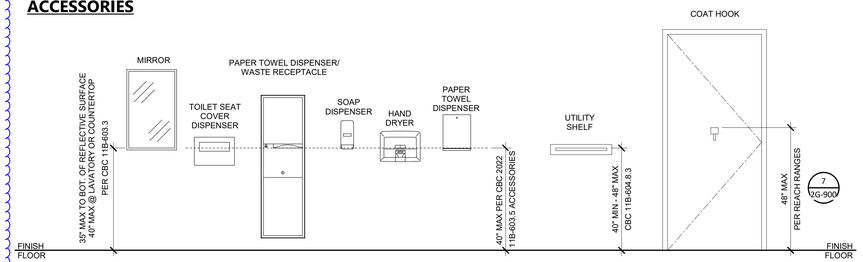
CLEARANCE TO FINISH SURFACE

FIXTURE	ADULT	FOR CHILDREN'S USE AGES 5-8	FOR CHILDREN'S USE AGES 9-12	CBC TABLE 11B-604.9
DISPENSER OR MIRROR HEIGHT	40" MAX.	40" MAX.	40" MAX.	
DRINKING FOUTAIN BUBBLER HEIGHT	36" MAX.	PARALLEL APPROACH 30" MAX.	PARALLEL APPROACH 30" MAX.	
DRINKING FOUTAIN KNEE CLEARANCE	27" MIN.	27" MIN.	27" MIN.	
HIGH D.F. SPOUT HEIGHT	38"-43"	38"-43"	38"-43"	
LAVATORY/SINK KNEE CLEARANCE	27" MIN.	24" MIN.	24" MIN.	
LAVATORY/SINK TOP HEIGHT	34" MAX.	31" MAX.	31" MAX.	
RAMP/STAIR HANDRAIL HEIGHT	34"-38"	34"-38"	34"-38"	
T.P. DISPENSER OUTLET (A.F.F. TO CENTER LINE OF OUTLET OR ROLL)	19" MIN	14"-17"	17"-19"	
TOILET CENTERLINE FROM WALL	17"-18"	12"-15"	15"-18"	
TOILET PAPER IN FRONT OF TOILET	7"-9"	7"-9"	7"-9"	
TOILET SEAT HEIGHT (AT SEAT LID)	17"-19"	12"-15"	15"-18"	
TOP OF GRAB BAR HEIGHT	33"-36"	20"-25"	25"-27"	
URINAL FLUSH HANDLE HEIGHT	44" MAX.	44" MAX.	44" MAX.	
URINAL LIP HEIGHT	17" MAX.	17" MAX.	17" MAX.	

PLUMBING FIXTURE CLEARANCES

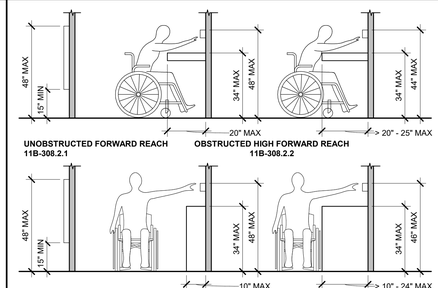
1/4" = 1'-0" | 21

ACCESSORIES



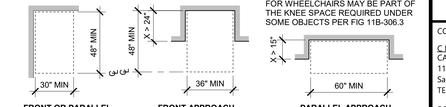
ADULT ACCESSIBLE ACCESSORY DIMENSION

1/2" = 1'-0" | 12



REACH RANGE

3/8" = 1'-0" | 7



CBC DEFINITION: CLEAR FLOOR SPACE IS THE MINIMUM UNOBSTRUCTED FLOOR OR GROUND SPACE REQUIRED TO ACCOMMODATE A SINGLE, STATIONARY WHEELCHAIR AND OCCUPANT.
CBC DEFINITION: WHEELCHAIR CLEARANCE: A CLEAR SPACE FOR A WHEEL CHAIR (AT LEAST 30"X48") MEASURED FROM THE FLOOR TO A HEIGHT OF 27 INCHES ABOVE THE FLOOR, OF SUFFICIENT SIZE TO INSCRIBE A CIRCLE WITH A DIAMETER NOT LESS THAN 60 INCHES IN SIZE.
PER CBC 11B-306 CLEAR FLOOR OR GROUND SPACE FOR WHEELCHAIRS MAY BE PART OF THE KNEE SPACE REQUIRED UNDER SOME OBJECTS PER FIG 11B-306.3

TURNING SPACE, CLEAR FLOOR SPACE

1/4" = 1'-0" | 2

KNEE AND TOE CLEARANCES PER CBC 11B-306

11B-306.1 GENERAL WHERE SPACE BENEATH AN ELEMENT IS INCLUDED AS PART OF CLEAR FLOOR OR GROUND SPACE OR TURNING SPACE, THE SPACE SHALL COMPLY WITH SECTION 11B-306. ADDITIONAL SPACE SHALL NOT BE PROHIBITED BENEATH AN ELEMENT BUT SHALL NOT BE CONSIDERED AS PART OF THE CLEAR FLOOR OR GROUND SPACE OR TURNING SPACE.

11B-306.2.5 WIDTH TOE CLEARANCE SHALL BE 30 INCHES (762 MM) WIDE MINIMUM.

11B-306.3.5 WIDTH KNEE CLEARANCE SHALL BE 30 INCHES (762 MM) WIDE MINIMUM.

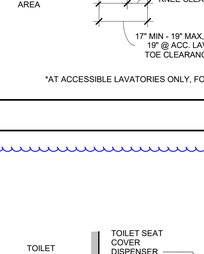
11B-606.1 GENERAL LAVATORIES AND SINKS SHALL COMPLY WITH SECTION 11B-606.

11B-606.5 WATER SUPPLY AND DRAIN PIPES UNDER LAVATORIES AND SINKS SHALL BE INSULATED OR OTHERWISE CONFIGURED TO PROTECT AGAINST CONTACT. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES AND SINKS.

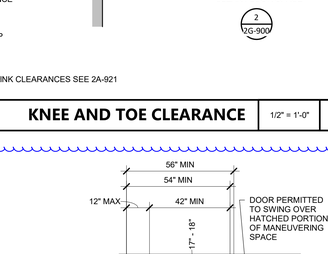
11B-606.6 ADJACENT SIDE WALL OR PARTITION LAVATORIES, WHEN LOCATED ADJACENT TO A SIDE WALL OR PARTITION, SHALL BE A MINIMUM OF 18 INCHES (457 MM) TO THE CENTERLINE OF THE FIXTURE.

11B-805.6 HAND WASHING FIXTURES, LAVATORIES AND SINKS ALL HAND WASHING FIXTURES, LAVATORIES AND SINKS SHALL COMPLY WITH SECTION 11B-606.

KNEE AND TOE CLEARANCE SECTION



KNEE AND TOE CLEARANCE PLAN @ ACCESSIBLE LAVATORY



*AT ACCESSIBLE LAVATORIES ONLY, FOR SINK CLEARANCES SEE 2A-921

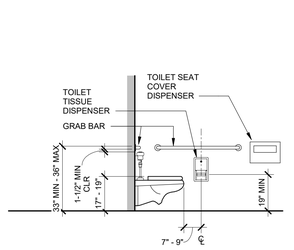
KNEE AND TOE CLEARANCE

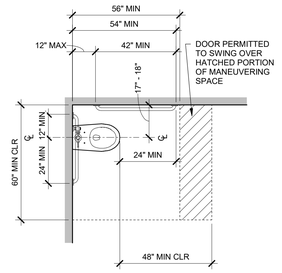
1/2" = 1'-0" | 3

11B-604.1 GENERAL WATER CLOSETS AND TOILET COMPARTMENTS SHALL COMPLY WITH SECTIONS 11B-604.2 THROUGH 11B-604.8.

11B-603.2.3 DOOR SWING DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE OR CLEARANCE REQUIRED FOR ANY FIXTURE. DOORS TO ACCESSIBLE WATER CLOSET COMPARTMENTS SHALL BE PERMITTED TO ENCROACH INTO THE TURNING SPACE WITHOUT LIMITATION. OTHER THAN DOORS TO ACCESSIBLE WATER CLOSET COMPARTMENTS, A DOOR, IN ANY POSITION, SHALL BE PERMITTED TO ENCROACH INTO THE TURNING SPACE BY 12 INCHES (305 MM) MAXIMUM.

11B-604.5 GRAB BARS GRAB BARS FOR WATER CLOSETS SHALL COMPLY WITH SECTION 11B-609. GRAB BARS SHALL BE PROVIDED ON THE SIDE WALL CLOSEST TO THE WATER CLOSET AND ON THE REAR WALL





ACCESSIBLE WATER CLOSET

3/8" = 1'-0" | 4

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

LICENSED ARCHITECT MARIANA ALVAREZ DE LA PEÑA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

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1936 Carlotta Drive
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MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

ACCESSIBILITY CLEARANCES

INC.2

DRAWN BY: Author JOB NUMBER: 23119.01

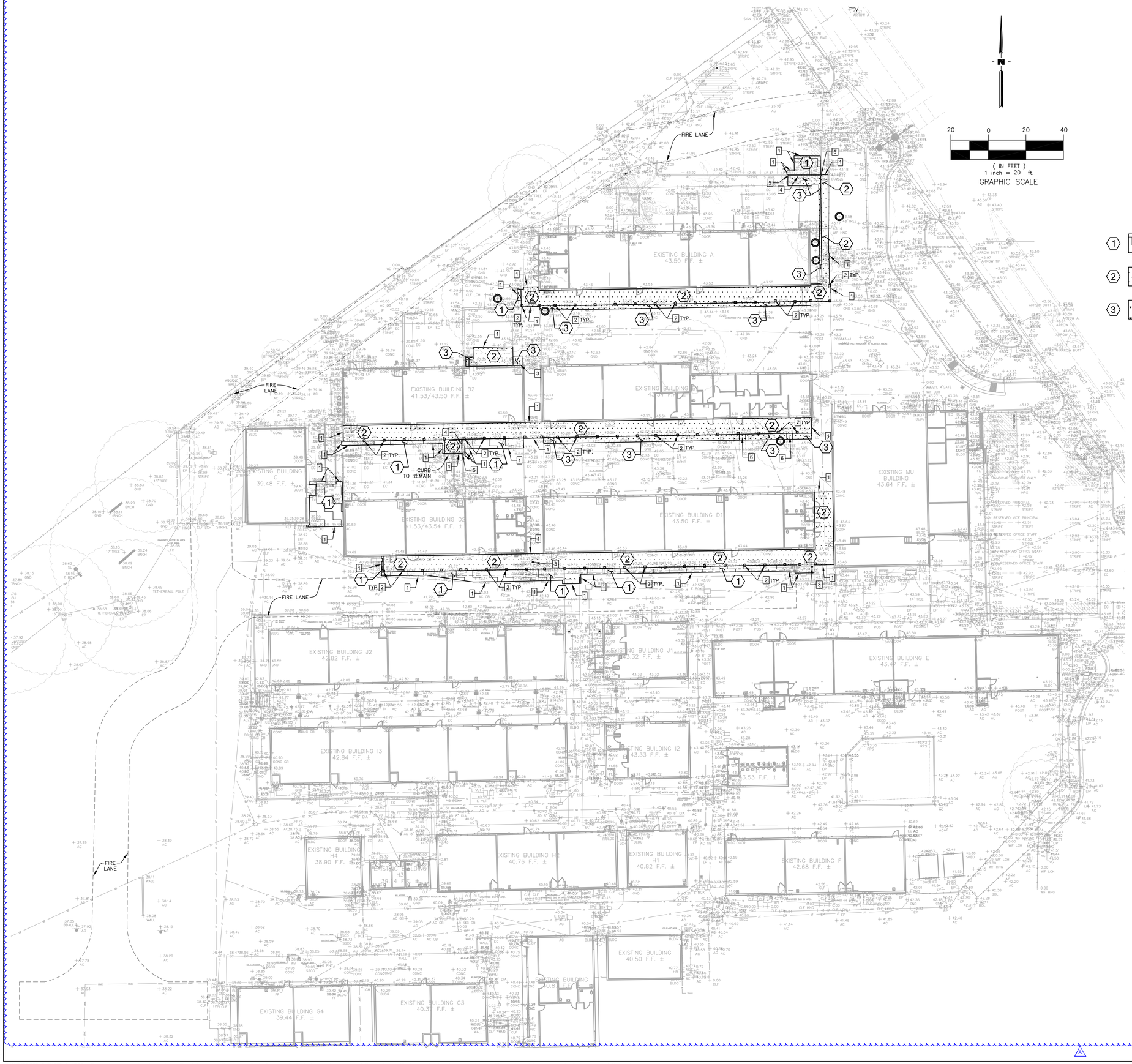
SHEET NO.

2G-900

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:50:45 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



N

20 0 20 40

(IN FEET)
1 inch = 20 ft.
GRAPHIC SCALE

LEGEND

- TREE TO REMAIN – PROTECT FROM DAMAGE.
- 1 — ASPHALT PAVING & AGGREGATE BASE ROCK TO BE REMOVED, REMOVE HEADER BOARD, TYP.
- 2 — CONCRETE TO BE REMOVED, REMOVE AGGREGATE BASE
- 3 — SHRUBS AND/OR LANDSCAPING TO BE REMOVED. GRUB OUT ALL VEGETATION/REMOVE BARK OR WOOD CHIPS. REMOVE PLANTER BOXES. PAVER BLOCKS TO BE REMOVED & REINSTALLED. REMOVE ANY IRRIGATION LINES OR VALVES.

1. SAWCUT ASPHALT OR REMOVE CONCRETE TO NEAREST CONTROL JOINT
2. POST & OVERHANG TO REMAIN. SAWCUT CONCRETE & FOOTING 7" FROM CENTER OF POST. VERIFY (E) FOUNDATIONS WITH AS-BUILT DRAWINGS. PROTECT FROM DAMAGE, TYP.
3. UTILITY BOX / CLEAN OUT TO REMAIN. PROTECT FROM DAMAGE, TYP.
4. REMOVE CONCRETE CURB
5. EXTENT OF CURB REMOVAL
6. REMOVE & RE-INSTALL (E) PAVERS TO (N) FG

NOTES:

1. THE LIMITS OF DEMOLITION SHOWN HEREON ARE TO PROVIDE THE CONTRACTOR WITH A GENERAL SCOPE OF WORK. PRECISE LIMITS OF PAVEMENT REMOVAL AND GRADING SHOULD BE TAKEN FROM THE GRADING AND DRAINAGE PLAN. THE CONTRACTOR SHOULD ALSO REFERENCE ARCHITECTURAL PLANS, AND THE CONSTRUCTION DOCUMENTS FOR A COMPLETE SCOPE OF WORK. (VERIFY ALL DEMOLITION WITH THE SCHOOL DISTRICT).

2. DEMOLITION WORK SHALL CONFORM TO CAL GREEN CODE SECTIONS 5.408.3 (CONSTRUCTION WASTE REDUCTION BY AT LEAST 50%) AND 5.408..4 (EXCAVATED SOIL AND LAND CLEARING DEBRIS), AND LOCAL CONSTRUCTION WASTE MANAGEMENT REQUIREMENTS. THE MOST STRINGENT CODE SHALL PREVAIL.

3. ALL SIGNS, POSTS, AND FOOTINGS TO BE REMOVED WITHIN THE LIMITS OF DEMOLITION UNLESS NOTED OTHERWISE.

4. REFER TO ORIGINAL DESIGN DRAWINGS, AVAILABLE FROM DISTRICT, FOR EXISTING BUILDINGS (FOOTINGS, MATERIALS, ETC.).

5. EXISTING TURF TO REMAIN. LANDSCAPE CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR IF REPLACEMENT IS REQUIRED DUE TO STAGING, CONSTRUCTION ACCESS, OR CONSTRUCTION ACTIVITY. REPAIR WITH SOD TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE. TURF AREAS FENCED DURING CONSTRUCTION SHALL BE MAINTAINED (MOWED, WATERED, AND FERTILIZED) BY CONTRACTOR.

WHERE NEW SOD IS INSTALLED, SHOVEL CUT EDGE OF EXISTING TURF VERTICAL AND STRAIGHT, AMEND SOIL AND GRADE TO RECEIVE NEW SOD FLUSH WITH EXISTING EDGES. DO NOT SCALE SOD REPAIR FROM THIS DRAWING. COORDINATE WITH GENERAL CONTRACTOR FOR EXTENT OF REPAIR REQUIRED TO RESTORE TURF DUE TO CONSTRUCTION ACTIVITY.

AGENCY APPROVAL DSA# 01-121400

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REGISTERED PROFESSIONAL ENGINEER
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Exp. 09/30/25
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STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

MT. DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
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MEADOW HOMES ES MODERNIZATION

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Concord, CA 94520

SHEET TITLE

DEMOLITION PLAN

DRAWN BY: KOM JOB NUMBER: 23119.01 CEI #: 3052

SHEET NO.

2C1.1

DATE: OCTOBER 25TH, 2024

CONSTRUCTION DOCUMENT

M:\3052 – Meadow Homes ES_DWG\3052_C1\1_DEMO.dwg 10-28-24 03:36:30 PM kim

Construction Contractor agrees that in accordance with generally accepted construction practices, construction contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property; that this requirement shall be made to apply continuously and not be limited to normal working hours, and construction contractor further agrees to indemnify and hold design professional harmless from any and all liability, real or alleged, in connection with the performance of work on this project, except for liability arising from the sole negligence of design professional.

UNAUTHORIZED CHANGES & USES: The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes to the plans must be in writing and must be approved by the preparer of these plans.

GRADING CONSTRUCTION DETAIL REFERENCES
SEE SHEETS 2C4.1 & 2C4.2

1. PEDESTRIAN AC PAVEMENT SECTION PER DETAIL 1 / 2C4.1
1A. AUTO AC PAVEMENT SECTION PER DETAIL 1 / 2C4.1
2. CONCRETE PAVING PER DETAIL 2 / 2C4.1
2A. COLORED CONCRETE PAVING PER DETAIL 2 / 2C4.1 (SEE NOTE #5 OF DETAIL 2 / 2C4.1)
3. (N) CONCRETE TO (E) CONCRETE PER DETAIL 3 / 2C4.1
4. (N) AC PAVEMENT TO (E) AC PAVEMENT PER DETAIL 4 / 2C4.1
5. (N) CONCRETE TO (N) AC PAVEMENT PER DETAIL 5 / 2C4.1
6. VERTICAL CURB PER DETAIL 2 / 2C4.2
7. PARKING BUMPER PER DETAIL 3 / 2C4.2
8. TRUNCATED DOMES PER DETAIL 4 / 2C4.2
9. CURB CUT RAMP PER DETAIL 1 / 2C4.2
10. SECTIONAL AT EXISTING BUILDING FOOTING PER DETAIL 12 / 2S-501
11. SECITONAL AT EXISTING POST FOOTING PER DETAIL 5 / 2S-501
12. (N) AC PAVEMENT AT (E) CONCRETE PER DETAIL 5 / 2C4.2

GRADING PLAN NOTES:

1. SAWCUT AND CONFORM TO (E) ASPHALT
2. CONFORM TO (E) CONCRETE AT NEAREST CONTROL JOINT
3. ADJUST UTILITY BOX / CLEAN OUT TO NEW FINISHED GRADE, TYP.
4. REINSTALL (E) PAVERS TO (N) FG

N

10 0 10 20
(IN FEET)
1 inch = 10 ft.
GRAPHIC SCALE

LEGEND

AC PAVEMENT

PEDESTRIAN CONCRETE

SLURRY SEAL (E) ASPHALT PAVING
REFER TO SPEC SECTION 32 12 36

FIRE LANE

SLURRY SEAL
OVERKOTE, CRACK
FILL & RESTRIPE

EXISTING BUILDING A
43.50 F.F. ±

EXISTING BUILDING B2
41.53/43.50 F.F. ±

EXISTING BUILDING B1
43.54 F.F. ±

EXISTING BUILDING D2
41.53/43.54 F.F. ±

EXISTING BUILDING D1
43.50 F.F. ±

EXISTING MU
BUILDING
43.64 F.F. ±

LIMITS OF GRADING

UNMARKED PVC IRRIGATION IN PLANTED AREAS

VERIFY DRY WELL IS ADA COMPLIANT IF NOT, INSTALL ADA COMPLAINT BOX

25LF RAMP @ 8.3% MAX., S.A.D.

HANDRAIL, S.A.D.

CONFORM TO (E) PAVERS

AGENCY APPROVAL DSA# 01-121400

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MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

DRAINAGE & GRADING PLAN

DRAWN BY: KOM JOB NUMBER: 23119.01 CEI #: 3052

SHEET NO.

2C2.1

DATE: OCTOBER 25TH, 2024

CONSTRUCTION DOCUMENT

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Construction Contractor agrees that in accordance with generally accepted construction practices, construction contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property; that this requirement shall be made to apply continuously and not be limited to normal working hours, and construction contractor further agrees to defend, indemnify and hold design professional harmless from any and all liability, real or alleged in connection with the performance of work on this project, excepting liability arising from the sole negligence of design professional.

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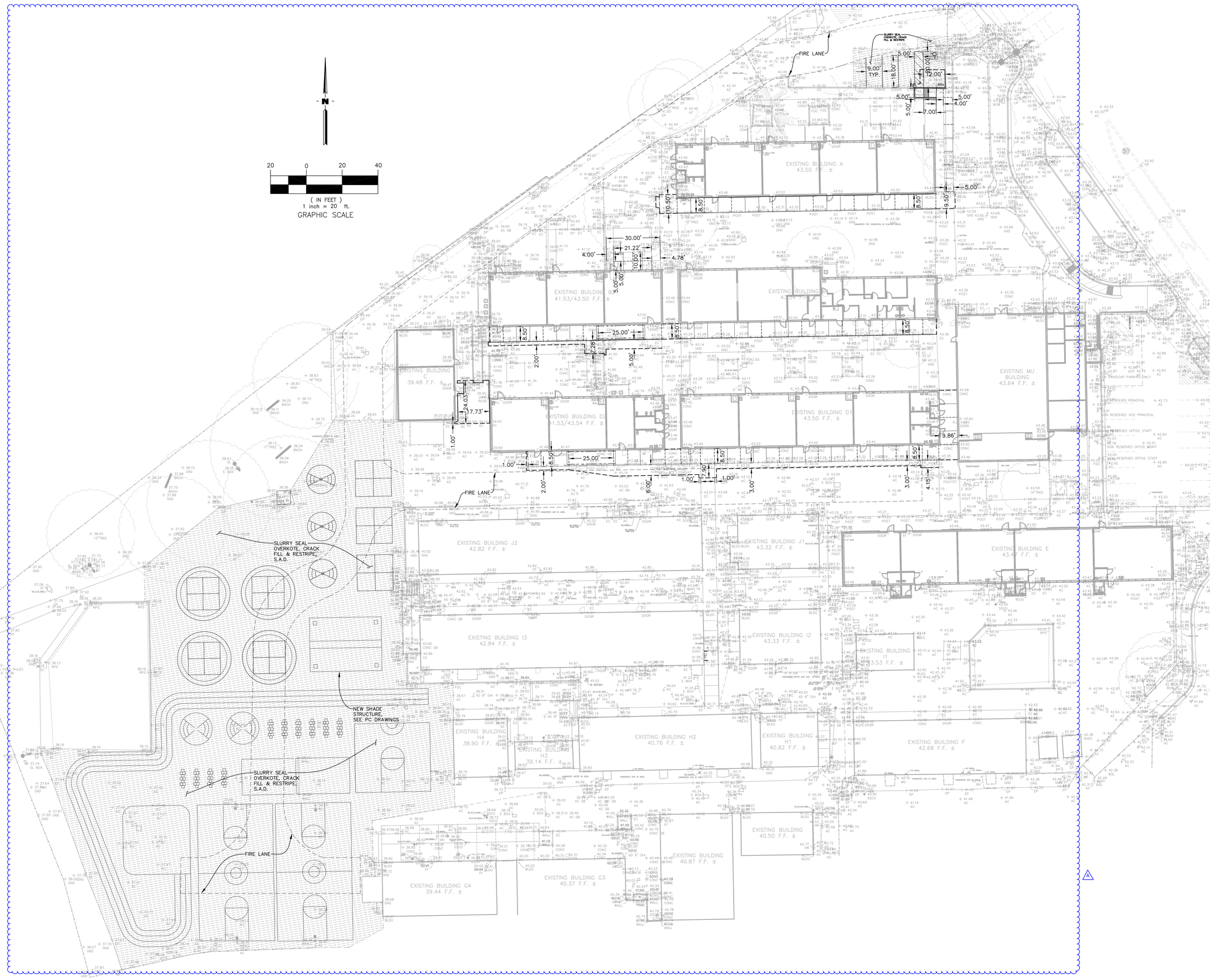

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NO.	DATE	DESCRIPTION
2	10-28-24	ADDENDUM 2

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SHEET TITLE

HORIZONTAL CONTROL PLAN

DRAWN BY: KOM JOB NUMBER: 23119.01 CEI #: 3052

SHEET NO.

2C3.1

DATE: OCTOBER 25TH, 2024

CONSTRUCTION DOCUMENT

GENERAL NOTES

1. All work shall be done in accordance with the following:
   a) Applicable sections of the State of California Department of Transportation Standard Specifications, latest edition, hereinafter called "Caltrans";
   b) California Plumbing Code and California Building Code Provisions
   c) AWWA standards and specifications;
   d) City of Concord Standard Details and Specifications where applicable;
   e) These plans and details shown hereon;
   f) Standards of the United States Department of Labor, Occupational Safety and Health Administration, Office of Standards and rules of the State Division of Industrial Safety.
   g) Latest edition of the California State Code of Regulations Title 24.
   h) The Project Specifications

Where conflicts exist between any of the above listed specifications, the most stringent listed specification shall prevail.

2. It is the responsibility of the Contractor to secure all permits necessary to perform the work, including but not limited to, work in the public right–of–way, grading, tree removal, and utility modifications.

3. Contractor shall supply all equipment, labor, and materials necessary to perform the work shown on this plan.

4. It shall be the responsibility of the various contractors to coordinate their work so as to eliminate conflicts and work toward the general good and completion of the entire project.

5. All workmanship and materials furnished by Contractor shall be of the kind and quality described in the specifications and shall be first class throughout. Neither final acceptance nor final payment by Owner shall relieve the Contractor of responsibility for faulty materials or workmanship.

6. In the event of any conflict of information shown in these plans or any conflict between these plans and the intent of a consistent and functional product, the Contractor shall so notify the Owner in writing, upon which notice the Owner shall resolve the conflict by the issuance of a written order, revised plans or both. The Contractor shall bear full cost and responsibility for work affected by such conflicts and performed by Contractor prior to such notice to the Owner and issuance of such order and/or revised plans.

7. Contractor shall provide adequate dust control at all times as required by Owner's representative.

8. Contractor shall exercise all necessary caution to avoid damage to any existing trees, or surface improvements, or to any existing drainage structure, water structures, sewer cleanouts, manholes, or junction boxes for underground electric, telephone, or cable TV, or storm sewer, sanitary sewer, water line, and underground utilities, which are to remain in place and shall bear full responsibility for any damage thereto.

9. All known existing utility lines are shown for information only. Contractor shall exercise all necessary caution to avoid damage to any existing utility lines or facilities to remain in place, whether or not such lines or facilities are shown on these plans, and shall bear full responsibility for any damage thereto. Contractor is advised to Contact Underground Service Alert (USA) at (800) 642–2444 or a private Underground Locater Service (at contractor's expense) and the affected utility company for marking underground lines prior to beginning work.

10. Inspection of work: The City of Concord Public Works Department will inspect all work involving conformance to encroachment permit. A representative of Owner will inspect all work, including grades and compaction of earthwork. Contractor shall notify the City of Concord public works at least forty eight (48) hours prior to work within the public ROW.

11. Engineer shall have no responsibility for Contractor's work methods and procedures, jobsite conditions, jobsite safety or adherence to safety procedures and requirements.

12. The Contractor agrees that, in accordance with generally accepted construction practices, the Contractor will be required to assume sole and complete responsibility for jobsite conditions during the course of construction of the project, including safety of all persons and property. This requirement shall apply continuously and not be limited to normal working hours. The contractor agrees to defend, indemnify and hold Owner and Engineer harmless from any and all liability, real or alleged, in connection with the performance of the work on this project, exempting liability arising from the sole negligence of the Engineer or Owner.

13. Parking lot striping shall be laid out in accordance with the Horizontal Control Plan, and in accordance with the City of Concord Standard specifications.

14. Contractor shall provide appropriate traffic control measures as outlined in the City of Concord specifications and as directed by the City Engineer.

GRADING AND PAVING NOTES

1. Work shall consist of all clearing, grubbing, and stripping, preparation of land to be filled, excavation, spreading, compaction and control of the fill, and all subsidiary work necessary to complete the grading to conform to the lines, grades and slopes, as shown on the accepted plans.

2. Not used.

3. Not used.

4. The Contractor shall notify the soils testing firm (hired by the district) during construction at least forty–eight (48) hours prior to commencement of any grading operations on–site.

5. A representative of the soils testing firm shall be on site during grading operations and shall perform such testing as deemed necessary. The representative shall observe the grading operation for conditions that should be corrected, and identify those conditions with recommended corrective measures to the Contractor.

6. In the event that any unusual conditions not covered by these notes and the Soils Investigation are encountered during grading operations, the soils testing firm shall be immediately notified for recommendations.

7. All existing trash, debris, roots, tree remains and other rubbish shall be removed from the site so as to leave the areas that have been disturbed with a neat and finished appearance free from unsightly debris. No burning shall be permitted.

8. Contractor shall grade to the line and elevations shown on the plan within the following horizontal and vertical tolerance, in the areas indicated:

	Horizontal	Vertical
a. Building Pad Subgrade	0.50'+	0.05'+
b. Driveway and parking area subgrade preparation	0.05'+	0.05'+

9. All aggregate base material and the handling and placement thereof shall be in accordance with the Caltrans Standard Specifications. Aggregate base materials shall be Class II.

10. Compacted building pads shall extend 5 feet minimum beyond building footprint.

11. Asphalt concrete (AC) shall be Type A, 3/4" maximum aggregate size for base course and 1/2" maximum aggregate size for surface course, as specified for surface course material in the Caltrans Specification. $\frac{1}{2}$" mix to be used for vehicular asphalt paving. $\frac{3}{8}$" mix to be used in non–vehicular asphalt paving. 2" thickness may be placed in one lift.

12. SC–70 liquid asphalt prime coat conforming to the provisions of the Caltrans Specifications shall be applied at the rate of 0.15+ gallons per square yard to surface of aggregate base prior to placement of asphalt concrete.

13. SS–I emulsified asphalt paint binder conforming to the provisions of the Caltrans Specification shall be applied at the rate of 0.07+ gallons per square yard to existing asphalt concrete surface and vertical concrete surfaces to receive asphalt concrete.

14. SS–I emulsified liquid asphalt seal coat conforming to the provisions of the Caltrans Specifications shall be diluted with equal parts water and applied at the rate of 0.15+ gallons per square yard to surface of the new finished asphalt paving surface and existing asphalt paving surfaces to remain in place. Existing asphalt surfaces shall be cleaned prior to seal coat operation.

15. Contractor shall adjust all inlets, valve boxes, manhole rims, and sewer cleanouts to new finish grade.

16. Materials handling and placement of Portland Cement Concrete shall be in accordance with applicable sections of the Caltrans Standard Specifications and these plans and details shown hereon. Concrete to be Class A, 6 sack, 3000 PSI concrete.

UNDERGROUND NOTES

1. Contractor shall expose and verify location and elevation of existing utilities, including sanitary and storm sewers, and water lines before constructing new facilities. Contractor shall cap existing irrigation lines where necessary so that the remaining irrigation system will continue to be operational for the existing landscaping to remain.

2. Materials for pipe, storm water inlets and cleanouts and installation procedures shall be in accordance with applicable California Building Code sections and the City of Concord Standard Specifications, the Project Specifications and these plans and details shown hereon.

   Storm Sewer Pipe designated "SD" shall be SDR 26 PVC pipe or HDPE ADS N–12 pipe appropriate for such use. Storm Sewer Pipe designated "DIP" shall be ductile iron pipe appropriate for such use.

   Storm Sewer Pipe designated "RCP" shall be reinforced concrete pipe appropriate for such use.

   Sanitary Sewer Pipe designated "SS" shall be vitrified clay pipe or SDR 26 PVC pipe appropriate for such use.

   Water Pipe designated "WATER" or "W" shall be Schedule 80 PVC pipe appropriate for such use

   Fire Lines designated "FIRE LINE" or "F" shall be AWWA C900 PVC – DR 18 pipe appropriate for such use

3. Ensure grates are ADA compliant for all existing inlets to remain in travelled access paths, subject to pedestrian traffic. Replace as necessary.

4. All trench excavation and backfill for sewer lines shall conform to requirements of the City of Concord Standard Specifications. Jetting of backfill materials to achieve compaction is not allowed.

5. All trenches and excavations shall be constructed in strict compliance with the applicable sections of California and Federal O.S.H.A. requirements and other applicable safety ordinances. Contractor shall bear full responsibility for trench shoring design and installation.

6. Materials for pipe and installation requirements for domestic water lines shall be in accordance with applicable California Plumbing Code sections and the City of Concord Standard Specifications and these plans and details shown hereon.

7. Soils on the site have been found to be corrosive. All buried metallic pipes, fittings and appurtenances associated with the water pipelines shall be encased in 8–mil polyethylene per AWWA C–105. All buried copper water service lines shall be encased in 6–mil polyethylene sleeve in accordance with AWWA C–105

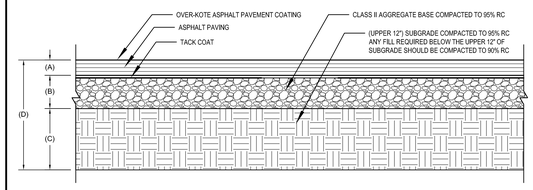
LEGEND

DESCRIPTION	PROPOSED	EXISTING
PROPERTY LINE		
CENTERLINE		
AC PAVEMENT		
PEDESTRIAN CONCRETE		
SLURRY SEAL		
CURB & GUTTER		
VERTICAL CURB		
ASPHALT EDGE /SAWCUT		
EXPANSION JOINT		
SCORE JOINT		
VALLEY GUTTER		
TRENCH DRAIN		
PERF PIPE		
RAINWATER LEADER		
STORM LINE		SD
SANITARY LINE		SS
WATER LINE		W
GAS LINE	G	
FENCE		X
ROLLING FENCE		
STORM DRAIN INLET		
END SECTION		
END SECTION MITERED DRAIN GRATE		
BOLLARD		
HYDRANT		
FDC		
PIV		
THRUST BLOCK		
SOV		
CHECK VALVE		
BACKFLOW		
LIGHTING POLE		
EV CHARGING STATION		
ELECTROLIER		
ELECTROLIER CONDUIT & CABLE W/PULL BOX		
DIRECTION & RATE OF SLOPE	0.015	
SWALE		
CONTOUR		

ABBREVIATIONS

AB	AGGREGATE BASE	LTB	LIME TREATED BASE
AC	ASPHALT CONCRETE	(ME)	MATCH EXISTING ELEVATION
ACC	ACCESSIBLE	MH	MANHOLE
ARCH	ARCHITECTURAL	ML	MONUMENT LINE
BS	BOTTOM OF STEP	(N)	NEW
BW	BACK OF WALK ELEVATION	PAV	PAVEMENT SURFACE ELEVATION
BOW	BOTTOM OF WALL ELEVATIONS	℄	PROPERTY LINE
CB	CATCH BASIN	PP	PERFORATED PIPE
CI	CAST IRON	RIM	RIM ELEVATION
℄	CENTER LINE	RS	TOP OF RAT SLAB ELEVATION
CLF	CHAIN LINK FENCE	RWL	RAIN WATER LEADER
C&G	CURB AND GUTTER	S=	SLOPE
CONC	CONCRETE	SD	STORM DRAIN
C	CONCRETE ELEVATION	S.A.D.	SEE ARCHITECT DRAWINGS
DWY	DRIVEWAY	S.E.D.	SEE ELECTRICAL DRAWINGS
E	ELECTRICAL	S.L.D.	SEE LANDSCAPE DRAWINGS
(E)	EXISTING	S.P.D.	SEE PLUMBING DRAWINGS
EBOX	ELECTRICAL BOX	SG	SUBGRADE ELEVATION
EC	EDGE OF CONCRETE	SS	SANITARY SEWER
EP	EDGE OF PAVEMENT	SSCO	SANITARY SEWER CLEANOUT
EV	ELECTRICAL VAULT	S/W	SIDEWALK
F	FIRE LINE	STLT	STREET LIGHT
FG	FINISH GRADE	T	TELEPHONE
FNC	FENCE	TC	TOP OF CURB
FH	FIRE HYDRANT	TD	TRENCH DRAIN
FF	FINISHED FLOOR ELEVATION	TILE	TOP OF TILE ELEVATION
FL	FLOW LINE	TOE	TOE OF BANK
FOC	FACE OF CURB	TOW	TOP OF WALL ELEVATION
G	GAS	TP	TELEPHONE POLE
GB	GRADE BREAK	TR	TOP OF RAMP
GND	GROUND ELEVATION	TS	TOP OF STEP
JP	JOINT POLE	TSB	TRAFFIC SIGNAL BOX
ICV	IRRIGATION CONTROL VALVE	VLT	VAULT
INV	INVERT	W	WATER
LF	LINEAR FEET	WV	WATER VALVE
LS	LANDSCAPE		

SECTION	TRAFFIC CONDITION	(A) ASPHALTIC CONCRETE (INCHES)	(B) CLASS 2 AGGREGATE BASE	(C) TOTAL THICKNESS
1	AUTO PARKING (TI = 4.5)*	2.5"	8"	10.5"
1A	PEDESTRIAN TRAFFIC	2.5"	6"	8.5"



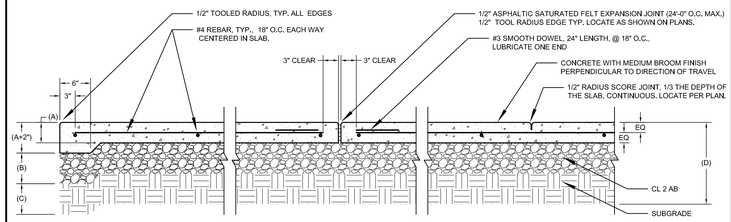
NOTES:

* GEOTECHNICAL ENGINEER TO VERIFY PAVEMENT SECTION THICKNESS BASED ON R-VALUE TESTING OF THE SUBGRADE SOILS DURING CONSTRUCTION.

1 AC PAVEMENT

SCALE: NTS

SECTION	CONCRETE SLAB THICKNESS (A)	CL 2 BASE / COMPACTION (B)	UPPER 12" SUBGRADE COMPACTION (C)	TOTAL THICKNESS (D)	ANY REQUIRED FILL BELOW UPPER 12" SUBGRADE COMPACTION
2/2A CONCRETE PAVING - PEDESTRIAN	4"	6" / 95% RC	90% RC	10"	90% RC

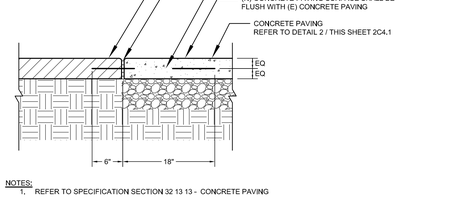


NOTES:

1. SCORE JOINTS SHALL BE PLACED A MAXIMUM OF 8'-0" O.C. REFER TO PLAN FOR EXACT LOCATIONS.
2. SCORE JOINTS TO BE 1/8" WIDE MAXIMUM, 1/2" RADIUS BOTH SIDES, SCORE DEPTH SHALL BE 1/3 OFCONCRETE PAVING DEPTH.
3. ADJACENT GRADE TO BE 1-1/2" BELOW CONCRETE IN PLANTING AND 1" BELOW CONCRETE IN SODDED TURF AND 1/2" BELOW CONCRETE IN SEEDED TURF.
4. REFER TO SPECIFICATION SECTION 32 13 13 - CONCRETE WORK FOR CONCRETE MIX DESIGN CRITERIA
5. CONTRACTOR SHALL INSTALL COLORED CONCRETE IN AREAS SHOWN IN SHEET 2C2.1, GRADING & DRAINAGE PLAN. CONCRETE COLOR SHALL BE INTEGRAL COLOR TO MATCH ADJACENT CONCRETE PAVING TO REMAIN.

2 2A CONCRETE PAVING

SCALE: NTS

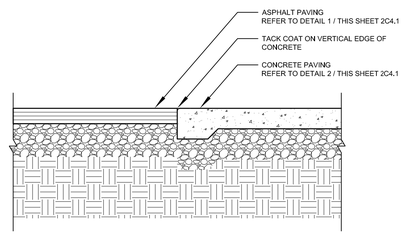


NOTES:

1. REFER TO SPECIFICATION SECTION 32 13 13 - CONCRETE PAVING

3 (N) CONCRETE TO (E) CONCRETE

SCALE: NTS

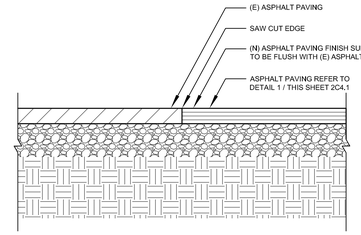


NOTES:

1. CONCRETE AND ASPHALT SURFACES SHALL BE FLUSH.
2. ASPHALT & OVER-KOTE SURFACING SHALL BE REMOVED FROM CONCRETE SURFACE PRIOR TO COMPETION.

5 (N) CONCRETE TO (N) AC PAVEMENT

SCALE: NTS



4 (N) AC PAVEMENT TO (E) AC PAVEMENT

SCALE: NTS

AGENCY APPROVAL DSA# 01-121400

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REGISTERED PROFESSIONAL ENGINEER
MATTHEW PAUL MARTIN
No. C 68770
Exp. 09/30/25
CIVIL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
2A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE

PROJECT OWNER & TITLE

MT. DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, CA 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

NOTES, DETAILS, & LEGEND

DRAWN BY: KOM JOB NUMBER: 23119.01 CEI #: 3052

SHEET NO.

2C4.1

DATE: OCTOBER 25TH, 2024

CONSTRUCTION DOCUMENT

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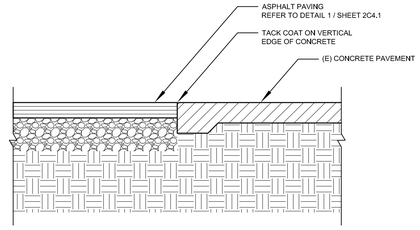
Construction Contractor agrees that in accordance with generally accepted construction practices, construction contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property; excepting liability arising from the sole negligence of design professional. Contractor agrees to defend, indemnify and hold design professional harmless from any and all liability, real or alleged in connection with the performance of work on this project; excepting liability arising from the sole

UNAUTHORIZED CHANGES & USES: The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes to the plans must be in writing and must be approved by the preparer of these plans.



NOTES:
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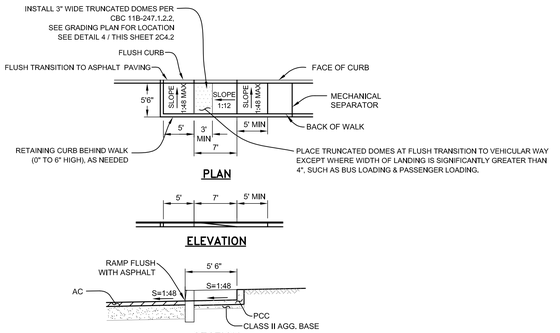
A

5 (N) AC PAVEMENT TO (E) CONCRETE

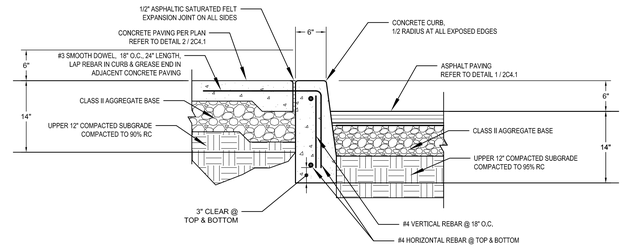
SCALE: NTS



NOTES:
1. ALL SLOPED SURFACES SHALL BE ROUGH BROOM FINISH FOR MARKED CONTRAST FROM SIDEWALK FINISH.
2. SLOPES WITHIN VEHICLE PULL-UP SPACE SHALL NOT EXCEED 1:48. (11B-503.4)

1 CURB CUT RAMP

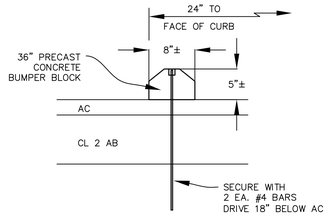
SCALE: NTS



NOTES:
1. TOP OF CURB TO SLOPE WITH ADJACENT PAVING
2. REFER TO SPECIFICATION SECTION 32 12 16 - ASPHALT PAVING
3. REFER TO SPECIFICATION SECTION 32 13 13 - CONCRETE PAVING

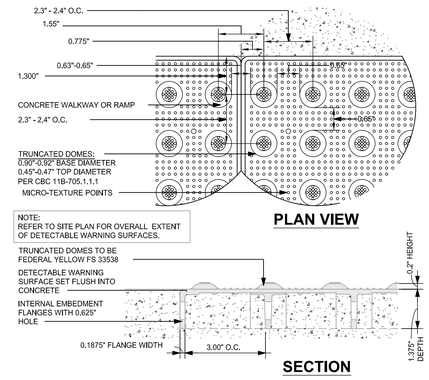
2 VERTICAL CURB

SCALE: NTS



3 PARKING BUMPER

SCALE: NTS



4 TRUNCATED DOME

SCALE: NTS

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DRAWN BY: KOM JOB NUMBER: 23119.01 CEI #: 3052

SHEET NO.

2C4.2

DATE: OCTOBER 25TH, 2024

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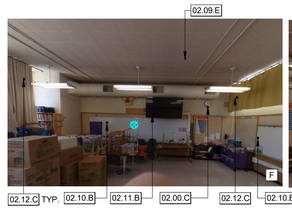



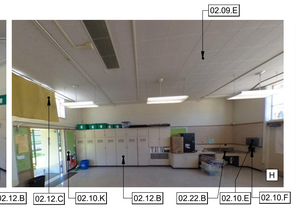

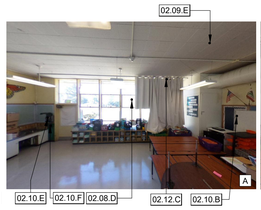

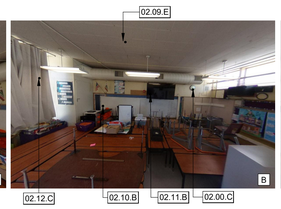

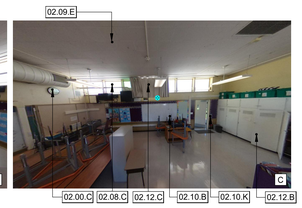

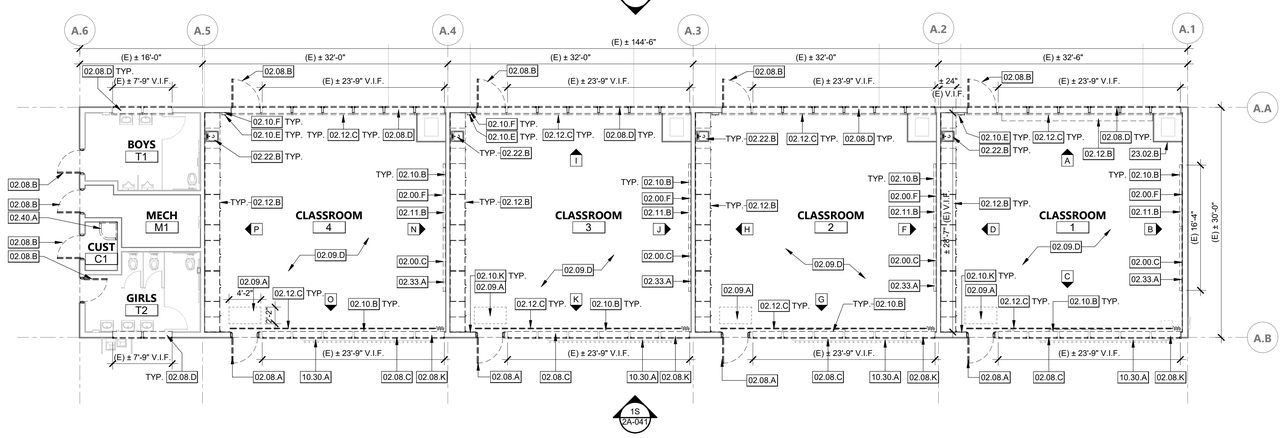

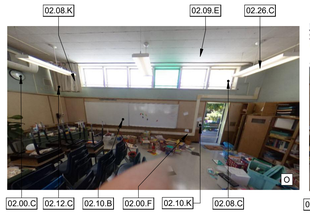

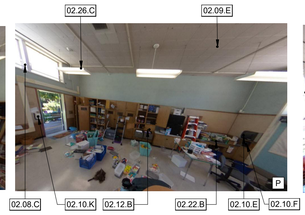

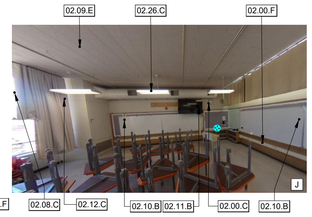

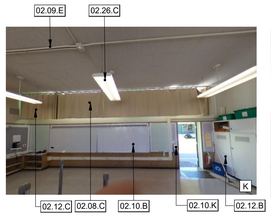





KEYNOTES

02.00.C	(E) CLOCK TO BE REMOVED, PREPARE FOR NEW CLOCK TO BE INSTALLED. S.T.D.
02.00.F	(E) WIRE MOLD TO BE REMOVED, S.T.D.
02.08.A	(E) DOOR, THRESHOLD AND ASSOCIATED HARDWARE TO BE DEMOLISHED. WOOD FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR. SALVAGE HARDWARE AND RETURN TO DISTRICT
02.08.B	(E) DOOR AND ASSOCIATED HARDWARE TO BE DEMOLISHED. WOOD FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR. SALVAGE HARDWARE AND RETURN TO DISTRICT
02.08.C	(E) CLERESTORY WINDOW AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.08.K	(E) CLERESTORY WINDOW AND FRAME TO BE DEMOLISHED. PREPARE FOR (N) WALL INFILL IN THAT OPENING.
02.09.A	EXISTING FINISHES DEMOLITION
02.09.D	(E) FLOORING AND WALL BASE TO BE DEMOLISHED. PREPARE FOR NEW FLOORING.
02.09.E	(E) GLUE-UP CEILING TILES TO BE DEMOLISHED. PATCH, CLEAN SURFACE, AND SMOOTH OUT. PROTECT (E) SUBSTRATE FRAMING FOR ATTACHMENT OF NEW CEILING PANELS
02.10.B	(E) WHITEBOARDS AND TACKBOARDS TO BE DEMOLISHED
02.10.E	(E) PAPER TOWEL DISPENSER TO BE DEMOLISHED
02.10.F	(E) SOAP DISPENSER TO BE DEMOLISHED
02.10.K	(E) HAND SANITIZER DISPENSER TO BE REMOVED & REINSTALLED
02.11.B	REMOVE/SALVAGE (E) TV & BRACKET. RETURN TO DISTRICT.
02.12.B	(E) CABINETS, COUNTERTOPS, BACKSPLASH, BOOKSHELVES, AND RELATED ACCESSORIES TO BE DEMOLISHED
02.12.C	(E) WINDOW COVERINGS AND TRACK TO BE DEMOLISHED
02.22.B	(E) SINK TO BE DEMOLISHED AND PREPARE TO RECIEVE NEW SINK AND CABINET, S.P.D.
02.26.C	(E) LIGHT FIXTURES TO BE DEMOLISHED. PATCH AND PREPARE FOR NEW LIGHT FIXTURES.
02.33.A	(E) TACKABLE WALL PANEL AND WOOD TRIM TO BE DEMOLISHED, TYP. FOR ALL WALLS
02.40.A	(E) FLOOR SINK TO BE DEMOLISHED AND REPLACED
06.00.B	(E) CASEWORK TO REMAIN. PROTECT IN PLACE.
08.00.B	(E) WINDOW TO REMAIN
10.00.F	(E) WHITEBOARDS TO REMAIN
10.30.A	(E) COAT HOOKS TO BE REMOVED AND REINSTALLED
23.02.B	(E) HVAC HOUSING AND DUCTWORK TO REMAIN AND BE PROTECTED DURING CONSTRUCTION, PAINT

LEGEND - DEMOLITION

- (E) 2X WOOD FRAMED WALL TO BE DEMOLISHED
- (E) DOOR TO BE DEMOLISHED
- (E) DOOR & FRAME TO REMAIN AND BE PAINTED
- (E) WINDOW & FRAME TO BE DEMOLISHED
- (E) 2X WOOD FRAMED WALL TO REMAIN
- (E) CONSTRUCTION TO BE REMOVED
- X — REFERENCE PHOTO KEY

DEMOLITION NOTES

1. IN ACCORDANCE WITH PERTINENT ITEMS OF THESE NOTES AND THOSE ITEMS SO INDICATED ON THE DRAWINGS "CAREFULLY" DEMOLISH AND REMOVE FROM THE JOB SITE THOSE ITEMS SCHEDULED TO BE SO DEMOLISHED AND REMOVED.
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7. VISIT THE SITE AND VERIFY THE EXTENT AND LOCATION OF SELECTIVE DEMOLITION REQUIRED.
8. CAREFULLY IDENTIFY LIMITS OF SELECTIVE DEMOLITION.
9. MARK INTERFACE SURFACES AS REQUIRED TO ENABLE WORKMAN ALSO TO IDENTIFY ITEMS TO BE REMOVED AND ITEMS TO BE LEFT IN PLACE INTACT.
10. PREPARE AND FOLLOW AN ORGANIZED PLAN FOR DEMOLITION AND REMOVAL OF ITEMS.
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14. REPLACEMENTS: IN THE EVENT OF DEMOLITION OF ITEMS NOT SO SCHEDULED TO BE DEMOLISHED, PROMPTLY REPLACE SUCH ITEMS TO THE APPROVAL OF THE ARCHITECT AND AT NO ADDITIONAL COST TO THE OWNER.
15. SEE ASBESTOS & LEAD IN PAINT SURVEY REPORT FOR MEADOW HOMES ELEMENTARY SHOOL PROVIDED BY ENVIRO-S.T.A.R. FOR REQUIRED ABATEMENT. BASED ON THE REPORT PROVIDED, MATERIALS IDENTIFIED FOR REMOVAL WILL BE REMOVED BY AN ABATEMENT CONTRACTOR PROPERLY LICENSED AND REGISTERED TO DO ASBESTOS & LEAD ABATEMENT.
16. TERMINATE ALL ELECTRICAL CONDUITS CONTAINED IN WALLS TO BE DEMOLISHED PER N.E.C. 2023. CONDUITS FEEDING DEMOLISHED AREAS, BUT CONTAINED WITHIN CONSTRUCTION TO REMAIN MAY BE ABANDONED IN PLACE.
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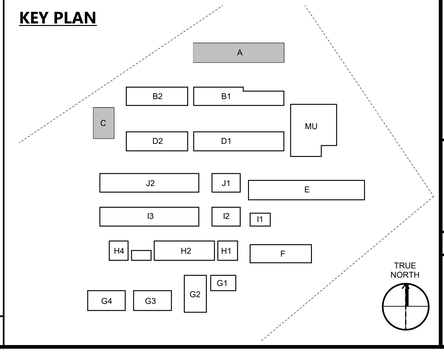
18. SEE PLASTER DEMOLITION & REPAIR NOTES ON A-911 PRIOR TO DEMOLITION OF PLASTER ASSEMBLIES

KEY PLAN



AGENCY APPROVAL DSA# 01-121400

196

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MECHANICAL ENGINEER
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ELECTRICAL ENGINEER
ATIUM ENGINEERING
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KMM Services Inc.
5433 El Camino Ave. Ste 5
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PROFESSIONAL STAMP

LICENSED ARCHITECT · MARINA ALVAREZ-PARGA · C-36107 · REN. 01-31-25 · STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

DEMOLITION PLAN - BLDG A, C

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.

2A-021

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DEMO FLOOR PLAN - BUILDING A

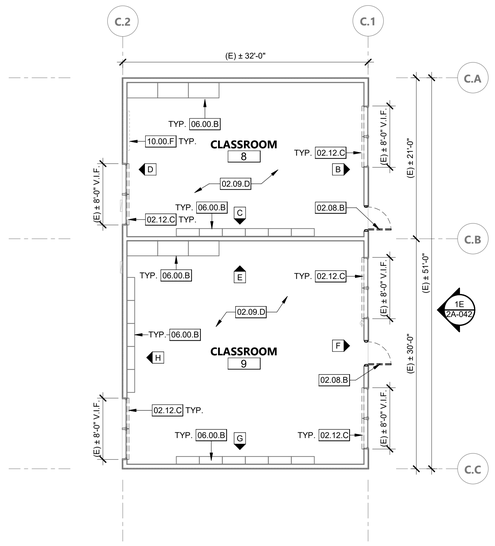
1/8" = 1'-0" | 1



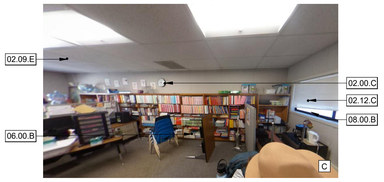














TRUE NORTH

DEMO FLOOR PLAN - BUILDING C

1/8" = 1'-0" | 4

FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt

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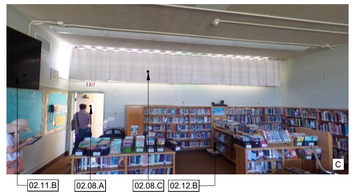
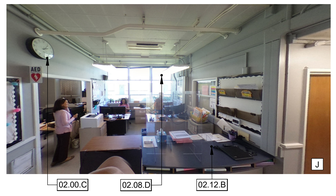
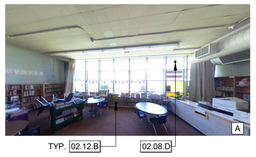




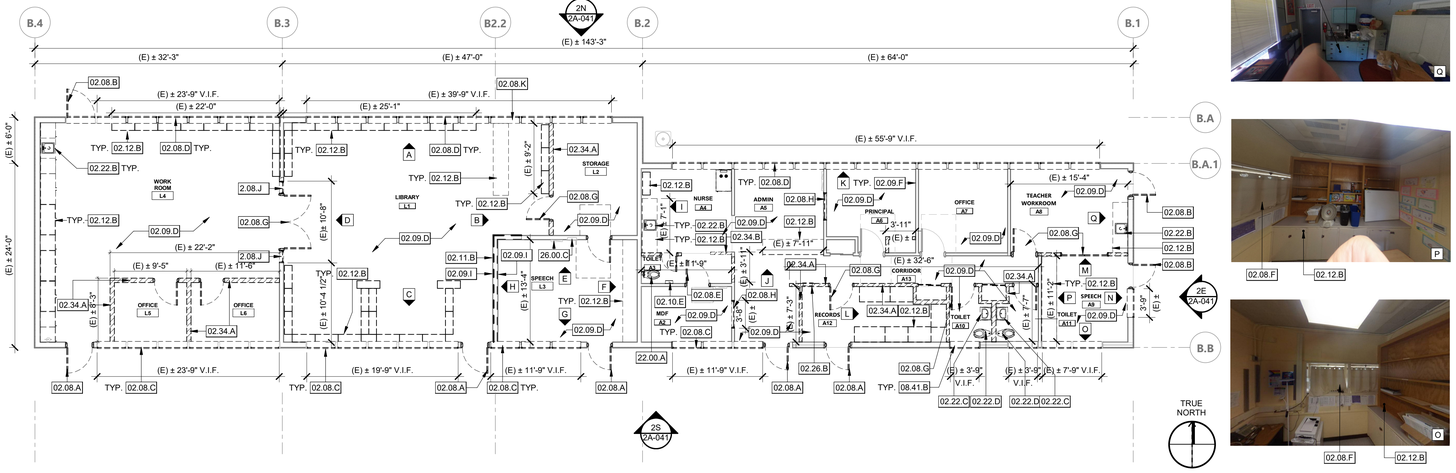






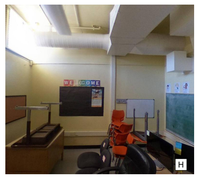












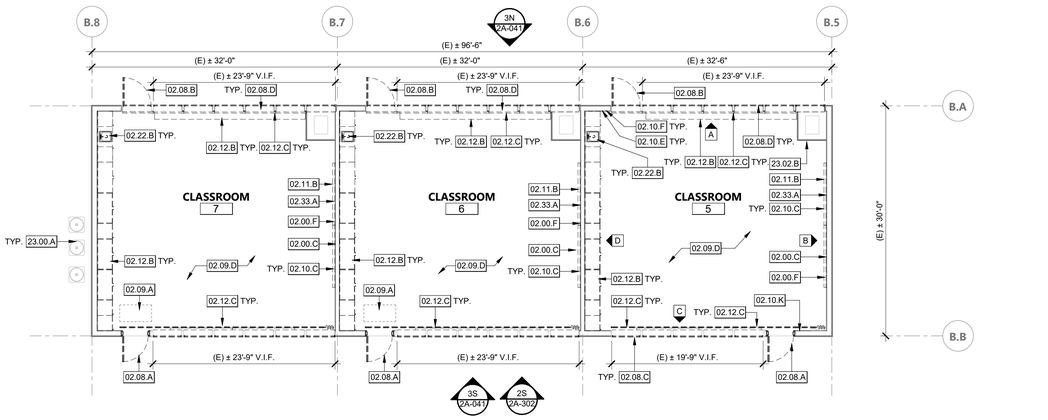


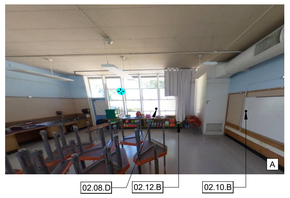


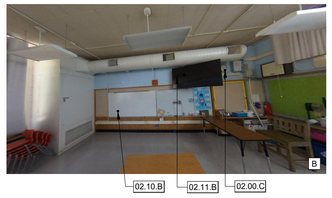


DEMO FLOOR PLAN - BUILDING B.1

1/8" = 1'-0" | 1











TRUE NORTH

DEMO FLOOR PLAN - BUILDING B.2

1/8" = 1'-0" | 2

KEYNOTES

02.00.C	(E) CLOCK TO BE REMOVED, PREPARE FOR NEW CLOCK TO BE INSTALLED. S.T.D.
02.00.F	(E) WIRE MOLD TO BE REMOVED, S.T.D.
02.08.A	(E) DOOR, THRESHOLD AND ASSOCIATED HARDWARE TO BE DEMOLISHED. WOOD FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR. SALVAGE HARDWARE AND RETURN TO DISTRICT
02.08.B	(E) DOOR AND ASSOCIATED HARDWARE TO BE DEMOLISHED. WOOD FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR. SALVAGE HARDWARE AND RETURN TO DISTRICT
02.08.C	(E) CLERESTORY WINDOW AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.08.E	(E) DOOR AND FRAME TO BE DEMOLISHED. INFILL OPENING.
02.08.F	(E) WINDOW AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.08.G	(E) DOOR AND FRAME TO BE DEMOLISHED
02.08.H	(E) WINDOW AND FRAME TO BE DEMOLISHED, INFILL WALL
2.08.J	(E) WINDOW AND FRAME TO BE DEMOLISHED
02.08.K	(E) CLERESTORY WINDOW AND FRAME TO BE DEMOLISHED. PREPARE FOR (N) WALL INFILL IN THAT OPENING.
02.09.A	EXISTING FINISHES DEMOLITION
02.09.D	(E) FLOORING AND WALL BASE TO BE DEMOLISHED. PREPARE FOR NEW FLOORING.
02.09.F	(E) WOOD PANELING & ASSOCIATED TRIM TO BE DEMOLISHED, PATCH AND REPAIR
02.09.I	DEMO (E) WALL FINISH DOWN TO THE STUDS. PREPARE FOR NEW RATED FINISH
02.10.B	(E) WHITEBOARDS AND TACKBOARDS TO BE DEMOLISHED
02.10.C	(E) WHITEBOARDS TO BE DEMOLISHED
02.10.E	(E) PAPER TOWEL DISPENSER TO BE DEMOLISHED
02.10.F	(E) SOAP DISPENSER TO BE DEMOLISHED
02.10.K	(E) HAND SANITIZER DISPENSER TO BE REMOVED & REINSTALLED
02.11.B	REMOVE/SALVAGE (E) TV & BRACKET. RETURN TO DISTRICT.
02.12.B	(E) CABINETS, COUNTERTOPS, BACKSPLASH, BOOKSHELVES, AND RELATED ACCESSORIES TO BE DEMOLISHED
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02.22.B	(E) SINK TO BE DEMOLISHED AND PREPARE TO RECIEVE NEW SINK AND CABINET, S.P.D.
02.22.C	(E) WALL MOUNTED SINK TO BE DEMOLISHED
02.22.D	(E) TOILET TO BE DEMOLISHED, S.P.D.
02.26.B	(E) ELECTRICAL PANEL SALVAGED TO BE RELOCATED
02.33.A	(E) TACKABLE WALL PANEL AND WOOD TRIM TO BE DEMOLISHED, TYP. FOR ALL WALLS
02.34.A	(E) PARTITION WALL TO BE DEMOLISHED
02.34.B	(E) PONY WALL TO BE DEMOLISHED
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
22.00.A	(E) PLUMBING FIXTURE TO REMAIN
23.00.A	(E) MECHANICAL EQUIPMENT TO REMAIN
23.02.B	(E) HVAC HOUSING AND DUCTWORK TO REMAIN AND BE PROTECTED DURING CONSTRUCTION, PAINT
26.00.C	(E) ELECTRICAL PANEL TO REMAIN, PROTECT IN PLACE

LEGEND - DEMOLITION

- (E) 2X WOOD FRAMED WALL TO BE DEMOLISHED
- (E) DOOR TO BE DEMOLISHED
- (E) DOOR & FRAME TO REMAIN AND BE PAINTED
- (E) WINDOW & FRAME TO BE DEMOLISHED
- (E) 2X WOOD FRAMED WALL TO REMAIN
- (E) CONSTRUCTION TO BE REMOVED
- X — REFERENCE PHOTO KEY

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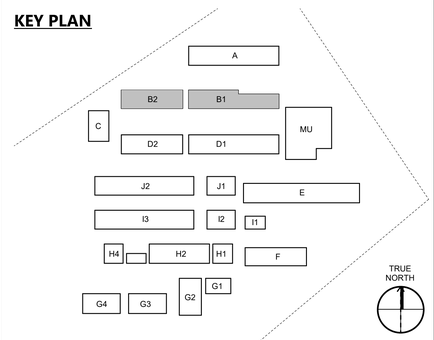
KEY PLAN



AGENCY APPROVAL DSA# 01-121400

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△

PROFESSIONAL STAMP

LICENSED ARCHITECT MARINA ALVAREZ-TARGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

△ #

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
DEMOLITION PLAN - BLDG B

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-022

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

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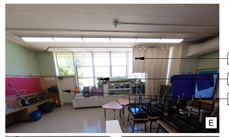
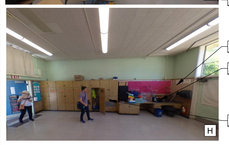
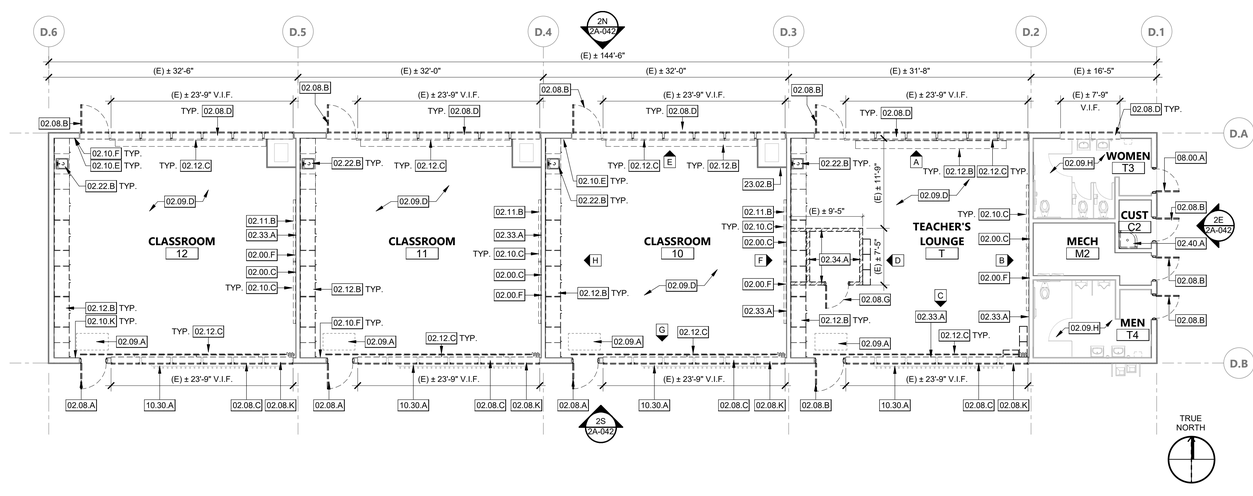












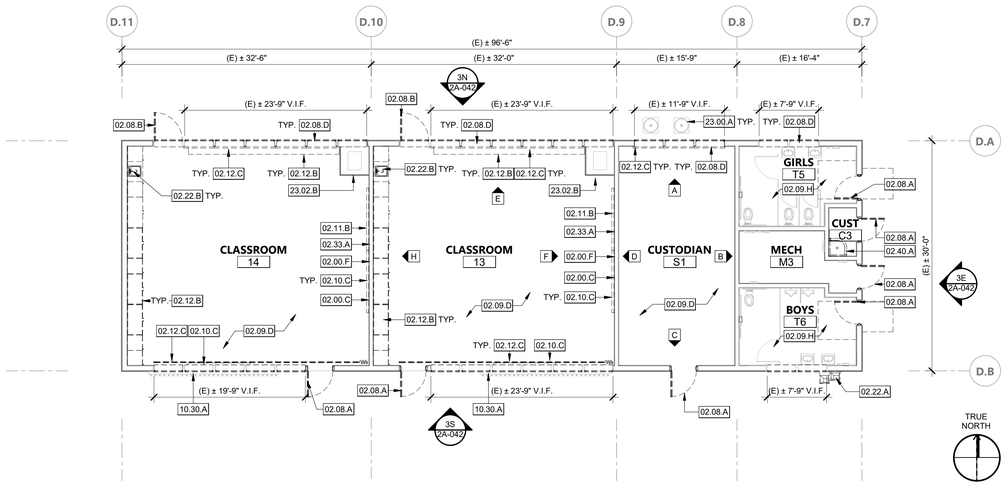


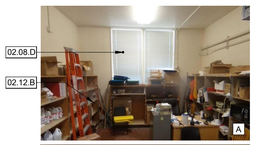




DEMO FLOOR PLAN - BUILDING D.1

1/8" = 1'-0" | 1





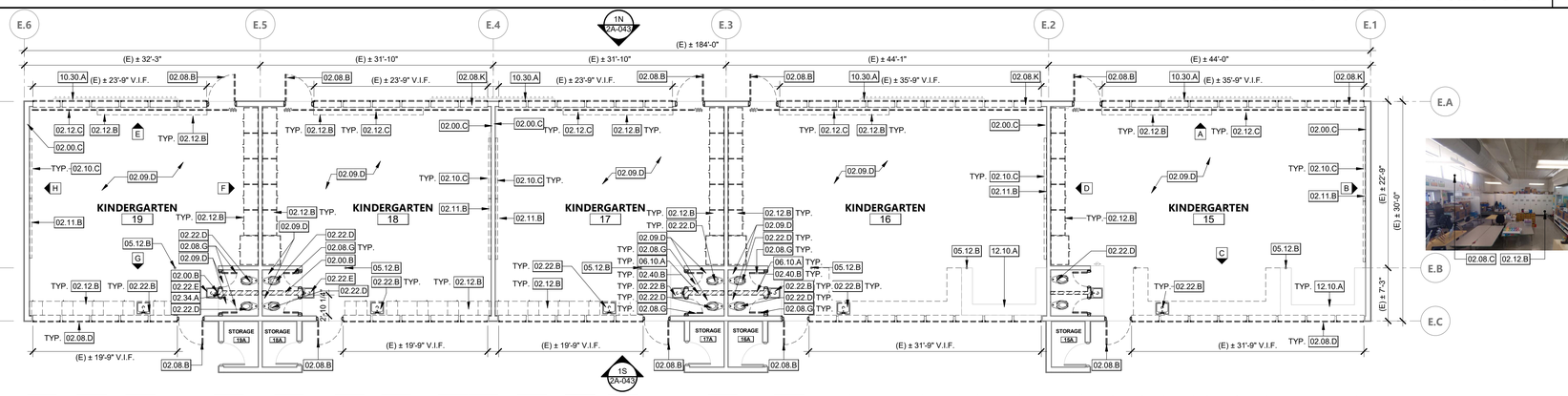


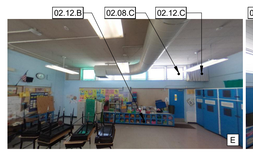




DEMO FLOOR PLAN - BUILDING D.2

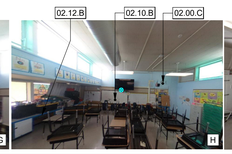
1/8" = 1'-0" | 2





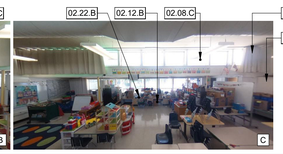












TRUE NORTH

DEMO FLOOR PLAN - BUILDING E

1/8" = 1'-0" | 3

KEYNOTES

02.00.B	(E) WOOD WALL PANEL AND TRIM TO BE DEMOLISHED
02.00.C	(E) CLOCK TO BE REMOVED, PREPARE FOR NEW CLOCK TO BE INSTALLED. S.T.D.
02.00.F	(E) WIRE MOLD TO BE REMOVED, S.T.D.
02.08.A	(E) DOOR, THRESHOLD AND ASSOCIATED HARDWARE TO BE DEMOLISHED. WOOD FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR. SALVAGE HARDWARE AND RETURN TO DISTRICT
02.08.B	(E) DOOR AND ASSOCIATED HARDWARE TO BE DEMOLISHED. WOOD FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR. SALVAGE HARDWARE AND RETURN TO DISTRICT
02.08.C	(E) CLERESTORY WINDOW AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.08.G	(E) DOOR AND FRAME TO BE DEMOLISHED
02.08.I	(E) HVAC HOUSING AND DUCTWORK TO REMAIN IN PLACE AND BE PROTECTED DURING CONSTRUCTION. PAINT THROUGHOUT
02.08.K	(E) CLERESTORY WINDOW AND FRAME TO BE DEMOLISHED. PREPARE FOR (N) WALL INFILL IN THAT OPENING.
02.09.A	EXISTING FINISHES DEMOLITION
02.09.D	(E) FLOORING AND WALL BASE TO BE DEMOLISHED. PREPARE FOR NEW FLOORING.
02.09.E	(E) GLUE-UP CEILING TILES TO BE DEMOLISHED. PATCH, CLEAN SURFACE, AND SMOOTH OUT. PROTECT (E) SUBSTRATE FRAMING FOR ATTACHMENT OF NEW CEILING PANELS
02.09.H	(E) TILE FLOORING, BASE, AND WALL TILE TO BE DEMOLISHED, PREPARE SUBSTRATE FOR NEW FLOORING
02.10.B	(E) WHITEBOARDS AND TACKBOARDS TO BE DEMOLISHED
02.10.C	(E) WHITEBOARDS TO BE DEMOLISHED
02.10.E	(E) PAPER TOWEL DISPENSER TO BE DEMOLISHED
02.10.F	(E) SOAP DISPENSER TO BE DEMOLISHED
02.10.H	(E) TOILET PAPER DISPENSER TO BE DEMOLISHED
02.10.K	(E) HAND SANITIZER DISPENSER TO BE REMOVED & REINSTALLED
02.11.B	REMOVE/SALVAGE (E) TV & BRACKET. RETURN TO DISTRICT.
02.12.B	(E) CABINETS, COUNTERTOPS, BACKSPLASH, BOOKSHELVES, AND RELATED ACCESSORIES TO BE DEMOLISHED
02.12.C	(E) WINDOW COVERINGS AND TRACK TO BE DEMOLISHED
02.22.A	EXISTING PLUMBING DEMOLITION
02.22.B	(E) SINK TO BE DEMOLISHED AND PREPARE TO RECIEVE NEW SINK AND CABINET, S.P.D.
02.22.D	(E) TOILET TO BE DEMOLISHED, S.P.D.
02.22.E	(E) SINK TO BE DEMOLISHED, S.P.D.
02.33.A	(E) TACKABLE WALL PANEL AND WOOD TRIM TO BE DEMOLISHED, TYP. FOR ALL WALLS
02.34.A	(E) PARTITION WALL TO BE DEMOLISHED
02.40.A	(E) FLOOR SINK TO BE DEMOLISHED AND REPLACED
02.40.B	(E) TILE TO BE DEMOLISHED
05.12.B	STEEL COLUMN TO REMAIN, PAINT ACCORDING SPECS
06.10.A	5" TALL WOOD STUD WALL PER STRUCTURAL DRAWINGS
08.00.A	(E) DOOR TO REMAIN
10.30.A	(E) COAT HOOKS TO BE REMOVED AND REINSTALLED
12.10.A	(E) SHELVING CASEWORK. FINISH TO BE REMOVED AND REPLACED WITH INK & STAIN RESISTANT VINYL.
23.00.A	(E) MECHANICAL EQUIPMENT TO REMAIN
23.02.B	(E) HVAC HOUSING AND DUCTWORK TO REMAIN AND BE PROTECTED DURING CONSTRUCTION, PAINT

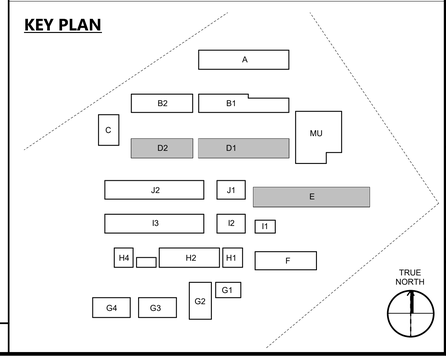
LEGEND - DEMOLITION

- (E) 2X WOOD FRAMED WALL TO BE DEMOLISHED
- (E) DOOR TO BE DEMOLISHED
- (E) DOOR & FRAME TO REMAIN AND BE PAINTED
- (E) WINDOW & FRAME TO BE DEMOLISHED
- (E) 2X WOOD FRAMED WALL TO REMAIN
- (E) CONSTRUCTION TO BE REMOVED
- X — REFERENCE PHOTO KEY

DEMOLITION NOTES

1. IN ACCORDANCE WITH PERTINENT ITEMS OF THESE NOTES AND THOSE ITEMS SO INDICATED ON THE DRAWINGS "CAREFULLY" DEMOLISH AND REMOVE FROM THE JOB SITE THOSE ITEMS SCHEDULED TO BE SO DEMOLISHED AND REMOVED.
2. SEE SPECIFICATION SECTION 02 41 19 FOR MORE DEMOLITION NOTES, REQUIREMENTS, AND PROCEDURES.
3. **REFER TO MECHANICAL, PLUMBING, ELECTRICAL AND TECHNOLOGY FOR ADDITIONAL DEMOLITION INFORMATION.**
4. KEYNOTED ELEMENTS SCHEDULED FOR DEMOLITION ARE NOTED FOR CLARIFICATION ONLY. SEE DEMOLITION PLAN LEGEND FOR ADDITIONAL DEMOLITION REQUIREMENTS.
   USE ADEQUATE NUMBERS OF SKILLED WORKMAN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND THE METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK.
5. SURFACE CONDITIONS: EXAMINE THE AREAS AND CONDITIONS UNDER WHICH WORK WILL BE PERFORMED. CORRECT CONDITIONS DETRIMENTAL TO TIMELY AND PROPER COMPLETION OF THE WORK. DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED.
6. DEMOLITION: BY CAREFUL STUDY OF THE DRAWINGS, DETERMINE THE LOCATION AND EXTENT OF SELECTIVE DEMOLITION REQUIRED.
7. VISIT THE SITE AND VERIFY THE EXTENT AND LOCATION OF SELECTIVE DEMOLITION REQUIRED.
8. CAREFULLY IDENTIFY LIMITS OF SELECTIVE DEMOLITION.
9. MARK INTERFACE SURFACES AS REQUIRED TO ENABLE WORKMAN ALSO TO IDENTIFY ITEMS TO BE REMOVED AND ITEMS TO BE LEFT IN PLACE INTACT.
10. PREPARE AND FOLLOW AN ORGANIZED PLAN FOR DEMOLITION AND REMOVAL OF ITEMS.
11. COMPLETELY REMOVE ITEMS SCHEDULED TO BE SO DEMOLISHED AND REMOVED, LEAVING SURFACES CLEAN, SOLID, AND READY TO RECEIVE NEW MATERIALS SPECIFIED ELSEWHERE.
12. SALVAGE: AFTER CAREFUL REVIEW OF THE DRAWINGS SHOWING PROPOSED NEW CONSTRUCTION, IDENTIFY THOSE ITEMS THAT ARE GOOD CANDIDATES FOR RE-USE AND CAREFULLY REMOVE AND STOCKPILE THEM ON SITE IN A PROTECTED AREA. SEE SPECIFICATION SECTION 02 41 19 FOR FURTHER CLARIFICATION.
13. DEMOLISHED MATERIALS SHALL BE CONSIDERED TO BE PROPERTY OF THE CONTRACTOR AND SHALL BE COMPLETELY REMOVED FROM THE JOB SITE, UNLESS OTHERWISE DIRECTED BY THE DISTRICT.
14. REPLACEMENTS: IN THE EVENT OF DEMOLITION OF ITEMS NOT SO SCHEDULED TO BE DEMOLISHED, PROMPTLY REPLACE SUCH ITEMS TO THE APPROVAL OF THE ARCHITECT AND AT NO ADDITIONAL COST TO THE OWNER.
15. SEE ASBESTOS & LEAD IN PAINT SURVEY REPORT FOR MEADOW HOMES ELEMENTARY SHOOL PROVIDED BY ENVIRO-S.T.A.R. FOR REQUIRED ABATEMENT. BASED ON THE REPORT PROVIDED, MATERIALS IDENTIFIED FOR REMOVAL WILL BE REMOVED BY AN ABATEMENT CONTRACTOR PROPERLY LICENSED AND REGISTERED TO DO ASBESTOS & LEAD ABATEMENT.
16. TERMINATE ALL ELECTRICAL CONDUITS CONTAINED IN WALLS TO BE DEMOLISHED PER N.E.C. 2023. CONDUITS FEEDING DEMOLISHED AREAS, BUT CONTAINED WITHIN CONSTRUCTION TO REMAIN MAY BE ABANDONED IN PLACE.
17. ALL ITEMS INDICATED FOR DEMOLITION ON THIS SHEET ARE CONSIDERED TO BE NON-STRUCTURAL. DURING DEMOLITION, EVIDENCE MAY BECOME APPARENT OF A LOAD-BEARING ITEM WHICH IS SHOWN TO BE DEMOLISHED. CONTRACTOR SHALL NOT REMOVE ANY ITEMS WHICH SHOW EVIDENCE OF CARRYING ROOF LOADS, CEILING JOIST LOADS, NOR WALLS WHICH ARE SHEATHED WITH PLYWOOD WITHOUT PRIOR APPROVAL OF THE ARCHITECT EVEN IF SUCH ITEMS ARE SHOWN TO BE DEMOLISHED HEREIN.
18. SEE PLASTER DEMOLITION & REPAIR NOTES ON A-911 PRIOR TO DEMOLITION OF PLASTER ASSEMBLIES

KEY PLAN



AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

LICENSED ARCHITECT · MARINA ALVAREZ PARGA · C-36107 · REN. 01-31-25 · STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
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MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
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SHEET TITLE
DEMOLITION PLAN - BLDG D, E

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

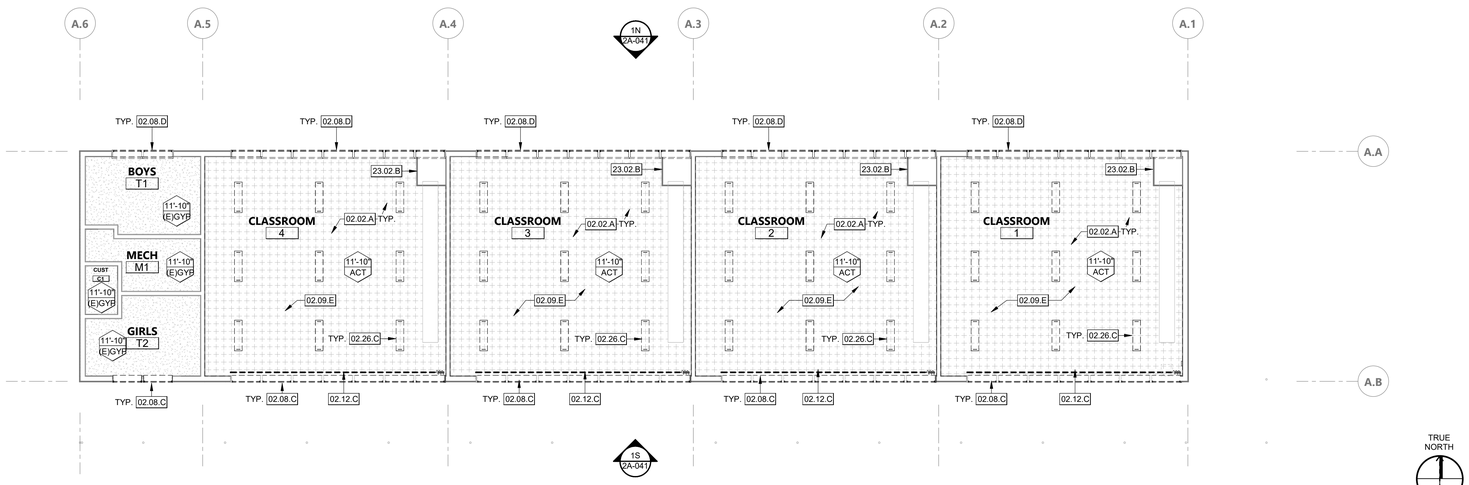
SHEET NO.

2A-023

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

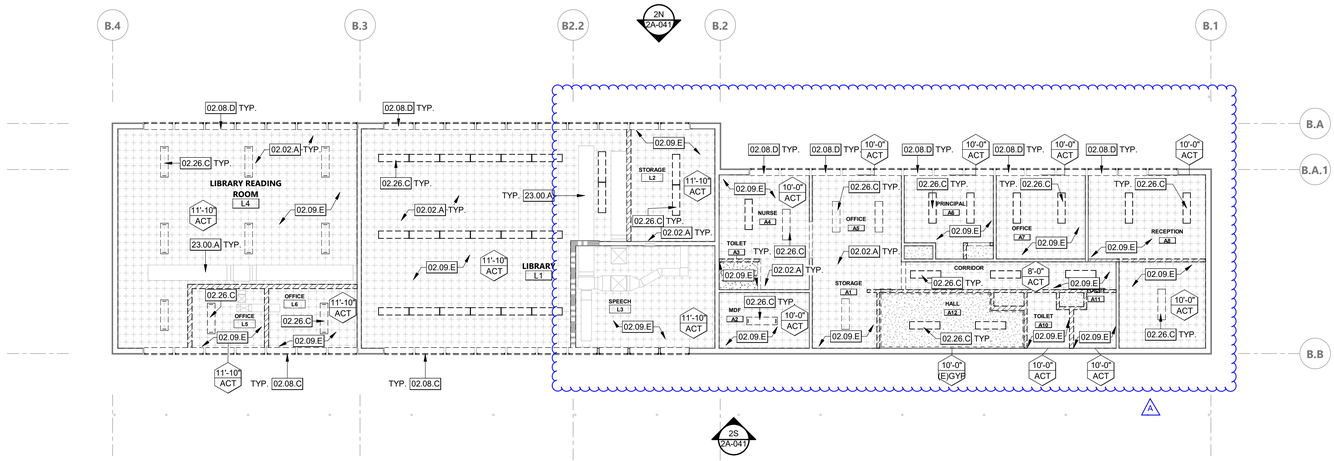
DATE PLOTTED: 10/30/2024 5:47:05 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



TRUE NORTH

DEMO CEILING PLAN - BUILDING A

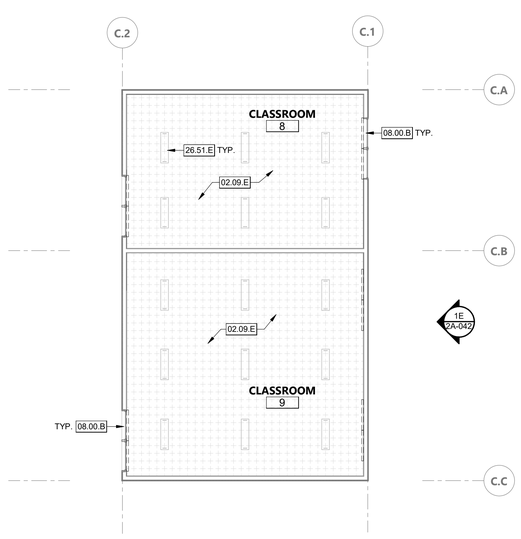
1/8" = 1'-0" | 1



TRUE NORTH

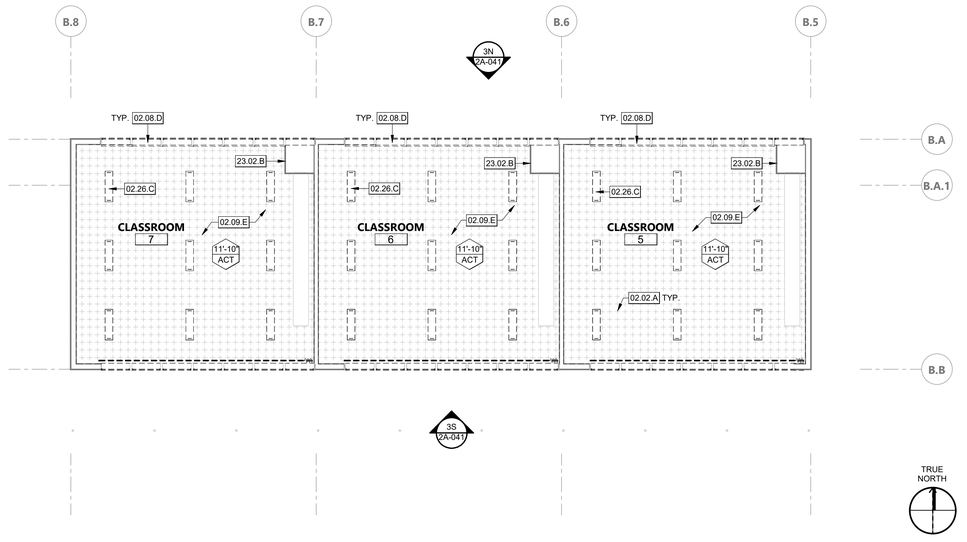
DEMO CEILING PLAN - BUILDING B.1

1/8" = 1'-0" | 2



DEMO CEILING PLAN - BUILDING C

1/8" = 1'-0" | 4



TRUE NORTH

DEMO CEILING PLAN - BUILDING B.2

1/8" = 1'-0" | 3

KEYNOTES

02.02.A	(E) SURFACE MOUNTED ELECTRICAL RACEWAYS TO BE DEMOLISHED, S.E.D.
02.08.C	(E) CLERESTORY WINDOW AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.09.E	(E) GLUE-UP CEILING TILES TO BE DEMOLISHED. PATCH, CLEAN SURFACE, AND SMOOTH OUT. PROTECT (E) SUBSTRATE FRAMING FOR ATTACHMENT OF NEW CEILING PANELS
02.12.C	(E) WINDOW COVERINGS AND TRACK TO BE DEMOLISHED
02.26.C	(E) LIGHT FIXTURES TO BE DEMOLISHED. PATCH AND PREPARE FOR NEW LIGHT FIXTURES.
08.00.B	(E) WINDOW TO REMAIN
23.00.A	(E) MECHANICAL EQUIPMENT TO REMAIN
23.02.B	(E) HVAC HOUSING AND DUCTWORK TO REMAIN AND BE PROTECTED DURING CONSTRUCTION, PAINT
26.51.E	(E) PENDANT LIGHTS, REMOVE AND STORE, FOR REINSTALLATION AFTER CEILING WORK COMPLETED

DEMO CEILING GENERAL NOTES

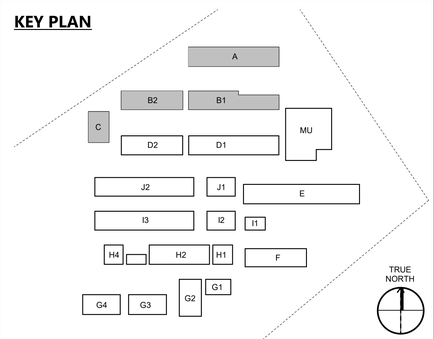
1. COORDINATE WITH ELECTRICAL, MECHANICAL, PLUMING DRAWINGS FOR DEMOLITION WORK
2. (E) FINISHES, EQUIPMENT, CONDUITS, ETC. INDICATED TO REMAIN, SHALL BE PROTECTED DURING CONSTRUCTION.
3. AT CEILINGS TO BE REMOVED, REMOVE ALL CEILINGS, SOFFITS, RELATED SUPPORT SYSTEMS AND ACCESSORIES, AND CEILING MOUNTED ITEMS. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS.
4. PROCEED WITH CAUTION WHEN REMOVING (E) CEILING AND/OR (E) CEILING FRAMING TO AVOID DAMAGING ANY (E) UTILITIES.

LEGEND - CEILING DEMOLITION

- 9'-2" ACT — CEILING HEIGHT ABOVE FIN. FLOOR
- CEILING MATERIAL
- (E) 1X1 GLUE-UP CEILING TILES TO BE DEMOLISHED
- (E) GWB - FRAMED GYPSUM BOARD CEILING TO PATCH AND REPAIR WHERE INDICATED
- (E) GWB - FRAMED GYPSUM BOARD CEILING TO BE DEMOLISHED WHERE INDICATED
- (E) EXHAUST FAN TO BE REMOVED WHERE INDICATED
- (E) SEMI RECESSED LIGHTING FIXTURE DO BE DEMOLISHED
- (E) PENDANT LIGHTING FIXTURE DO BE DEMOLISHED
- (E) AC SPLIT UNIT DO BE DEMOLISHED
- ROOF ACCESS HATCH
- (E) RETURN AIR GRILLE
- (E) SUPPLY REGISTER
- (E) EXHAUST FAN OR GRILLE TO BE REMOVED WHERE INDICATED

NOTE: SYMBOLS SHOWN FOR LOCATION PURPOSES ONLY, SEE MECHANICAL, ELECTRICAL, & FIRE PROTECTION DRAWINGS FOR DETAILED INFORMATION

KEY PLAN



TRUE NORTH

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PROFESSIONAL STAMP

LICENSED ARCHITECT MARIANA ALVAREZ PARGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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MEADOW HOMES ES MODERNIZATION

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SHEET TITLE
DEMO REFLECTED CEILING PLAN - BLDG A, B

INCREMENT: INC.2

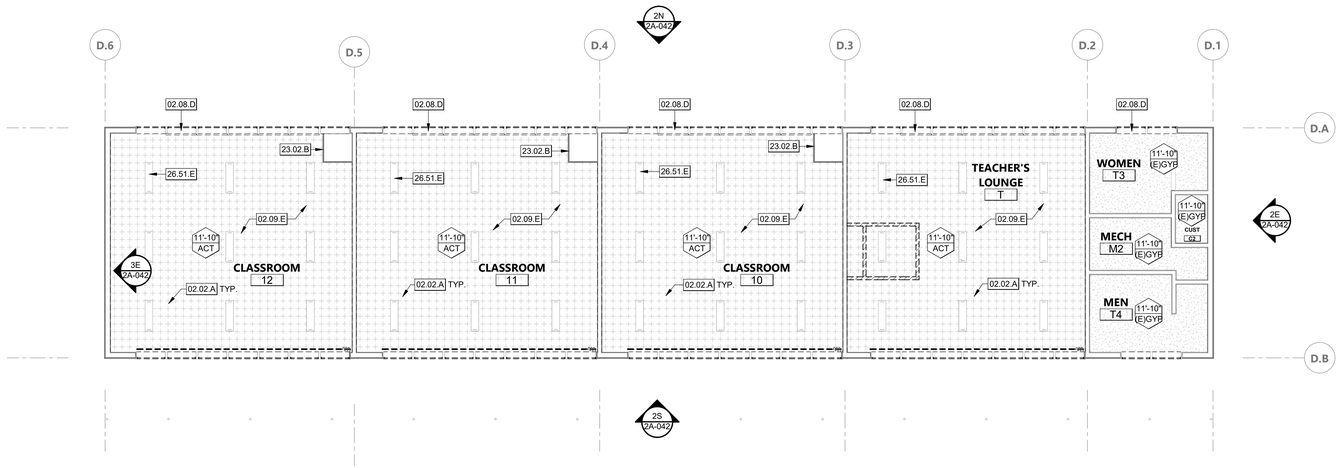
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-031

DATE: OCTOBER 25, 2024

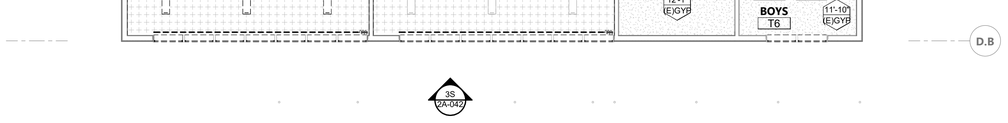
CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:47:10 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



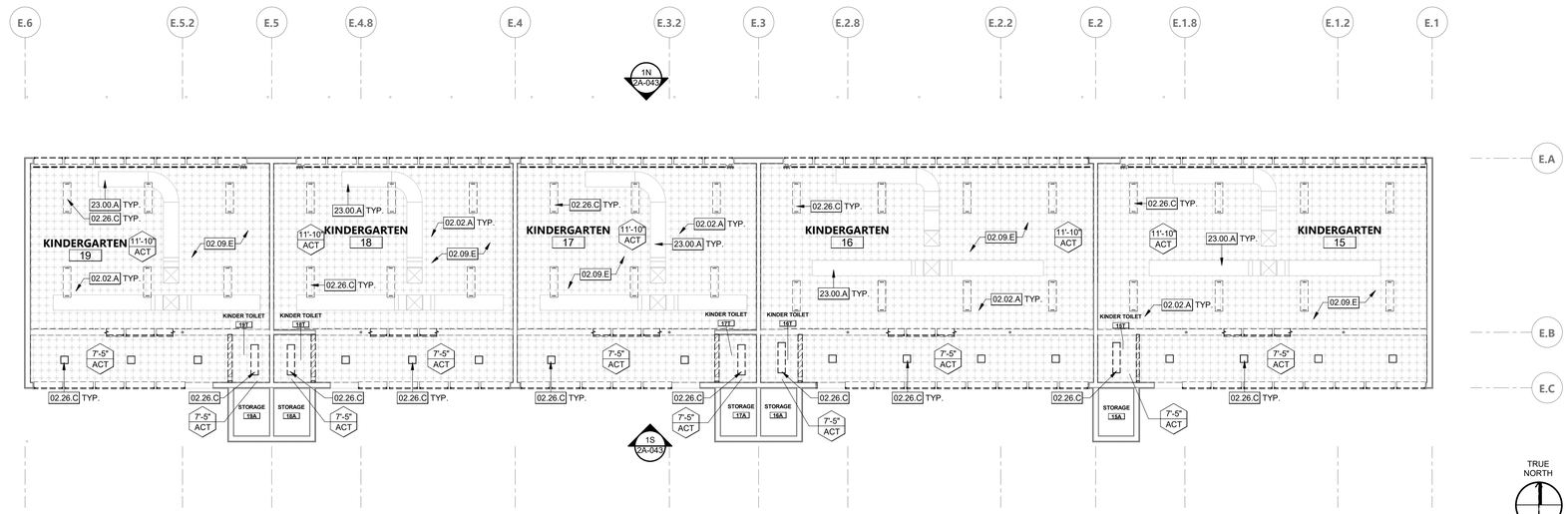
TRUE NORTH

DEMO CEILING PLAN - BUILDING D.1 | 1/8" = 1'-0" | 1



TRUE NORTH

DEMO CEILING PLAN - BUILDING D.2 | 1/8" = 1'-0" | 2



TRUE NORTH

DEMO CEILING PLAN - BUILDING E | 1/8" = 1'-0" | 3

KEYNOTES

02.02.A	(E) SURFACE MOUNTED ELECTRICAL RACEWAYS TO BE DEMOLISHED, S.E.D.
02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.09.E	(E) GLUE-UP CEILING TILES TO BE DEMOLISHED. PATCH, CLEAN SURFACE, AND SMOOTH OUT. PROTECT (E) SUBSTRATE FRAMING FOR ATTACHMENT OF NEW CEILING PANELS
02.26.C	(E) LIGHT FIXTURES TO BE DEMOLISHED. PATCH AND PREPARE FOR NEW LIGHT FIXTURES.
23.00.A	(E) MECHANICAL EQUIPMENT TO REMAIN
23.02.B	(E) HVAC HOUSING AND DUCTWORK TO REMAIN AND BE PROTECTED DURING CONSTRUCTION, PAINT
26.51.E	(E) PENDANT LIGHTS, REMOVE AND STORE, FOR REINSTALLATION AFTER CEILING WORK COMPLETED

DEMO CEILING GENERAL NOTES

1. COORDINATE WITH ELECTRICAL, MECHANICAL, PLUMING DRAWINGS FOR DEMOLITION WORK
2. (E) FINISHES, EQUIPMENT, CONDUITS, ETC. INDICATED TO REMAIN, SHALL BE PROTECTED DURING CONSTRUCTION.
3. AT CEILINGS TO BE REMOVED, REMOVE ALL CEILINGS, SOFFITS, RELATED SUPPORT SYSTEMS AND ACCESSORIES, AND CEILING MOUNTED ITEMS. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS.
4. PROCEED WITH CAUTION WHEN REMOVING (E) CEILING AND/OR (E) CEILING FRAMING TO AVOID DAMAGING ANY (E) UTILITIES.

LEGEND - CEILING DEMOLITION

- 9'-2" ACT — CEILING HEIGHT ABOVE FIN. FLOOR / CEILING MATERIAL
- (E) 1X1 GLUE-UP CEILING TILES TO BE DEMOLISHED
- (E) GWB - FRAMED GYPSUM BOARD CEILING TO PATCH AND REPAIR WHERE INDICATED
- (E) GWB - FRAMED GYPSUM BOARD CEILING TO BE DEMOLISHED WHERE INDICATED
- (E) EXHAUST FAN TO BE REMOVED WHERE INDICATED
- (E) SEMI RECESSED LIGHTING FIXTURE DO BE DEMOLISHED
- (E) PENDANT LIGHTING FIXTURE DO BE DEMOLISHED
- (E) AC SPLIT UNIT DO BE DEMOLISHED
- ROOF ACCESS HATCH
- (E) RETURN AIR GRILLE
- (E) SUPPLY REGISTER
- (E) EXHAUST FAN OR GRILLE TO BE REMOVED WHERE INDICATED

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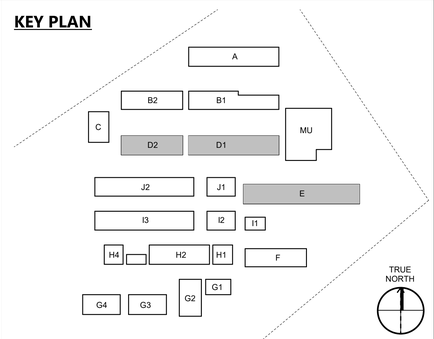
KEY PLAN



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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
DEMO REFLECTED CEILING PLAN - BLDG D, E

INCREMENT: INC.2

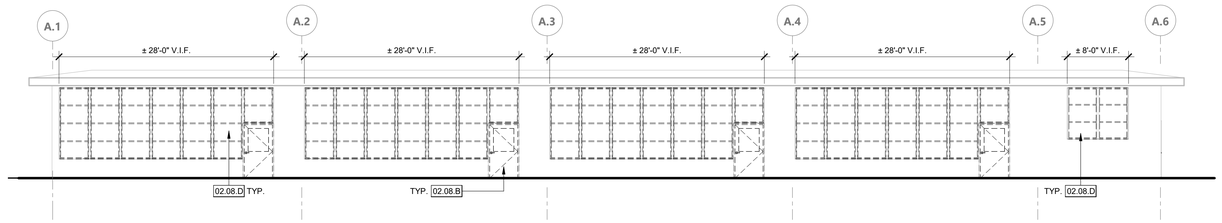
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-032

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:47:14 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



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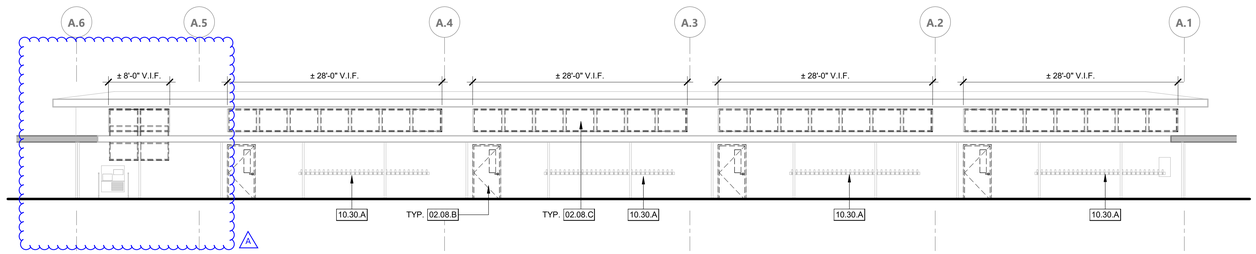
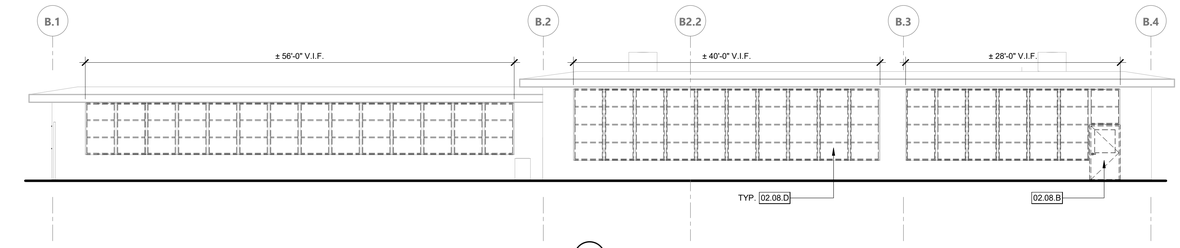


1S

DEMO ELEVATIONS - BUILDING A

1/8" = 1'-0" | 1



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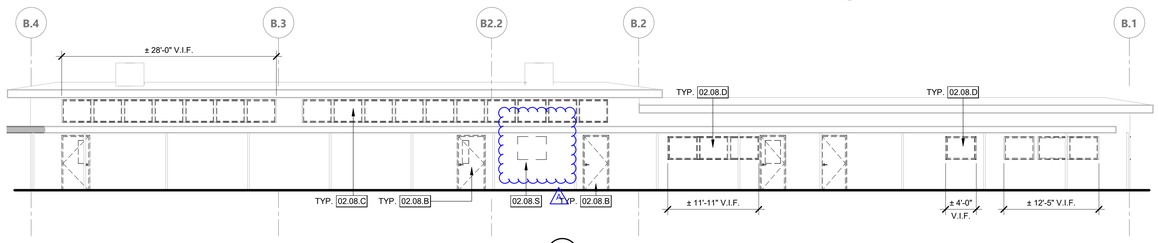

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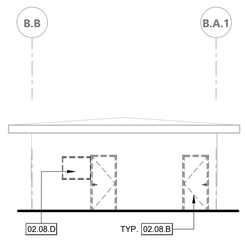
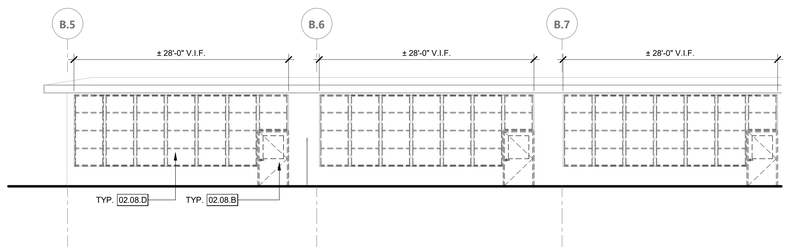


2E

DEMO ELEVATIONS - BUILDING B.1

1/8" = 1'-0" | 2



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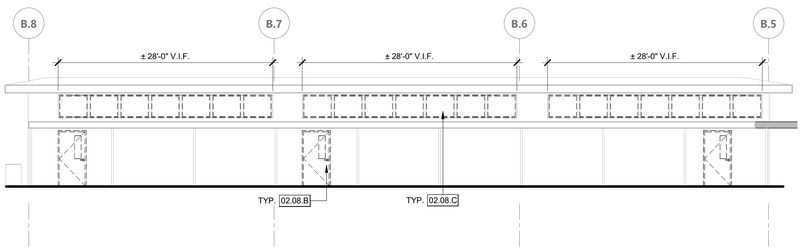

3S

DEMO ELEVATIONS - BUILDING B.2

1/8" = 1'-0" | 3

KEYNOTES

02.08.B	(E) DOOR AND ASSOCIATED HARDWARE TO BE DEMOLISHED. WOOD FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR. SALVAGE HARDWARE AND RETURN TO DISTRICT
02.08.C	(E) CLERESTORY WINDOW AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.08.S	DEMO PORTION OF (E) WALL FOR NEW WINDOW
10.30.A	(E) COAT HOOKS TO BE REMOVED AND REINSTALLED

DEMOLITION NOTES

1. IN ACCORDANCE WITH PERTINENT ITEMS OF THESE NOTES AND THOSE ITEMS SO INDICATED ON THE DRAWINGS "CAREFULLY" DEMOLISH AND REMOVE FROM THE JOB SITE THOSE ITEMS SCHEDULED TO BE SO DEMOLISHED AND REMOVED.
2. SEE SPECIFICATION SECTION 02 41 19 FOR MORE DEMOLITION NOTES, REQUIREMENTS, AND PROCEDURES.
3. **REFER TO MECHANICAL, PLUMBING, ELECTRICAL AND TECHNOLOGY FOR ADDITIONAL DEMOLITION INFORMATION.**
4. KEYNOTED ELEMENTS SCHEDULED FOR DEMOLITION ARE NOTED FOR CLARIFICATION ONLY. SEE DEMOLITION PLAN LEGEND FOR ADDITIONAL DEMOLITION REQUIREMENTS.
   USE ADEQUATE NUMBERS OF SKILLED WORKMAN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND THE METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK.
5. SURFACE CONDITIONS: EXAMINE THE AREAS AND CONDITIONS UNDER WHICH WORK WILL BE PERFORMED. CORRECT CONDITIONS DETRIMENTAL TO TIMELY AND PROPER COMPLETION OF THE WORK. DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED.
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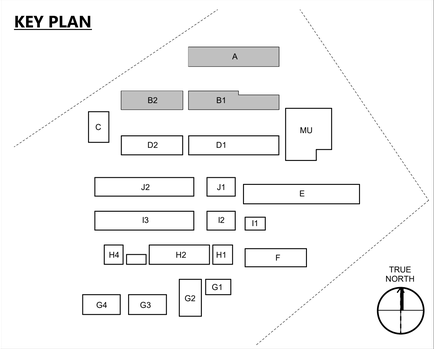
7. VISIT THE SITE AND VERIFY THE EXTENT AND LOCATION OF SELECTIVE DEMOLITION REQUIRED.
8. CAREFULLY IDENTIFY LIMITS OF SELECTIVE DEMOLITION.
9. MARK INTERFACE SURFACES AS REQUIRED TO ENABLE WORKMAN ALSO TO IDENTIFY ITEMS TO BE REMOVED AND ITEMS TO BE LEFT IN PLACE INTACT.
10. PREPARE AND FOLLOW AN ORGANIZED PLAN FOR DEMOLITION AND REMOVAL OF ITEMS.
11. COMPLETELY REMOVE ITEMS SCHEDULED TO BE SO DEMOLISHED AND REMOVED, LEAVING SURFACES CLEAN, SOLID, AND READY TO RECEIVE NEW MATERIALS SPECIFIED ELSEWHERE.
12. SALVAGE: AFTER CAREFUL REVIEW OF THE DRAWINGS SHOWING PROPOSED NEW CONSTRUCTION, IDENTIFY THOSE ITEMS THAT ARE GOOD CANDIDATES FOR RE-USE AND CAREFULLY REMOVE AND STOCKPILE THEM ON SITE IN A PROTECTED AREA. SEE SPECIFICATION SECTION 02 41 19 FOR FURTHER CLARIFICATION.
13. DEMOLISHED MATERIALS SHALL BE CONSIDERED TO BE PROPERTY OF THE CONTRACTOR AND SHALL BE COMPLETELY REMOVED FROM THE JOB SITE, UNLESS OTHERWISE DIRECTED BY THE DISTRICT.
14. REPLACEMENTS: IN THE EVENT OF DEMOLITION OF ITEMS NOT SO SCHEDULED TO BE DEMOLISHED, PROMPTLY REPLACE SUCH ITEMS TO THE APPROVAL OF THE ARCHITECT AND AT NO ADDITIONAL COST TO THE OWNER.
15. SEE ASBESTOS & LEAD IN PAINT SURVEY REPORT FOR MEADOW HOMES ELEMENTARY SHOOL PROVIDED BY ENVIRO-S.T.A.R. FOR REQUIRED ABATEMENT. BASED ON THE REPORT PROVIDED, MATERIALS IDENTIFIED FOR REMOVAL WILL BE REMOVED BY AN ABATEMENT CONTRACTOR PROPERLY LICENSED AND REGISTERED TO DO ASBESTOS & LEAD ABATEMENT.
16. TERMINATE ALL ELECTRICAL CONDUITS CONTAINED IN WALLS TO BE DEMOLISHED PER N.E.C. 2023. CONDUITS FEEDING DEMOLISHED AREAS, BUT CONTAINED WITHIN CONSTRUCTION TO REMAIN MAY BE ABANDONED IN PLACE.
17. ALL ITEMS INDICATED FOR DEMOLITION ON THIS SHEET ARE CONSIDERED TO BE NON-STRUCTURAL. DURING DEMOLITION, EVIDENCE MAY BECOME APPARENT OF A LOAD-BEARING ITEM WHICH IS SHOWN TO BE DEMOLISHED. CONTRACTOR SHALL NOT REMOVE ANY ITEMS WHICH SHOW EVIDENCE OF CARRYING ROOF LOADS, CEILING JOIST LOADS, NOR WALLS WHICH ARE SHEATHED WITH PLYWOOD WITHOUT PRIOR APPROVAL OF THE ARCHITECT EVEN IF SUCH ITEMS ARE SHOWN TO BE DEMOLISHED HEREIN.
18. SEE PLASTER DEMOLITION & REPAIR NOTES ON A-911 PRIOR TO DEMOLITION OF PLASTER ASSEMBLIES

KEY PLAN



AGENCY APPROVAL DSA# 01-121400

196

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CONSULTANTS

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MECHANICAL ENGINEER
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5433 El Camino Ave. Ste 5
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PROFESSIONAL STAMP

LICENSED ARCHITECT
MARIANA ALVAREZ PARGA
C-36107
REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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SHEET TITLE
DEMO EXTERIOR ELEVATIONS - BLDG A, B1, B2

INCREMENT: INC.2

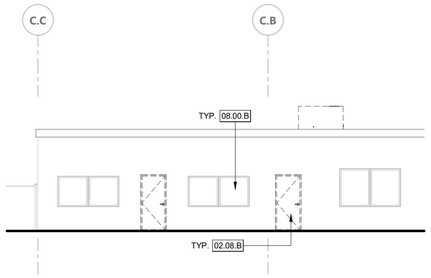
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-041

DATE: OCTOBER 25, 2024

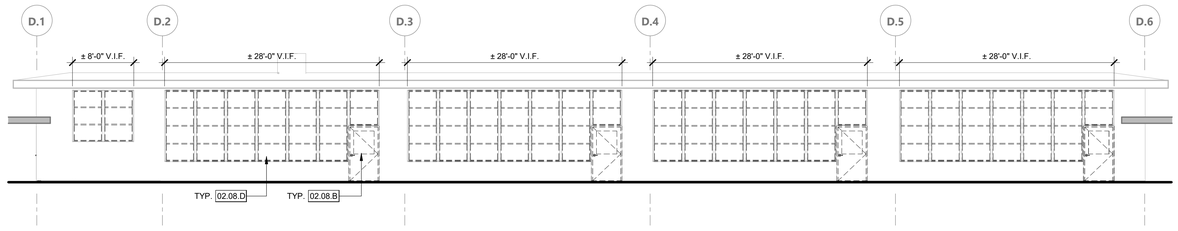
CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:47:20 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



1E

DEMO ELEVATIONS - BUILDING C | 1/8" = 1'-0" | 1



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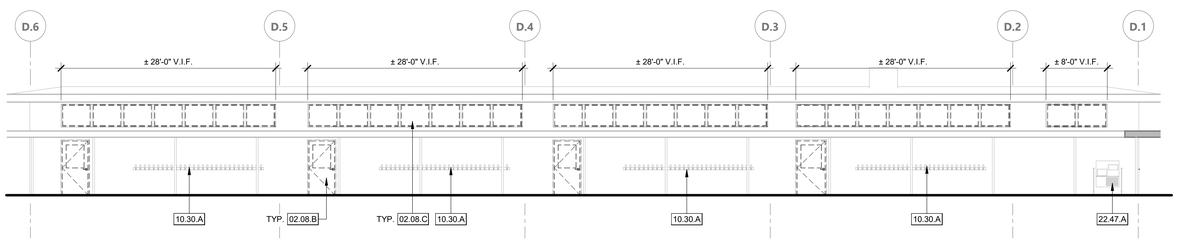

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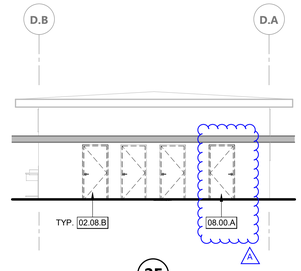
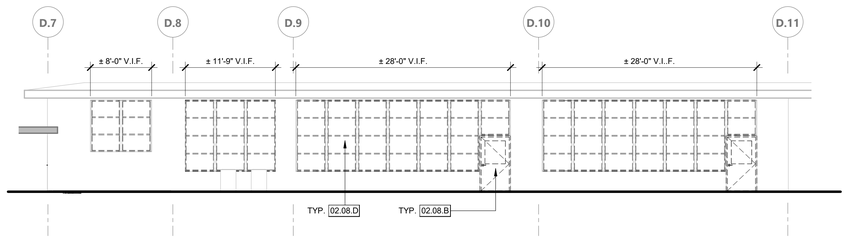


2E

DEMO ELEVATIONS - BUILDING D.1 | 1/8" = 1'-0" | 2



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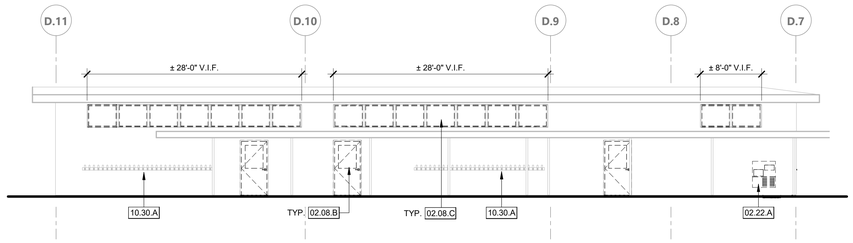

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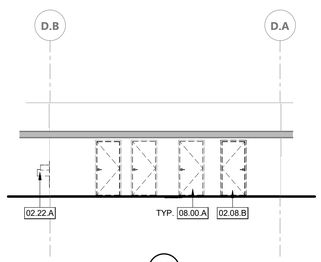

3E

DEMO ELEVATIONS - BUILDING D.2 | 1/8" = 1'-0" | 3

KEYNOTES

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02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.22.A	EXISTING PLUMBING DEMOLITION
08.00.A	(E) DOOR TO REMAIN
08.00.B	(E) WINDOW TO REMAIN
10.30.A	(E) COAT HOOKS TO BE REMOVED AND REINSTALLED
22.47.A	(E) HI-LOW DRINKING FOUNTAIN TO REMAIN

DEMOLITION NOTES

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KEY PLAN

AGENCY APPROVAL DSA# 01-121400

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CONSULTANTS

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1101 South Winchester Blvd., Suite H184
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LICENSED ARCHITECT
MARJANA ALVAREZ PARGA
C-36107
REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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1936 Carlotta Drive
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MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
DEMO EXTERIOR ELEVATIONS - BLDG C, D1, D2

INCREMENT: INC.2

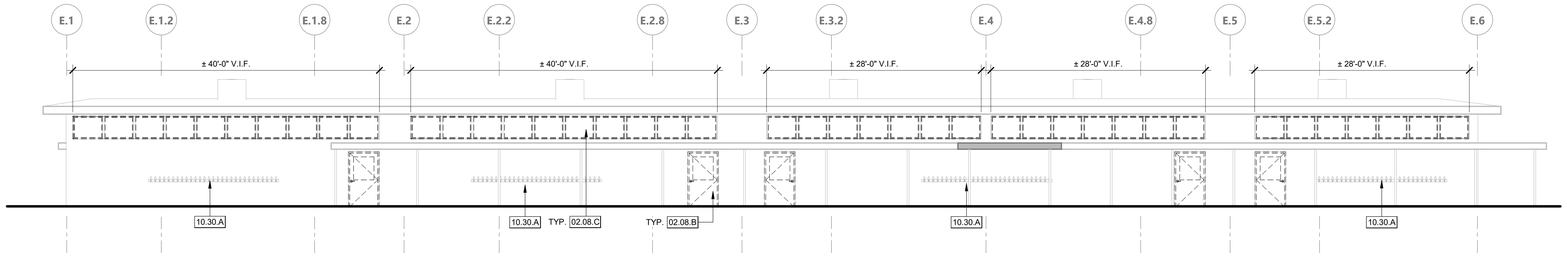
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-042

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:47:24 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



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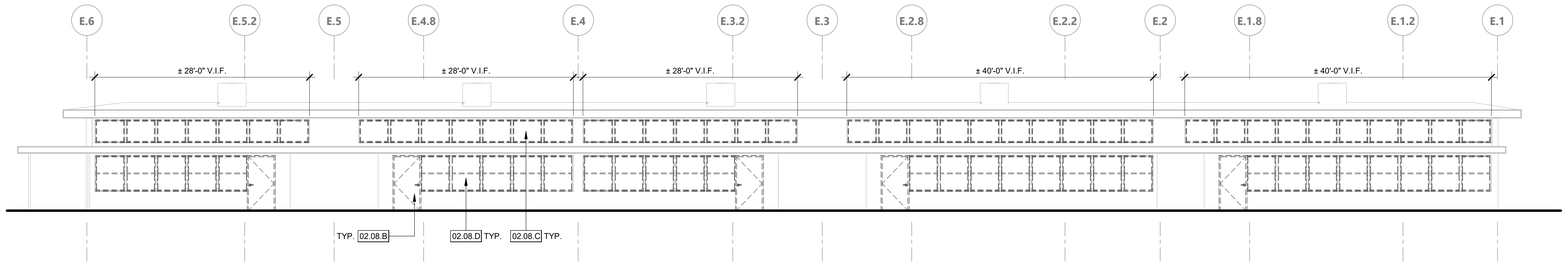

1S

DEMO ELEVATIONS - BUILDING E | 1/8" = 1'-0" | 1

KEYNOTES

02.08.B	(E) DOOR AND ASSOCIATED HARDWARE TO BE DEMOLISHED. WOOD FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR. SALVAGE HARDWARE AND RETURN TO DISTRICT
02.08.C	(E) CLERESTORY WINDOW AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
10.30.A	(E) COAT HOOKS TO BE REMOVED AND REINSTALLED

DEMOLITION NOTES

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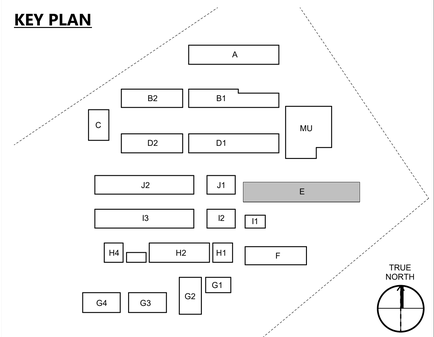
15. SEE ASBESTOS & LEAD IN PAINT SURVEY REPORT FOR MEADOW HOMES ELEMENTARY SHOOL PROVIDED BY ENVIRO-S.T.A.R. FOR REQUIRED ABATEMENT. BASED ON THE REPORT PROVIDED, MATERIALS IDENTIFIED FOR REMOVAL WILL BE REMOVED BY AN ABATEMENT CONTRACTOR PROPERLY LICENSED AND REGISTERED TO DO ASBESTOS & LEAD ABATEMENT.
16. TERMINATE ALL ELECTRICAL CONDUITS CONTAINED IN WALLS TO BE DEMOLISHED PER N.E.C. 2023. CONDUITS FEEDING DEMOLISHED AREAS, BUT CONTAINED WITHIN CONSTRUCTION TO REMAIN MAY BE ABANDONED IN PLACE.
17. ALL ITEMS INDICATED FOR DEMOLITION ON THIS SHEET ARE CONSIDERED TO BE NON-STRUCTURAL. DURING DEMOLITION, EVIDENCE MAY BECOME APPARENT OF A LOAD-BEARING ITEM WHICH IS SHOWN TO BE DEMOLISHED. CONTRACTOR SHALL NOT REMOVE ANY ITEMS WHICH SHOW EVIDENCE OF CARRYING ROOF LOADS, CEILING JOIST LOADS, NOR WALLS WHICH ARE SHEATHED WITH PLYWOOD WITHOUT PRIOR APPROVAL OF THE ARCHITECT EVEN IF SUCH ITEMS ARE SHOWN TO BE DEMOLISHED HEREIN.
18. SEE PLASTER DEMOLITION & REPAIR NOTES ON A-911 PRIOR TO DEMOLITION OF PLASTER ASSEMBLIES

KEY PLAN



AGENCY APPROVAL DSA# 01-121400

196

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PROFESSIONAL STAMP

LICENSED ARCHITECT
MARIANA ALVAREZ PEREZ
C-36107
REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
DEMO EXTERIOR ELEVATIONS - BLDG E

INCREMENT: INC.2

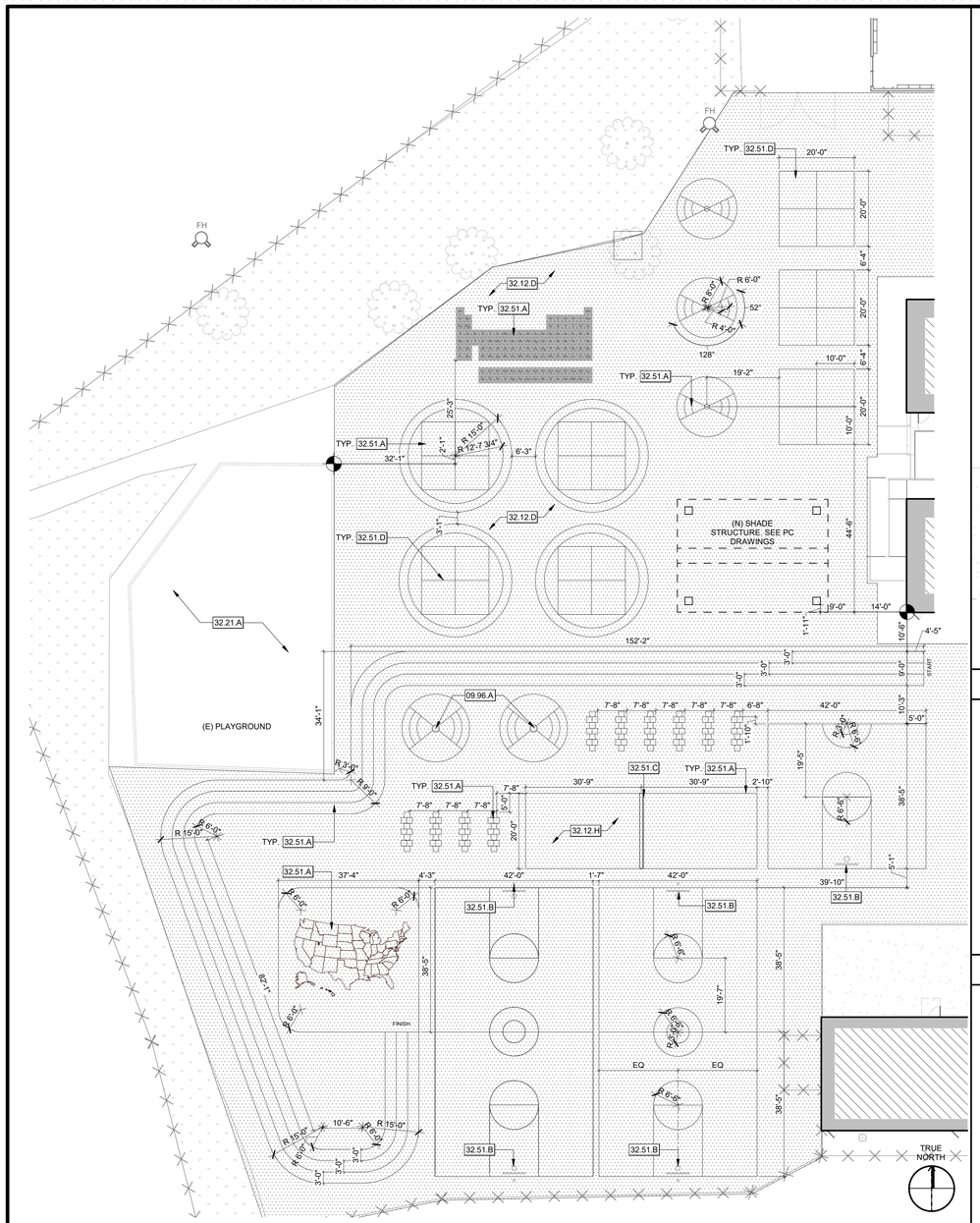
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-043

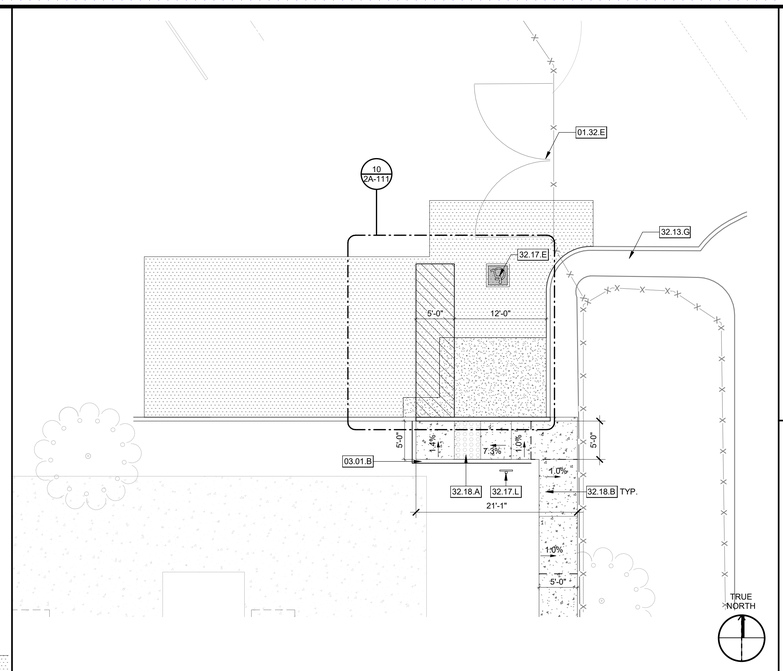
DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

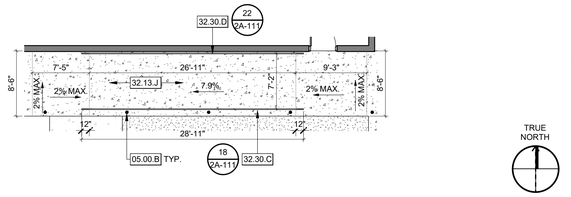
DATE PLOTTED: 10/30/2024 5:47:27 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



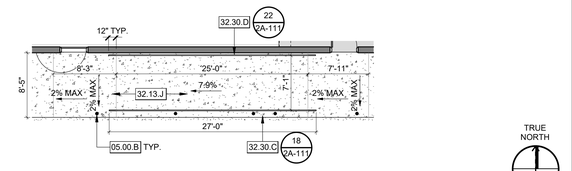
PLAY AREA 1/16" = 1'-0" **2**



ENLARGED PARKING PLAN 1/8" = 1'-0" **1**

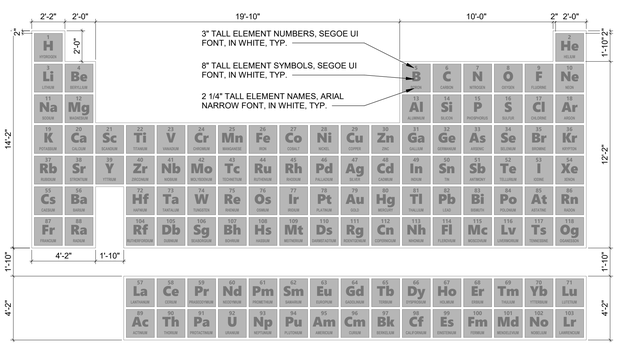


RAMP BLDG B.2 ENLARGED PLAN 1/8" = 1'-0" **3**



RAMP BLDG D.2 ENLARGED PLAN 1/8" = 1'-0" **4**

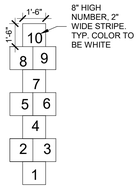
NOTE:
1. STRIPING LINES TO BE PAINTED WITH KELLY-MOORE TRAFFIC MARKING PAINT 1472, OR APPROVED EQUAL. APPLY ALL PAINT IN TWO COATS AT THE MANUFACTURER'S RECOMMENDED RATE.
2. ALL OTHER STRIPING PLAY LINES INCLUDING THE PLAY COURT NOT SHOWN ON THIS DETAIL TO BE 2" WIDE AND LETTERS TO BE 8" TALL.



C PERIODIC TABLE OF ELEMENTS



B USA MAP



A HOPSCOTCH

STRIPING DETAILS 1/4" = 1'-0" **5**

KEYNOTES

01.32.E	(E) GATE W/ 20'-0" CLEAR OPENING WITH KNOX BOX
03.01.B	(N) CURB S.C.D.
05.00.B	(E) COVERED WALKWAY POST. PREPARE FOR PAINTING AND PROTECT DURING CONSTRUCTION
09.96.A	(N) POWDER COAT EXISTING TETHERBALL POLES WITH BLUE FINISH
32.12.D	SLURRY SEAL (E) ASPHALT. S.C.D.
32.12.H	SEAL COAT ENTIRE (E) ASPHALT PLAYGROUND AREA
32.13.G	RAISED WALKWAY
32.13.J	(N) CONCRETE SITE RAMP, S.C.D.
32.17.E	36" X 36" INTERNATIONAL SYMBOL OF ACCESSIBILITY
32.17.L	(N) VAN ACCESSIBLE PARKING STALL AND SIGNAGE
32.18.A	TRUNCATED DOMES, SEE DETAIL 4/2C3.2
32.18.B	CONCRETE PAVING PER DETAIL 1/2C3.1
32.21.A	(E) PLAY STRUCTURE TO REMAIN
32.30.C	(N) HANDRAIL WITH CONCRETE FOOTINGS
32.30.D	(N) HANDRAIL MOUNTED AT EXISTING EXTERIOR WALL
32.51.A	(N) GAME STRIPING. FOR ADDITIONAL NOTES REFER TO DETAIL 5/2A-101
32.51.B	(E) BASKETBALL HOOP TO REMAIN, PROVIDE (N) POWDER COAT WITH BLUE FINISH
32.51.C	(E) BALL WALL TO BE PAINTED IN YELLOW
32.51.D	(N) FOUR SQUARE GAME STRIPING TO BE PAINTED WITH A 2" WIDE STRIPE, ALTERNATING SOLID BLUE AND GREEN COLORS. TYPICAL. FOR MORE INFORMATION, REFER TO DETAIL 5/2A-101

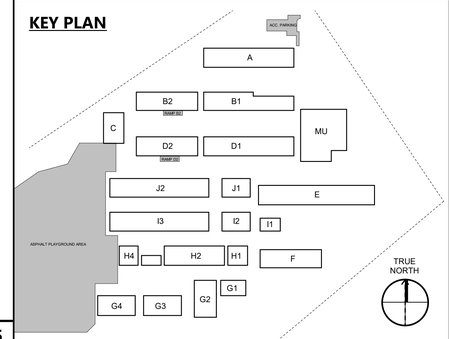
LEGEND - CODE SITE GENERAL NOTES

1. ALL NEW CONCRETE AND AC PAVING IN P.O.T. SHALL HAVE 2% MAX. SLOPE IN ALL DIRECTIONS U.N.O. AND SHALL HAVE FLUSH TRANSITIONS TO ALL ADJACENT NEW AND EXISTING WALK SURFACES IN P.O.T.
2. ALL LANDSCAPE EDGES ALONG ALL NEW OR EXISTING WALK SURFACES IN P.O.T. SHALL BE PER CIVIL DRAWINGS.
3. FOR GRATINGS OR STRAINERS LOCATED IN THE SURFACE OF ANY PEDESTRIAN WAY OR IN P.O.T., THE MAXIMUM GRATE OR STRAINER OPENINGS SHALL NOT EXCEED 1/2" IN THE DIRECTION OF TRAFFIC FLOW.
4. SAFETY DISPERSAL AREA PER CBC 1028.5:OCCUPANTS: 180+54+136+181+113+249+262= 1175x5= 5875 SF REQUIRED.
5. THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR THE PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS, AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NON-COMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NON-COMPLIANT ELEMENTS, COMPONENTS, OR PORTIONS OF THE P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS. DURING CONSTRUCTION, IF POT ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NON-CONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.
6. THE OCCUPANCY OF EXISTING STRUCTURES (BLDG A, C, D, E & MPR) AS DESCRIBED IN THE PROJECT INFORMATION CONTINUE WITHOUT CHANGE PER THE APPROVED DSA APPLICATION NUMBER (CBC 102.6).
7. NO OCCUPANCY CHANGE, SIGNIFICANT ALTERATION, OR INCREASE IN SQUARE FOOTAGE IS PROPOSED FOR THIS PROJECT SCOPE OF WORK. BUILDINGS DO NOT REQUIRE THE ADDITION OF SPRINKLERS. EXISTING BUILDING CONSTRUCTION TYPE WILL BE MAINTAINED.

LEGEND - ENLARGED SITE PLAN

- (N) CONCRETE PAVING
- EXPANSION JOINT
- CONTROL JOINT
- (E) LANDSCAPING
- (N) CONCRETE PAVING PER CIVIL DRAWINGS
- (N) AC PAVEMENT PER CIVIL DRAWINGS
- (E) FENCE LINE
- SLURRY SEAL OVER (E) ASPHALT PER CIVIL DRAWINGS

KEY PLAN



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LICENSED ARCHITECT MARSHA ALVAREZ PERCA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

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MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
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SHEET TITLE
ENLARGED SITE PLANS

INCREMENT: INC.2

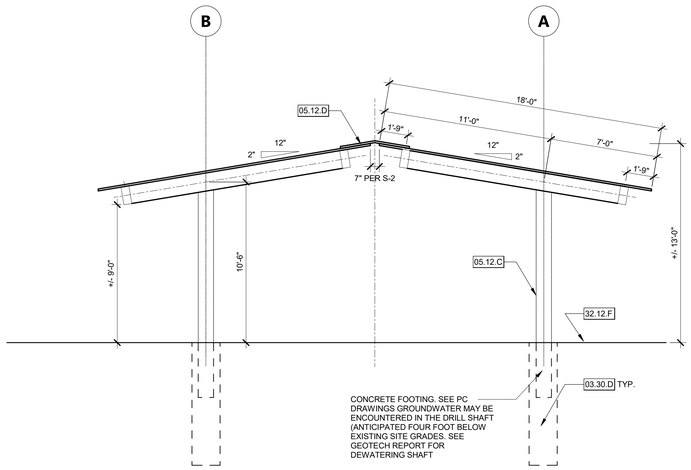
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-101

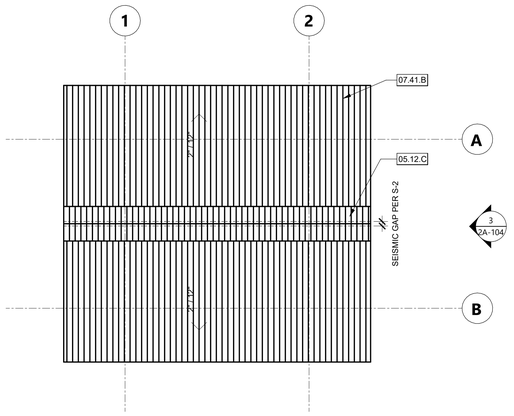
DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:47:31 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2022\23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_rvt



SHADE STRUCTURE 36'-0" X 40'-0" ELEVATION | 1/4" = 1'-0" | 3



SHADE STRUCTURE 36'-0" X 40'-0" ROOF PLAN | 1/8" = 1'-0" | 1

SHADE STRUCTURE 36'-0" X 40'-0" FLOOR PLAN | 1/8" = 1'-0" | 2

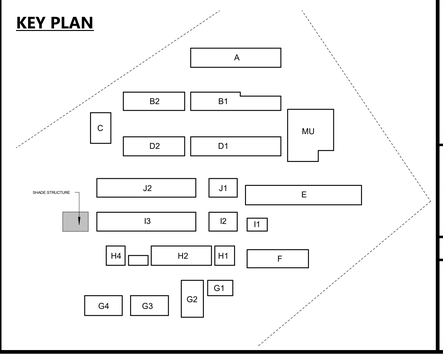
KEYNOTES

01.07.A	LINE OF SHADE STRUCTURE ROOF ABOVE, TYPICAL
03.30.D	SHADE STRUCTURE CONCRETE FOOTING. PROVIDE STEEL CASING, SEE PC DRAWINGS
05.12.C	PC SHADE STRUCTURE COLUMN, HOT-DIP GALVANIZED, TYPICAL, SEE PC DRAWINGS
05.12.D	RIDGE CAP PER MANUFACTURER, SEE PC DRAWINGS 4/S-13
07.41.B	ROOF DECK, SEE PC DRAWINGS
32.00.G	(E) ASPHALT PLAYGROUND
32.12.E	NEATLY SAWCUT EXISTING ASPHALT CONCRETE (AC) TO PREPARE FOR INSTALLATION OF COLUMN FOUNDATIONS. REPAIR ASPHALT
32.12.F	FINISH GRADE

2022 CALIFORNIA BUILDING CODE

STRUCTURE OVER OUTDOOR CLASSROOM/LEARNING SPACES
CONSTRUCTION TYPE: IIB
OCCUPANCY: A-3
NUMBER OF STORIES: 1
BUILDING AREA: 1,440 SF
OCCUPANCY LOAD: 72

KEY PLAN



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1371 Detroit Ave
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SHEET TITLE
PC SHADE STRUCTURE PLANS & ELEVATION

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-104

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

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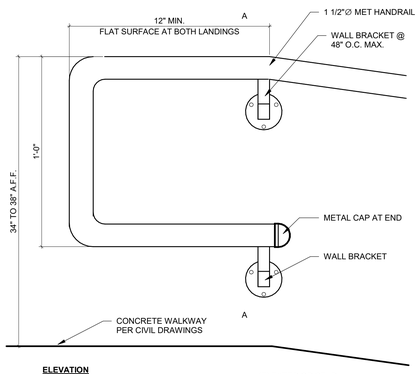
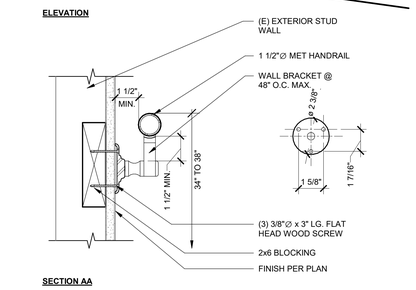
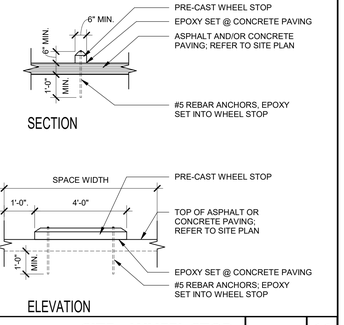
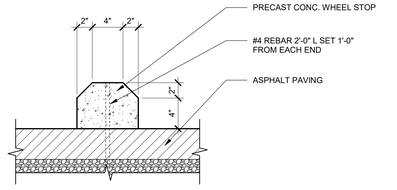




HANDRAIL MOUNTED @ EXTERIOR WALL | 3" = 1'-0" | 22



SITE - WHEEL STOP | 3/8" = 1'-0" | 16



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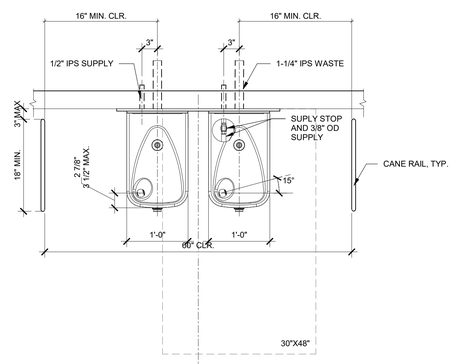
PRE-CAST CONC. WHEEL STOP | 1 1/2" = 1'-0" | 17

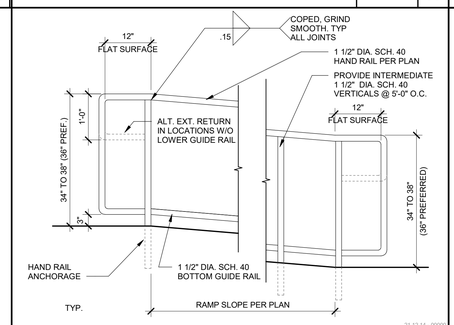


HAWS® ADA VANDAL-RESISTANT WALL MOUNT ADJUSTABLE DRINKING FOUNTAIN

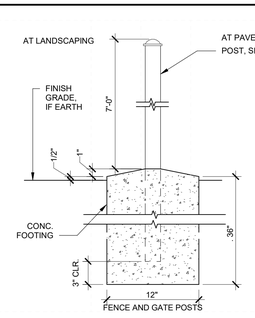
MODEL 1117L

HAWS® MOUNTING PLATE MODEL: 6717

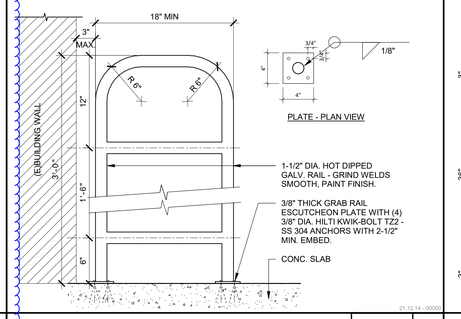
WALL MOUNTED DRINKING FOUNTAIN | 1" = 1'-0" | 2



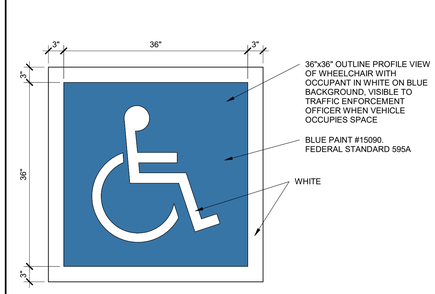
HANDRAIL @ RAMP | 3/4" = 1'-0" | 18



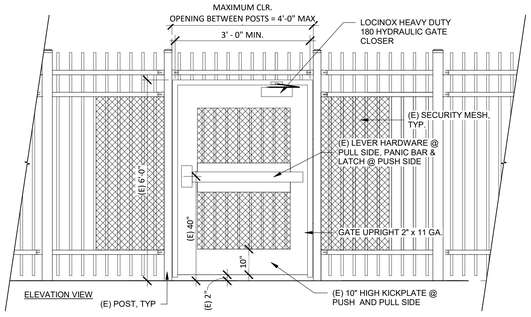
POST FOOTING | N.T.S. | 13



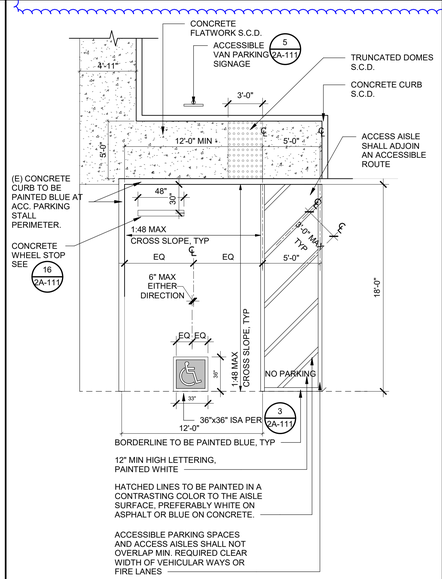
DRINKING FOUNTAIN (N) GRAB RAIL | 1 1/2" = 1'-0" | 8



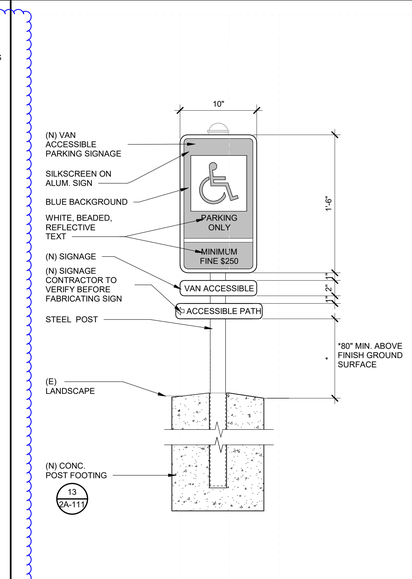
ACCESSIBLE PARKING SYMBOL | 1" = 1'-0" | 3



EXISTING ORNAMENTAL GATE (FOR REFERENCE ONLY) | 1/2" = 1'-0" | 15



ADA PARKING | 3/16" = 1'-0" | 10



ACC. PARKING LOT SIGNAGE | 1 1/2" = 1'-0" | 5

AGENCY APPROVAL DSA# 01-121440

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PROFESSIONAL STAMP

LICENSED ARCHITECT MARIANA ALVAREZ PARGA C-36102 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
SITE DETAILS

INC.2

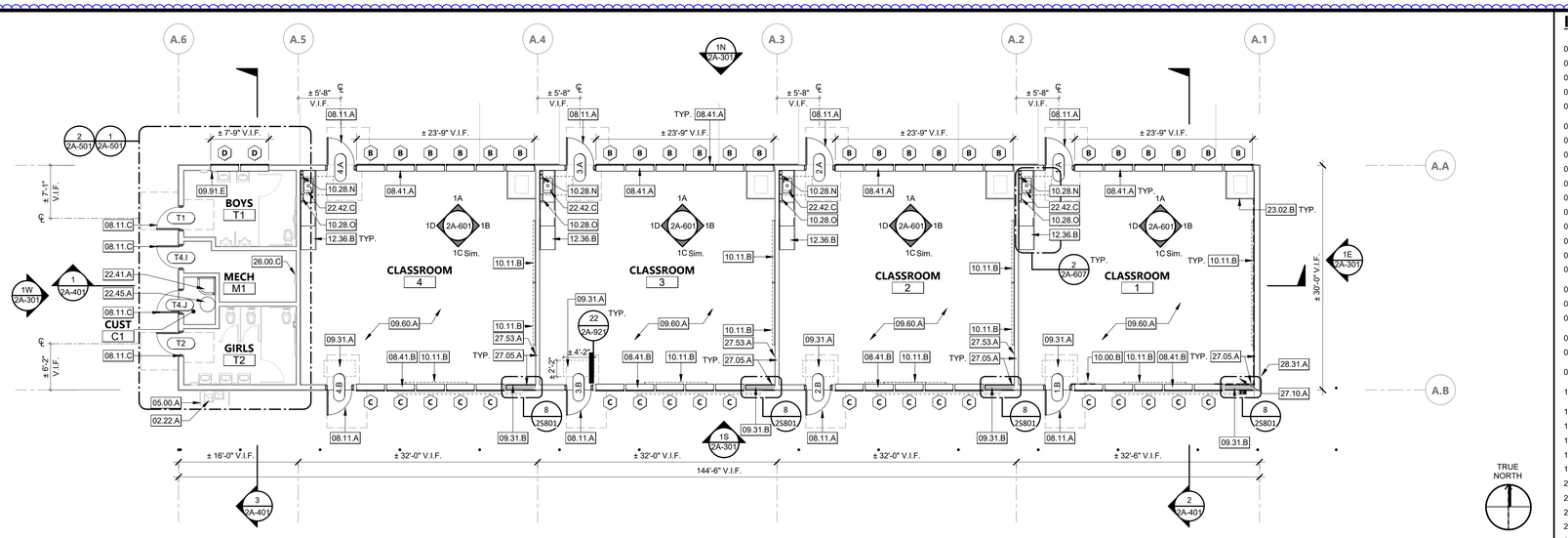
DRAWN BY: MEP JOB NUMBER: 23119.01

SHEET NO.
2A-111

DATE: OCTOBER 25, 2024

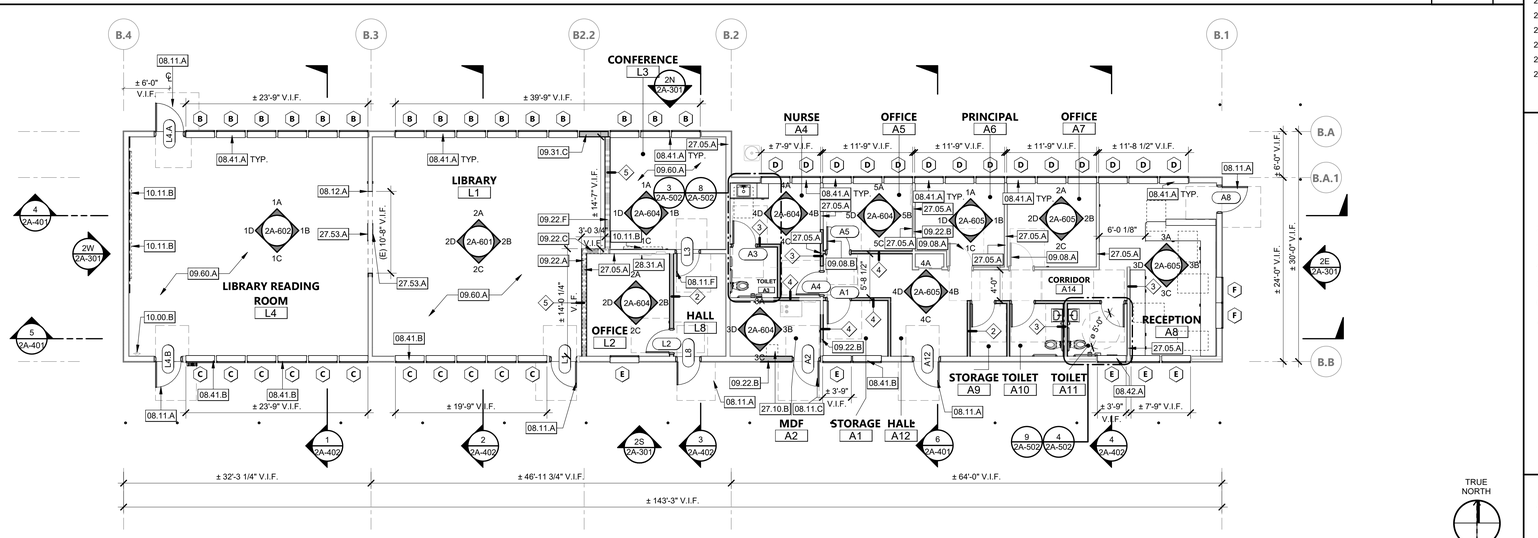
CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:47:36 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDIUSD_MEADOW HOMES ES MOD_INC2.rvt



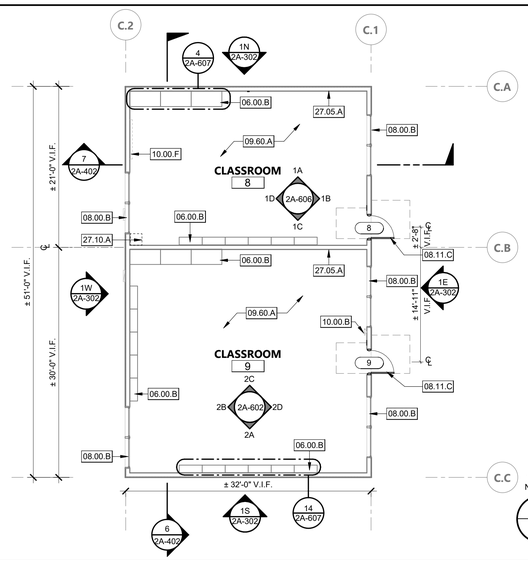
FLOOR PLAN - BUILDING A

1/8" = 1'-0" | 1



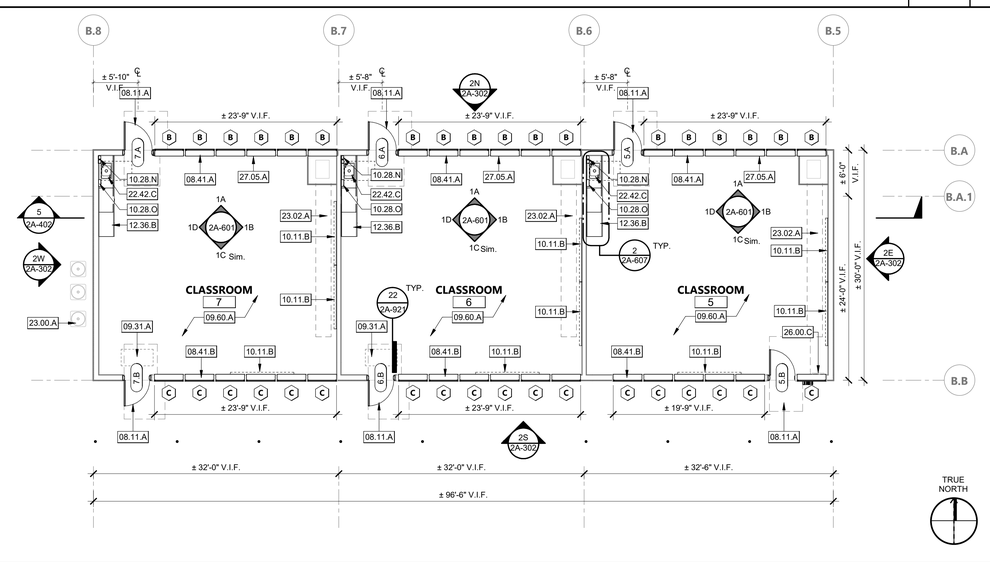
FLOOR PLAN - BUILDING B.1

1/8" = 1'-0" | 2



FLOOR PLAN - BUILDING C

1/8" = 1'-0" | 4



FLOOR PLAN - BUILDING B.2

1/8" = 1'-0" | 3

KEYNOTES

02.22.A	EXISTING PLUMBING DEMOLITION
05.00.A	(E) METAL HANDRAIL TO REMAIN
06.00.B	(E) CASEWORK TO REMAIN. PROTECT IN PLACE.
08.00.B	(E) WINDOW TO REMAIN
08.11.A	(N) EXTERIOR FRP FLUSH DOOR WITH HALF NARROW LITE INSTALLED IN (E) WOOD OR HOLLOW METAL FRAME.
08.11.C	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.11.F	FLIP (E) DOOR
08.12.A	NEW OPENING, WALL FINISH TO MATCH EXISTING
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
08.42.A	ALUMINUM CLERESTORY WINDOW, FROSTED
09.08.A	(E) DOOR TO BE PAINTED. SEE FINISH PLAN
09.08.B	(N) DOOR TO BE PAINTED. SEE FINISH PLAN
09.22.A	(E) WALL STUDS. PREPARE FOR NEW RATED (2HR) FINISH ON BOTH SIDES
09.22.B	(N) INFILL WALL AND PATCH TO MATCH EXISTING
09.22.C	(E) WALL STUDS. PREPARE FOR NEW RATED (2HR) FINISH. ADD (1) LAYER ON THE SIDE OF THE OFFICE AND (3) LAYERS TO THE LIBRARY. WALL IN OFFICE SHOULD BE FLUSH.
09.22.F	(N) 2-HR INTERIOR WALL, REFER TO WALL TYPES
09.31.A	SAW CUT & INFILL RECESS MAT. (N) LVT FLOORING FLUSH OVER INFILL
09.31.B	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING WITH (N) 2" CONDUIT PENETRATION PER TECHNOLOGY DRAWINGS. SEE 8/2S-801 FOR WINDOW INFILL.
09.31.C	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING.
09.60.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
09.91.E	PATCH WALL & REPLACE TILES AROUND NEW WINDOWS. REFER TO SECTION 09 30 13 IN THE SPECS
10.00.B	(E) FIRE EXTINGUISHER TO BE REMOVED/PROTECTED AND REINSTALLED. SEE INTERIOR ELEVATIONS FOR LOCATION.
10.00.F	(E) WHITEBOARDS TO REMAIN
10.11.B	WALL MOUNTED 4'x8' WHITEBOARDS, SEE DETAIL/2A-921
10.28.N	SURFACE MOUNT SOAP DISPENSER
10.28.O	SURFACE MOUNT PAPER TOWEL DISPENSER
12.36.B	PLASTIC LAMINATED COUNTERTOP. 6" BACKSPLASH, TYP.
22.41.A	JANITORIAL FLOOR MOP SINK, S.M.D.
22.42.C	ACCESSIBLE SINK, S.MP.D.
22.45.A	(N) WATER HEATER, S.P.D. FOR MORE INFORMATION
23.00.A	(E) MECHANICAL EQUIPMENT TO REMAIN
23.02.A	(E) HVAC HOUSING AND DUCTWORK TO REMAIN AND BE PROTECTED DURING CONSTRUCTION. PREPARE SURFACE FOR PAINTING
23.02.B	(E) HVAC HOUSING AND DUCTWORK TO REMAIN AND BE PROTECTED DURING CONSTRUCTION, PAINT
26.00.C	(E) ELECTRICAL PANEL TO REMAIN, PROTECT IN PLACE
27.05.A	(N) SURFACE RACEWAY. S.T.D.
27.10.A	(N) IDF RACK, S.T.D.
27.10.B	(N) MDF RACK, S.T.D.
27.53.A	(N) CLOCK SYSTEM, S.T.D.
28.31.A	ELECTRICAL PANELS. REFER TO ELECTRICAL.

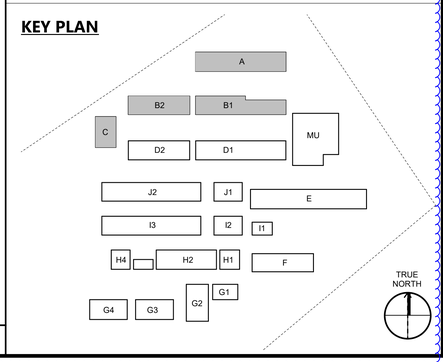
LEGEND - FLOOR PLAN GENERAL NOTES

1. ALL INTERIOR CONSTRUCTION ON THIS PROJECT IS DESIGNATED "AIRTIGHT" FOR THE PURPOSES OF SOUND ISOLATION AND NOISE CONTROL. THE REQUIREMENTS FOR AIRTIGHT CONSTRUCTION INCLUDE, BUT ARE NOT LIMITED TO, THE REQUIREMENTS DESCRIBED IN THE SPECIFICATIONS AND THE DETAILS SHOWN ON DRAWING SHEET A-901. ALL NECESSARY PRODUCTS AND DETAILING SHALL BE PROVIDED TO ACHIEVE AIRTIGHT/LEAKPROOF CONSTRUCTION, WHETHER OR NOT THOSE PRODUCTS, OR DETAILS, ARE SPECIFICALLY DESCRIBED OR SHOWN IN THE PROJECT DOCUMENTS.
2. FURNITURE N.I.C.
3. ALL DIMENSIONS ARE FROM FACE OF STUD TO FACE OF STUD OR CENTERLINE OF COLUMN.
4. ALL EXPOSED STEEL TO BE GALVANIZED AND PAINTED.
5. ALL EXPOSED PIPES, STRUCTURE, AND CONDUIT TO BE PAINTED.
6. FOR WALL TYPES SEE SHEET A-911.
7. OFFICE SPACES, WHEN ACCOMMODATING STUDENTS SUCH AS, FOR COUNSELLING SESSIONS, SHALL PROVIDE A TURNING SPACE WITHIN THE ROOM.

LEGEND - FLOOR PLAN

- ROOM NAME / 101 — ROOM NAME / ROOM NUMBER
- A0 — WALL TYPE TAG
- 101AA — DOOR TYPE TAG
- A — WINDOW TYPE TAG
- (N) PARTITION AND INFILL WALL
- (E) WALL
- (E) WALL TO BE DEMOLISHED
- (E) 1 HR RATED WALL
- (N) 2 HR RATED WALL

KEY PLAN



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PROFESSIONAL STAMP

LICENSED ARCHITECT MARINA ALVAREZ ZAPATA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

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MEADOW HOMES ES MODERNIZATION

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SHEET TITLE
FLOOR PLAN - BLDG A, B, C

INCREMENT: INC.2

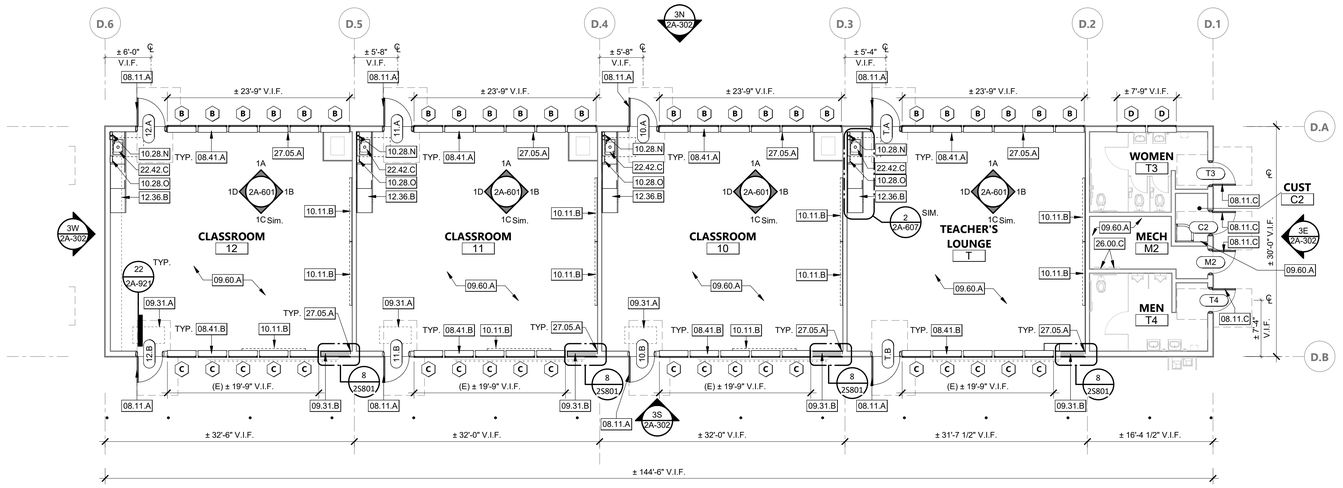
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-201

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

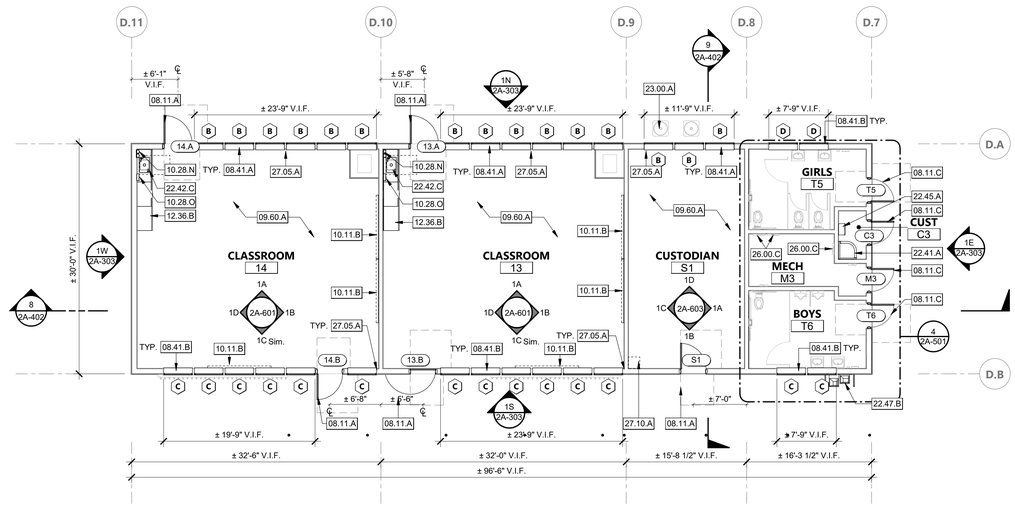
DATE PLOTTED: 10/30/2024 4:23:34 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



TRUE NORTH

FLOOR PLAN - BUILDING D.1

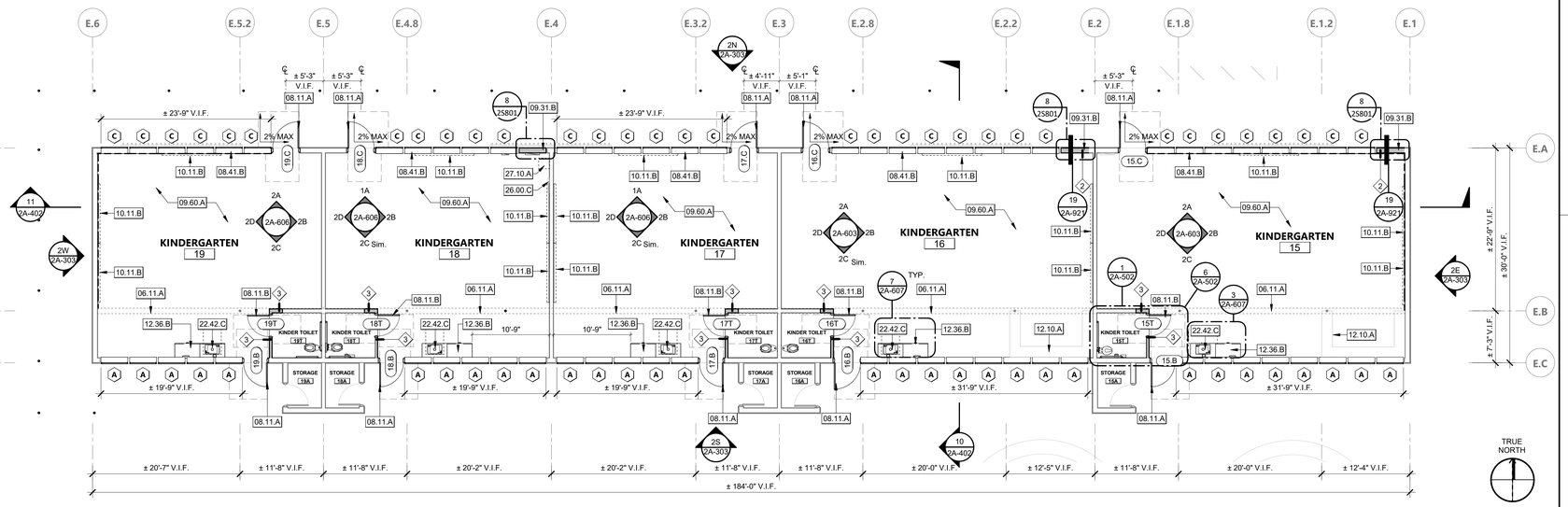
1/8" = 1'-0" | 1



TRUE NORTH

FLOOR PLAN - BUILDING D.2

1/8" = 1'-0" | 2



TRUE NORTH

FLOOR PLAN - BUILDING E

1/8" = 1'-0" | 3

KEYNOTES

06.11.A	(E) HEADER TO REMAIN
08.11.A	(N) EXTERIOR FRP FLUSH DOOR WITH HALF NARROW LITE INSTALLED IN (E) WOOD OR HOLLOW METAL FRAME.
08.11.B	(N) WOOD DOOR AND FRAME
08.11.C	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
09.31.A	SAW CUT & INFILL RECESS MAT. (N) LVT FLOORING FLUSH OVER INFILL
09.31.B	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING WITH (N) 2" CONDUIT PENETRATION PER TECHNOLOGY DRAWINGS. SEE 8/2S-801 FOR WINDOW INFILL.
09.60.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
10.11.B	WALL MOUNTED 4'x8' WHITEBOARDS, SEE DETAIL/2A-921
10.28.N	SURFACE MOUNT SOAP DISPENSER
10.28.O	SURFACE MOUNT PAPER TOWEL DISPENSER
12.10.A	(E) SHELVING CASEWORK. FINISH TO BE REMOVED AND REPLACED WITH INK & STAIN RESISTANT VINYL.
12.36.B	PLASTIC LAMINATED COUNTERTOP. 6" BACKSPLASH, TYP.
22.41.A	JANITORIAL FLOOR MOP SINK, S.M.D.
22.42.C	ACCESSIBLE SINK, S.MP.D.
22.45.A	(N) WATER HEATER, S.P.D. FOR MORE INFORMATION
22.47.B	HI-LOW DRINKING FOUNTAIN WITH HYDRAITION STATION
23.00.A	(E) MECHANICAL EQUIPMENT TO REMAIN
26.00.C	(E) ELECTRICAL PANEL TO REMAIN, PROTECT IN PLACE
27.05.A	(N) SURFACE RACEWAY. S.T.D.
27.10.A	(N) IDF RACK, S.T.D.

LEGEND - FLOOR PLAN GENERAL NOTES

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2. FURNITURE N.I.C.
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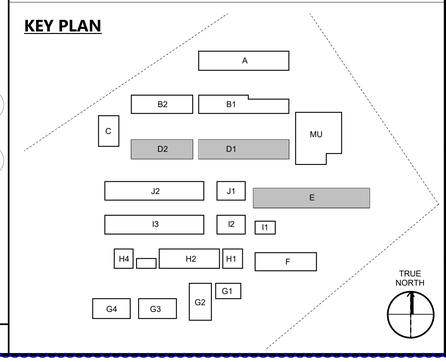
4. ALL EXPOSED STEEL TO BE GALVANIZED AND PAINTED.
5. ALL EXPOSED PIPES, STRUCTURE, AND CONDUIT TO BE PAINTED.
6. FOR WALL TYPES SEE SHEET A-911.
7. OFFICE SPACES, WHEN ACCOMMODATING STUDENTS SUCH AS, FOR COUNSELLING SESSIONS, SHALL PROVIDE A TURNING SPACE WITHIN THE ROOM.

LEGEND - FLOOR PLAN

- ROOM NAME / 101 — ROOM NAME / ROOM NUMBER
- A8 — WALL TYPE TAG
- 101AA — DOOR TYPE TAG
- A — WINDOW TYPE TAG
- (N) PARTITION AND INFILL WALL
- (E) WALL
- (E) WALL TO BE DEMOLISHED
- (E) 1 HR RATED WALL
- (N) 2 HR RATED WALL

KEY PLAN



TRUE NORTH

AGENCY APPROVAL DSA# 1-121400

196

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A

PROFESSIONAL STAMP

LICENSED ARCHITECT
MARINA ALVAREZ-PARGA
C-36107
REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

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Concord, CA 94520

SHEET TITLE

FLOOR PLAN - BLDG D, E

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

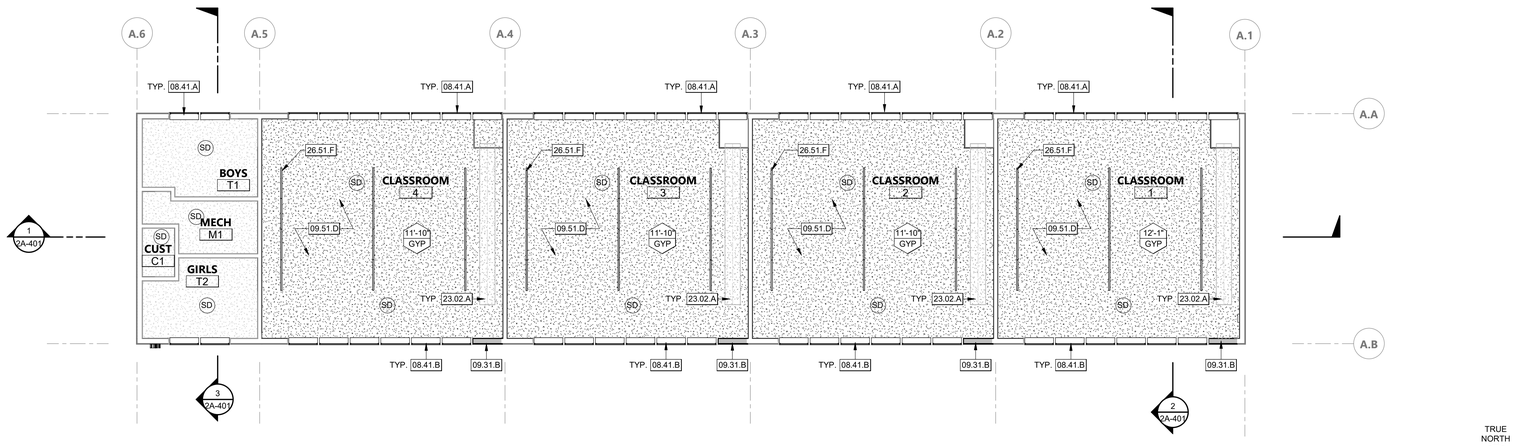
SHEET NO.

2A-202

DATE: OCTOBER 25, 2024

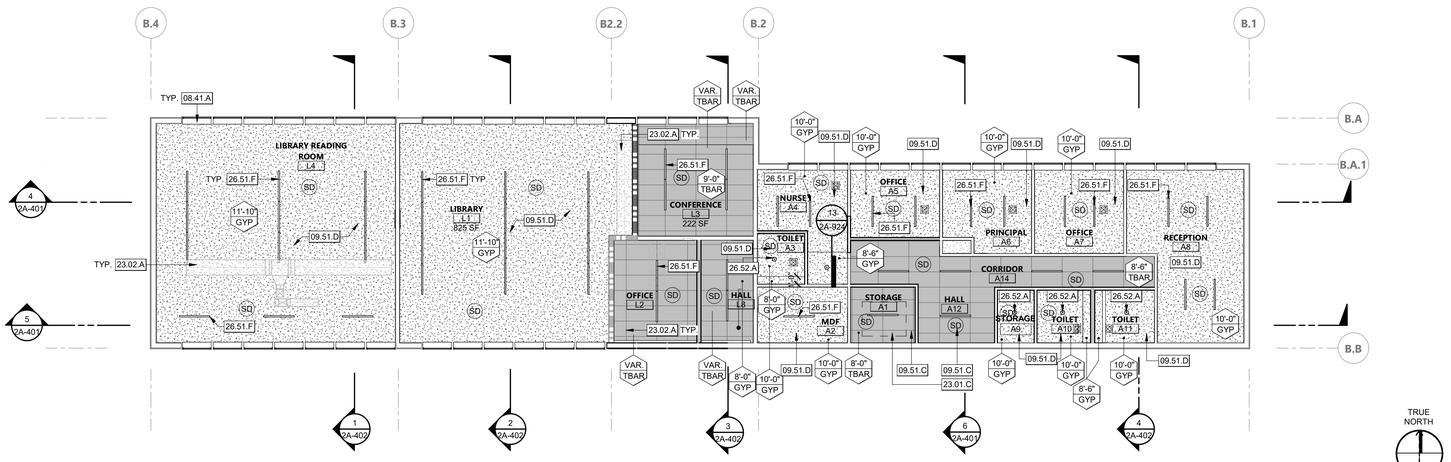
CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:47:50 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



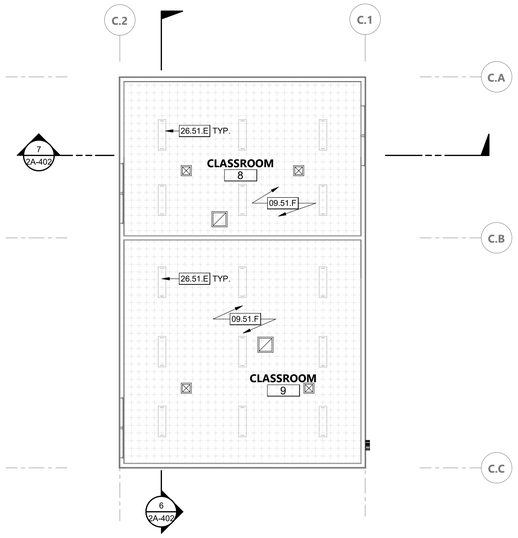
TRUE NORTH

CEILING PLAN - BUILDING A | 1/8" = 1'-0" | 1

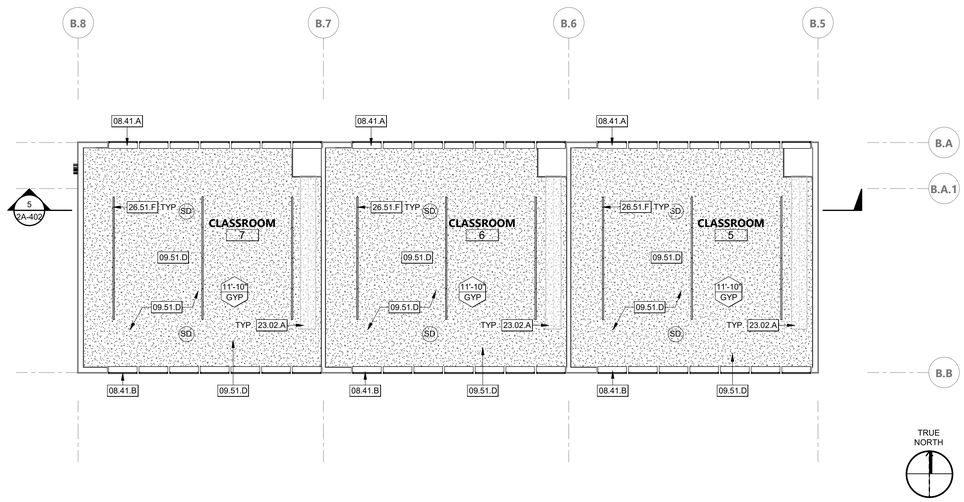


TRUE NORTH

CEILING PLAN - BUILDING B.1 | 1/8" = 1'-0" | 2



CEILING PLAN - BUILDING C | 1/8" = 1'-0" | 4



TRUE NORTH

CEILING PLAN - BUILDING B.2 | 1/8" = 1'-0" | 3

KEYNOTES

08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
09.31.B	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING WITH (N) 2" CONDUIT PENETRATION PER TECHNOLOGY DRAWINGS. SEE 8/2S-801 FOR WINDOW INFILL.
09.51.C	(N) SUSPENDED ACOUSTICAL PANEL CEILING
09.51.D	(N) GYPSUM BOARD CEILING. USE EXISTING FRAMING WHERE OCCURS.
09.51.F	PAINT EXISTING GRID AND REPLACE TILES WITH NEW
23.01.C	(N) ERV PER MECHANICAL DRAWINGS, S.M.D., S.S.D.
23.02.A	(E) HVAC HOUSING AND DUCTWORK TO REMAIN AND BE PROTECTED DURING CONSTRUCTION. PREPARE SURFACE FOR PAINTING
26.51.E	(E) PENDANT LIGHTS, REMOVE AND STORE, FOR REINSTALLATION AFTER CEILING WORK COMPLETED
26.51.F	(N) INTERIOR LIGHTING FIXTURE, S.E.D.
26.52.A	NEW CAN LIGHTS

CEILING GENERAL NOTES

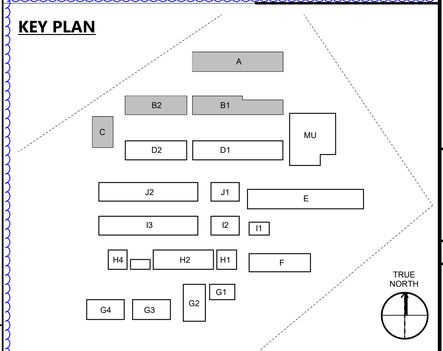
1. ANY EXPOSED DUCTS, PIPES TO BE PAINTED.
2. ANY EXPOSED STEEL TO BE GALVANIZED AND PAINTED.
3. NO SURFACE MOUNTED BACK BOXES, PIPES OR CONDUIT.
4. FOR FRAMED GYP. BD. CEILING, SEE DETAILS IN 2A-924

LEGEND - CEILING

- 12'-0" ACT — CEILING HEIGHT ABOVE FIN. FLOOR / CEILING MATERIAL
- EXISTING ACT CEILING. GRID TO MAINTAIN AND PAINT. (N) TILES
- NEW 2x4 SUSPENDED ACOUSTICAL PANEL CEILING (T-BAR) — 7 / 2A-923
- EXISTING GWB - FRAMED GYPSUM BOARD CEILING (GYP(E))
- NEW GWB - FRAMED GYPSUM BOARD CEILING (GYP) — 12 / 2A-924
- EXIT SIGN. SEE ALSO ELECTRICAL LIGHTING PLANS
- (E) RECESSED RECTANGULAR LIGHT FIXTURE
- NEW LINEAR PENDANT LIGHT FIXTURE S.E.D.
- CAN LIGHT FLUSH MOUNT FIXTURE
- RETURN AIR GRILLE PER MECHANICAL DRAWINGS
- ROOF ACCESS HATCH
- SUPPLY REGISTER PER MECHANICAL DRAWINGS
- EXHAUST FAN OR GRILLE PER MECHANICAL DRAWINGS
- AC SPLIT UNIT
- AUDIO SPEAKER
- FA — FIRE ALARM PER FIRE ALARM DRAWINGS
- OS — OCCUPANCY SENSOR PER ELECTRICAL DRAWINGS
- SD — SMOKE DETECTOR PER FIRE ALARM DRAWINGS

NOTE: SYMBOLS SHOWN FOR LOCATION PURPOSES ONLY, SEE MECHANICAL, ELECTRICAL, & FIRE PROTECTION DRAWINGS FOR DETAILED INFORMATION

KEY PLAN



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PROFESSIONAL STAMP

LICENSED ARCHITECT MARIANA ALVAREZ PEÑA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

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REFLECTED CEILING PLAN - BLDG A, B, C

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.

2A-211

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

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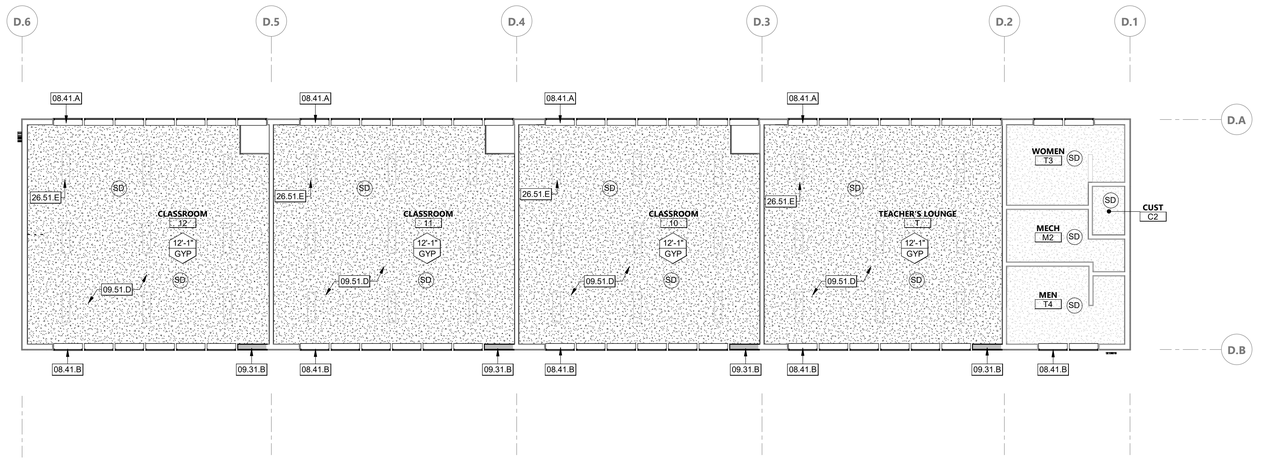
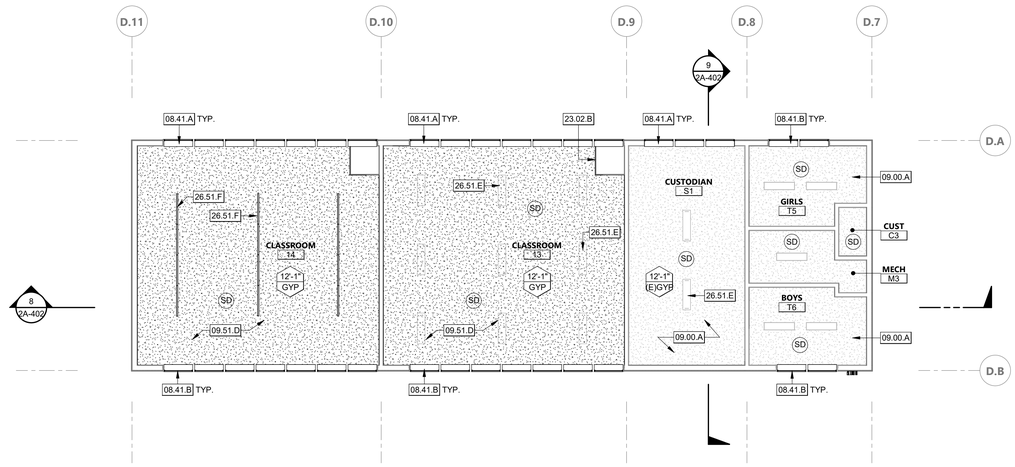
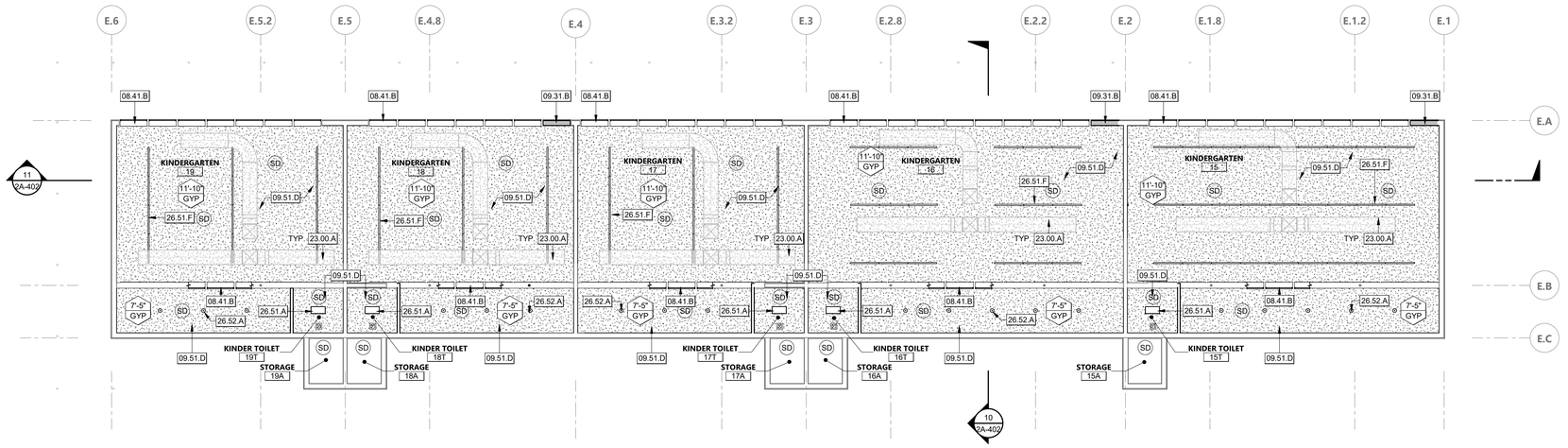


CEILING PLAN - BUILDING D.1 | 1/8" = 1'-0" | 1



CEILING PLAN - BUILDING D.2 | 1/8" = 1'-0" | 2



CEILING PLAN - BUILDING E | 1/8" = 1'-0" | 3

KEYNOTES

08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
09.00.A	(E) GYPSUM BOARD TO REMAIN
09.31.B	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING WITH (N) 2" CONDUIT PENETRATION PER TECHNOLOGY DRAWINGS. SEE 8/2S-801 FOR WINDOW INFILL.
09.51.D	(N) GYPSUM BOARD CEILING. USE EXISTING FRAMING WHERE OCCURS.
23.00.A	(E) MECHANICAL EQUIPMENT TO REMAIN
23.02.B	(E) HVAC HOUSING AND DUCTWORK TO REMAIN AND BE PROTECTED DURING CONSTRUCTION, PAINT
26.51.A	NEW LED PENDANT LIGHTS
26.51.E	(E) PENDANT LIGHTS, REMOVE AND STORE, FOR REINSTALLATION AFTER CEILING WORK COMPLETED
26.51.F	(N) INTERIOR LIGHTING FIXTURE, S.E.D.
26.52.A	NEW CAN LIGHTS

CEILING GENERAL NOTES

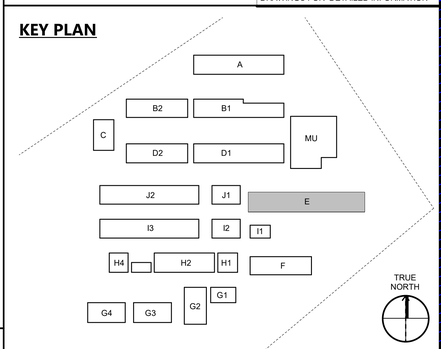
1. ANY EXPOSED DUCTS, PIPES TO BE PAINTED.
2. ANY EXPOSED STEEL TO BE GALVANIZED AND PAINTED.
3. NO SURFACE MOUNTED BACK BOXES, PIPES OR CONDUIT.
4. FOR FRAMED GYP. BD. CEILING, SEE DETAILS IN 2A-924

LEGEND - CEILING

- 12'-0" ACT — CEILING HEIGHT ABOVE FIN. FLOOR / CEILING MATERIAL
- EXISTING ACT CEILING. GRID TO MAINTAIN AND PAINT. (N) TILES
- NEW 2x4 SUSPENDED ACOUSTICAL PANEL CEILING (T-BAR) — 7 / 2A-923
- EXISTING GWB - FRAMED GYPSUM BOARD CEILING (GYP(E))
- NEW GWB - FRAMED GYPSUM BOARD CEILING (GYP) — 12 / 2A-924
- EXIT SIGN. SEE ALSO ELECTRICAL LIGHTING PLANS
- (E) RECESSED RECTANGULAR LIGHT FIXTURE
- NEW LINEAR PENDANT LIGHT FIXTURE S.E.D.
- CAN LIGHT FLUSH MOUNT FIXTURE
- RETURN AIR GRILLE PER MECHANICAL DRAWINGS
- ROOF ACCESS HATCH
- SUPPLY REGISTER PER MECHANICAL DRAWINGS
- EXHAUST FAN OR GRILLE PER MECHANICAL DRAWINGS
- AC SPLIT UNIT
- AUDIO SPEAKER
- FA — FIRE ALARM PER FIRE ALARM DRAWINGS
- OS — OCCUPANCY SENSOR PER ELECTRICAL DRAWINGS
- SD — SMOKE DETECTOR PER FIRE ALARM DRAWINGS

NOTE: SYMBOLS SHOWN FOR LOCATION PURPOSES ONLY, SEE MECHANICAL, ELECTRICAL, & FIRE PROTECTION DRAWINGS FOR DETAILED INFORMATION

KEY PLAN



AGENCY APPROVAL DSA# 1-121400

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PROFESSIONAL STAMP

LICENSED ARCHITECT — MARINA ALVAREZ PUGA — C-36107 — REN. 01-31-25 — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

REFLECTED CEILING PLAN - BLDG D, E

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

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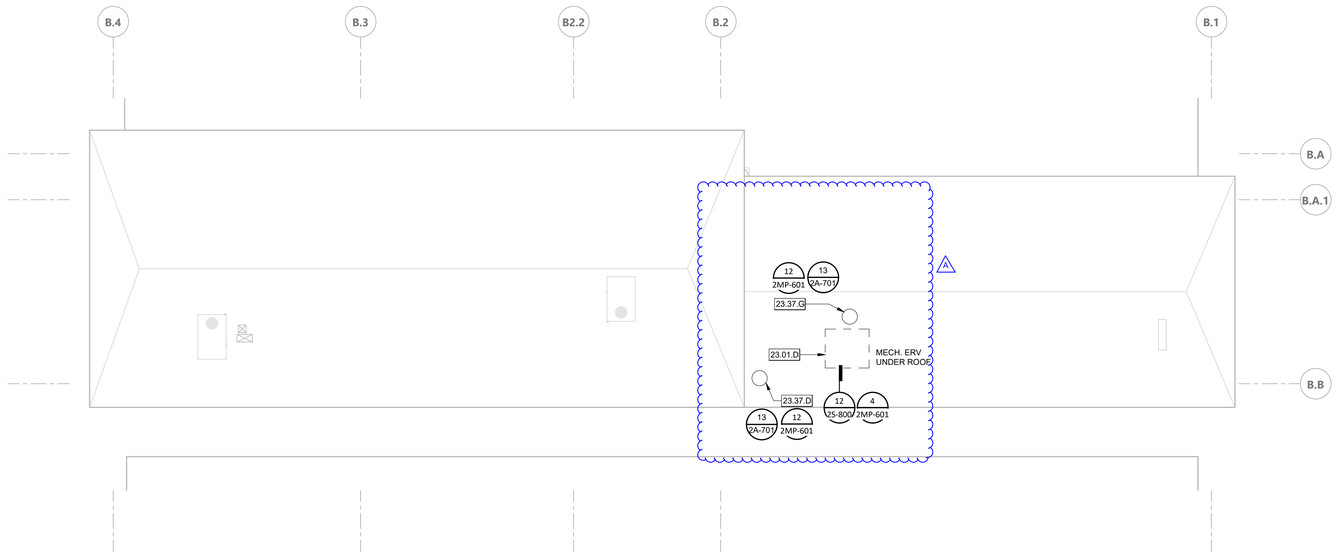


ROOF PLAN - BUILDING B.1

1/8" = 1'-0"

2

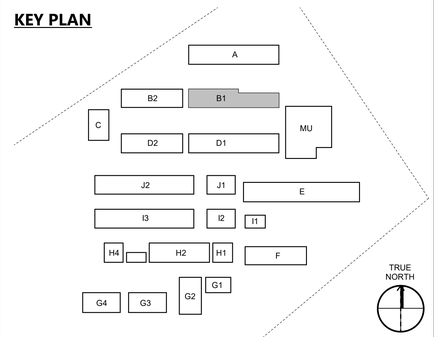
KEYNOTES

23.01.D	(N) ERV UNDER ROOF PER MECHANICAL DRAWINGS, S.M.D., S.S.D.
23.37.D	EXHAUST HOOD PER MECHANICAL DRAWINGS. FOR ROOF PATCH BACK SEE DETAIL 6/2A-701
23.37.G	INTAKE AIR HOOD PER MECHANICAL DRAWINGS. FOR ROOF PATCH BACK SEE DETAIL 6/2A-701

ROOF GENERAL NOTES

1. REFER TO MECHANICAL SHEETS FOR MECHANICAL EQUIPMENT INFORMATION.
2. REFER TO STRUCTURAL SHEETS FOR NEW ROOF FRAMING TO RECEIVE MECHANICAL UNITS.

KEY PLAN



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SHEET TITLE

DEMO & NEW ROOF PLAN - BLDG B

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

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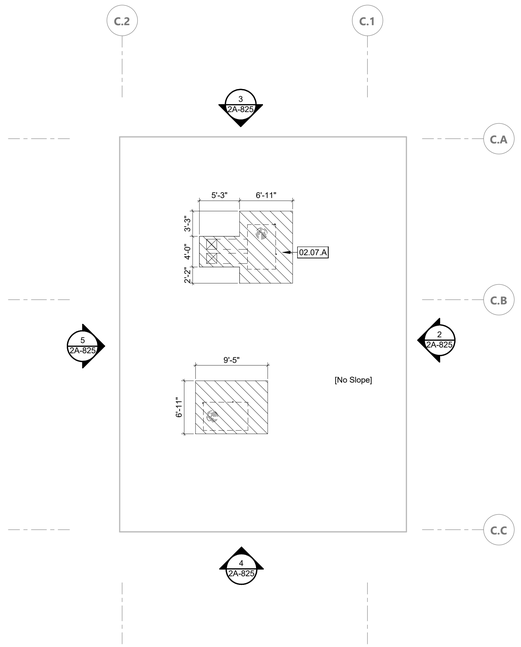
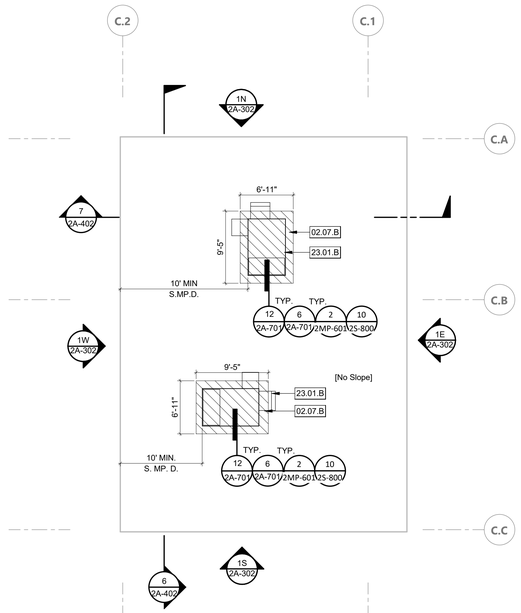
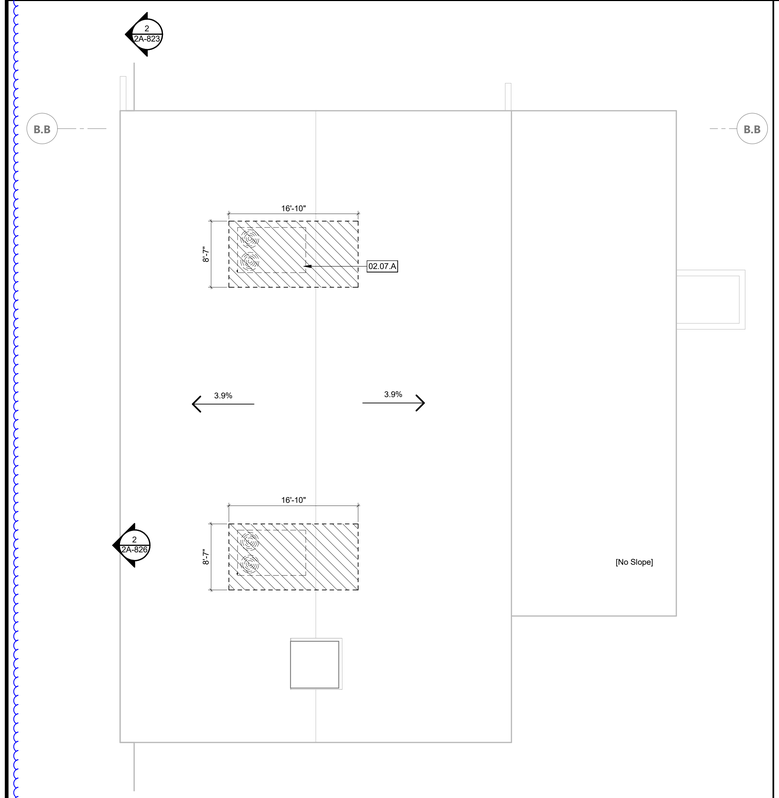


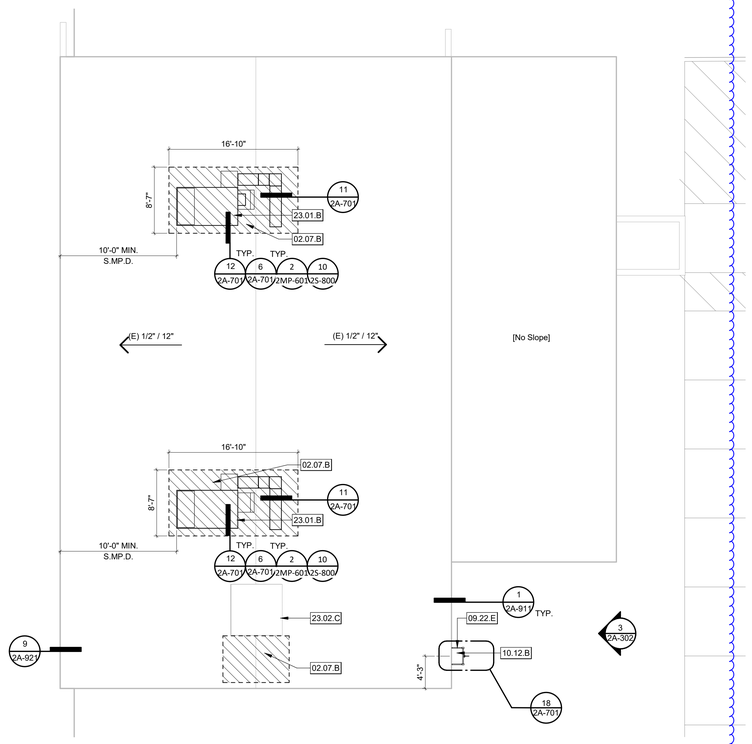
DEMO ROOF PLAN - BUILDING C | 1/8" = 1'-0" | 1



ROOF PLAN - BUILDING C | 1/8" = 1'-0" | 2



DEMO ROOF PLAN - MULTI-USE BUILDING | 1/8" = 1'-0" | 3



ROOF PLAN - MULTI-USE BUILDING | 1/8" = 1'-0" | 4

TRUE NORTH

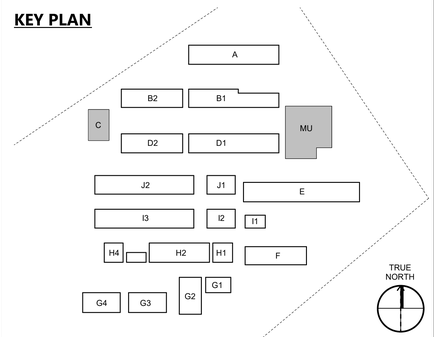
KEYNOTES

02.07.A	EXISTING THERMAL AND MOISTURE PROTECTION DEMOLITION
02.07.B	REPAIR EXISTING THERMAL AND MOISTURE PROTECTION
09.22.E	(E) 1HR EXTERIOR BEARING WALL. PROVIDE WOOD BLOCKING FOR ROOF ACCESS LADDER. MAKE OPENING FROM INTERIOR. REPAIR TO MEET SPECIFIED F.R. LISTING. PATCH AND PAINT TO MATCH ADJACENT SURFACES.
10.12.B	TUBULAR RAIL LOW PARAPET ACCESS ALUMINUM LADDER WITH PLATFORM.
23.01.B	(N) MECHANICAL EQUIPMENT PER MECHANICAL DRAWINGS. USE (E) CURB, OPENINGS AND DUCTWORK
23.02.C	(E) SMOKE VENT

ROOF GENERAL NOTES

1. REFER TO MECHANICAL SHEETS FOR MECHANICAL EQUIPMENT INFORMATION.
2. REFER TO STRUCTURAL SHEETS FOR NEW ROOF FRAMING TO RECEIVE MECHANICAL UNITS.

KEY PLAN



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SHEET TITLE
DEMO & NEW ROOF PLAN - BLDG C, MULTI-USE

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

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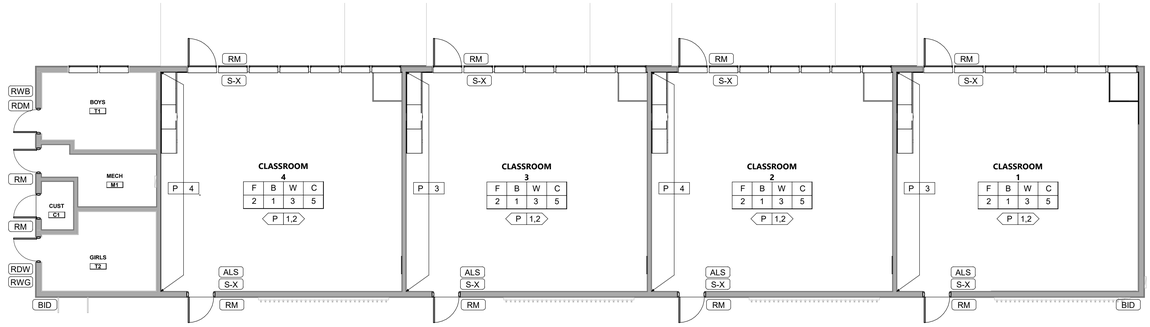


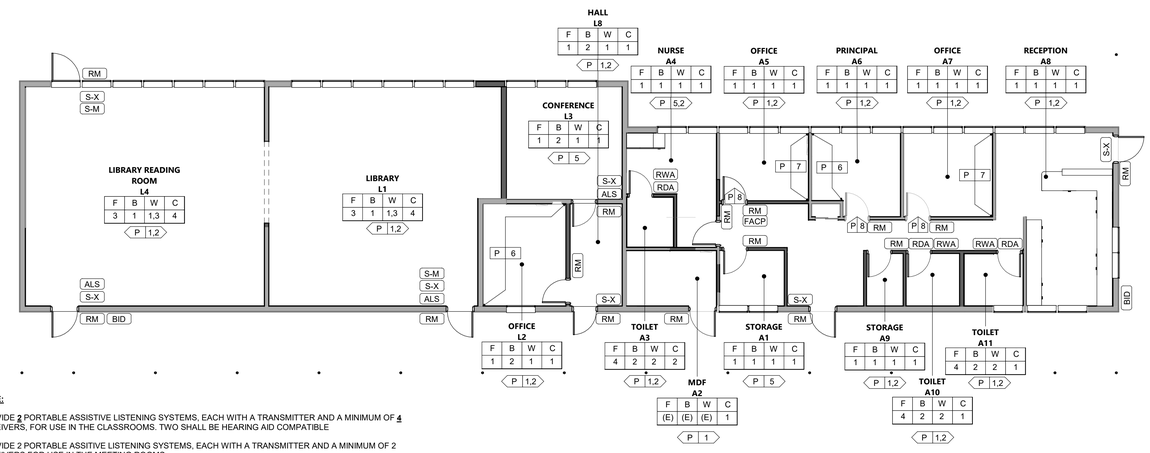
NOTE:

PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **4** RECEIVERS, FOR USE IN THE CLASSROOMS. TWO SHALL BE HEARING AID COMPATIBLE

THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

TRUE NORTH

FINISH PLAN - BUILDING A | 1/8" = 1'-0" | 1



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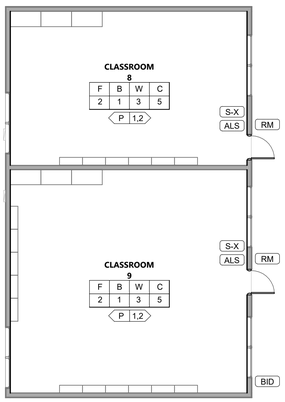
PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **4** RECEIVERS, FOR USE IN THE CLASSROOMS. TWO SHALL BE HEARING AID COMPATIBLE

PROVIDE 2 PORTABLE ASSITIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF 2 RECEIVERS FOR USE IN THE MEETING ROOMS

THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

TRUE NORTH

FINISH PLAN - BUILDING B.1 | 1/8" = 1'-0" | 2



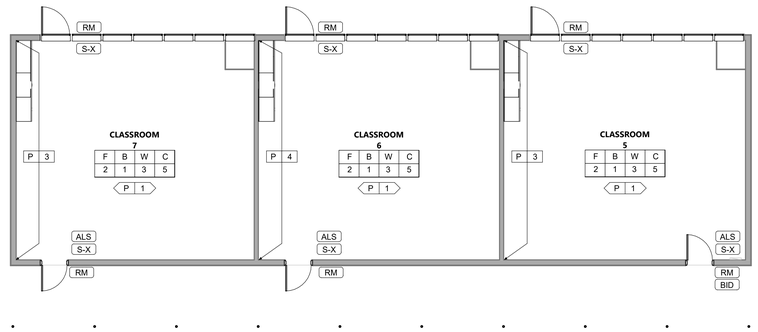
NOTE:

PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **4** RECEIVERS, FOR USE IN THE CLASSROOMS. TWO SHALL BE HEARING AID COMPATIBLE

THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

TRUE NORTH

FINISH PLAN - BUILDING C | 1/8" = 1'-0" | 4



NOTE:

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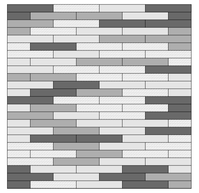
TRUE NORTH

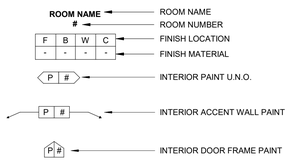
FINISH PLAN - BUILDING B.2 | 1/8" = 1'-0" | 3

TYPICAL CLASSROOM LVT LAYOUT



- LVT COLOR 1 - JOY SQUARED - SNOW DAY
- LVT COLOR 2 - JOY SQUARED - SKY
- LVT COLOR 3 - JOY SQUARED - HOLIDAY
- LVT COLOR 4 - JOY SQUARED - BUBBLE
- LVT COLOR 5 - JOY SQUARED - TREEHOUSE

FINISH PLAN LEGEND



- ROOM NAME
- ROOM NUMBER
- FINISH LOCATION
- FINISH MATERIAL
- INTERIOR PAINT U.N.O.
- INTERIOR ACCENT WALL PAINT
- INTERIOR DOOR FRAME PAINT

LEGEND - SIGNAGE GENERAL NOTES

1. ALL SIGNS TO BE MOUNTED BACK TO BACK. SEE DETAIL 5/2A-925
2. 11B-302.2 CARPET. CARPET OR CARPET TILE SHALL BE SECURELY ATTACHED AND SHALL HAVE A FIRM CUSHION, PAD, OR BACKING OR NO CUSHION OR PAD. CARPET OR CARPET TILE SHALL HAVE A LEVEL LOOP, TEXTURED LOOP, LEVEL CUT PILE, LEVEL CUT/UNCUT PILE TEXTURE. PILE HEIGHT SHALL BE 2 INCH (12.7 MM) MAXIMUM. EXPOSED EDGES OF CARPET SHALL BE FASTENED TO FLOOR SURFACES AND SHALL HAVE TRIM ON THE ENTIRE LENGTH OF THE EXPOSED EDGE. CARPET EDGE TRIM SHALL COMPLY WITH SECTION 11B-303.
3. ROOM/EXIT SIGN LOCATIONS
   A. SINGLE DOOR - MOUNT ON LATCH SIDE OF THE DOOR
   B. DOUBLE DOOR - MOUNT ON RIGHT SIDE OF THE DOOR
   C. WHERE NO WALL SPACE IS AVAILABLE ON LATCH SIDE, INCLUDING @ DL DOORS, SIGNS SHALL BE PLACED ON NEAREST ADJACENT WALL PREFERABLY ON THE RIGHT (CBC II/7B.5.7)
   D. INSTALL AT 60" TOP OF EXIST AND DOOR SIGN TYPICAL
   E. SIGNAGE ATTACHMENT TO BE WALL W/ D.F TAPE AND SILICONE TYPICAL
      a. OPTIONAL ALTERNATIVE AT PLASTER EXTERIOR: FASTENER ATTACHMENT WITH SS TAMPER-RESISTANT SCREW HEADS IF APPROVED BY OWNER.
   F. WHERE THERE IS ONLY STOREFRONT (NO WALL SPACE AVAILABLE ON LATCH SIDE) EXTIS SIGN SHALL BE PLACED ON WINDOW BACK TO BACK WITH ROOM SING IN THE EXTERIOR.
4. SIGNAGE MATERIAL
   A. ALL SIGNS TO BE 1/4" ACRYLIC PLASTIC, U.N.O.
      a. NON-GLARE FINISH
   B. MOUNTING ON DF TAPE WITH SILICONE AS REQUIRED.
   C. FIGURES TO BE ETCHED WITH ENAMEL FILLED.
   D. BUILDING IDENTIFICATION SIGN TO BE CAST ALUMINUM PAINTED BLACK.
5. SIGNAGE COLORS
   A. LETTERS TO CONTRAST WITH BACKGROUND COLOR TO CONTRAST (70% MIN.) NON-GLARE FINISH. COLOR TBD.
   B. BACKGROUND COLOR TBD TO MATCH SITE STANDARD

FINISHES GENERAL NOTES

1. CONTRACTOR RESPONSIBLE FOR FIELD VERIFYING MATERIAL DIMENSIONS AT EACH PARTITION IN THE FIELD AS RELATED TO THE OVERALL FINAL PARTITION DIMENSION, PRIOR TO DOOR AND WINDOW SUBMITTALS.
2. FOR MATERIAL FINISHES AND LOCATION OF FINISHES, REFER TO FINISH PLAN, INTERIOR ELEVATIONS AND FINISH SCHEDULE.
3. SPECIFICATIONS SHALL SUPERCEDE DIMENSIONS IN THIS DETAIL AS NECESSARY; CONTRACTOR TO VERIFY.

SEE 2A-251 FOR NOTES ON FINISHES

FLOOR FINISHES (F)

(F)	DESCRIPTION	COLOR	SPEC SECTION	REMARKS
(E#)	EXISTING FLOOR			MATCH EXISTING ADJACENT
1	LVT (OFFICE)	NATURAL 48250	09 65 19	SHAW CONTRACT - SOLITUDE
2	LVT (MULTICOLOR)	5 COLORS	09 65 19	SHAW CONTRACT - JOY SQUARED
3	CARPET TILE 24"x24"	TBD	09 68 13	SHAW CONTRACT - CREATIVE ZONE
4	EPOXY	TBD	09 67 00	6" COVE BASE, DUR-A-FLEX
5	CERAMIC TILE		09 30 13	COVE BASE

WALL FINISHES (W)

(W)	DESCRIPTION	COLOR	SPEC SECTION	REMARKS
(E#)	EXISTING WALL			MATCH EXISTING ADJACENT
1	5/8" TYPE 'X' GYP BD	PAINT	09 29 00	
2	CERAMIC WALL TILE	TBD	09 30 13	DATILE - COLOR WHEEL
3	TACKABLE WALL PANEL 7' HIGH		09 84 00	CLARIDGE

BASE FINISHES (B)

(B)	DESCRIPTION	COLOR	SPEC SECTION	REMARKS
(E#)	EXISTING BASE			MATCH EXISTING ADJACENT
1	4" RUBBER BASE	TBD	09 65 13	JOHNSONITE
2	6" EPOXY BASE W/ INTEGRAL COVE	TBD	09 65 13	6" COVE BASE, DUR-A-FLEX

CEILING FINISHES (C)

(C)	DESCRIPTION	COLOR	SPEC SECTION	REMARK
(E#)	EXISTING CEILING			MATCH EXISTING ADJACENT
1	5/8" TYPE "X" GYP BD	PAINT	09 29 00	
2	5/8" WATER RESISTANT TYPE "X" GYP BD	PAINT	09 29 00	
3	SUSPENDED ACOUSTIC CEILING, 24" x 48" TILES	WHITE	09 51 13	

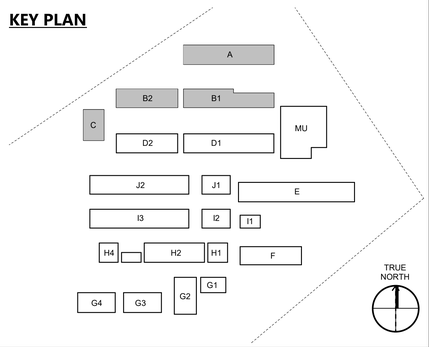
PAINT (P)

(P)	DESCRIPTION	COLOR	FINISH	SPEC SECTION	REMARK
(E#)	EXISTING PAINT				MATCH EXISTING ADJACENT
1	INTERIOR WALL PAINT	SW7757 HIGH REFLECTIVE WHITE	SHADOW SEMI-GLOSS	09 91 00	SHERWIN WILLIAMS
2	INTERIOR CLASSROOM CEILING PAINT	SW7757 HIGH REFLECTIVE WHITE	PROF FLAT	09 91 00	SHERWIN WILLIAMS
3	INTERIOR ACCENT WALL	SW906 GENTLE AQUAMARINE	SHADOW SEMI-GLOSS	09 91 00	SHERWIN WILLIAMS
4	INTERIOR ACCENT WALL	SW6717 DANCING GREEN	SHADOW SEMI-GLOSS	09 91 00	SHERWIN WILLIAMS
5	INTERIOR ACCENT WALL - OFFICE	SW7631 CITY LOFT	SHADOW SEMI-GLOSS	09 91 00	SHERWIN WILLIAMS
6	INTERIOR ACCENT WALL - OFFICE	SW9137 NIEBLA AZUL	SHADOW SEMI-GLOSS	09 91 00	SHERWIN WILLIAMS
7	INTERIOR ACCENT WALL - OFFICE	SW6191 CONTENDED	SHADOW SEMI-GLOSS	09 91 00	SHERWIN WILLIAMS
8	INTERIOR DOOR FRAME	SW7757 HIGH REFLECTIVE WHITE	SEMI-GLOSS	09 91 00	
10	EXTERIOR PAINT	TBD		09 91 00	SHERWIN WILLIAMS
11	EXTERIOR ACCENT PAINT	TBD		09 91 00	SHERWIN WILLIAMS
12	EXTERIOR TRIM	TBD		09 91 00	SHERWIN WILLIAMS

LEGEND - SIGNAGE

RM	ROOM NAME / NUMBER SIGN, SEE DETAIL	2/2A-925	AES	ACCESSIBLE ENTRANCE SIGN, SEE DETAIL	19/2A-925
S-1	TOILET ROOM DOOR SIGN, SEE DETAIL	18/2A-925	RWG	RESTROOM WALL - GIRLS	13/2A-925
S-2	TOILET ROOM WALL SIGN, SEE DETAILS	13/2A-925	RWB	RESTROOM WALL - BOYS	13/2A-925
S-X	TACTILE "EXIT" SIGN (INTERIOR), SEE DETAILS	7/2A-925	RDW	RESTROOM DOOR - WOMEN/GIRLS	18/2A-925
S-XR	TACTILE "EXIT ROUTE" SIGN (INTERIOR), SEE DETAILS	8/2A-925	RDM	RESTROOM DOOR - MEN/BOYS	18/2A-925
S-M	"MAXIMUM OCCUPANCY" SIGN (INTERIOR), SEE DETAIL	15/2A-925	RWA	RESTROOM WALL - ALL GENDER	13/2A-925
ALS	ASSISTIVE LISTENING SIGN, SEE DETAIL	14/2A-925	RDA	RESTROOM DOOR - ALL GENDER	18/2A-925
BID	BUILDING IDENTIFICATION SIGN, SEE DETAIL	20/2A-925	FACP	FIRE ALARM CONTROL PANEL ROOM	

KEY PLAN



AGENCY APPROVAL DSA# 1-121400

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PROFESSIONAL STAMP

LICENSED ARCHITECT — MARINA ALVAREZ-BARGA — C-36107 — REN. 01-31-25 — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
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MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

SIGNAGE & FINISH PLANS - BLDG A, B, C

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

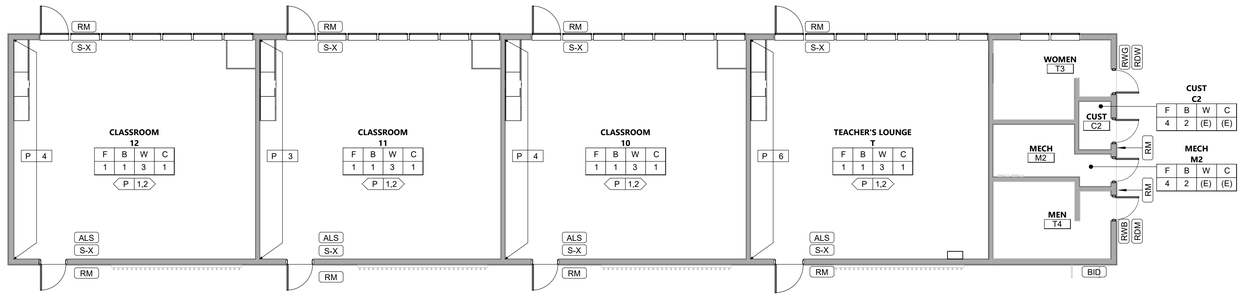
SHEET NO.

2A-251

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:48:11 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC2r2_A22_r24



NOTE:

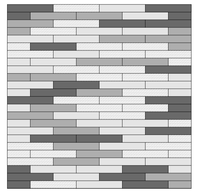
PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **4** RECEIVERS, FOR USE IN THE CLASSROOMS. TWO SHALL BE HEARING AID COMPATIBLE.

THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

TRUE NORTH

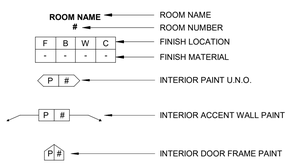
FINISH PLAN - BUILDING D.1_ | 1/8" = 1'-0" | **1**

TYPICAL CLASSROOM LVT LAYOUT



- LVT COLOR 1 - JOY SQUARED - SNOW DAY
- LVT COLOR 2 - JOY SQUARED - SKY
- LVT COLOR 3 - JOY SQUARED - HOLIDAY
- LVT COLOR 4 - JOY SQUARED - BUBBLE
- LVT COLOR 5 - JOY SQUARED - TREEHOUSE

FINISH PLAN LEGEND



- ROOM NAME
- ROOM NUMBER
- FINISH LOCATION
- FINISH MATERIAL
- INTERIOR PAINT U.N.O.
- INTERIOR ACCENT WALL PAINT
- INTERIOR DOOR FRAME PAINT

FINISHES GENERAL NOTES

1. CONTRACTOR RESPONSIBLE FOR FIELD VERIFYING MATERIAL DIMENSIONS AT EACH PARTITION IN THE FIELD AS RELATED TO THE OVERALL FINAL PARTITION DIMENSION, PRIOR TO DOOR AND WINDOW SUBMITTALS.
2. FOR MATERIAL FINISHES AND LOCATION OF FINISHES, REFER TO FINISH PLAN, INTERIOR ELEVATIONS AND FINISH SCHEDULE.
3. SPECIFICATIONS SHALL SUPERCEDE DIMENSIONS IN THIS DETAIL AS NECESSARY; CONTRACTOR TO VERIFY.

SEE 2A-251 FOR NOTES ON FINISHES

FLOOR FINISHES (F)

(F)	DESCRIPTION	COLOR	SPEC SECTION	REMARKS
(E#)	EXISTING FLOOR			MATCH EXISTING ADJACENT
1	LVT (OFFICE)	NATURAL 48250	09 65 19	SHAW CONTRACT - SOLITUDE
2	LVT (MULTICOLOR)	5 COLORS	09 65 19	SHAW CONTRACT - JOY SQUARED
3	CARPET TILE 24"x24"	TBD	09 68 13	SHAW CONTRACT - CREATIVE ZONE
4	EPOXY	TBD	09 67 00	6" COVE BASE, DUR-A-FLEX
5	CERAMIC TILE		09 30 13	COVE BASE

WALL FINISHES (W)

(W)	DESCRIPTION	COLOR	SPEC SECTION	REMARKS
(E#)	EXISTING WALL			MATCH EXISTING ADJACENT
1	5/8" TYPE 'X' GYP BD	PAINT	09 29 00	
2	CERAMIC WALL TILE	TBD	09 30 13	DATILE - COLOR WHEEL
3	TACKABLE WALL PANEL 7' HIGH		09 84 00	CLARIDGE

BASE FINISHES (B)

(B)	DESCRIPTION	COLOR	SPEC SECTION	REMARKS
(E#)	EXISTING BASE			MATCH EXISTING ADJACENT
1	4" RUBBER BASE	TBD	09 65 13	JOHNSONITE
2	6" EPOXY BASE W/ INTEGRAL COVE	TBD	09 65 13	6" COVE BASE, DUR-A-FLEX

CEILING FINISHES (C)

(C)	DESCRIPTION	COLOR	SPEC SECTION	REMARK
(E#)	EXISTING CEILING			MATCH EXISTING ADJACENT
1	5/8" TYPE "X" GYP BD	PAINT	09 29 00	
2	5/8" WATER RESISTANT TYPE "X" GYP BD	PAINT	09 29 00	
3	SUSPENDED ACOUSTIC CEILING, 24" x 48" TILES	WHITE	09 51 13	

PAINT (P)

(P)	DESCRIPTION	COLOR	FINISH	SPEC SECTION	REMARK
(E#)	EXISTING PAINT				MATCH EXISTING ADJACENT
1	INTERIOR WALL PAINT	SW7757 HIGH REFLECTIVE WHITE	SHADOW SEMI-GLOSS	09 91 00	SHERWIN WILLIAMS
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8	INTERIOR DOOR FRAME	SW7757 HIGH REFLECTIVE WHITE	SEMI-GLOSS	09 91 00	
10	EXTERIOR PAINT	TBD		09 91 00	SHERWIN WILLIAMS
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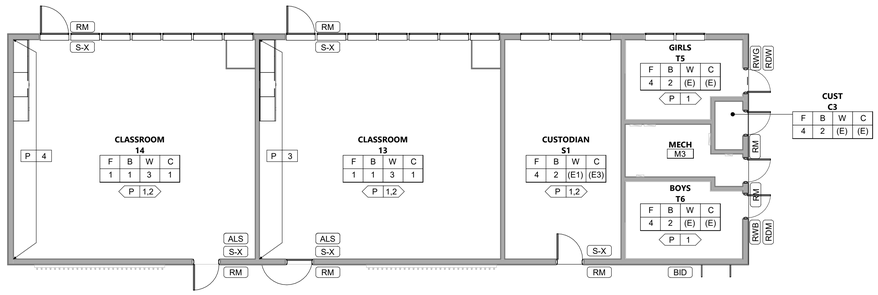

NOTE:

PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **4** RECEIVERS, FOR USE IN THE CLASSROOMS. TWO SHALL BE HEARING AID COMPATIBLE

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TRUE NORTH

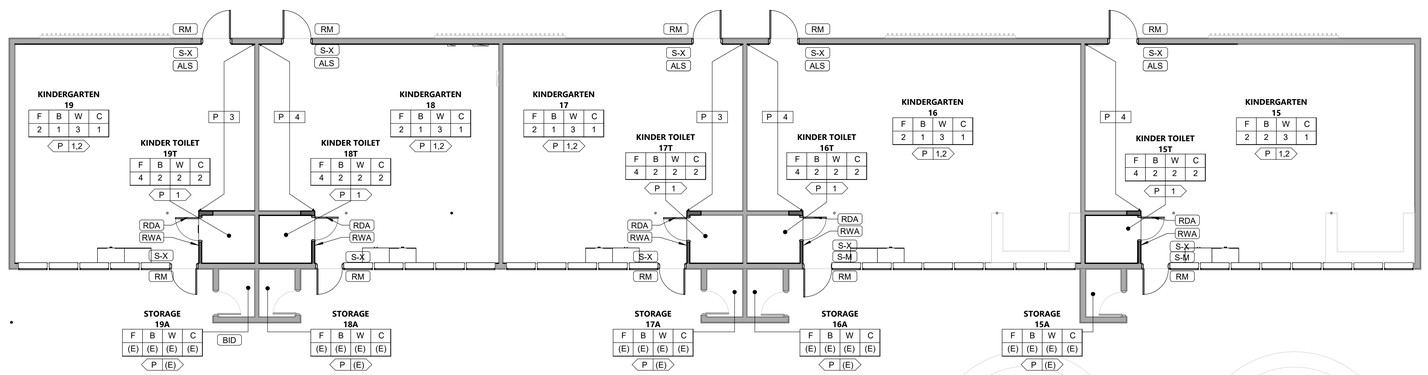
FINISH PLAN - BUILDING D.2+ | 1/8" = 1'-0" | **2**

LEGEND - SIGNAGE GENERAL NOTES

1. ALL SIGNS ON GLAZING TO BE MOUNTED BACK TO BACK. SEE DETAIL 5/2A-925
2. 11B-302.2 CARPET. CARPET OR CARPET TILE SHALL BE SECURELY ATTACHED AND SHALL HAVE A FIRM CUSHION, PAD, OR BACKING OR NO CUSHION OR PAD. CARPET OR CARPET TILE SHALL HAVE A LEVEL LOOP, TEXTURED LOOP, LEVEL CUT PILE, LEVEL CUT/UNCUT PILE TEXTURE. PILE HEIGHT SHALL BE 2 INCH (12.7 MM) MAXIMUM. EXPOSED EDGES OF CARPET SHALL BE FASTENED TO FLOOR SURFACES AND SHALL HAVE TRIM ON THE ENTIRE LENGTH OF THE EXPOSED EDGE. CARPET EDGE TRIM SHALL COMPLY WITH SECTION 11B-303.
3. ROOM/EXIT SIGN LOCATIONS
   A. SINGLE DOOR - MOUNT ON LATCH SIDE OF THE DOOR
   B. DOUBLE DOOR - MOUNT ON RIGHT SIDE OF THE DOOR
   C. WHERE NO WALL SPACE IS AVAILABLE ON LATCH SIDE, INCLUDING @ DL DOORS, SIGNS SHALL BE PLACED ON NEAREST ADJACENT WALL PREFERABLY ON THE RIGHT (CBC II7B.5.7)
   D. INSTALL AT 60" TOP OF EXIST AND DOOR SIGN TYPICAL
   E. SIGNAGE ATTACHMENT TO BE WALL W/ D.F TAPE AND SILICONE TYPICAL
      a. OPTIONAL ALTERNATIVE AT PLASTER EXTERIOR: FASTENER ATTACHMENT WITH SS TAMPER-RESISTANT SCREW HEADS IF APPROVED BY OWNER.
   F. WHERE THERE IS ONLY STOREFRONT (NO WALL SPACE AVAILABLE ON LATCH SIDE) EXTIS SIGN SHALL BE PLACED ON WINDOW BACK TO BACK WITH ROOM SING IN THE EXTERIOR.
4. SIGNAGE MATERIAL
   A. ALL SIGNS TO BE 1/4" ACRYLIC PLASTIC, U.N.O.
      a. NON-GLARE FINISH
   B. MOUNTING ON DF TAPE WITH SILICONE AS REQUIRED.
   C. FIGURES TO BE ETCHED WITH ENAMEL FILLED.
   D. BUILDING IDENTIFICATION SIGN TO BE CAST ALUMINUM PAINTED BLACK.
5. SIGNAGE COLORS
   A. LETTERS TO CONTRAST WITH BACKGROUND COLOR TO CONTRAST (70% MIN.) NON-GLARE FINISH. COLOR TBD.
   B. BACKGROUND COLOR TBD TO MATCH SITE STANDARD

LEGEND - SIGNAGE

RM	ROOM NAME / NUMBER SIGN, SEE DETAIL	2/2A-925	AES	ACCESSIBLE ENTRANCE SIGN, SEE DETAIL	19/2A-925
S-1	TOILET ROOM DOOR SIGN, SEE DETAIL	18/2A-925	RWG	RESTROOM WALL - GIRLS	13/2A-925
S-2	TOILET ROOM WALL SIGN, SEE DETAILS	13/2A-925	RWB	RESTROOM WALL - BOYS	13/2A-925
S-X	TACTILE "EXIT" SIGN (INTERIOR), SEE DETAILS	7/2A-925	RDW	RESTROOM DOOR - WOMEN/GIRLS	18/2A-925
S-XR	TACTILE "EXIT ROUTE" SIGN (INTERIOR), SEE DETAILS	8/2A-925	RDM	RESTROOM DOOR - MEN/BOYS	18/2A-925
S-M	"MAXIMUM OCCUPANCY" SIGN (INTERIOR), SEE DETAIL	15/2A-925	RWA	RESTROOM WALL - ALL GENDER	13/2A-925
ALS	ASSISTIVE LISTENING SIGN, SEE DETAIL	14/2A-925	RDA	RESTROOM DOOR - ALL GENDER	18/2A-925
BID	BUILDING IDENTIFICATION SIGN, SEE DETAIL	20/2A-925	FACP	FIRE ALARM CONTROL PANEL ROOM	



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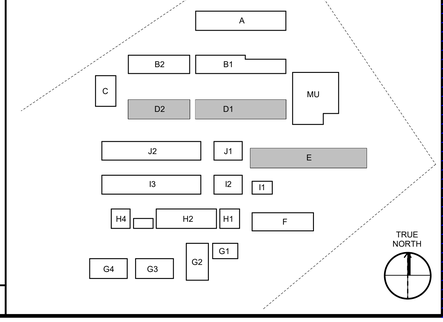
TRUE NORTH

FINISH PLAN - BUILDING E | 1/8" = 1'-0" | **3**

KEY PLAN



AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

LICENSED ARCHITECT MARINA ALVAREZ PEREA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

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A	10-31-2024	ADDENDUM 01

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1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

SIGNAGE & FINISH PLANS - BLDG D, E

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.

2A-252

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt

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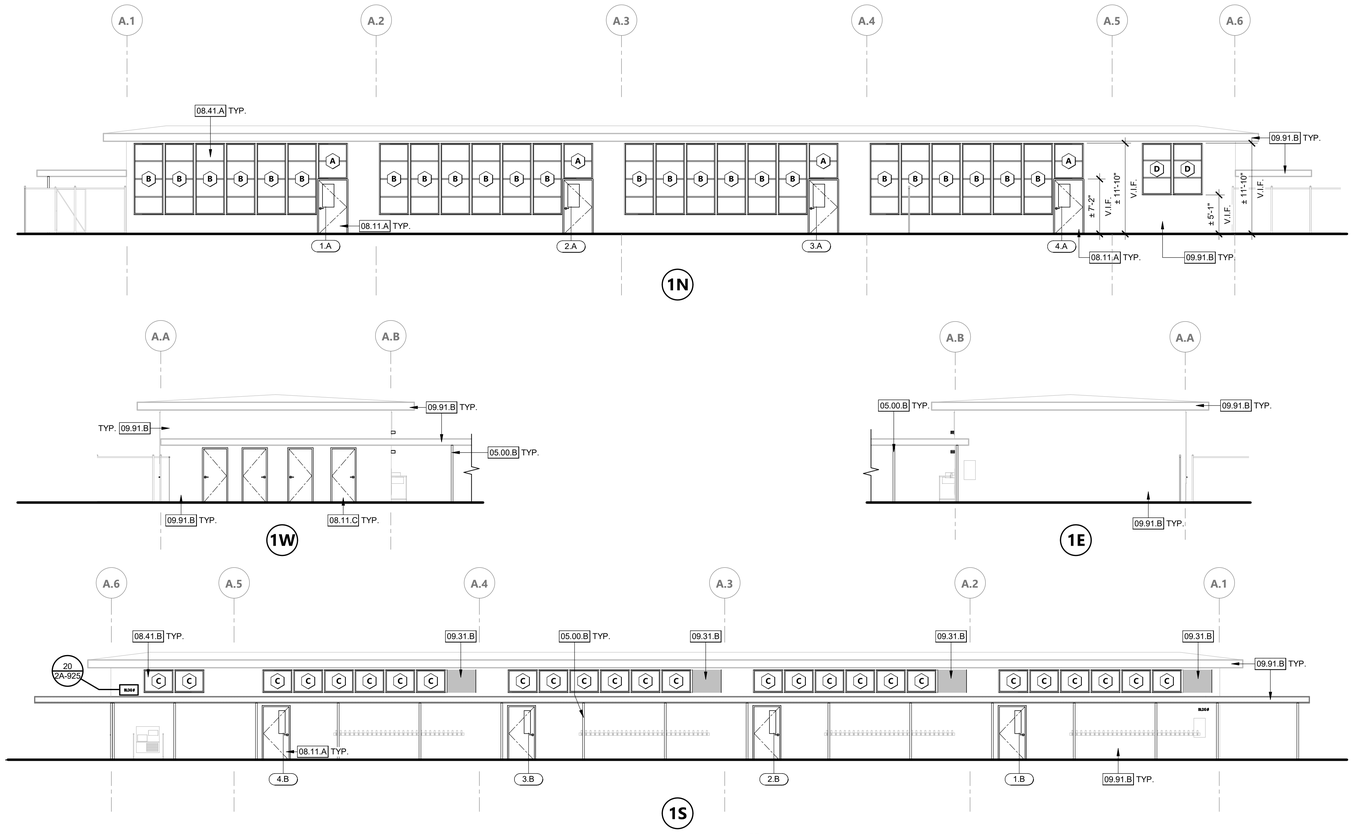
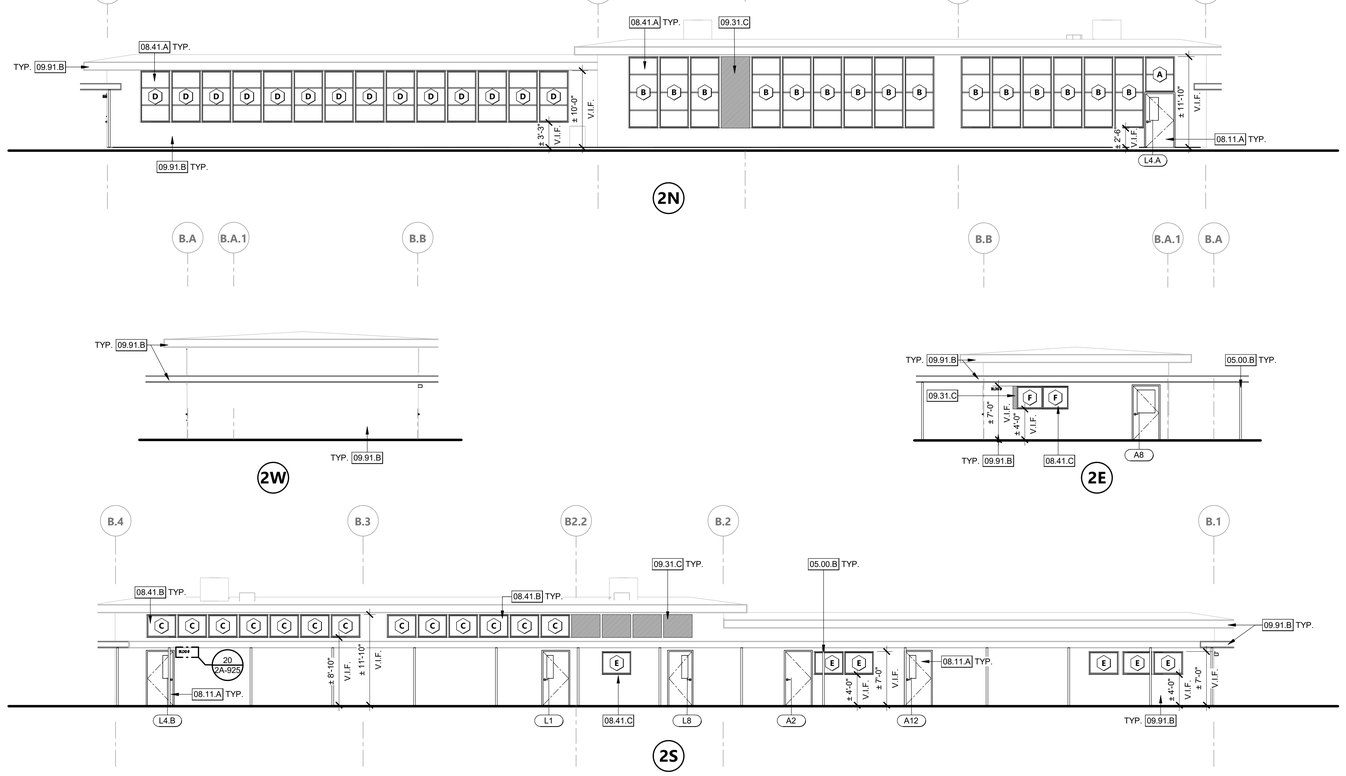


B2.2

EXTERIOR ELEVATIONS - BUILDING A

1/8" = 1'-0" | 1



EXTERIOR ELEVATIONS - BUILDING B.1

As noted | 2

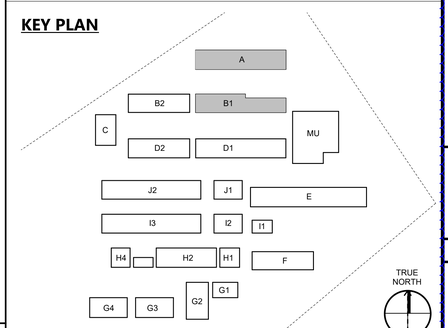
KEYNOTES

05.00.B	(E) COVERED WALKWAY POST. PREPARE FOR PAINTING AND PROTECT DURING CONSTRUCTION
08.11.A	(N) EXTERIOR FRP FLUSH DOOR WITH HALF NARROW LITE INSTALLED IN (E) WOOD OR HOLLOW METAL FRAME.
08.11.C	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
08.41.C	(N) ALUMINUM WINDOW
09.31.B	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING WITH (N) 2" CONDUIT PENETRATION PER TECHNOLOGY DRAWINGS. SEE 8/2S-801 FOR WINDOW INFILL.
09.31.C	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING.
09.91.B	PAINT ALL EXTERIOR SURFACES

EXTERIOR ELEVATION GENERAL NOTES

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE WINDOW SCHEDULE.
2. NEW WINDOW AND DOOR FRAMES TO BE PAINT. MATCH EXISTING.
3. PATCH AND REPAIR EXTERIOR SURFACES AS NEEDED OR WHERE INDICATED
4. ALL WALL PATCHS TO BE PAINTED. MATCH EXISTING EXTERIOR WALL COLOR. PROVIDE A FLUSH TRANSITION BETWEEN EXISTING AND NEW SURFACES.
5. EXTERIOR REPAINTING SCOPE OF WORK: REPAIR ALL DAMAGED SURFACES TO ALLOW FOR A FLUSH, CLEAN SURFACE. SAND, CLEAN, RE-PRIME ALL EXISTING SURFACES. REPAINT ALL EXISTING PAINTED SURFACES, INCLUDING BUT NOT LIMITED TO WALLS, WALKWAY SOFFITS, CONDUITS, PIPES, GUTTER, DOWNSPOUTS, TRIM AND DOORS & WINDOW FRAMES OF EXISTING BUILDINGS. REPAINT ALL PAINTED SITE EQUIPMENT INCLUDING BUT NOT LIMITED TO BENCHES, GATES, FENCES, POSTS, BASKETBALL EQUIPMENT, FREESTANDING WALLS. COLORS PER DISTRICT APROVED COLOR PALETTE. ALL NEW DOORS AND WINDOWS AS WELL NEW DOORS AND WINDOW FRAMES TO BE PAINTED AS NOTED ON PLANS.

KEY PLAN



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SHEET TITLE
EXTERIOR ELEVATIONS - BLDG A, B1

INCREMENT: INC.2

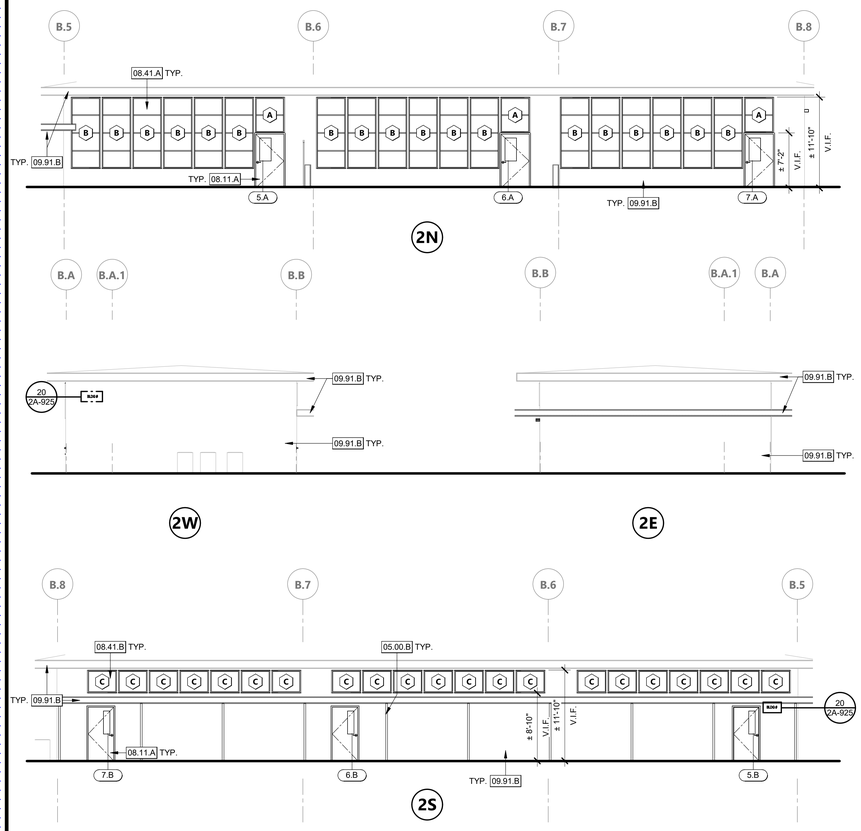
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-301

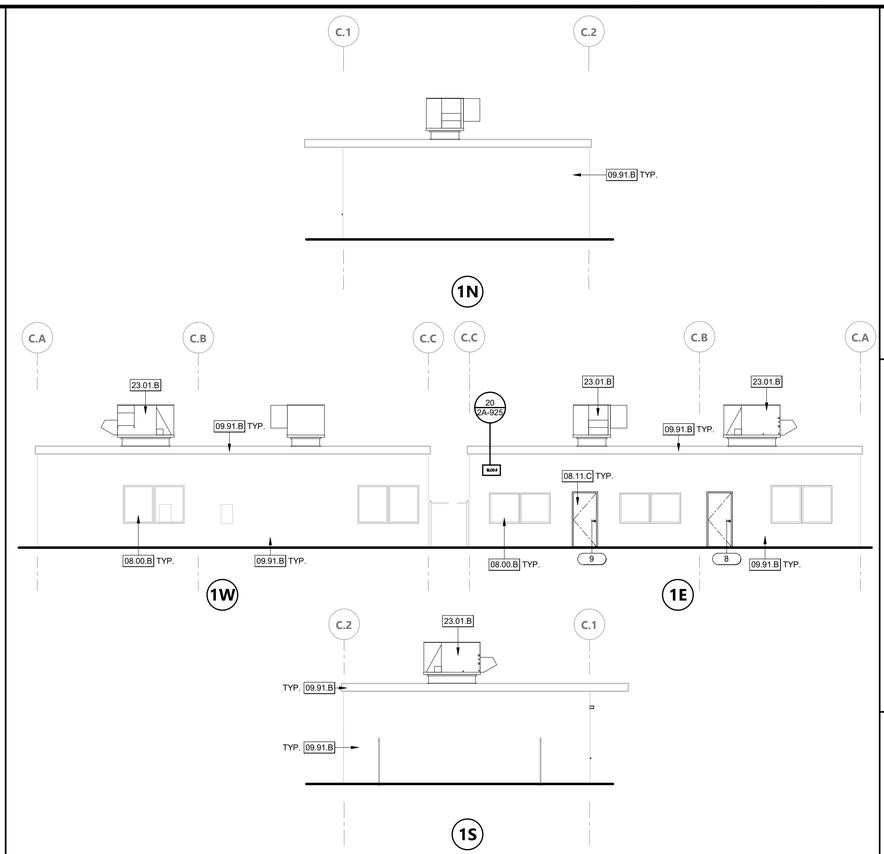
DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:48:24 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



EXTERIOR ELEVATIONS - BUILDING B.2 | 1/8" = 1'-0" | 2



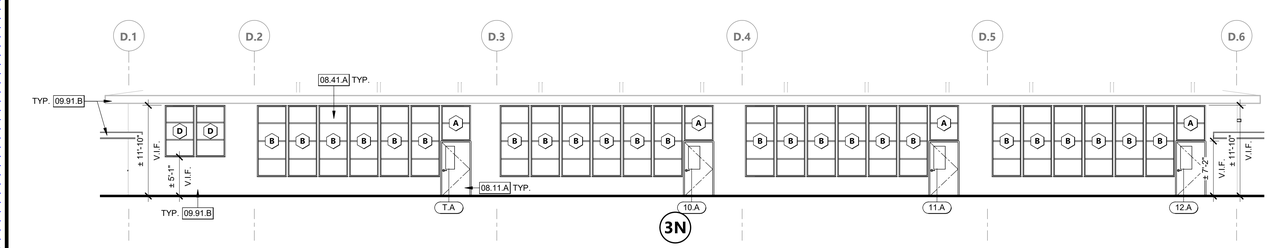
EXTERIOR ELEVATIONS - BUILDING C | 1/8" = 1'-0" | 1

KEYNOTES

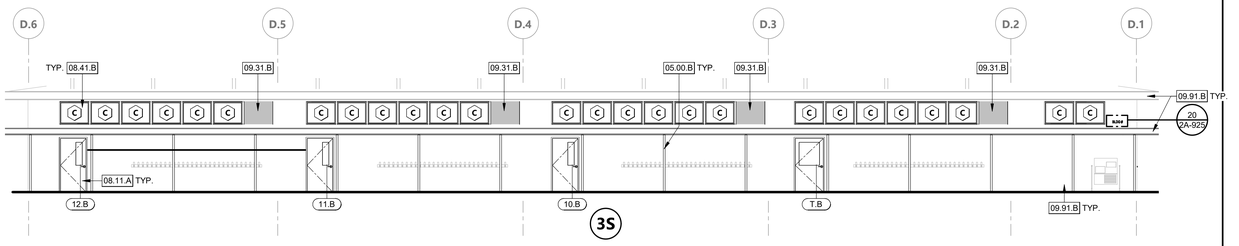
05.00.B	(E) COVERED WALKWAY POST. PREPARE FOR PAINTING AND PROTECT DURING CONSTRUCTION
08.00.B	(E) WINDOW TO REMAIN
08.11.A	(N) EXTERIOR FRP FLUSH DOOR WITH HALF NARROW LITE INSTALLED IN (E) WOOD OR HOLLOW METAL FRAME.
08.11.C	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
09.31.B	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING WITH (N) 2" CONDUIT PENETRATION PER TECHNOLOGY DRAWINGS. SEE 8/2S-801 FOR WINDOW INFILL.
09.91.B	PAINT ALL EXTERIOR SURFACES
10.12.B	TUBULAR RAIL LOW PARAPET ACCESS ALUMINUM LADDER WITH PLATFORM.
23.01.B	(N) MECHANICAL EQUIPMENT PER MECHANICAL DRAWINGS. USE (E) CURB, OPENINGS AND DUCTWORK
23.02.C	(E) SMOKE VENT

EXTERIOR ELEVATION GENERAL NOTES

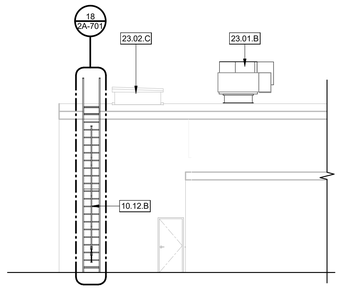
1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE WINDOW SCHEDULE.
2. NEW WINDOW AND DOOR FRAMES TO BE PAINT. MATCH EXISTING.
3. PATCH AND REPAIR EXTERIOR SURFACES AS NEEDED OR WHERE INDICATED
4. ALL WALL PATCHS TO BE PAINTED. MATCH EXISTING EXTERIOR WALL COLOR. PROVIDE A FLUSH TRANSITION BETWEEN EXISTING AND NEW SURFACES.
5. EXTERIOR REPAINTING SCOPE OF WORK: REPAIR ALL DAMAGED SURFACES TO ALLOW FOR A FLUSH, CLEAN SURFACE. SAND, CLEAN, RE-PRIME ALL EXISTING SURFACES. REPAINT ALL EXISTING PAINTED SURFACES, INCLUDING BUT NOT LIMITED TO WALLS, WALKWAY SOFFITS, CONDUITS, PIPES, GUTTER, DOWNSPOUTS, TRIM AND DOORS & WINDOW FRAMES OF EXISTING BUILDINGS. REPAINT ALL PAINTED SITE EQUIPMENT INCLUDING BUT NOT LIMITED TO BENCHES, GATES, FENCES, POSTS, BASKETBALL EQUIPMENT, FREESTANDING WALLS. COLORS PER DISTRICT APROVED COLOR PALETTE. ALL NEW DOORS AND WINDOWS AS WELL NEW DOORS AND WINDOW FRAMES TO BE PAINTED AS NOTED ON PLANS.





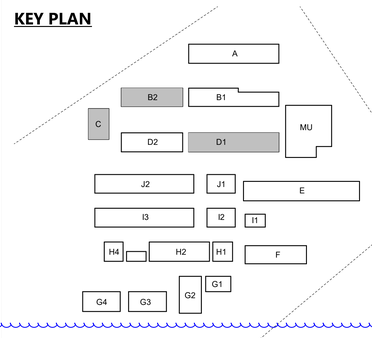


EXTERIOR ELEVATIONS - BUILDING D.1 | 1/8" = 1'-0" | 4



MPR - PARTIAL EAST ELAVATION | 1/8" = 1'-0" | 3

KEY PLAN



AGENCY APPROVAL DSA# 1-121400

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REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
EXTERIOR ELEVATIONS - BLDG B2, C, D1& MPR

INCREMENT: INC.2

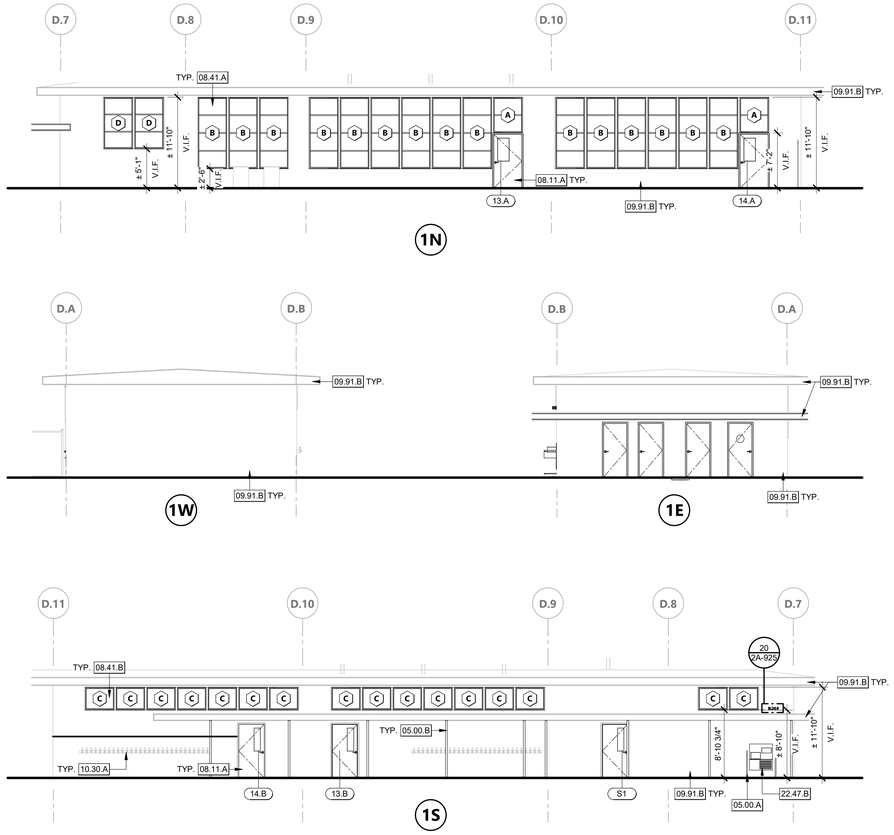
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-302

DATE: OCTOBER 25, 2024

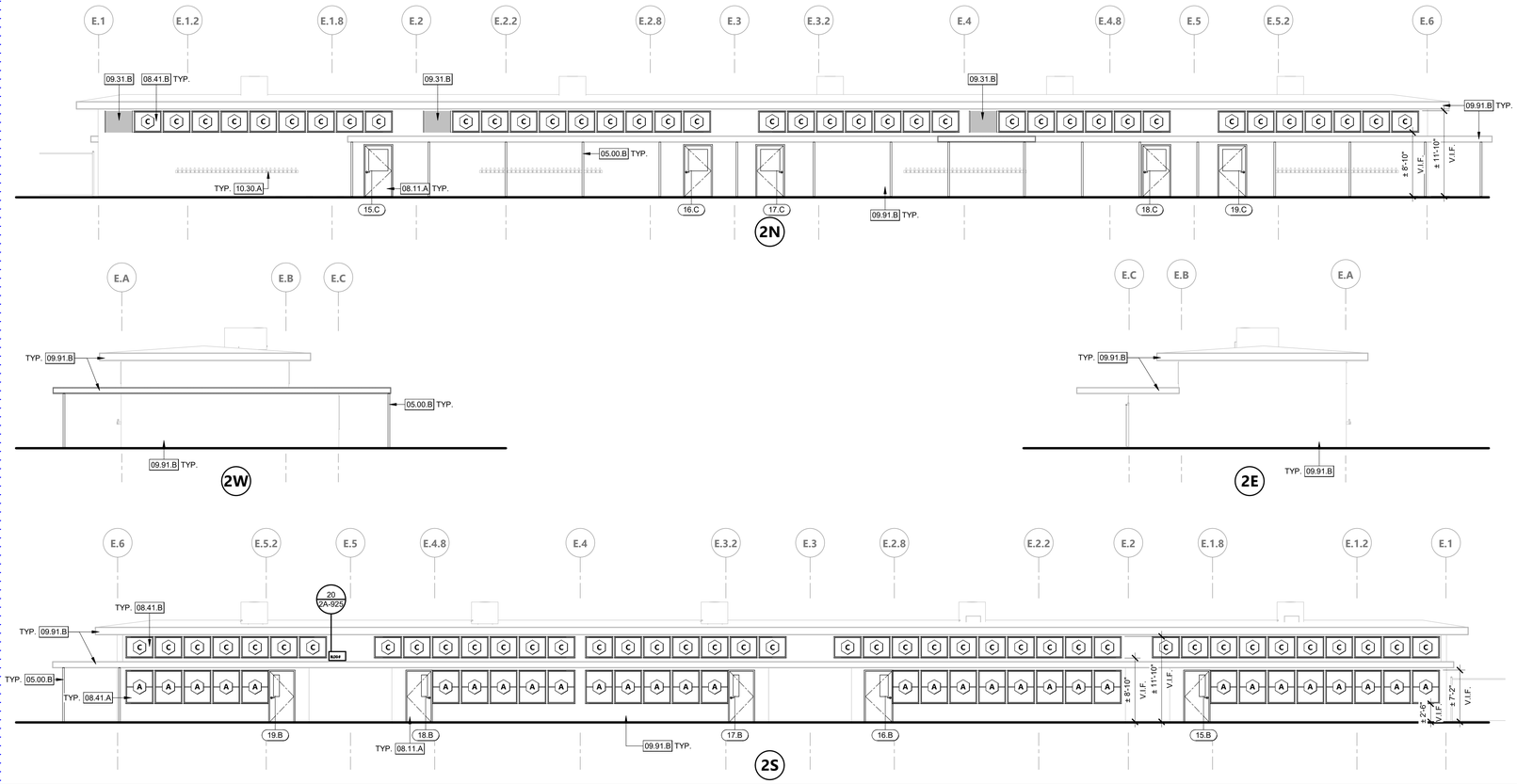
CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:48:29 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_cv4



EXTERIOR ELEVATIONS - BUILDING D.2

1/8" = 1'-0" | 1



EXTERIOR ELEVATIONS - BUILDING E

1/8" = 1'-0" | 2

KEYNOTES

05.00.A	(E) METAL HANDRAIL TO REMAIN
05.00.B	(E) COVERED WALKWAY POST. PREPARE FOR PAINTING AND PROTECT DURING CONSTRUCTION
08.11.A	(N) EXTERIOR FRP FLUSH DOOR WITH HALF NARROW LITE INSTALLED IN (E) WOOD OR HOLLOW METAL FRAME.
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
09.31.B	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING WITH (N) 2" CONDUIT PENETRATION PER TECHNOLOGY DRAWINGS. SEE 8/2S-801 FOR WINDOW INFILL
09.91.B	PAINT ALL EXTERIOR SURFACES
10.30.A	(E) COAT HOOKS TO BE REMOVED AND REINSTALLED
22.47.B	HI-LOW DRINKING FOUNTAIN WITH HYDRAITION STATION

EXTERIOR ELEVATION GENERAL NOTES

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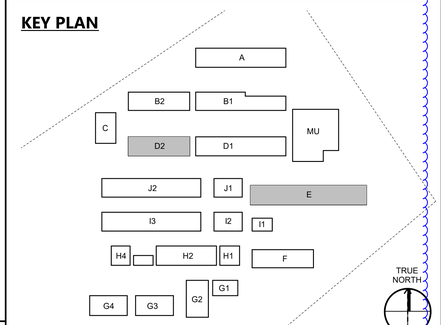
KEY PLAN



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SHEET TITLE
EXTERIOR ELEVATIONS - BLDG D2, E

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

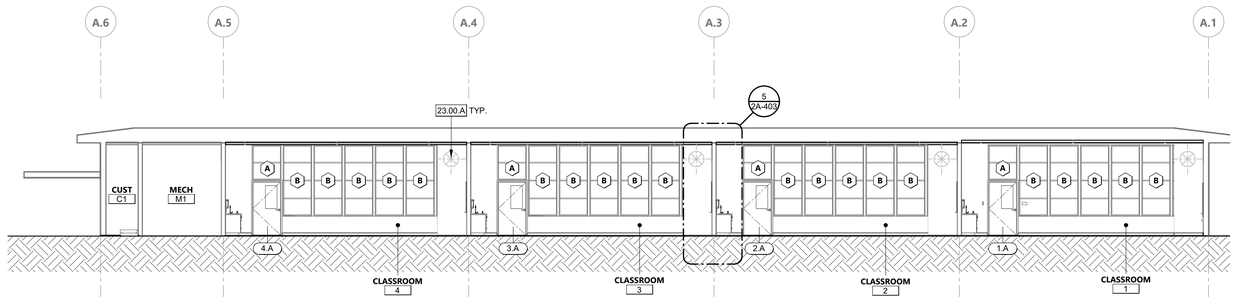
SHEET NO.

2A-303

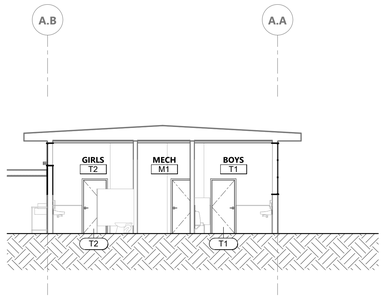
DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

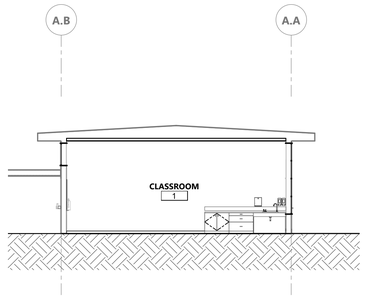
DATE PLOTTED: 10/30/2024 5:48:34 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



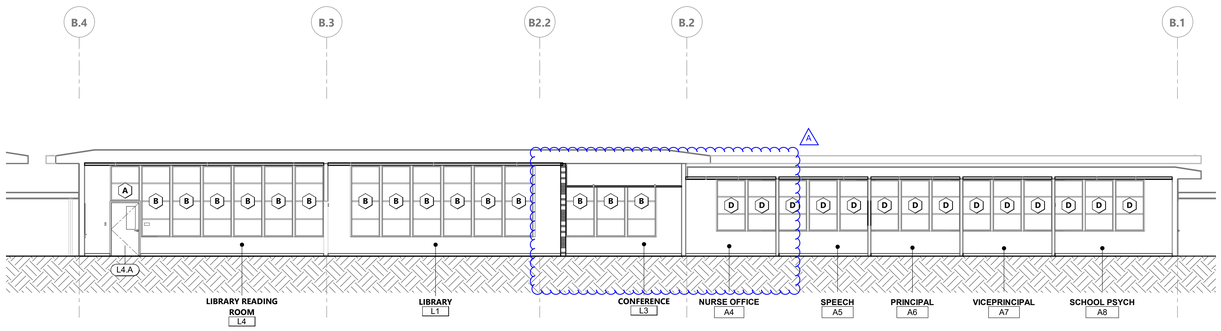
BLDG A - SECTION AA | 1/8" = 1'-0" | 1



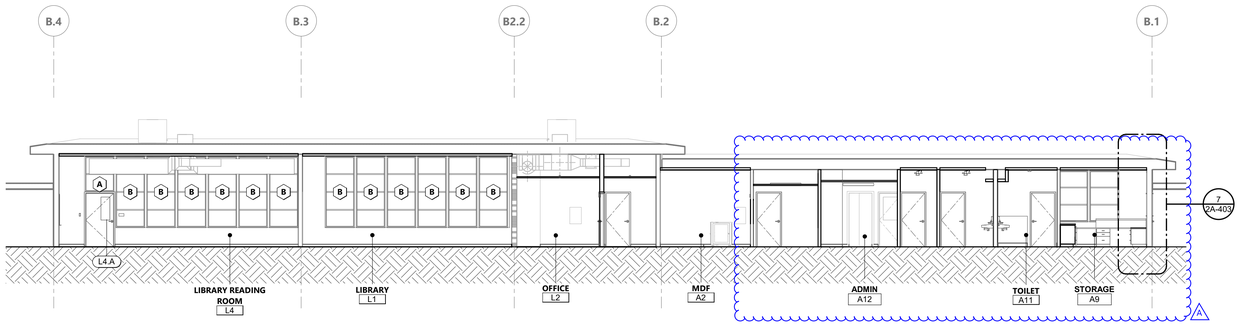
BLDG A - SECTION CC | 1/8" = 1'-0" | 3



BLDG A - SECTION BB | 1/8" = 1'-0" | 2



BLDG B.1 - SECTION AA | 1/8" = 1'-0" | 4



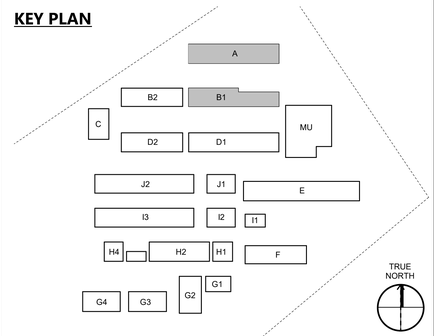
BLDG B.1 - SECTION BB | 1/8" = 1'-0" | 5

BLDG B.1 - SECTION FF. | 1/8" = 1'-0" | 6

KEYNOTES

23.00.A (E) MECHANICAL EQUIPMENT TO REMAIN

KEY PLAN



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MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
BUILDING SECTIONS A, B.1

INCREMENT: INC.2

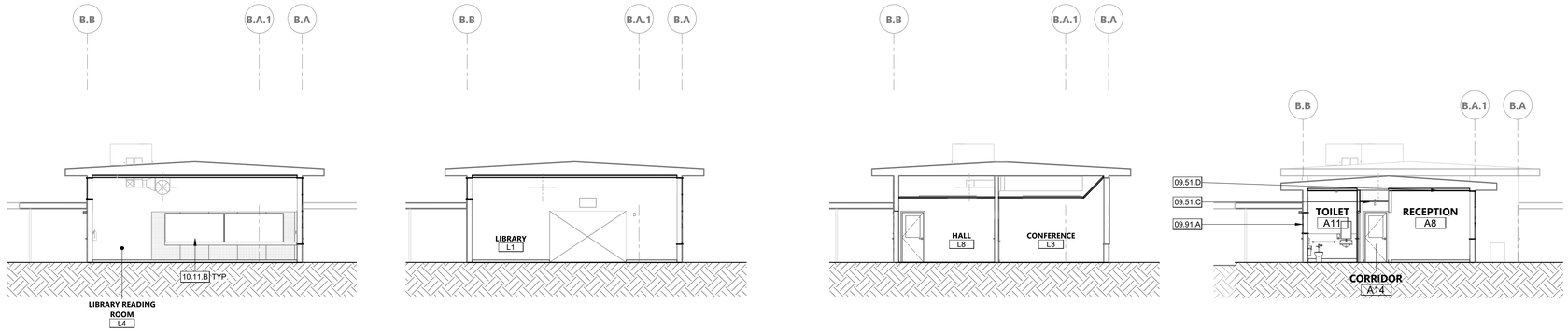
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-401

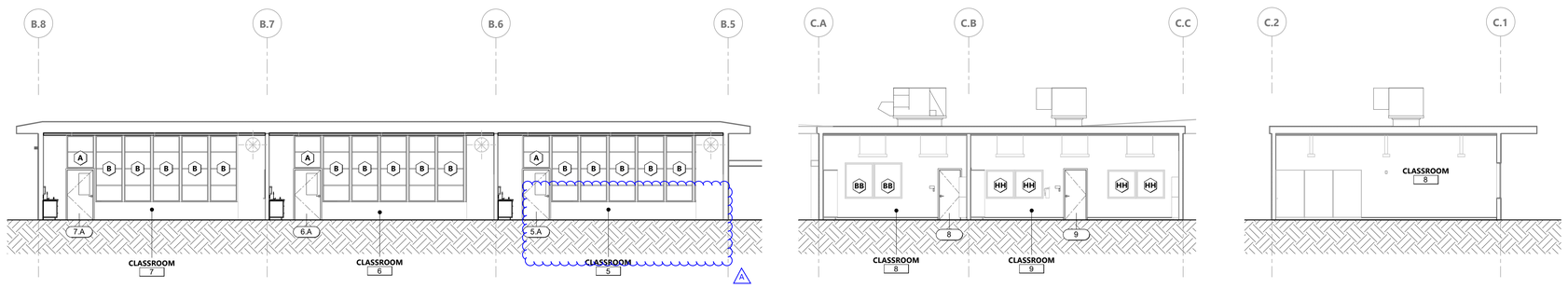
DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

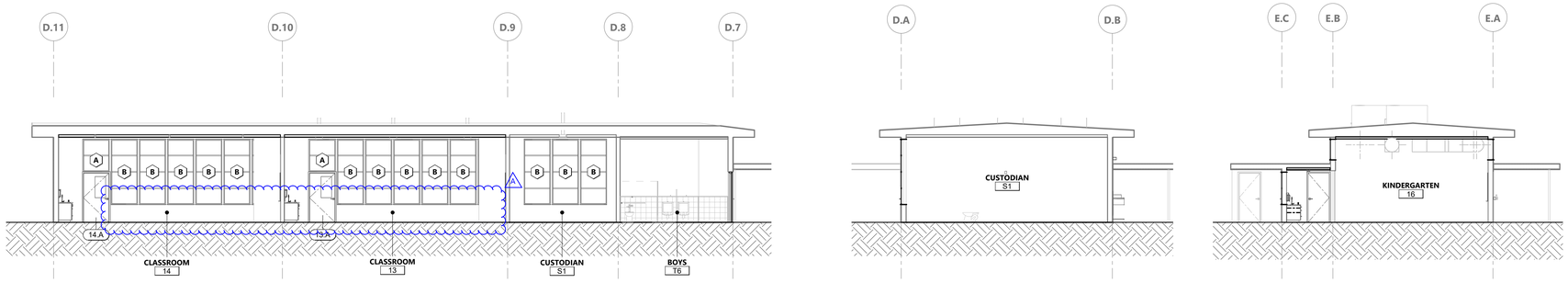
DATE PLOTTED: 10/30/2024 5:48:40 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



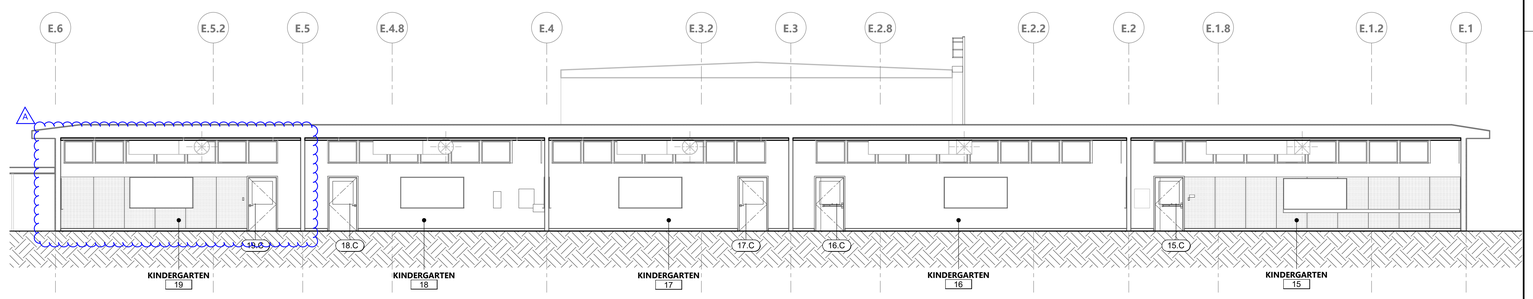
BLDG B.1 - SECTION CC	1/8" = 1'-0"	1	BLDG B.1 - SECTION DD	1/8" = 1'-0"	2	BLDG B.1 - SECTION EE	1/8" = 1'-0"	3	BLDG. B.1 - SECTION FF	1/8" = 1'-0"	4



BUILDING B.2 - SECTION AA	1/8" = 1'-0"	5	BUILDING C - SECTION AA	1/8" = 1'-0"	6	BUILDING C - SECTION BB	1/8" = 1'-0"	7



BUILDING D.2 - SECTION AA	1/8" = 1'-0"	8	BUILDING D.2 - SECTION BB	1/8" = 1'-0"	9	BUILDING E - SECTION BB	1/8" = 1'-0"	10

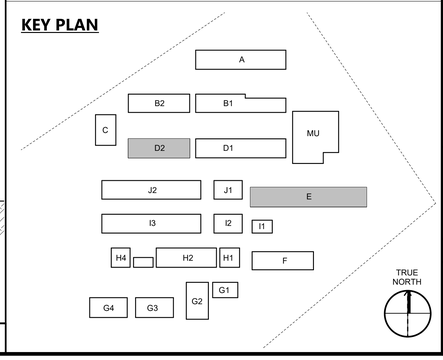


BUILDING E - SECTION AA	1/8" = 1'-0"	11

KEYNOTES

09.51.C	(N) SUSPENDED ACOUSTICAL PANEL CEILING
09.51.D	(N) GYPSUM BOARD CEILING. USE EXISTING FRAMING WHERE OCCURS.
09.91.A	PAINT ALL INTERIOR SURFACES
10.11.B	WALL MOUNTED 4'x8' WHITEBOARDS, SEE DETAIL/2A-921

KEY PLAN



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1371 Detroit Ave
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SHEET TITLE
BUILDING SECTIONS D.2, E

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-402

DATE: OCTOBER 25, 2024

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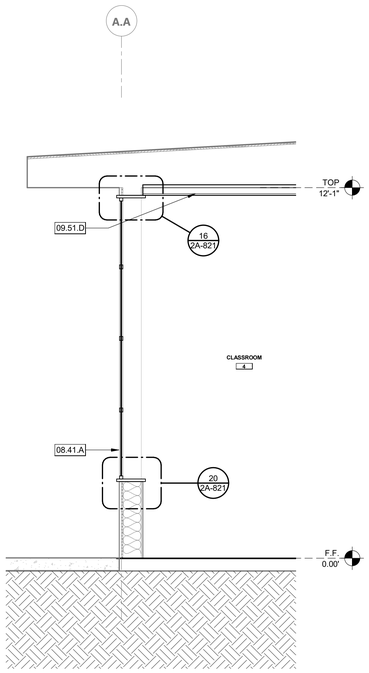
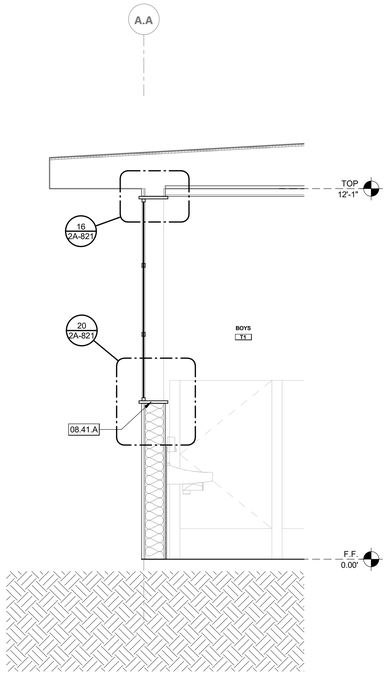
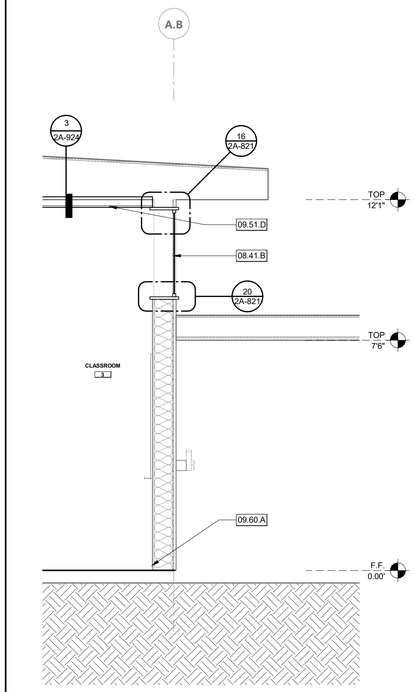


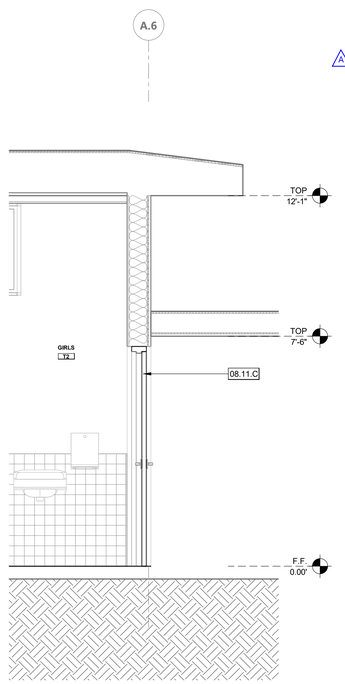
BUILDING A - WALL SECTION AA | 1/2" = 1'-0" | 1



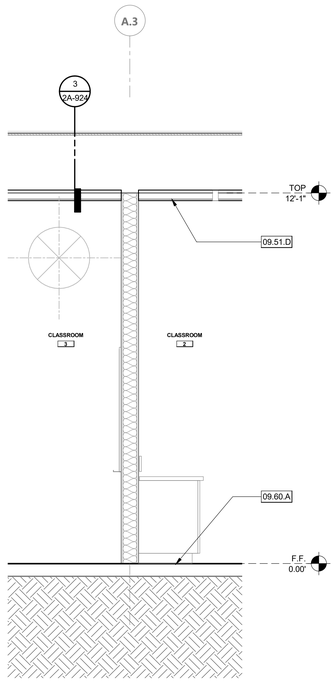
BUILDING A - WALL SECTION BB | 1/2" = 1'-0" | 2



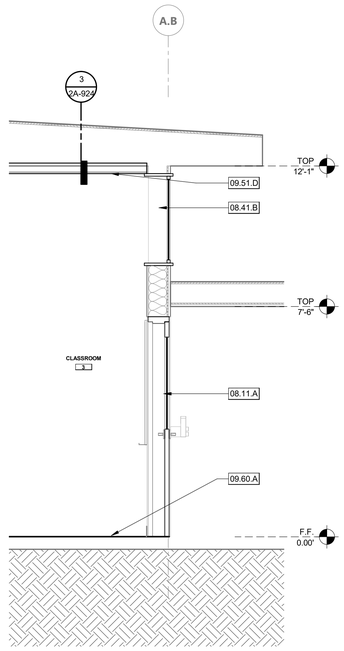
BUILDING A - WALL SECTION CC | 1/2" = 1'-0" | 3



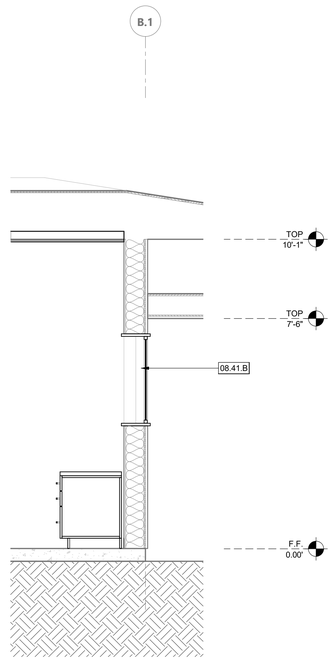
BUILDING A - WALL SECTION DD | 1/2" = 1'-0" | 4



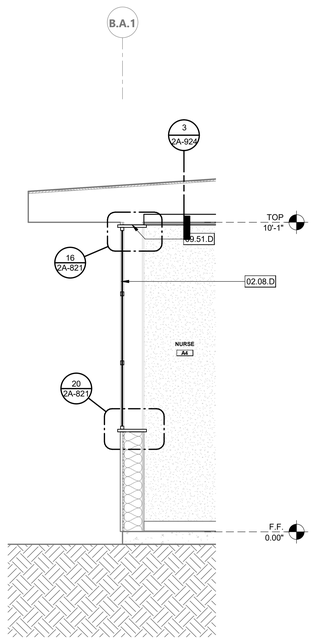
BUILDING A - WALL SECTION EE | 1/2" = 1'-0" | 5



BUILDING A - WALL SECTION FF | 1/2" = 1'-0" | 6



BUILDING B.1 - WALL SECTION AA | 1/2" = 1'-0" | 7



BUILDING B.1 - WALL SECTION BB | 1/2" = 1'-0" | 8

KEYNOTES

02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW.
08.11.A	(N) EXTERIOR FRP FLUSH DOOR WITH HALF NARROW LITE INSTALLED IN (E) WOOD OR HOLLOW METAL FRAME.
08.11.C	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
09.51.D	(N) GYPSUM BOARD CEILING. USE EXISTING FRAMING WHERE OCCURS.
09.60.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

LICENSED ARCHITECT
MARIANA ALVAREZ PEREA
C-36107
REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
WALL SECTIONS

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

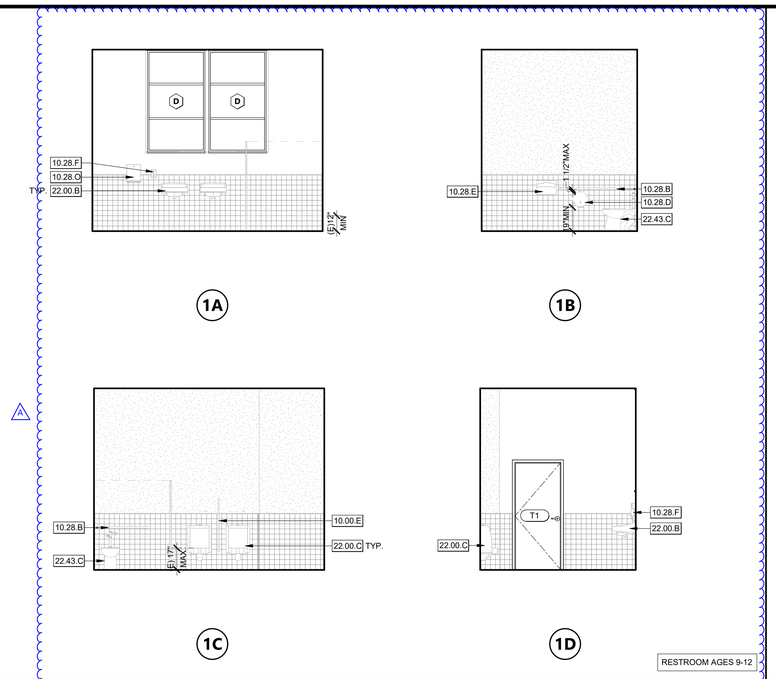
SHEET NO.

2A-403

DATE: OCTOBER 25, 2024

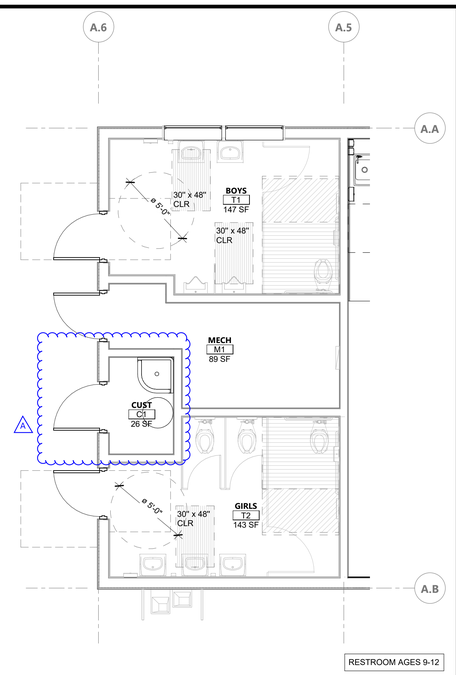
CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:48:49 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



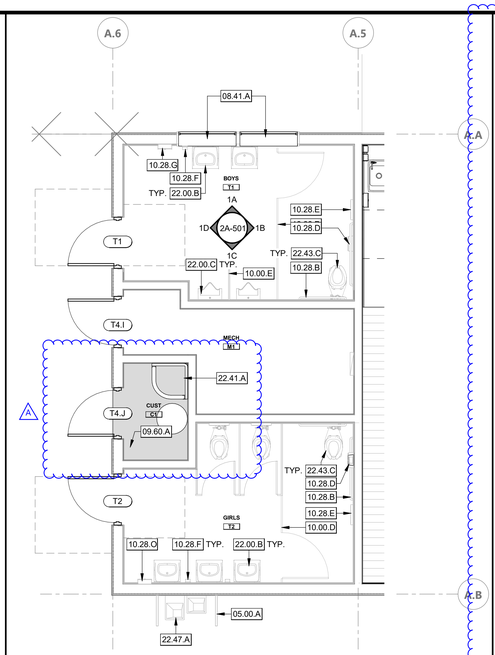
TYPICAL RESTROOM ENLARGED ELEVATIONS - BUILDING A

1/4" = 1'-0" | 5



CLEARANCE PLAN - BUILDING A - TOILETS

1/4" = 1'-0" | 2

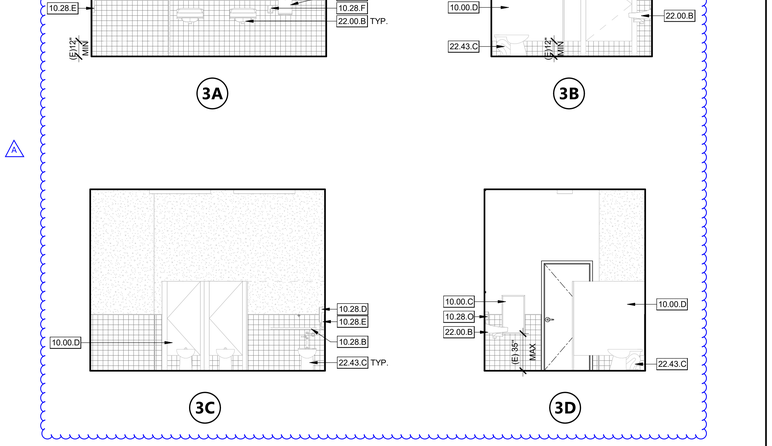


BUILDING A - TOILETS FLOOR PLAN

1/4" = 1'-0" | 1

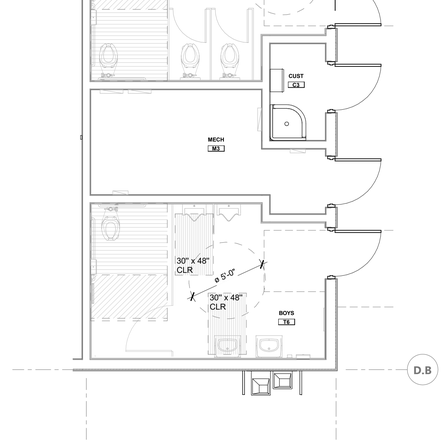
KEYNOTES

02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
05.00.A	(E) METAL HANDRAIL TO REMAIN
05.52.A	(N) 1-1/2" DIA. SCH. 40 HANDRAIL
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
09.60.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
10.00.C	(E) MIRROR TO REMAIN
10.00.D	(E) TOILET COMPARTMENTS TO REMAIN
10.00.E	(E) URINAL SCREEN TO REMAIN
10.28.B	(E) GRAB BAR TO REMAIN
10.28.D	(N) TOILET TISSUE DISPENSER
10.28.E	(E) TOILET SEAT COVER DISPENSER TO REMAIN
10.28.F	(E) SOAP DISPENSER TO REMAIN
10.28.G	(E) PAPER TOWEL DISPENSER TO REMAIN
10.28.O	SURFACE MOUNT PAPER TOWEL DISPENSER
22.00.B	(E) SINK TO REMAIN
22.00.C	(E) URINAL TO REMAIN
22.41.A	JANITORIAL FLOOR MOP SINK, S.M.D.
22.43.C	(E) WATER CLOSET TO REMAIN
22.45.A	(N) WATER HEATER, S.P.D. FOR MORE INFORMATION
22.47.A	(E) HI-LOW DRINKING FOUNTAIN TO REMAIN
22.47.B	HI-LOW DRINKING FOUNTAIN WITH HYDRATION STATION



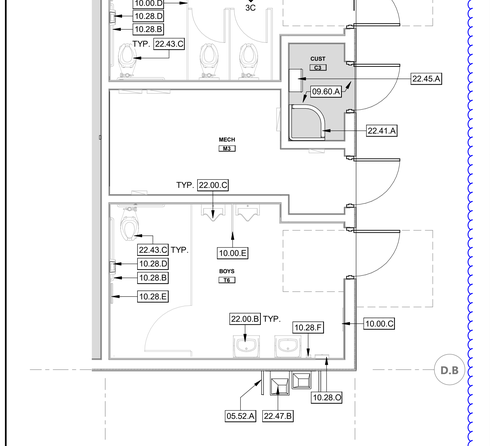
GIRLS TS RESTROOM ENLARGED ELEVATIONS - BUILDING D.2

1/4" = 1'-0" | 6



CLEARANCE PLAN - BUILDING D.2 - TOILETS

1/4" = 1'-0" | 4



ENLARGED FLOOR PLAN - BUILDING D.2

1/4" = 1'-0" | 3

LEGEND - RESTROOM GENERAL NOTES

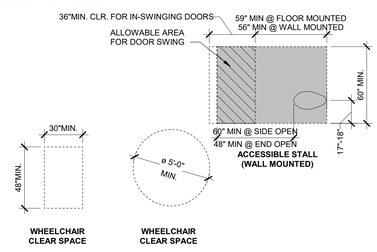
1. MOUNTING HEIGHTS SHOWN ARE TYPICAL, UNLESS OTHERWISE NOTED.
2. ALL ACCESSORIES SHALL BE ACCESSIBLE WITH A MAXIMUM REACH HEIGHT OF 40" ABOVE FINISH FLOOR.
3. SLOPE FLOORS 1/8" PER FOOT MINIMUM AND 1/4" PER FOOT MAXIMUM, UNLESS NOTED OTHERWISE.
4. SEE ENLARGED TOILET PLAN AND INTERIOR ELEVATION DRAWINGS FOR TOILET ACCESSORY LOCATIONS.
5. OWNER FURNISHED ACCESSORIES SHALL BE CONTRACTOR INSTALLED.
6. PROVIDE BACKING FOR GRAB BARS AND SHELVES PER DETAIL.
7. ALL FLOOR DRAINS SHALL HAVE 1/2" MAX. STRAINER OPENING IN ALL DIRECTIONS SEE DETAILS.
8. ALL DIMENSIONS FOR ACCESS COMPLIANCE ARE TO FACE OF FINISH.
9. PROVIDE UNDER LAVATORY GUARDS, MOLDED VINYL COVERING FOR SUPPLY AND DRAIN PIPING WITH FLIP TOP AT VALVE TO ALLOW SERVICE WITHOUT REMOVING COVERING.
10. THE SPACE BETWEEN WALL AND GRAB BAR SHALL BE 1 1/2". THE SPACE BETWEEN THE GRAB BAR AND PROJECTING OBJECTS BELOW AND AT THE ENDS SHALL BE 1 1/2" MIN. THE SPACE BETWEEN THE GRAB BAR AND PROJECTING OBJECTS ABOVE SHALL BE 12" MIN.
11. SEE 2G 900 FOR TYPICAL FIXTURE AND ACCESSORY PLACEMENT DIMENSIONS

CLEARANCE TO FINISH SURFACE

FIXTURE	ADULT	FOR CHILDREN'S USE AGES 5-8	FOR CHILDREN'S USE AGES 9-12	CBC TABLE 11B-604.9
DISPENSER OR MIRROR HEIGHT	40" MAX.	40" MAX.	40" MAX.	
DRINKING FOUTAIN BUBBLER HEIGHT	36" MAX.	PARALLEL APPROACH 30" MAX.	PARALLEL APPROACH 30" MAX.	
DRINKING FOUTAIN KNEE CLEARANCE	27" MIN.	27" MIN.	27" MIN.	
HIGH D.F. SPOUT HEIGHT	38"-43"	38"-43"	38"-43"	
LAVATORY/SINK KNEE CLEARANCE	27" MIN.	24" MIN.	24" MIN.	
LAVATORY/SINK TOP HEIGHT	34" MAX.	31" MAX.	31" MAX.	
RAMP/STAIR HANDRAIL HEIGHT	34"-38"	34"-38"	34"-38"	
T.P. DISPENSER OUTLET (A.F.F. TO CENTER LINE OF OUTLET OR ROLL)	19" MIN	14"-17"	17"-19"	
TOILET CENTERLINE FROM WALL	17"-18"	12"-15"	15"-18"	
TOILET PAPER IN FRONT OF TOILET	7"-9"	7"-9"	7"-9"	
TOILET SEAT HEIGHT (AT SEAT LID)	17"-19"	12"-15"	15"-18"	
TOP OF GRAB BAR HEIGHT	33"-36"	20"-25"	25"-27"	
URINAL FLUSH HANDLE HEIGHT	44" MAX.	44" MAX.	44" MAX.	
URINAL LIP HEIGHT	17" MAX.	17" MAX.	17" MAX.	

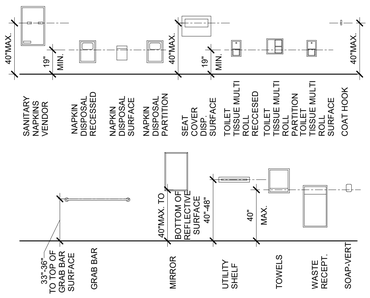
LEGEND - ACCESSIBLE HEIGHTS

CLEARANCES

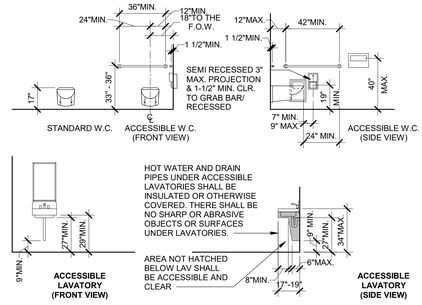


FOR ADDITIONAL ACCESS REQUIREMENTS, SEE

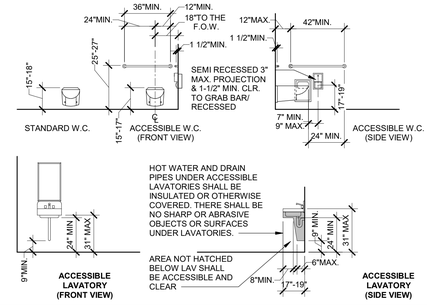
MOUNTING HEIGHTS



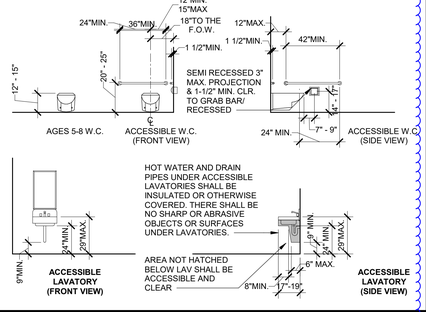
TOILET FIXTURE HEIGHTS - ADULT



TOILET FIXTURE HEIGHTS - CHILDREN AGES 9-12



TOILET FIXTURE HEIGHTS - CHILDREN AGES 5-8



AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

LICENSED ARCHITECT MARINA ALVAREZ PORCA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

RESTROOM PLAN ENLARGEMENTS

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.

2A-501

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt
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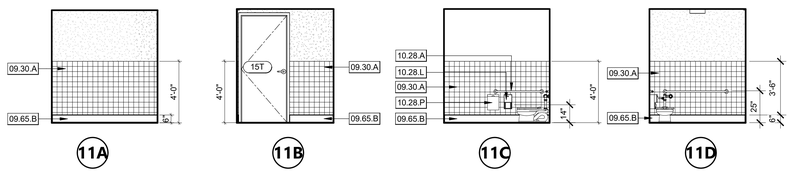
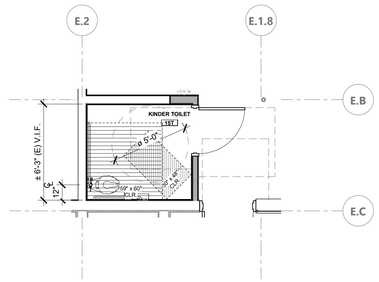


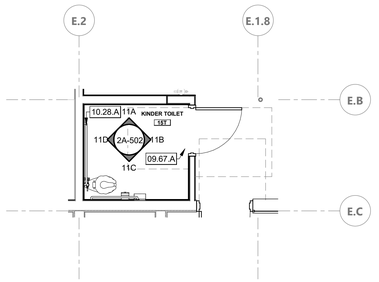
TOILET AGES 5-8

RESTROOM ENLARGED ELEVATIONS - BUILDING E KINDER TOILET | 1/4" = 1'-0" | 11



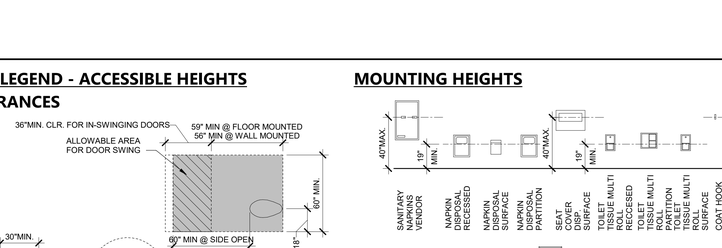
TOILET AGES 5-8

CLEARANCE PLAN-BLDG E-KINDER TOILET | 1/4" = 1'-0" | 6



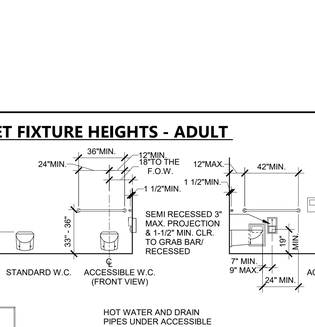
TOILET AGES 5-8

BUILDING E - KINDER TOILET | 1/4" = 1'-0" | 1



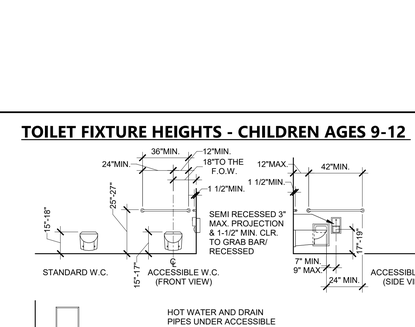
TOILET AGES 9-12

RESTROOM ENLARGED ELEVATIONS - BUILDING B.1 NURSE TOILET | 1/4" = 1'-0" | 13



TOILET AGES 9-12

CLEARANCE PLAN - BLDG B.1 - NURSE TOILET | 1/4" = 1'-0" | 8



TOILET AGES 9-12

BUILDING B.1 - NURSE TOILET | 1/4" = 1'-0" | 3

TOILET AGES ADULT

RESTROOM ENLARGED ELEVATIONS - BUILDING B.1 STAFF TOILET | 1/4" = 1'-0" | 14

TOILET AGES ADULT

CLEARANCE PLAN - BLDG B.1 - STAFF TOILET | 1/4" = 1'-0" | 9

TOILET AGES ADULT

BUILDING B.1 - STAFF TOILET | 1/4" = 1'-0" | 4

KEYNOTES

06.00.A	(E) WOOD STUD WALL TO REMAIN
06.10.A	5' TALL WOOD STUD WALL PER STRUCTURAL DRAWINGS
06.10.C	(N) WOOD SOFFIT FRAMING, REFER TO DETAIL 13/2A-924
08.11.B	(N) WOOD DOOR AND FRAME
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
08.87.A	INSTALL (N) PRIVACY FILM ON (N) WINDOW
09.30.A	(N) CERAMIC TILE. REFER TO FINISH SCHEDULE.
09.65.B	(N) 6" CONTINUOUS EPOXY COVE BASE, SEE FINISH SCHEDULE
09.91.A	PAINT ALL INTERIOR SURFACES
10.28.A	(N) GRAB BAR, SEE 5/2A-921
10.28.C	(N) MIRROR, SEE 10/2A-921
10.28.E	(E) TOILET SEAT COVER DISPENSER TO REMAIN
10.28.L	SURFACE MOUNT TOILET TISSUE DISPENSER
10.28.N	SURFACE MOUNT SOAP DISPENSER
10.28.P	SURFACE MOUNT SANITARY NAPKIN DISPOSAL
22.42.B	NEW WALL MOUNT SINK, SEE PLUMBING DRAWINGS FOR MORE INFO.
22.43.C	(E) WATER CLOSET TO REMAIN

LEGEND - RESTROOM GENERAL NOTES

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2. ALL ACCESSORIES SHALL BE ACCESSIBLE WITH A MAXIMUM REACH HEIGHT OF 40" ABOVE FINISH FLOOR.
3. SLOPE FLOORS 1/8" PER FOOT MINIMUM AND 1/4" PER FOOT MAXIMUM, UNLESS NOTED OTHERWISE.
4. SEE ENLARGED TOILET PLAN AND INTERIOR ELEVATION DRAWINGS FOR TOILET ACCESSORY LOCATIONS.
5. OWNER FURNISHED ACCESSORIES SHALL BE CONTRACTOR INSTALLED.
6. PROVIDE BACKING FOR GRAB BARS AND SHELVES PER DETAIL.
7. ALL FLOOR DRAINS SHALL HAVE 1/2" MAX. STRAINER OPENING IN ALL DIRECTIONS SEE DETAILS.
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9. PROVIDE UNDER LAVATORY GUARDS, MOLDED VINYL COVERING FOR SUPPLY AND DRAIN PIPING WITH FLIP TOP AT VALVE TO ALLOW SERVICE WITHOUT REMOVING COVERING.
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11. SEE 2G 900 FOR TYPICAL FIXTURE AND ACCESSORY PLACEMENT DIMENSIONS

CLEARANCE TO FINISH SURFACE

FIXTURE	ADULT	FOR CHILDREN'S USE AGES 5-8	FOR CHILDREN'S USE AGES 9-12	CBC TABLE 11B-604.9
DISPENSER OR MIRROR HEIGHT	40" MAX.	40" MAX.	40" MAX.	
DRINKING FOUTAIN BUBBLER HEIGHT	36" MAX.	PARALLEL APPROACH 30" MAX.	PARALLEL APPROACH 30" MAX.	
DRINKING FOUTAIN KNEE CLEARANCE	27" MIN.	27" MIN.	27" MIN.	
HIGH D.F. SPOUT HEIGHT	38"-43"	38"-43"	38"-43"	
LAVATORY/SINK KNEE CLEARANCE	27" MIN.	24" MIN.	24" MIN.	
LAVATORY/SINK TOP HEIGHT	34" MAX.	31" MAX.	31" MAX.	
RAMP/STAIR HANDRAIL HEIGHT	34"-38"	34"-38"	34"-38"	
T.P. DISPENSER OUTLET (A.F.F. TO CENTER LINE OF OUTLET OR ROLL)	19" MIN	14"-17"	17"-19"	
TOILET CENTERLINE FROM WALL	17"-18"	12"-15"	15"-18"	
TOILET PAPER IN FRONT OF TOILET	7"-9"	7"-9"	7"-9"	
TOILET SEAT HEIGHT (AT SEAT LID)	17"-19"	12"-15"	15"-18"	
TOP OF GRAB BAR HEIGHT	33"-36"	20"-25"	25"-27"	
URINAL FLUSH HANDLE HEIGHT	44" MAX.	44" MAX.	44" MAX.	
URINAL LIP HEIGHT	17" MAX.	17" MAX.	17" MAX.	

LEGEND - ACCESSIBLE HEIGHTS

CLEARANCES

FOR ADDITIONAL ACCESS REQUIREMENTS, SEE

MOUNTING HEIGHTS

TOILET FIXTURE HEIGHTS - ADULT

TOILET FIXTURE HEIGHTS - CHILDREN AGES 9-12

TOILET FIXTURE HEIGHTS - CHILDREN AGES 5-8

AGENCY APPROVAL DSA# 1-121400

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PROFESSIONAL STAMP

LICENSED ARCHITECT MARIANA ALVAREZ ORTEGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

RESTROOM PLAN ENLARGEMENTS

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

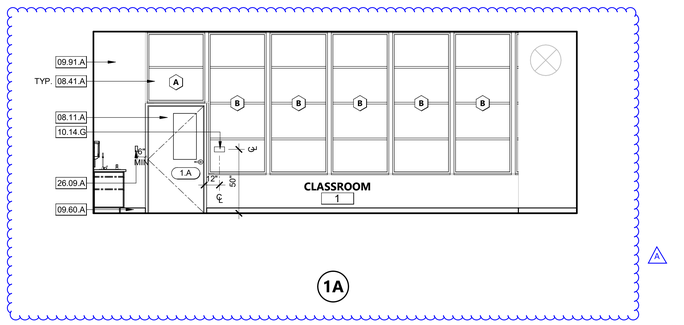
SHEET NO.

2A-502

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:49:05 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_v1



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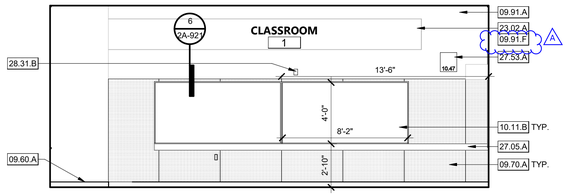

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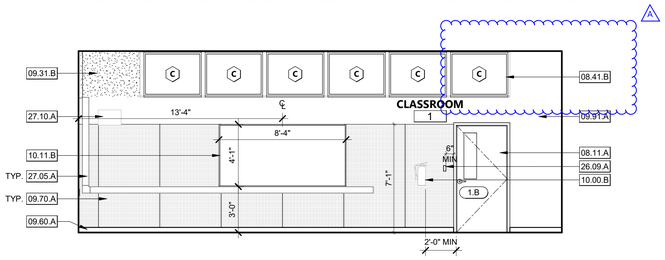

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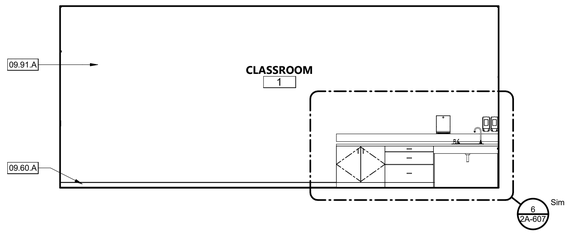

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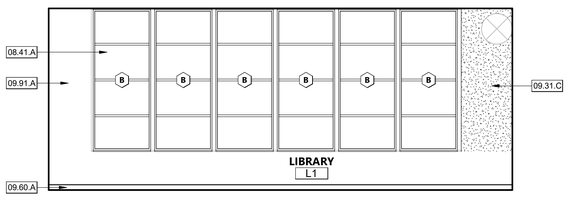
BUILDING A - TYPICAL CLASSROOM | 1/4" = 1'-0" | 1



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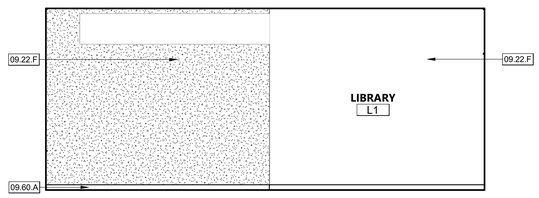

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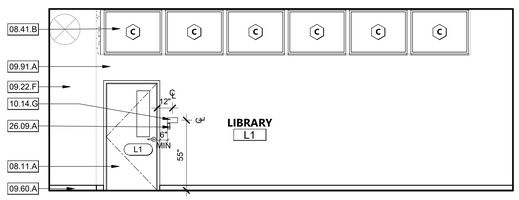

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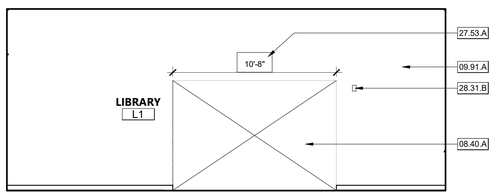


2D

BUILDING B.1 - LIBRARY | 1/4" = 1'-0" | 2

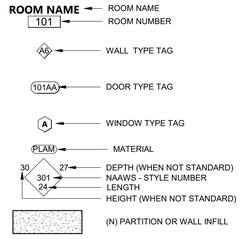
KEYNOTES

08.11.A	(N) EXTERIOR FRP FLUSH DOOR WITH HALF NARROW LITE INSTALLED IN (E) WOOD OR HOLLOW METAL FRAME.
08.40.A	(N) WALL OPENING.
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
09.22.F	(N) 2-HR INTERIOR WALL, REFER TO WALL TYPES
09.31.B	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING WITH (N) 2" CONDUIT PENETRATION PER TECHNOLOGY DRAWINGS. SEE 8/2S-801 FOR WINDOW INFILL.
09.31.C	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING.
09.60.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
09.70.A	TACKABLE WALL PANELS
09.91.A	PAINT ALL INTERIOR SURFACES
09.91.F	(N) PAINT AT EXISTING HVAC HOUSING AND DUCTWORK TO MATCH WALL COLOR, COVER, AND PROTECT VENTS DURING PAINTING. SEE FINISH SCHEDULE
10.00.B	(E) FIRE EXTINGUISHER TO BE REMOVED/PROTECTED AND REINSTALLED. SEE INTERIOR ELEVATIONS FOR LOCATION.
10.11.B	WALL MOUNTED 4'x8' WHITEBOARDS, SEE DETAIL/2A-921
10.14.G	(N) TACTILE EXIT SIGN
23.02.A	(E) HVAC HOUSING AND DUCTWORK TO REMAIN AND BE PROTECTED DURING CONSTRUCTION. PREPARE SURFACE FOR PAINTING
26.09.A	LIGHTING CONTROL DEVICES
27.05.A	(N) SURFACE RACEWAY. S.T.D.
27.10.A	(N) IDF RACK, S.T.D.
27.53.A	(N) CLOCK SYSTEM, S.T.D.
28.31.B	(N) HORN STROBE, S.FA.D.

LEGEND - INTERIOR ELEVATION GENERAL NOTES

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET A-811.
2. ALL STEEL TO BE GALVANIZED AND PAINTED.
3. LIGHT SWITCHES TO BE MOUNTED AT 45" A.F.F. TO THE TOP OF SWITCH PLATE.

INTERIOR ELEVATION LEGEND



AGENCY APPROVAL DSA# 1-121400

196

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SHEET TITLE
INTERIOR ELEVATIONS

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-601

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CONSTRUCTION DOCUMENTS

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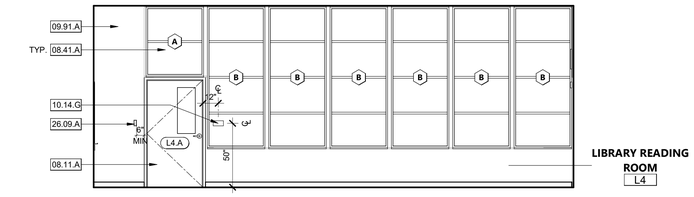

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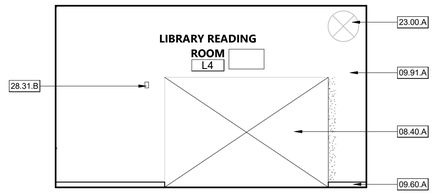

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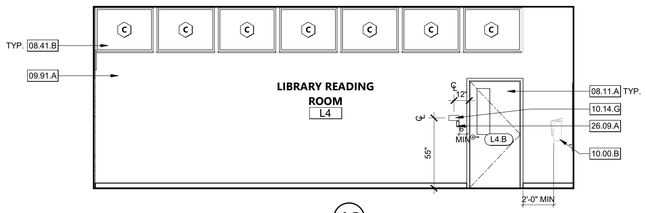

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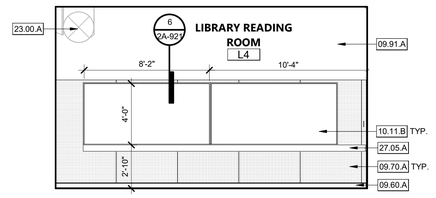
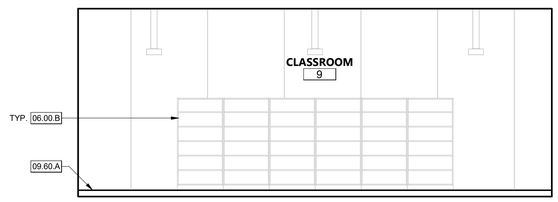


1D

BUILDING B.1 - LIBRARY READING ROOM | 1/4" = 1'-0" | **1**



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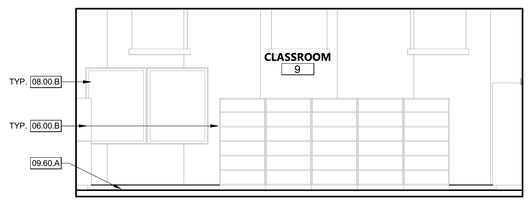

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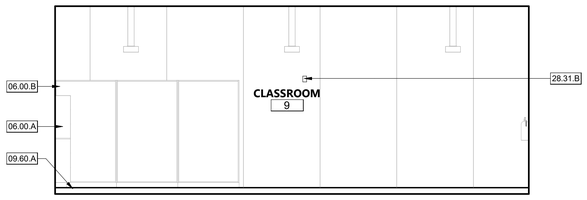

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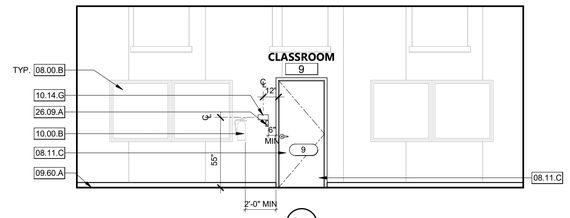


2D

BUILDING C - CLASSROOM 9 | 1/4" = 1'-0" | **2**

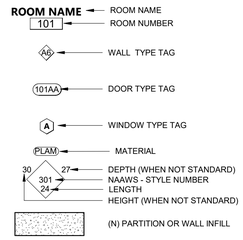
KEYNOTES

06.00.A	(E) WOOD STUD WALL TO REMAIN
06.00.B	(E) CASEWORK TO REMAIN. PROTECT IN PLACE.
08.00.B	(E) WINDOW TO REMAIN
08.11.A	(N) EXTERIOR FRP FLUSH DOOR WITH HALF NARROW LITE INSTALLED IN (E) WOOD OR HOLLOW METAL FRAME.
08.11.C	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.40.A	(N) WALL OPENING.
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
09.60.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION.
09.70.A	TACKABLE WALL PANELS
09.91.A	PAINT ALL INTERIOR SURFACES
10.00.B	(E) FIRE EXTINGUISHER TO BE REMOVED/PROTECTED AND REINSTALLED. SEE INTERIOR ELEVATIONS FOR LOCATION.
10.11.B	WALL MOUNTED 4'x8' WHITEBOARDS, SEE DETAIL/2A-921
10.14.G	(N) TACTILE EXIT SIGN
23.00.A	(E) MECHANICAL EQUIPMENT TO REMAIN
26.09.A	LIGHTING CONTROL DEVICES
27.05.A	(N) SURFACE RACEWAY. S.T.D.
28.31.B	(N) HORN STROBE, S.FA.D.

LEGEND - INTERIOR ELEVATION GENERAL NOTES

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET A-811.
2. ALL STEEL TO BE GALVANIZED AND PAINTED.
3. LIGHT SWITCHES TO BE MOUNTED AT 45" A.F.F. TO THE TOP OF SWITCH PLATE.

INTERIOR ELEVATION LEGEND



AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

LICENSED ARCHITECT
MARINA ALVAREZ PORCA
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REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

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SHEET TITLE
INTERIOR ELEVATIONS

INCREMENT: INC.2

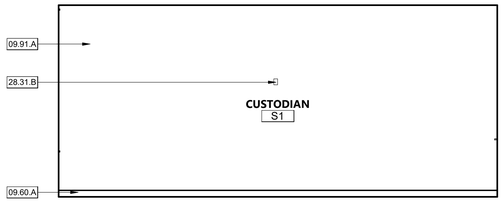
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-602

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:49:13 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



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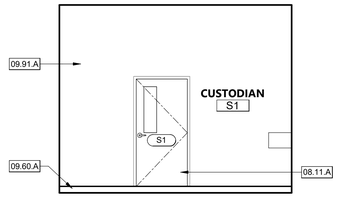

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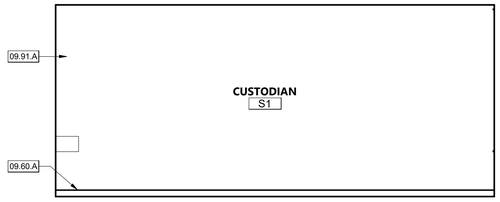

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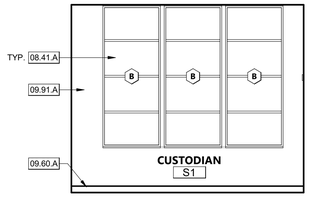
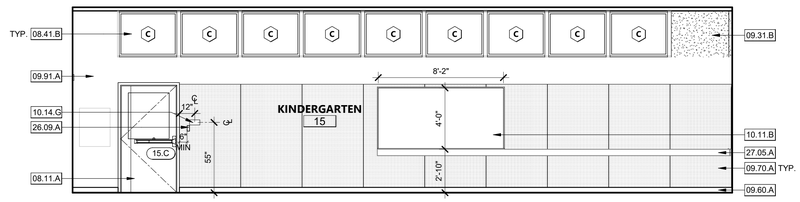


1D

BUILDING D.2 - CUSTODIAN S1

1/4" = 1'-0" | 1



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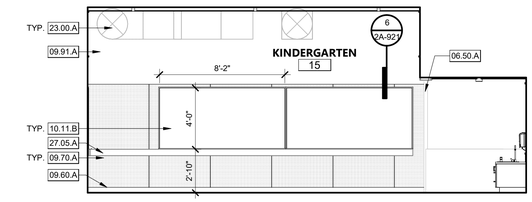

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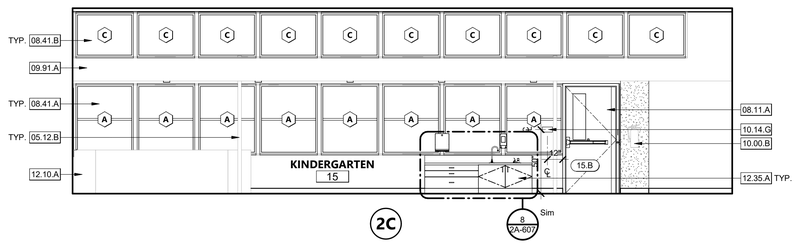

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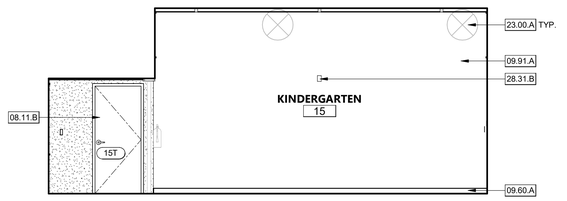


2D

BUILDING E - KINDERGARTEN

1/4" = 1'-0" | 2

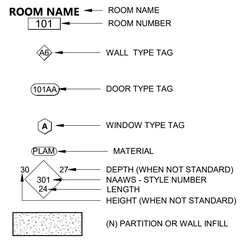
KEYNOTES

05.12.B	STEEL COLUMN TO REMAIN, PAINT ACCORDING SPECS
06.50.A	(E) POST TO REMAIN
08.11.A	(N) EXTERIOR FRP FLUSH DOOR WITH HALF NARROW LITE INSTALLED IN (E) WOOD OR HOLLOW METAL FRAME.
08.11.B	(N) WOOD DOOR AND FRAME
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
09.31.B	(N) WALL INFILL AT (E) WINDOW OPENING. COORDINATE WALL FRAMING WITH (N) 2" CONDUIT PENETRATION PER TECHNOLOGY DRAWINGS. SEE 8/2S-801 FOR WINDOW INFILL.
09.60.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
09.70.A	TACKABLE WALL PANELS
09.91.A	PAINT ALL INTERIOR SURFACES
10.00.B	(E) FIRE EXTINGUISHER TO BE REMOVED/PROTECTED AND REINSTALLED. SEE INTERIOR ELEVATIONS FOR LOCATION.
10.11.B	WALL MOUNTED 4'x8' WHITEBOARDS, SEE DETAIL/2A-921
10.14.G	(N) TACTILE EXIT SIGN
12.10.A	(E) SHELVING CASEWORK. FINISH TO BE REMOVED AND REPLACED WITH INK & STAIN RESISTANT VINYL.
12.35.A	NEW PLAM CASEWORK
23.00.A	(E) MECHANICAL EQUIPMENT TO REMAIN
26.09.A	LIGHTING CONTROL DEVICES
27.05.A	(N) SURFACE RACEWAY. S.T.D.
28.31.B	(N) HORN STROBE, S.FA.D.

LEGEND - INTERIOR ELEVATION GENERAL NOTES

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET A-802.
2. ALL STEEL TO BE GALVANIZED AND PAINTED.

INTERIOR ELEVATION LEGEND



ROOM NAME
ROOM NUMBER
WALL TYPE TAG
DOOR TYPE TAG
WINDOW TYPE TAG
MATERIAL
DEPTH (WHEN NOT STANDARD)
NAAWS - STYLE NUMBER
LENGTH
HEIGHT (WHEN NOT STANDARD)
(N) PARTITION OR WALL INFILL

AGENCY APPROVAL DSA# 01-121400

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
INTERIOR ELEVATIONS

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

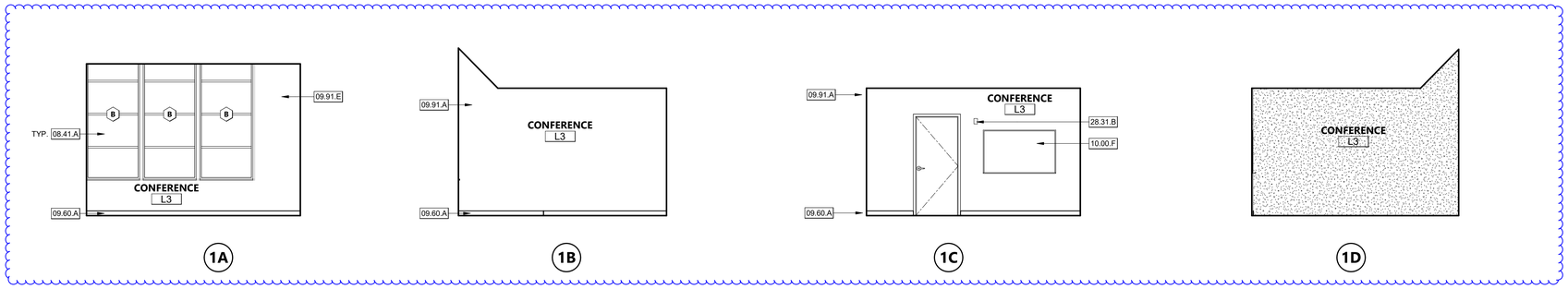
SHEET NO.

2A-603

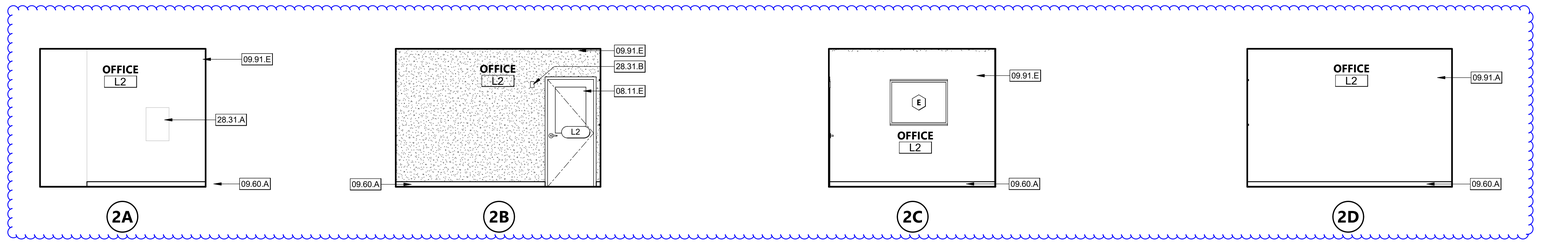
DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

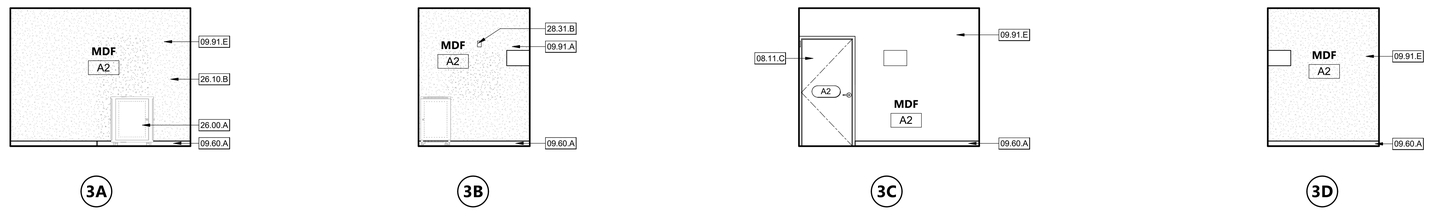
DATE PLOTTED: 10/30/2024 5:49:18 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



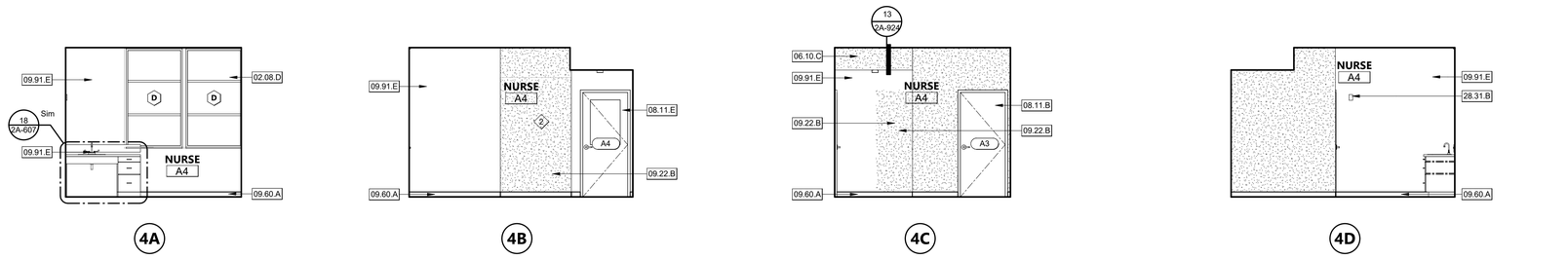
BUILDING B.1 - CONFERENCE | 1/4" = 1'-0" | 1



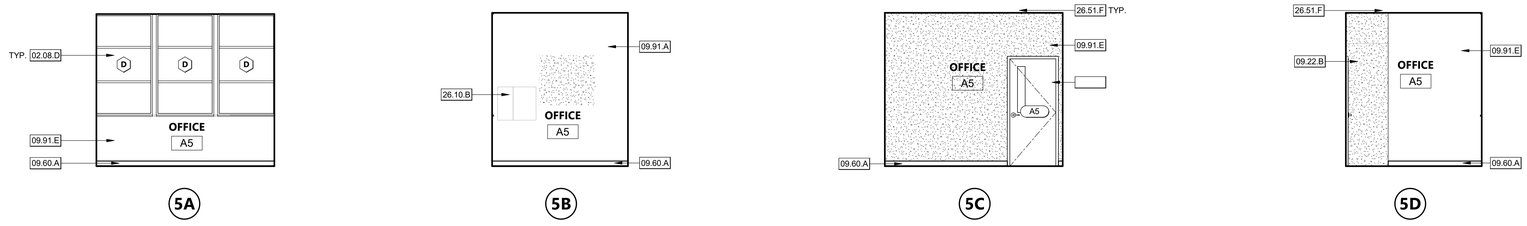
BUILDING B.1 - OFFICE | 1/4" = 1'-0" | 2



BUILDING B.1 - MDF | 1/4" = 1'-0" | 3



BUILDING B.1 - NURSE | 1/4" = 1'-0" | 4



BUILDING B.1 - OFFICE | 1/4" = 1'-0" | 5

KEYNOTES

02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
06.10.C	(N) WOOD SOFFIT FRAMING, REFER TO DETAIL 13/2A-924
08.11.B	(N) WOOD DOOR AND FRAME
08.11.C	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.11.E	(N) DOOR WITH HALF LITE
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
09.22.B	(N) INFILL WALL AND PATCH TO MATCH EXISTING
09.60.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
09.91.A	PAINT ALL INTERIOR SURFACES
09.91.E	PATCH WALL & REPLACE TILES AROUND NEW WINDOWS. REFER TO SECTION 09 30 13 IN THE SPECS
10.00.F	(E) WHITEBOARDS TO REMAIN
26.00.A	(E) ELECTRICAL EQUIPMENT TO REMAIN
26.10.B	(E) ELECTRICAL PANEL
26.51.F	(N) INTERIOR LIGHTING FIXTURE, S.E.D.
28.31.A	ELECTRICAL PANELS. REFER TO ELECTRICAL.
28.31.B	(N) HORN STROBE, S.FA.D.

LEGEND - INTERIOR ELEVATION GENERAL NOTES

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET A-802.
2. ALL STEEL TO BE GALVANIZED AND PAINTED.

INTERIOR ELEVATION LEGEND

AGENCY APPROVAL DSA# 01-121400

196

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PROFESSIONAL STAMP

LICENSED ARCHITECT
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C-36107
REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

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SHEET TITLE
INTERIOR ELEVATIONS

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-604

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

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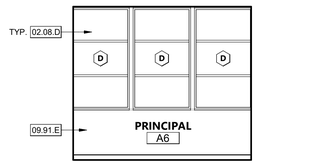

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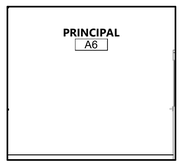

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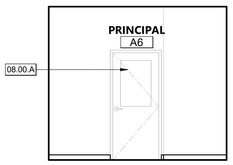

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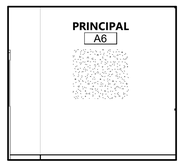

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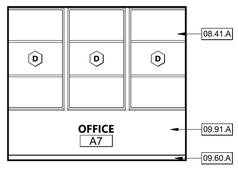
BUILDING B.1 - PRINCIPAL 1/4" = 1'-0" **1**



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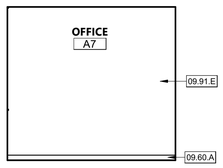

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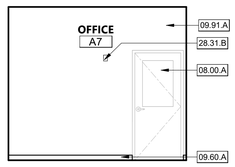

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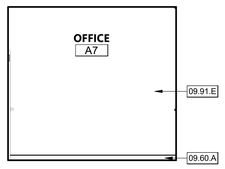
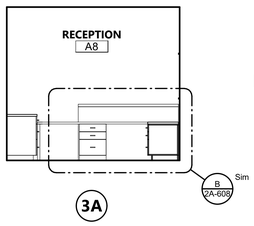


2D

BUILDING B.1 - CONFERENCE 1/4" = 1'-0" **2**



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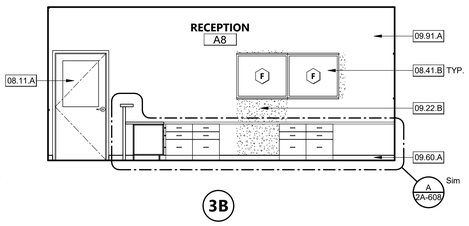

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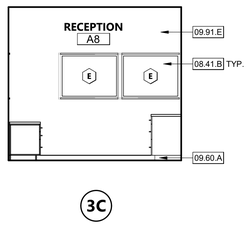

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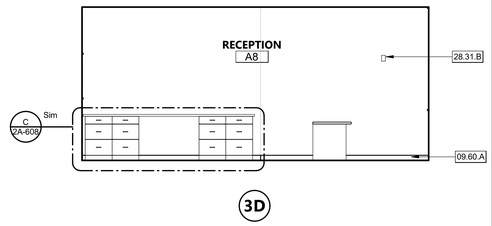
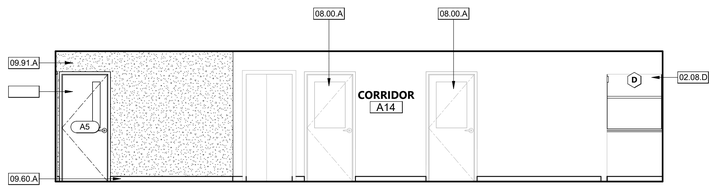


3D

BUILDING B.1 - ADMIN 1/4" = 1'-0" **3**



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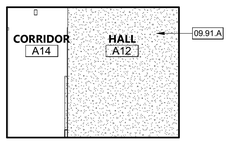

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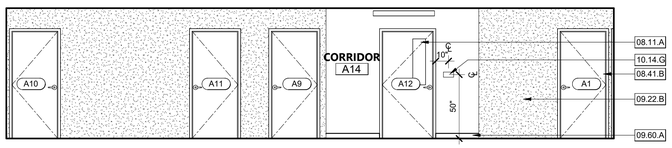

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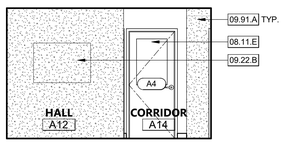

4D

BUILDING B.1 - CORRIDOR & HALL 1/4" = 1'-0" **4**

KEYNOTES

02.08.D	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT (E) OPENING AND PREPARE FOR NEW WINDOW
08.00.A	(E) DOOR TO REMAIN
08.11.A	(N) EXTERIOR FRP FLUSH DOOR WITH HALF NARROW LITE INSTALLED IN (E) WOOD OR HOLLOW METAL FRAME.
08.11.E	(N) DOOR WITH HALF LITE
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
09.22.B	(N) INFILL WALL AND PATCH TO MATCH EXISTING
09.60.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
09.91.A	PAINT ALL INTERIOR SURFACES
09.91.E	PATCH WALL & REPLACE TILES AROUND NEW WINDOWS. REFER TO SECTION 09 30 13 IN THE SPECS
10.14.G	(N) TACTILE EXIT SIGN
28.31.B	(N) HORN STROBE, S.FA.D.

LEGEND - INTERIOR ELEVATION GENERAL NOTES

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET A-802.
2. ALL STEEL TO BE GALVANIZED AND PAINTED.

INTERIOR ELEVATION LEGEND

AGENCY APPROVAL DSA# 01-121400

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A

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LICENSED ARCHITECT
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REVISIONS

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SHEET TITLE
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INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

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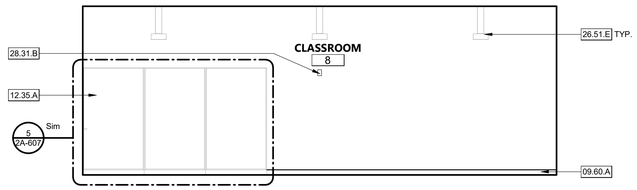

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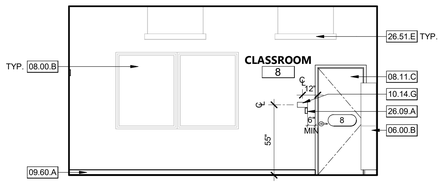

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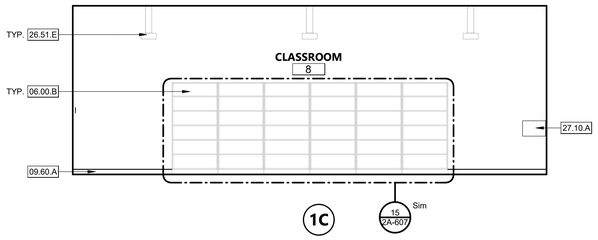

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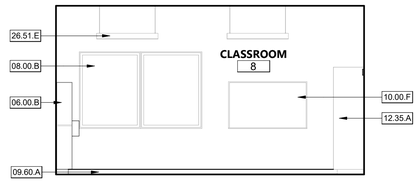
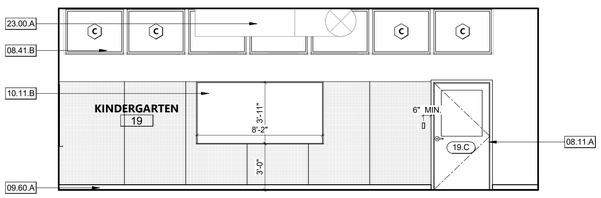


1D

BUILDING C - CLASSROOM 8 | 1/4" = 1'-0" | 1



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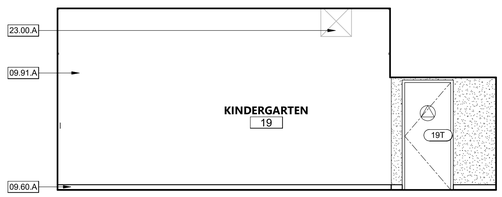

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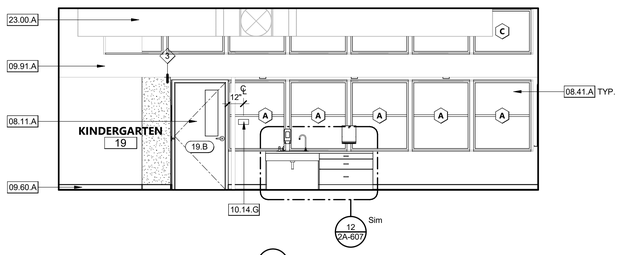

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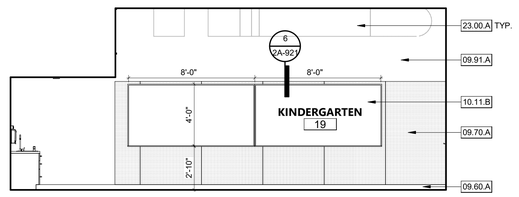

2D

BUILDING E - KINDERGARTEN TYPE 2 | 1/4" = 1'-0" | 2

KEYNOTES

06.00.B	(E) CASEWORK TO REMAIN. PROTECT IN PLACE.
08.00.B	(E) WINDOW TO REMAIN
08.11.A	(N) EXTERIOR FRP FLUSH DOOR WITH HALF NARROW LITE INSTALLED IN (E) WOOD OR HOLLOW METAL FRAME.
08.11.C	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.41.A	(N) ALUMINUM STOREFRONT WINDOW, SEE DETAILS
08.41.B	(N) ALUMINUM CLERESTORY WINDOW
09.60.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
09.70.A	TACKABLE WALL PANELS
09.91.A	PAINT ALL INTERIOR SURFACES
10.00.F	(E) WHITEBOARDS TO REMAIN
10.11.B	WALL MOUNTED 4'x8' WHITEBOARDS, SEE DETAIL/2A-921
10.14.G	(N) TACTILE EXIT SIGN
12.35.A	NEW PLAM CASEWORK
23.00.A	(E) MECHANICAL EQUIPMENT TO REMAIN
26.09.A	LIGHTING CONTROL DEVICES
26.51.E	(E) PENDANT LIGHTS, REMOVE AND STORE, FOR REINSTALLATION AFTER CEILING WORK COMPLETED
27.10.A	(N) IDF RACK, S.T.D.
28.31.B	(N) HORN STROBE, S.FA.D.

LEGEND - INTERIOR ELEVATION GENERAL NOTES

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INTERIOR ELEVATION LEGEND

ROOM NAME
ROOM NUMBER
WALL TYPE TAG
DOOR TYPE TAG
WINDOW TYPE TAG
MATERIAL
DEPTH (WHEN NOT STANDARD)
NAAWS - STYLE NUMBER
LENGTH
HEIGHT (WHEN NOT STANDARD)
(N) PARTITION OR WALL INFILL

AGENCY APPROVAL DSA# 01-121400

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LICENSED ARCHITECT
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DRAWN BY: PR JOB NUMBER: 23119.01

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CONSTRUCTION DOCUMENTS

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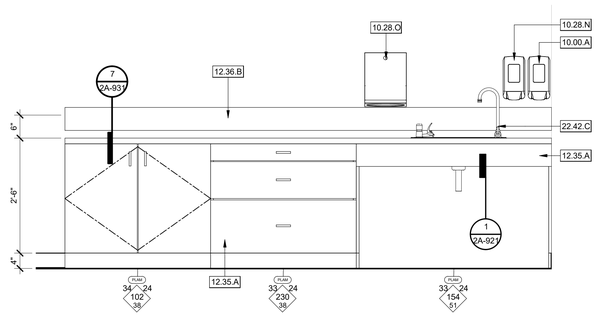
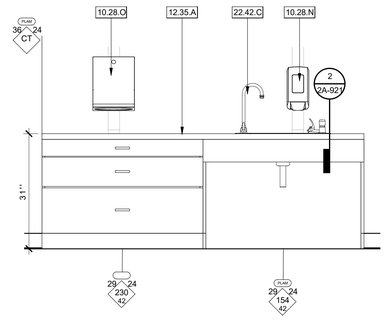
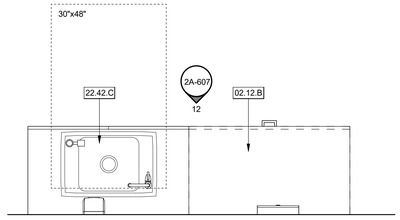


TYP. CLASSROOM CASEWORK - ELEVATION | 3/4" = 1'-0" | **6**

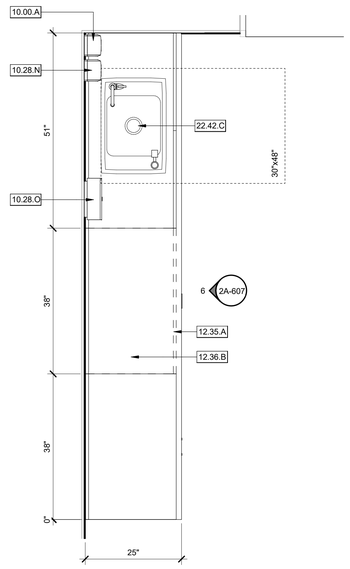


CLASSROOMS 16-20
AGES 6-8

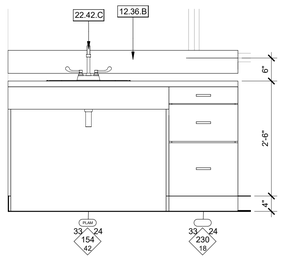
ALT. CLASSROOM CASEWK. - ELEVATION | 3/4" = 1'-0" | **12**



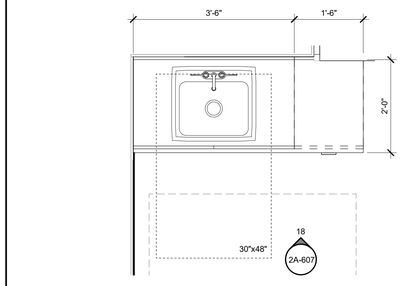
ALT. CLSRM. CASEWK. - ENLARGE PLAN | 3/4" = 1'-0" | **7**



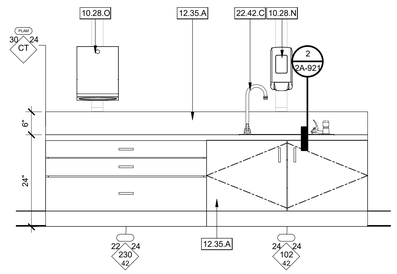
TYP. CLSRM. CASEWK. - ENLARGE PLAN | 3/4" = 1'-0" | **2**



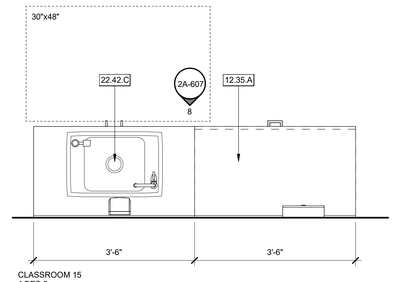
NURSE CASEWORK - ELEVATION | 3/4" = 1'-0" | **18**



NURSE CASEWORK - ENLARGED PLAN | 3/4" = 1'-0" | **13**

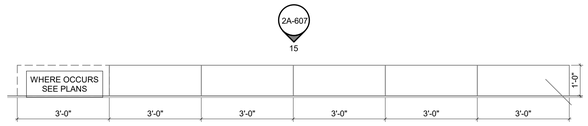


CLASSROOM 15 CASEWK. - ELEVATION | 3/4" = 1'-0" | **8**

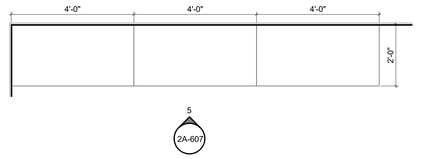


CLASSROOM 15
AGES 5

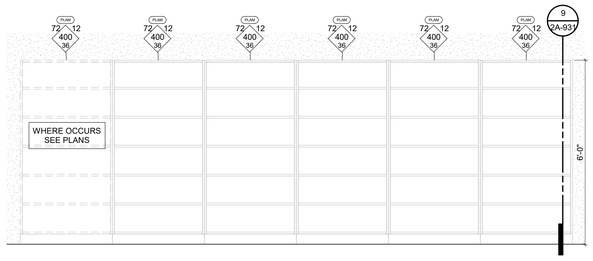
CLSRM. 15 CASEWK. - ENLARGE PLAN | 3/4" = 1'-0" | **3**



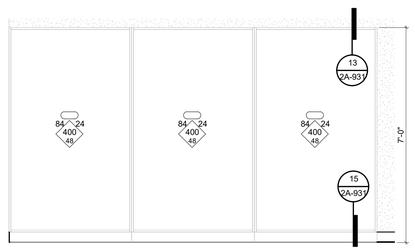
BUILDING C - SHELF CASEWORK - ENLARGED PLAN | 1/2" = 1'-0" | **14**



BUILDING C - TALL CASEWORK - ENLARGED PALN | 1/2" = 1'-0" | **4**



BUILDING C - SHELF CASEWORK - ELEVATION | 1/2" = 1'-0" | **15**



BUILDING C - TALL CASEWORK - ELEVATION | 1/2" = 1'-0" | **5**

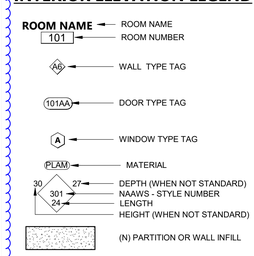
KEYNOTES

02.12.B	(E) CABINETS, COUNTERTOPS, BACKSPLASH, BOOKSHELVES, AND RELATED ACCESSORIES TO BE DEMOLISHED
10.00.A	(E) SALVAGED HAND SANITIZER DISPENSER REINSTALLED
10.28.N	SURFACE MOUNT SOAP DISPENSER
10.28.O	SURFACE MOUNT PAPER TOWEL DISPENSER
12.35.A	NEW PLAM CASEWORK
12.36.B	PLASTIC LAMINATED COUNTERTOP. 6" BACKSPLASH, TYP.
22.42.C	ACCESSIBLE SINK, S.MP.D.

LEGEND - INTERIOR ELEVATION GENERAL NOTES

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET A-811.
2. ALL STEEL TO BE GALVANIZED AND PAINTED.
3. LIGHT SWITCHES TO BE MOUNTED AT 45" A.F.F. TO THE TOP OF SWITCH PLATE.

INTERIOR ELEVATION LEGEND



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REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	12-19-2023	FOR PLAN CHECK ONLY, PER DSA IR_A-19
A	12-19-2023	DSA SUBMITTAL

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

CASEWORK PLANS & ELEVATIONS

ING.2

DRAWN BY: MP JOB NUMBER: 23119.01

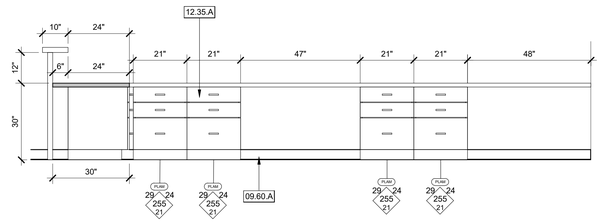
SHEET NO.

2A-607

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:49:39 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2022/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_rvt



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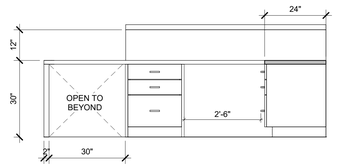

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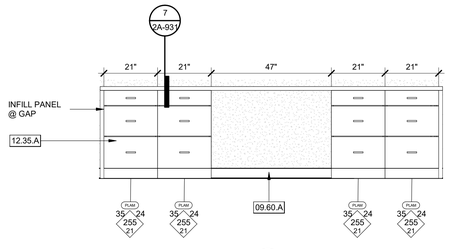
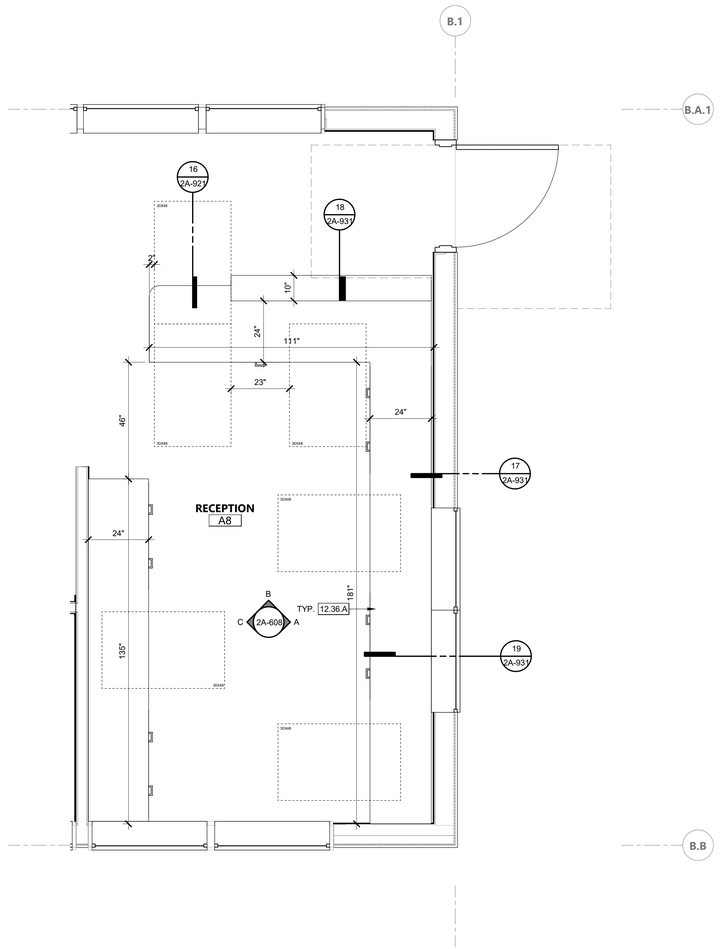


C

BUILDING B.1 - ADMIN CASEWORK ELEVATIONS

1/4" = 1'-0" | 2



ENLARGED FLOOR PLAN - BUILDING B.1 - ADMIN

1/2" = 1'-0" | 1

KEYNOTES

09.60.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
12.35.A	NEW PLAM CASEWORK
12.36.A	TRANSACTION COUNTERTOP. SOLID SURFACE, TYP

LEGEND - INTERIOR ELEVATION GENERAL NOTES

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET A-811.
2. ALL STEEL TO BE GALVANIZED AND PAINTED.
3. LIGHT SWITCHES TO BE MOUNTED AT 45" A.F.F. TO THE TOP OF SWITCH PLATE.

INTERIOR ELEVATION LEGEND

AGENCY APPROVAL DSA# 01-121400

196

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A	10-31-2024	ADDENDUM 01

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SHEET TITLE
CASEWORK PLANS & ELEVATIONS

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.

2A-608

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt

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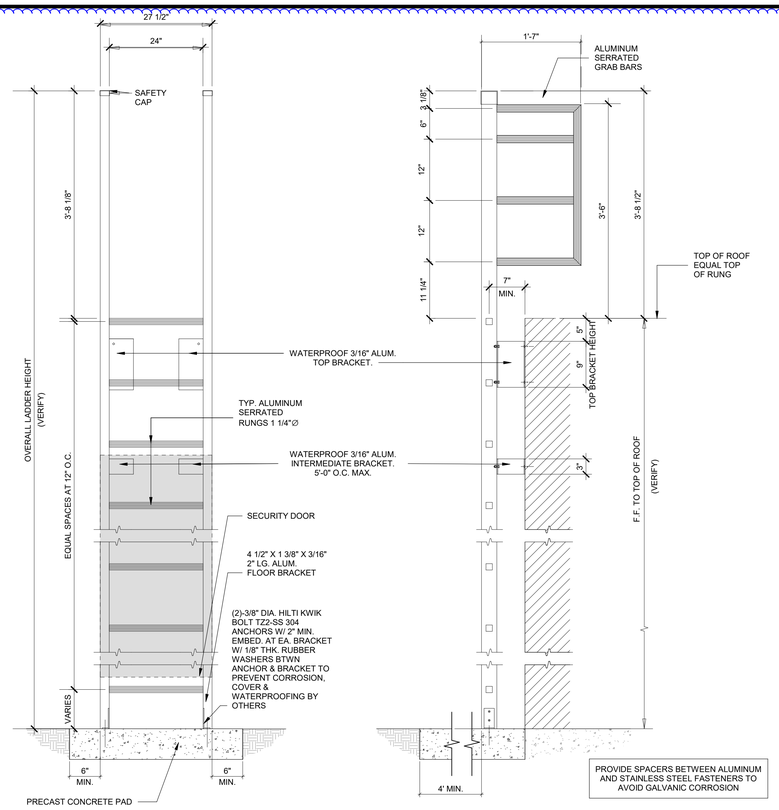
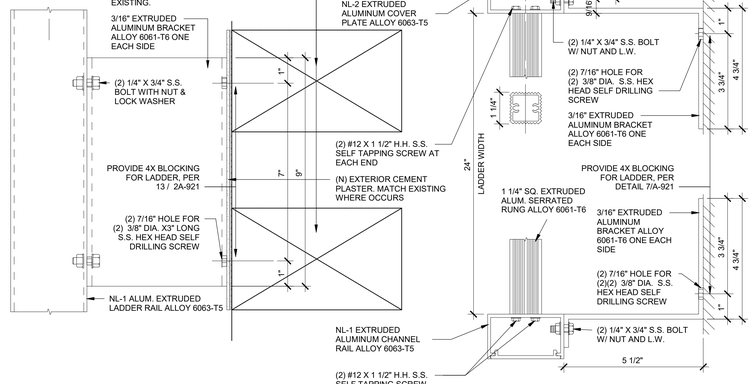


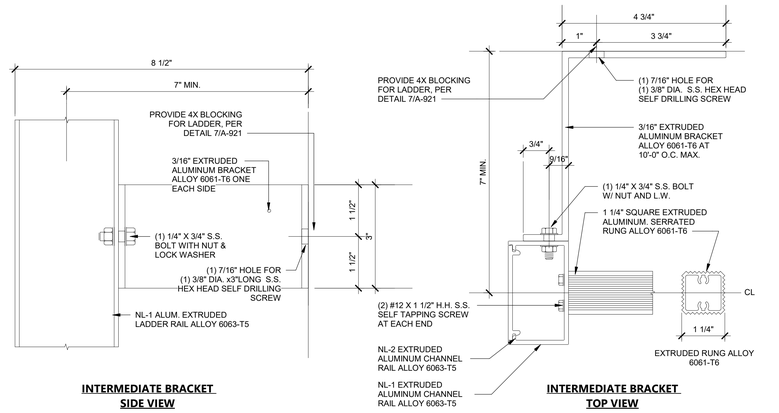
FRONT ELEVATION
N.T.S.

SIDE ELEVATION
N.T.S.



OFF FLOOR/ TOP BRACKET SIDE VIEW

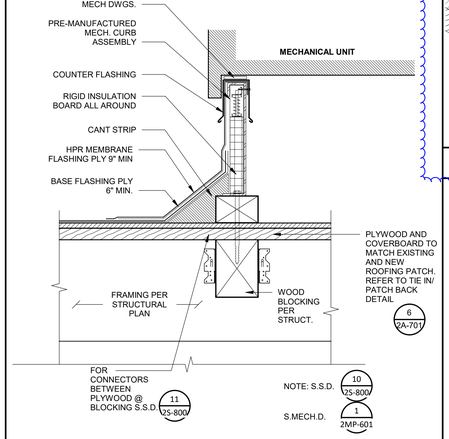
OFF FLOOR/ TOP BRACKET TOP VIEW



INTERMEDIATE BRACKET SIDE VIEW

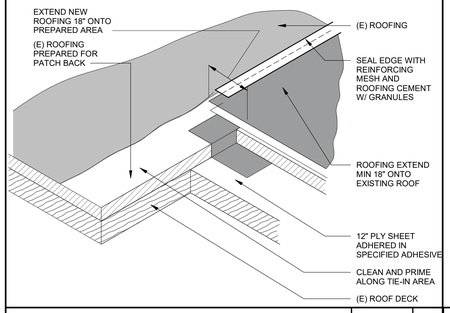
INTERMEDIATE BRACKET TOP VIEW

EXTERIOR ROOF ACCESS LADDER W/ SECURITY DOOR | N.T.S. | 18

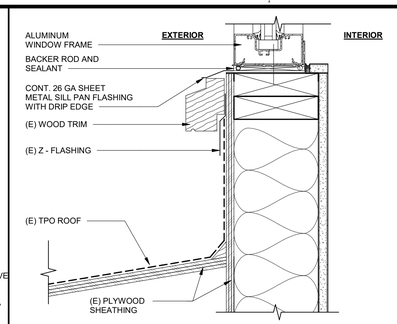


MECH CURB AT ROOF | 1 1/2" = 1'-0" | 12

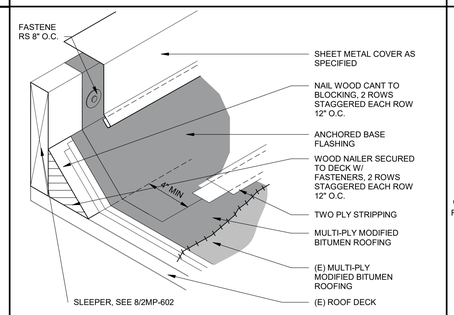
EXHAUST FAN AT ROOF | NTS | 13



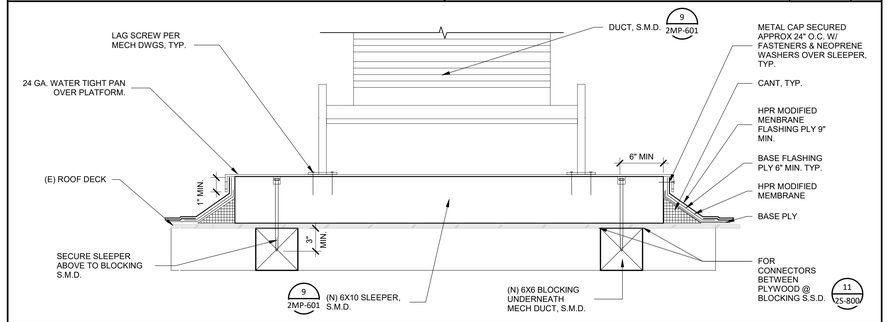
TIE IN / PATCH BACK | NTS | 6



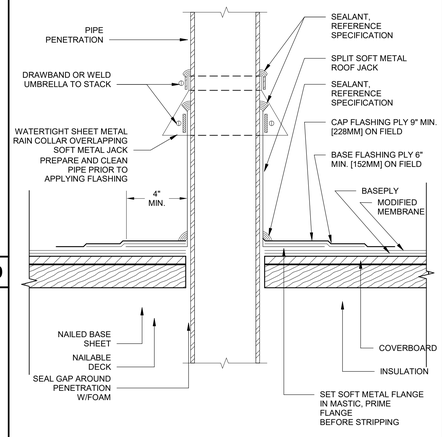
CLERESTORY @ ROOF | 3" = 1'-0" | 1



MEMBRANE ON SLEEPER | NTS | 10



MECHANICAL PLATFORM | 1 1/2" = 1'-0" | 11



NOTE:
REFERENCE SPECIFICATION FOR SURFACING, MEMBRANE ADHESIVE TYPE, AND INSULATION/COVER BOARD TYPE AND ATTACHMENT METHOD

SEE MECH. DWGS 1 / 1MP-602

ROOF PENETRATION | 3" = 1'-0" | 5

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REVISIONS

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SHEET TITLE
EXTERIOR DETAILS

INC 2

DRAWN BY: MP JOB NUMBER: 23119.01

SHEET NO.
2A-701

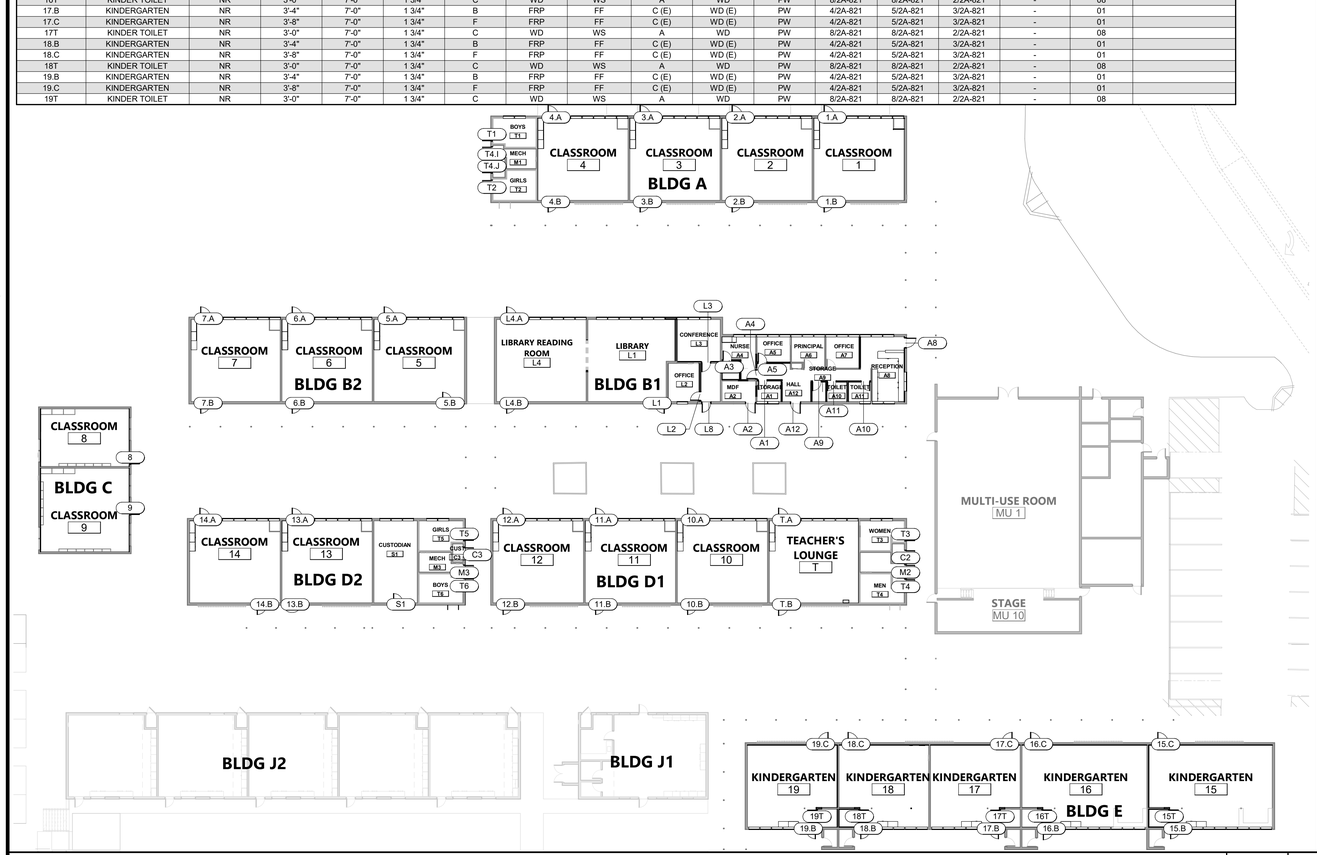
DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:49:45 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES_MOD_INC02_A22_.rvt

DOOR SCHEDULE - INC 2

ROOM	FIRE RATING	SIZE WIDTH	SIZE HEIGHT	SIZE THICKNESS	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	PANIC HARDWARE	HARDWARE GROUP	NOTES
BUILDING A																
1.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
1.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
2.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
2.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
3.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
3.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
4.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
4.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
T1	BOYS	NR	3'-0"	7'-0"	1 3/4"	A	(E)	P	A (E)	HM (E)	PM	7/2A-821	10/2A-821	3/2A-821	-	05	LOUVERS
T2	GIRLS	NR	3'-0"	7'-0"	1 3/4"	A	(E)	P	A (E)	HM (E)	PM	7/2A-821	10/2A-821	3/2A-821	-	04	LOUVERS
T4.I	MECH	NR	3'-0"	7'-0"	1 3/4"	A	(E)	P	A (E)	HM (E)	PM	7/2A-821	10/2A-821	3/2A-821	-	01	LOUVERS
T4.J	CUST	NR	3'-0"	7'-0"	1 3/4"	A	(E)	P	A (E)	HM (E)	PM	7/2A-821	10/2A-821	3/2A-821	-	01	LOUVERS
BUILDING B.1																
A1	STORAGE	NR	3'-0"	7'-0"	1 3/4"	C	WD	WS	C	WD	PW	8/2A-821	8/1A-901	2/2A-821	-	06	
A2	MDF	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	07	
A3	TOILET	NR	3'-0"	7'-0"	1 3/4"	C	WD	WS	C	WD	PW	8/2A-821	8/1A-901	2/2A-821	-	08	
A4	NURSE	NR	3'-0"	7'-0"	1 3/4"	F	WD	WS	F	WD	PW	8/2A-821	8/1A-901	2/2A-821	-	-	
A5	OFFICE	NR	3'-0"	7'-0"	1 3/4"	B	WD	WS	F	WD	PW	8/2A-821	8/1A-901	2/2A-821	-	03	
A8	RECEPTION	NR	3'-4"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
A9	STORAGE	NR	3'-0"	7'-0"	1 3/4"	C	WD	WS	C	WD	PW	8/2A-821	8/1A-901	2/2A-821	-	06	
A10	TOILET	NR	3'-0"	7'-0"	1 3/4"	C	WD	WS	C	WD	PW	8/2A-821	8/1A-901	2/2A-821	-	08	
A11	TOILET	NR	3'-0"	7'-0"	1 3/4"	C	WD	WS	C	WD	PW	8/2A-821	8/1A-901	2/2A-821	-	08	
A12	HALL	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
L1	LIBRARY	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
L2	OFFICE	NR	3'-0"	7'-0"	1 3/4"	F	WD	WS	C	WD	PW	8/2A-821	8/1A-901	2/2A-821	-	03	
L3	CONFERENCE	NR	3'-0"	7'-0"	1 3/4"	A	(E) WD	-	C (E)	WD (E)	PW	4/2A-821	5/2A-821	(E)	-	(E)	
L4.A	LIBRARY READING ROOM	NR	3'-8"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
L4.B	LIBRARY READING ROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	03	
L8	HALL	NR	3'-0"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
BUILDING B.2																
5.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
5.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
6.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
6.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
7.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
7.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
BUILDING C																
8	CLASSROOM	NR	3'-0"	7'-0"	1 3/4"	A	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
9	CLASSROOM	NR	3'-0"	7'-0"	1 3/4"	A	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
BUILDING D.1																
10.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
10.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
11.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
11.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
12.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
12.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
C2	CUST	NR	3'-0"	7'-0"	1 3/4"	A	FRP	FF	A (E)	HM (E)	PM	7/2A-821	10/2A-821	3/2A-821	-	04	LOUVERS
M2	MECH	NR	3'-0"	7'-0"	1 3/4"	A	FRP	FF	A (E)	HM (E)	PM	7/2A-821	10/2A-821	3/2A-821	-	05	LOUVERS
T3	WOMEN	NR	3'-0"	7'-0"	1 3/4"	A	(E)	P	C (E)	WD (E)	PW	4/2A-821	5/2A-821	2/2A-821	-	05	LOUVERS
T4	MEN	NR	3'-0"	7'-0"	1 3/4"	A	FRP	FF	A (E)	HM (E)	PM	7/2A-821	10/2A-821	3/2A-821	-	05	LOUVERS
T.A	TEACHER'S LOUNGE	NR	3'-8"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
T.B	TEACHER'S LOUNGE	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
BUILDING D.2																
13.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
13.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
14.A	CLASSROOM	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
14.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
C3	CUST	NR	3'-0"	7'-0"	1 3/4"	A	FRP	FF	A (E)	HM (E)	PM	7/2A-821	10/2A-821	3/2A-821	-	01	LOUVERS
M3	MECH	NR	3'-0"	7'-0"	1 3/4"	A	FRP	FF	A (E)	HM (E)	PM	7/2A-821	10/2A-821	3/2A-821	-	05	LOUVERS
S1	CUSTODIAN	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	06	
T5	GIRLS	NR	3'-0"	7'-0"	1 3/4"	A	FRP	FF	A (E)	HM (E)	PM	7/2A-821	10/2A-821	3/2A-821	-	05	LOUVERS
T6	BOYS	NR	3'-0"	7'-0"	1 3/4"	A	FRP	FF	A (E)	HM (E)	PM	7/2A-821	10/2A-821	3/2A-821	-	05	LOUVERS
BUILDING E																
15.B	KINDERGARTEN	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	P.H.	02	
15.C	KINDERGARTEN	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	P.H.	02	
15T	KINDER TOILET	NR	3'-0"	7'-0"	1 3/4"	C	WD	WS	A	WD	PW	8/2A-821	8/2A-821	2/2A-821	-	08	
16.B	KINDERGARTEN	NR	3'-8"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	P.H.	02	
16.C	KINDERGARTEN	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	P.H.	02	
16T	KINDER TOILET	NR	3'-0"	7'-0"	1 3/4"	C	WD	WS	A	WD	PW	8/2A-821	8/2A-821	2/2A-821	-	08	
17.B	KINDERGARTEN	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
17.C	KINDERGARTEN	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
17T	KINDER TOILET	NR	3'-0"	7'-0"	1 3/4"	C	WD	WS	A	WD	PW	8/2A-821	8/2A-821	2/2A-821	-	08	
18.B	KINDERGARTEN	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
18.C	KINDERGARTEN	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
18T	KINDER TOILET	NR	3'-0"	7'-0"	1 3/4"	C	WD	WS	A	WD	PW	8/2A-821	8/2A-821	2/2A-821	-	08	
19.B	KINDERGARTEN	NR	3'-4"	7'-0"	1 3/4"	B	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
19.C	KINDERGARTEN	NR	3'-8"	7'-0"	1 3/4"	F	FRP	FF	C (E)	WD (E)	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
19T	KINDER TOILET	NR	3'-0"	7'-0"	1 3/4"	C	WD	WS	A	WD	PW	8/2A-821	8/2A-821	2/2A-821	-	08	



FLOOR PLAN - DOOR SCHEDULE

3/64" = 1'-0" | 1

LEGEND - DOOR GLAZING NOTES

1. ALL GLAZING SHALL BE TEMPERED 1/4" CLEAR GLASS UNLESS DOOR IS FIRE-RATED. THEN SAFETY GLAZING SHALL MEET CURRENT FEDERAL STANDARDS WHERE GLAZING OCCURS IN RATED DOOR ASSEMBLY. (WIRE GLASS IS NOT ACCEPTABLE)
2. RATED GLAZING NOTES:
   A. FIRE-RESISTANCE-RATED GLAZING SHALL BE PERMITTED IN FIRE DOOR AND FIRE WINDOW ASSEMBLIES WHERE TESTED AND INSTALLED IN ACCORDANCE WITH THEIR LISTINGS AND WHERE IN COMPLIANCE WITH THE REQUIREMENTS OF CBC SECTION 716.3.
   B. CBC 716.3 MARKING FIRE-RATED GLAZING ASSEMBLIES: FIRE-RATED ASSEMBLIES SHALL BE MARKED IN ACCORDANCE WITH TABLES 716.3, 716.5, AND 716.6.
   C. CBC 716.3.1 FIRE-RATED GLAZING IDENTIFICATION: FOR FIRE-RATED GLAZING, THE LABEL SHALL BEAR THE IDENTIFICATION REQUIRED IN TABLES 716.3 AND 716.5. "D" INDICATES THAT THE GLAZING IS PERMITTED TO BE USED IN FIRE DOOR ASSEMBLIES AND THAT THE GLAZING MEETS THE FIRE PROTECTION REQUIREMENTS OF NFPA 252. "H" SHALL INDICATE THAT THE GLAZING MEETS THE HOSE STREAM REQUIREMENTS OF NFPA 252. "T" SHALL INDICATE THAT THE GLAZING MEETS THE TEMPERATURE REQUIREMENTS OF SECTION 716.5.5.1. THE PLACEHOLDER "XXX" REPRESENTS THE FIRE-RATING PERIOD IN MINUTES.
   D. CBC 716.3.2 FIRE-PROTECTION-RATED GLAZING IDENTIFICATION: FOR FIRE-PROTECTION-RATED GLAZING, THE LABEL SHALL BEAR THE FOLLOWING IDENTIFICATION REQUIRED IN TABLES 7 J 6.3 AND 716.6: "OH-XXX". "OB" INDICATES THAT THE GLAZING MEETS BOTH THE FIRE PROTECTION AND THE HOSE-STREAM REQUIREMENTS OF NFPA 257 OR UL 9 AND IS PERMITTED RO BE USED IN FIRE WINDOW OPENINGS. THE PLACEHOLDER "XXX" REPRESENTS THE FIRE-RATING PERIOD IN MINUTES.
   E. FIRE BARRIER: 3/4 HOUR GLAZING, MAX SIZE TESTED, MARKED D-H
   F. NFPA 257 OR CL 9 MEETS FIRE WINDOW ASSEMBLY CRITERIA INCLUDING THE HOSE STREAM TEST
   G. NFPA 252 OR UL 10B I OR UL 10C D = MEETS FIRE DOOR ASSEMBLY CRITERIA. H = MEETS FIRE DOOR ASSEMBLY HOSE STREAM TEST
   H. RATED GLAZING SHALL BE FIRELITE NT

ACCESSIBLE DOORS, GATES AND HARDWARE CBC 11B-404

DH1) PROVIDE ACCESSIBLE DOOR OR GATE LEAF WIDTH, MINIMUM 36" WIDE AND CAPABLE OF MAXIMUM 5LB. FORCE OPERATION PER 11B-404.2.9. (NOTE THAT THE MAXIMUM ALLOWED WIDTH FOR A SWINGING EGRESS DOOR OR GATE IS 48" NOMINAL PER CBC 1010.1.1.)

DH2) STOREROOM OR SIMILAR HARDWARE FUNCTION TYPES REQUIRE TWO-HAND OPERATION AND DO NOT COMPLY WITH 11B-404.2.7. (NOTE THAT ACCESSIBLE HARDWARE IS NOT REQUIRED TO MECHANICAL, ELECTRICAL OR SIMILAR ROOMS AS EXCEPTED IN 11B-203.5.)

DH3) PROVIDE CLASSROOM SECURITY HARDWARE. ROOMS WITH FIVE OR MORE OCCUPANTS IN KINDERGARTEN THROUGH TWELFTH-GRADE FACILITIES MUST BE LOCKABLE FROM THE INSIDE PER CBC 1010.1.11.) CLARIFY ON DOOR SCHEDULE WHICH DOORS ARE REQUIRED TO MEET THIS REQUIREMENT.

DH4) PROVIDE HARDWARE WITH 5LB. MAXIMUM UNLATCHING FORCE PER 11B-404.2.7 AND 11B-309.4. THIS REQUIREMENT APPLIES TO ALL DOOR HARDWARE, INCLUDING EXIT DEVICES.

DH5) UNLATCHING OF ANY DOOR SHALL NOT REQUIRE MORE THAN ONE OPERATION. SEE CBC 1010.1.9.5 FOR EXCEPTIONS.

DH6) PROVIDE ACCESSIBLE THRESHOLD OR THRESHOLD CONDITION PER 11B-404.2.5.

DH7) ON THE PUSH-SIDE OF THE DOOR, PROVIDE SMOOTH SURFACE WITHIN 10" OF FINISH FLOOR OR GROUND, FOR FULL WIDTH OF DOOR PER 11B-404.2.10.

DH8) IN-DOOR GLAZING AND VISION LIGHTS SHALL HAVE BOTTOM EDGE MAXIMUM 43" ABOVE THE FINISH FLOOR OR GROUND SURFACE PER 11B-404.2.11

DH9) INDICATE ON PLANS AND/OR SPECIFICATIONS THAT HARDWARE COMPLIES WITH SFM STANDARD 12-10-3, SECTION 12-10-302:
-CROSS BARS FOR EXIT DEVICES SHALL EXTEND ACROSS NOT LESS THAN HALF OF THE DOOR OR GATE WIDTH.
-ENDS OF CROSS BARS SHALL BE CURVED, GUARDED OR OTHERWISE DESIGNED TO PREVENT CATCHING ON CLOTHING DURING EGRESS.

LEGEND - DOOR MATERIALS

DOOR CONSTRUCTION AND MATERIAL:
HM - HOLLOW METAL
AL - ALUMINUM
WD - WOOD
FRP - FIBERGLASS-REINFORCED POLYMER

DOOR FACING AND FINISH:
SP - STEEL, PAINTED
K - KYNAR FINISH ON ALUMINUM
WS - WOOD VENEER, STAINED
FF - FACTORY FINISH

FRAME MATERIAL:
HM - HOLLOW METAL, PAINTED
AL - ALUMINUM
WD - WOOD (EXISTING)

FRAME FINISH:
P - PAINTED STEEL
K - KYNAR FINISH ON ALUMINUM

FRAME TYPES:
A, B

GLASS:
ALL GLASS IS TEMPERED (SG - SAFETY GLAZING)

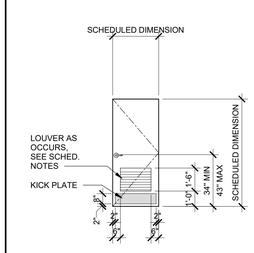
HARDWARE:
P.H. - PANIC HARDWARE

LEGEND - DOOR NOTES

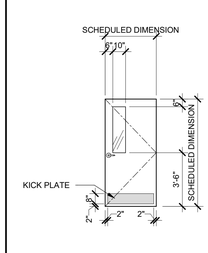
1. DOORS SHALL BE 1-3/4" THICK UNLESS NOTED OTHERWISE.
2. THE SYMBOL (P) FOLLOWING THE 'DOOR TYPE' DESIGNATION IN THE DOOR SCHEDULE INDICATES PAIR OF DOORS. BOTH LEAVES ARE THE SAME SIZE, UNLESS NOTED OTHERWISE.
3. SEE NOTES SECTION OF DOOR SCHEDULE FOR GLASS TYPES.
4. ALL EXTERIOR DOORS IN BUILDINGS, INCLUDING, BUT NOT LIMITED TO DOORS OF TOILETS AND STORAGE ROOMS, SHALL CONFORM WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE.
   a. EXIT DOOR SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
   b. HAND ACTIVATED DOOR OPENING HARDWARE SHALL BE CENTERED BETWEEN 30" AND 44" ABOVE FINISH FLOOR.
   c. DEAD BOLTS ARE NOT PERMITTED UNLESS OPERABLE WITH A SINGLE EFFORT LEVER TYPE HARDWARE.
   d. ALL ROOMS SERVING AN OCCUPANCY LOAD OF 50 OR GREATER AND DOORS LOCATED ON THE DISCHARGE OF EXIT CORRIDORS ARE REQUIRED TO BE PROVIDED WITH PANIC HARDWARE (CBC 1008.1.10).
   e. ALL FIRE DOOR LABELS SHALL COMPLY WITH CBC 716.2.9.
5. FIRE ASSEMBLIES REQUIRED TO HAVE A ONE-HOUR FIRE-PROTECTION RATING SHALL BE EITHER AUTOMATIC OR SELF-CLOSING FIRE ASSEMBLIES TO BE ACTIVATED BY AN INCREASE IN TEMPERATURE SHALL HAVE HEAT-ACTIVATING DEVICES INSTALLED ON EACH SIDE OF THE WALL AT THE CEILING HEIGHT WHERE THE CEILING IS MORE THAN 3 FEET ABOVE THE TOP OF THE OPENING OR BY A SINGLE FUSSIBLE LINK IN THE OPENING INCORPORATED IN THE CLOSING DEVICE.
6. ALL FIRE-RESISTIVE ASSEMBLIES FOR PROTECTED OPENING SHOULD COMPLY WITH SECTION 716 CBC.
7. SEE SPECIFICATION SECTION 08 71 00 FOR DOOR HARDWARE INDEX AND DOOR HARDWARE SETS.
8. EXTERIOR: FRP DOORS ON EXISTING WOOD FRAMES. NEW DOORS SHALL BE SPECIAL LITE SL-20 SANDSTONE TEXTURE FRP UNLESS OTHERWISE NOTED. SEE SPECIFICATIONS 08 17 43.
9. INTERIOR WOOD DOORS. USE EXISTING WOODEN FRAMES WHERE POSSIBLE. NEW WOOD FRAMES ON NEW DOORS. USE MINIMUM 6" WIDE STILE ON ALL STILE & RAIL TYPE DOORS TO ACCOMMODATE EXIT DEVICES.
10. ALL INTERIOR HOLLOW METAL DOOR AND FRAMES TO HAVE JAMB AND HEAD GASKETING. PEMKO 319 OR EQUAL.
11. ALL INTERIOR STORFRONT FRAMES SHOULD PROVIDE GASKETING FOR THE FRP DOORS PER THE DETAILS.
12. PROVIDE ACCESS CONTROL WIRING AND DOOR SWITCH WIRING PER HARDWARE SCHEDULE.
13. PROVIDE DOOR SWITCH WIRING PER HARDWARE SCHEDULE.
14. SEE SHEETS 1A-252 AND 1A-925 FOR SIGNAGE PLAN AND SIGNAGE DETAILS.
15. INTERIOR SWINGING, MANUALLY OPERATED EGRESS DOORS (OTHER THAN A FIRE DOOR): NOT TO EXCEED 5-POUNDS.
16. SWINGING, SLIDING, OR FOLDING DOORS, AND FIRE-RATED DOORS: NOT TO EXCEED 30 POUNDS TO SET THE DOOR IN MOTION, AND SHALL MOVE TO THE FULL-OPEN POSITION WITH NOT MORE THAN 15 POUNDS OF FORCE.
17. OPERABLE PARTS OF DOOR AND GATE HARWARE SHALL BE 34" MINIMUM AND 44" MAXIMUM ABOVE THE FINISHED FLOOR OR GROUND. WHERE SLIDING DOORS ARE FULLY OPEN POSITION, OPERATING HARDWARE SHALL BE FULLY EXPOSED AND USABLE FROM BOTH SIDES. CBC 11B-404.2.7
18. DOOR AND GATE CLOSERS SHALL BE ADJUSTABLE SO THAT FROM AN OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO A POSITION OF 12 DEGREES FROM THE LATCH IS 5 SECONDS MINIMUM. CVC 11B-404.2.1
19. DOOR AND GATE SPRING HINGES SHALL BE ADJUSTED SO THAT IN THE OPEN POSITION OF 70 DEGREES, THE DOOR AND GATE SHALL MOVE TO THE CLOSED POSITION IN 1.5 SECONDS MINIMUM.11B-404.2.8.2
20. ALL HARDWARE SHALL MEET THE REQUIREMENTS 11B-309.4
21. THRESHOLDS SHALL COMPLY WITH 11B-404.2.5.
22. FLOOR STOPS SHALL NOT BE LOCATED IN THE PATH OF TRAVEL AND 4" MAXIMUM FROM WALL PER DSA POLICY 99-08

DOOR SCHEDULE - EXISTING RECEIVING NEW HARDWARE

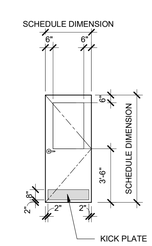
ROOM	FIRE RATING	SIZE WIDTH	SIZE HEIGHT	SIZE THICKNESS	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	PANIC HARDWARE	NEW HARDWARE GROUP	NOTES
BUILDING B.1																
A6	PRINCIPAL	NR	3'-0"	7'-0"	1 3/4"	(E)	(E) WD	WS	A (E)	HM (E)	PM	-	-	-	-	03	
A7	OFFICE	NR	3'-0"	7'-0"	1 3/4"	(E)	(E) WD	WS	A (E)	HM (E)	PM	-	-	-	-	03	



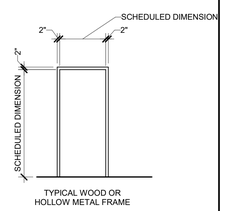
DOOR TYPE 'A'



DOOR TYPE 'B'



DOOR TYPE 'F'



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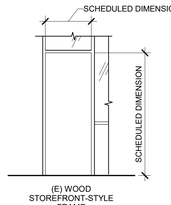

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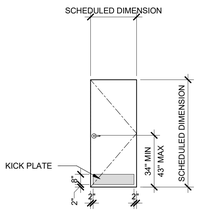

DOOR TYPE 'C'

AGENCY APPROVAL DSA# 01-121400

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ATUM ENGINEERING
3333 York Ln.
San Ramon, CA 94582
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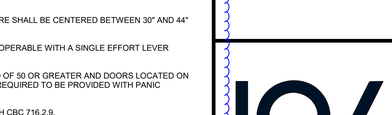
PROFESSIONAL STAMP



REVISIONS

NO.	DATE	DESCRIPTION
2	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
DOOR SCHEDULE

INCREMENT: INC.2

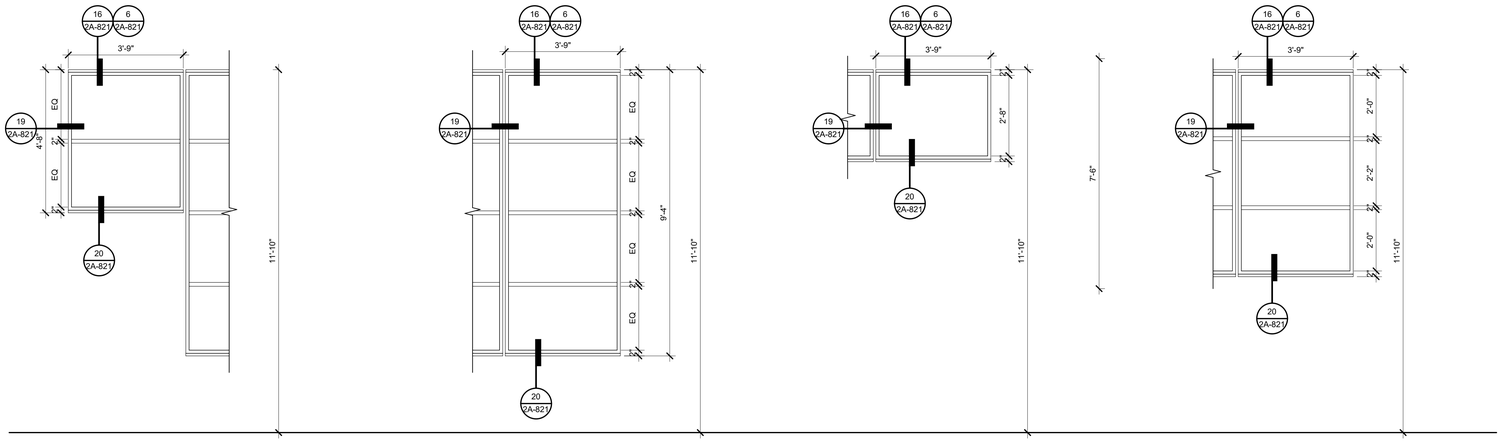
DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
2A-801

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:49:55 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt



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	FRAME MATERIAL	ALUMINUM
	FRAME FINISH	CLR ANODIZED

B	GLAZING TYPE	CLEAR
	FRAME MATERIAL	ALUMINUM
	FRAME FINISH	CLR ANODIZED

C	GLAZING TYPE	CLEAR
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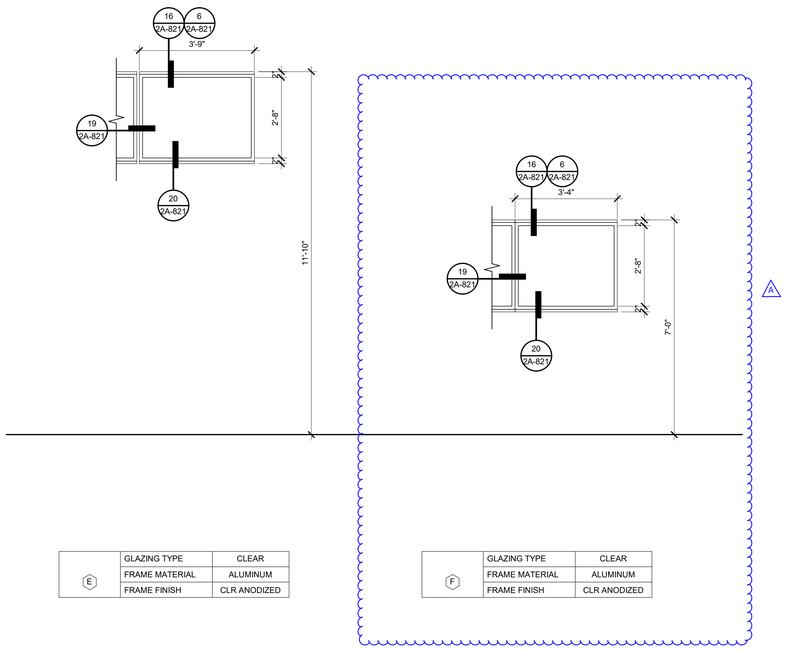
	FRAME FINISH	CLR ANODIZED

D	GLAZING TYPE	CLEAR
	FRAME MATERIAL	ALUMINUM
	FRAME FINISH	CLR ANODIZED



E	GLAZING TYPE	CLEAR
	FRAME MATERIAL	ALUMINUM
	FRAME FINISH	CLR ANODIZED

F	GLAZING TYPE	CLEAR
	FRAME MATERIAL	ALUMINUM
	FRAME FINISH	CLR ANODIZED

LEGEND - WINDOW GENERAL NOTES

1. ALL GLASS TO BE TEMPERED PER SPECIFICATIONS.
2. ALL EXISTING WIRE GLASS TO BE REPLACED TO TEMPERED SAFATEY GLASS.
3. ALL GLASS TO BE INSULATING, PER SPECIFICATIONS.
4. EXTERIOR STOREFRONT AND CLERESTORIES WINDOWS TO B.O.D. BE OLDCASTLE
5. INTERIOR WINDOWS TO BE B.O.D. OLDCASTLE

AGENCY APPROVAL DSA# 01-121400

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LICENSED ARCHITECT
MARIANA ALVAREZ PEREZ
C-36107
REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

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A	10-31-2024	ADDENDUM 01

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Concord, CA 94520

SHEET TITLE
WINDOW SCHEDULE

INCREMENT: INC.2

DRAWN BY: PR JOB NUMBER: 23119.01

SHEET NO.
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DATE: OCTOBER 25, 2024

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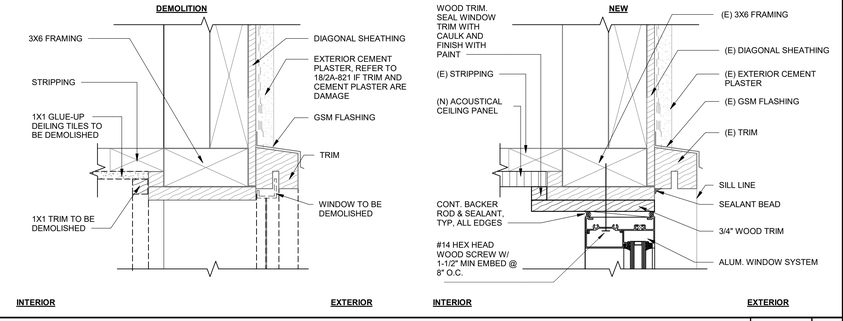
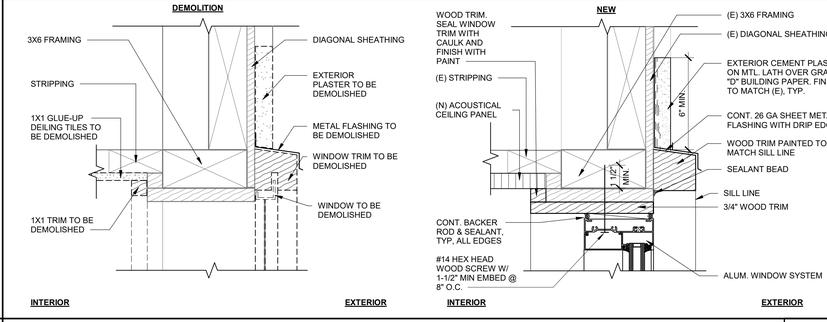
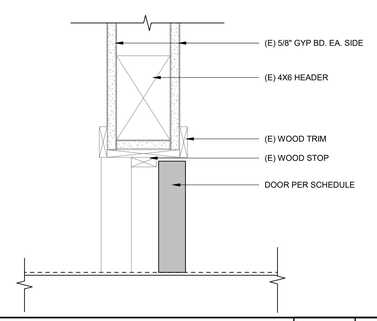


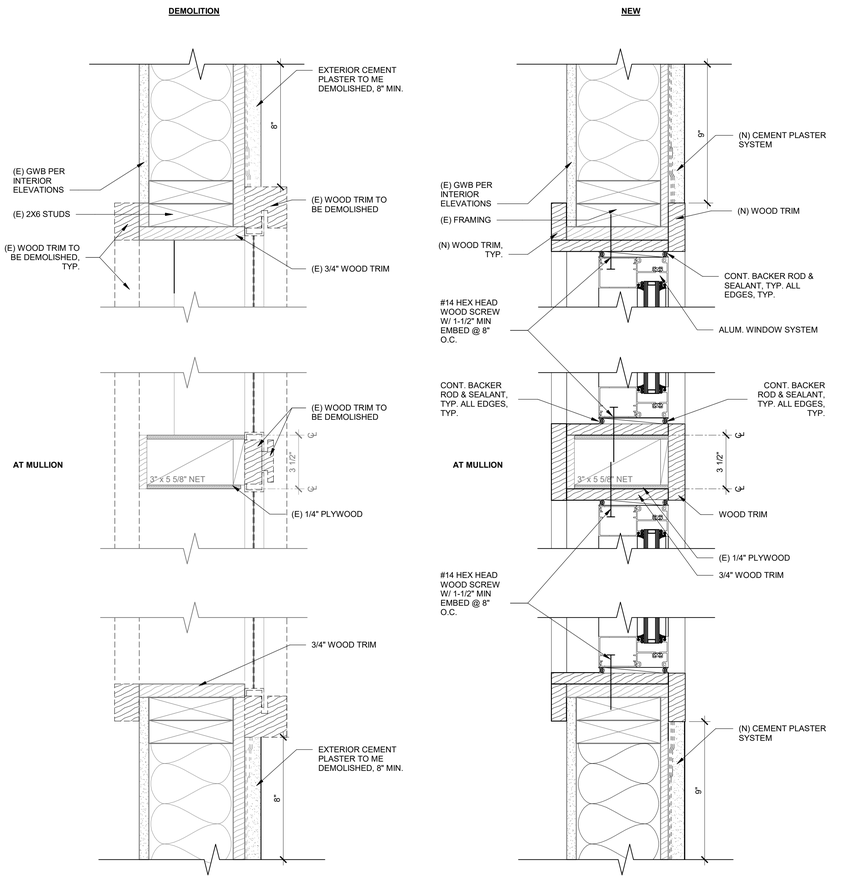
WINDOW HEAD | 3" = 1'-0" | 16



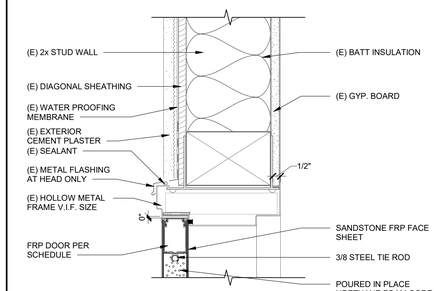
WINDOW HEAD (ALTERNATE) | 3" = 1'-0" | 6



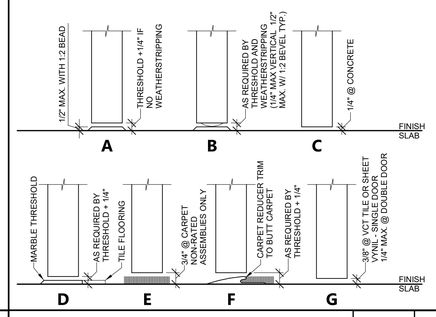
INT WD. DOOR WITH EXISTING FRAME | 3" = 1'-0" | 1



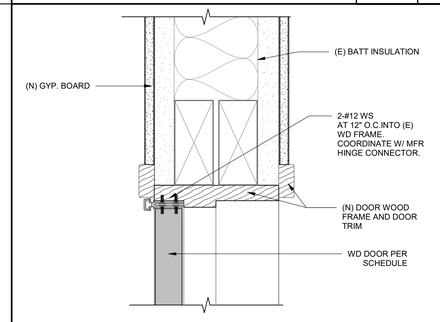
WINDOW JAMB | 3" = 1'-0" | 19



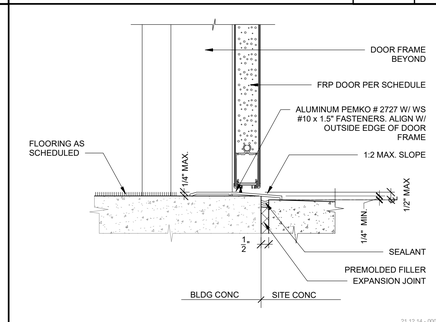
FRP HEAD DETAIL - (E) HM FRAME | 3" = 1'-0" | 7



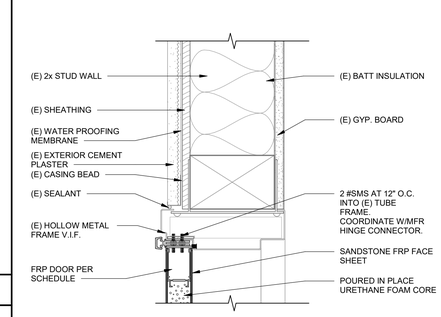
DOOR UNDERCUT CRITERIA | 3" = 1'-0" | 2



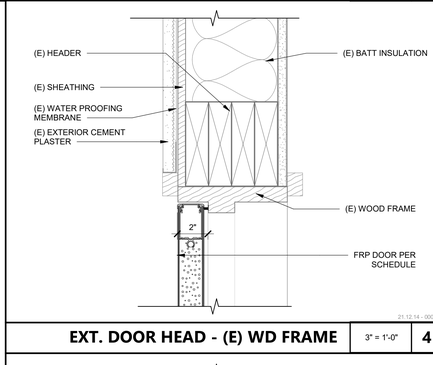
INT. DOOR JAMB/HEAD - (N) WD FRAME | 3" = 1'-0" | 8



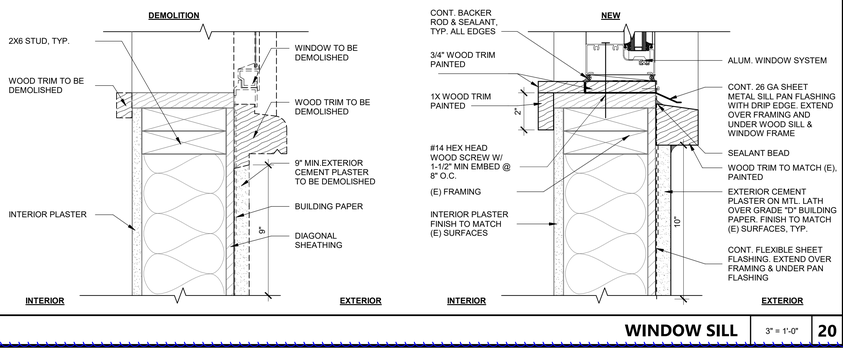
EXTERIOR DOOR THRESHOLD | 3" = 1'-0" | 3



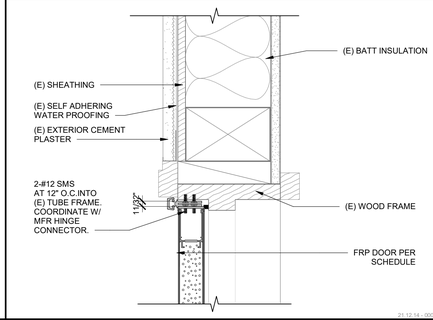
FRP JAMB DETAIL - (E) HM FRAME | 3" = 1'-0" | 10



EXT. DOOR HEAD - (E) WD FRAME | 3" = 1'-0" | 4



WINDOW SILL | 3" = 1'-0" | 20



EXT. DOOR JAMB - (E) WD FRAME | 3" = 1'-0" | 5

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LICENSED ARCHITECT MARIANA ALVAREZ PEREA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	10-31-2024	ADDENDUM 01

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MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
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SHEET TITLE

DOOR AND WINDOW DETAILS

INC.2

DRAWN BY: DV JOB NUMBER: 23119.01

SHEET NO.

2A-821

DATE: OCTOBER 25, 2024

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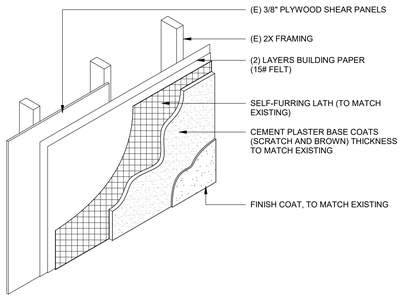
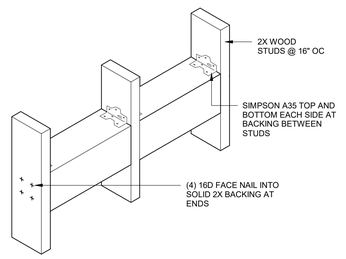


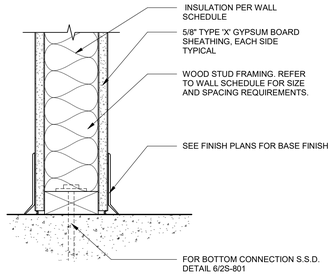
EXTERIOR PLASTER ASSEMBLY | 1" = 1'-0" | 21

PLASTER DEMOLITION & REPAIR NOTES

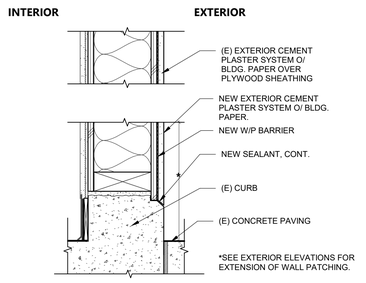
1. PLASTER DEMOLITION:
   A. STRAIGHT LINE OR SAW CUTS MUST BE MADE IRREGULAR BY CHIPPING AWAY THE EDGE.
   B. REMOVE ANY LOOSE MATERIAL AND EXPOSE APPROXIMATELY 2 INCHES OF THE EXISTING LATH AT ALL EDGES OF THE REPAIR AREA
2. INSTALLATION OF THE WATER RESISTIVE BARRIER (BUILDING PAPER)
   A MINIMUM 6" VERTICAL AND 2" HORIZONTAL WEATHERBOARD / SHINGLE LAP IS REQUIRED, LAP TOP AND SIDES UNDER THE EXISTING AND ALLOW THE BOTTOM TO LAP OVER THE EXISTING PAPER.
3. INSTALLATION OF LATH:
   A. CUT LATH TO FIT AND LAP THE EXISTING OVER/ON TOP OF THE NEW LATH.
   B. PROVIDE REINFORCEMENT "BUTTERFLIES" (6" x 12" STRIPS OF METAL LATH) AT CORNERS OF DOOR AND WINDOW OPENINGS, PRIOR TO INSTALLING FIELD LATH
4. INSTALLATION OF PLASTER
   A. INSTALL (3)-COAT SYSTEM AS SPECIFIED TO (E) PLASTER EDGE.



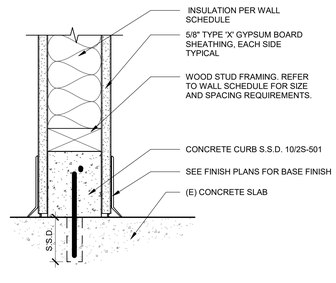
BACKING AT WOOD STUDS | 3" = 1'-0" | 22



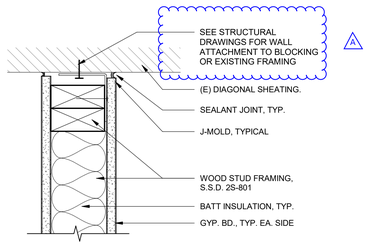
B.O. WALL- W/ OUT CURB | 3" = 1'-0" | 17



CEMENT PLASTER @ EXTERIOR WALL | 1 1/2" = 1'-0" | 23



B.O. RR WALL WITH CURB | 3" = 1'-0" | 6



T.O. WALL - FULL HEIGHT | 3" = 1'-0" | 25

WOOD FRAMING NOTES

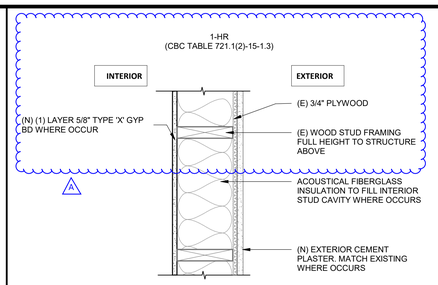
1. SEE GENERAL NOTES ON A-101
2. 2X STUDS/ JOISTS, 4X/6X BEAMS & HEADERS ARE TO BE DF #1 OR BETTER
3. BLOCKING AND OTHER MISC. FRAMING IS TO BE DF STD @ BTR OR BETTER
4. ALL STRAPS, HANGERS, CLIPS, TIES, CAPS, BASES, PLATES ETC. AS MANUFACFACTURED BY SIMPSON STRONG-TIE, CATALOG 2015 OR ENGINEER APPROVED EQUIVALENT.
5. FRAMING SHALL BE LEVEL, PLUB, TRUE TO LINE, ACCURATE, SQUARE, NEAT, ETC.
6. CUSTOM CUT, SHAPE, RIP, BEVEL, COUNTERSIN, PLANE ETC. ALL MATERIAL AS IS REQUIRED FOR TIGHT FITTING. EVEN BEARING CONDNECTIONS W.O.
7. COUNTERSINK 1" MAX AT 3X & LARGER MEMBERS AS REQUIRED TO CONCEAL BOLT HEADS, NUTS & WASHERS. DO NOT DAP 2X AND SMALLER MEMBERS.

MIN HEADER @ LOAD BEARING WALLS		
x4 WALLS	4x12	6' MAX SPAN
x6 WALLS	6x6	6' MAX SPAN

MIN HEADER @ NON-LOAD BEARING WALLS		
x4 WALLS	4x4	6' MAX SPAN
x6 WALLS	4x6 FLAT	6' MAX SPAN

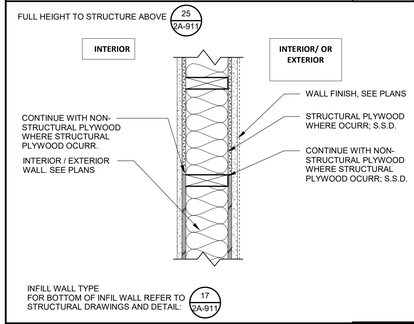
FRAMING	*FASTENER*
2X TOP PLATE TO 2x4 STUD	*(2) 16D END NAILS*
2X TOP PLATE TO 2X6 STUD	*(3) 16D END NAILS*
2X SILL PLATE TO 2x4 STUD	*(2) 16D END NAILS*
2X SILL PLATE TO 2x6 STUD	*(3) 16D END NAILS*
DOUBLE STUD/ CORNER STUDS	*16D @ 24" FACE NAIL, STGR*
DOUBLE TOP PLATE	*16D @ 24" FACE NAIL, STGR*
DOUBLE TOP PLATE SPLICE	*(15) 16D FACE NAIL EA SIDE, STGR*
BUILT UP HDR/ BM	*16D @ 12" FACE NAIL EA SIDE EA EDGE*
KING STUD TO HEADER	*(8) 16D END NAILS*
MISC 1x FRAMING	*(2) 10D EA CONTACT*
MISC 2X FRAMING	*(2) 16D EA CONTACT*

ALL NOTES ARE TYPICAL U.O.N. IN DRAWINGS. SEE CBC.TABLE 2304.9.1 FOR ADDITIONAL INFORMATION.

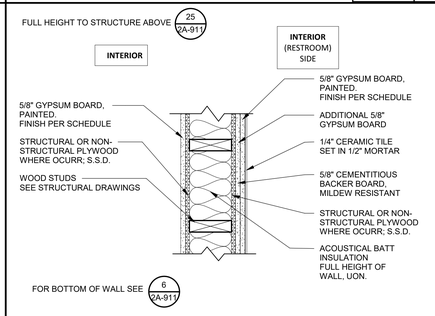


NOTE: SEE STRUCTURAL FOR SPACING. 16" O.C. TYP, U.O.N.

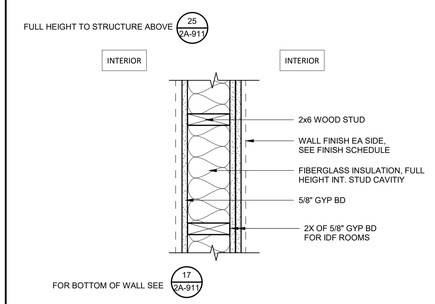
WALL TYPE 1 - MULTI USE | 1 1/2" = 1'-0" | 1



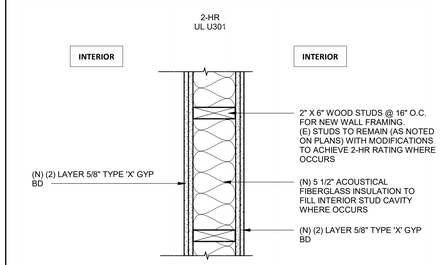
WALL TYPE 2 | 1 1/2" = 1'-0" | 2



WALL TYPE 3 | 1 1/2" = 1'-0" | 3



WALL TYPE 4 | 1 1/2" = 1'-0" | 4



NOTE: SEE STRUCTURAL FOR SPACING. 16" O.C. TYP, U.O.N.

WALL TYPE 5 - 2HR | 1 1/2" = 1'-0" | 5

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5433 El Camino Ave. Ste 5
Carmichael, CA 95608
TEL (916) 359-4000

PROFESSIONAL STAMP

LICENSED ARCHITECT MARINA ALVAREZ ZAPATA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
WALL TYPES & DETAILS

INC 2

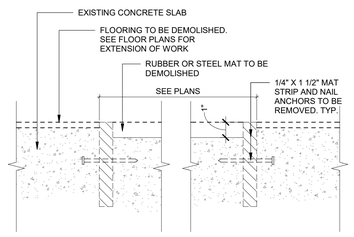
DRAWN BY: Author JOB NUMBER: 23119.01

SHEET NO.
2A-911

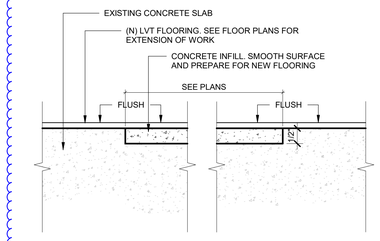
DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:50:05 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt

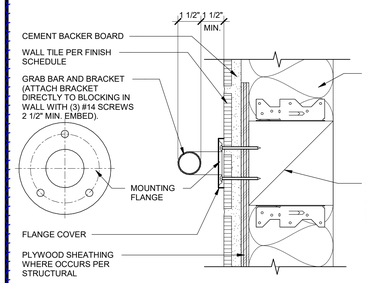


DEMOLITION

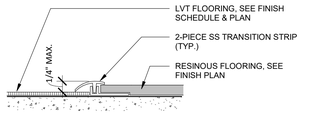


NEW WORK

CONCRETE INFILL @ DEMO RECESS MAT | 6" = 1'-0" | 22



GRAB BAR BLOCKING | 3" = 1'-0" | 23



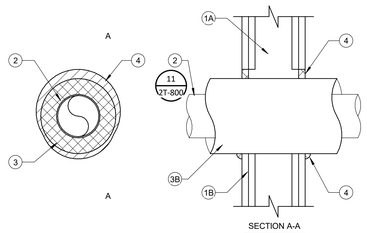
LVT FLOORING - EPOXY

NOTES:
1. INSTALL STRIP WITH FLANGE ON SIDE SHOWN.
2. PROVIDE STRIP AT ALL FLOOR MATERIAL TRANSITIONS.

LVT TO EPOXY FLOORING TRANSITION | 12" = 1'-0" | 16

System No. W-L-5257

F RATING - 1 and 2 Hr (See Item 1)
T RATING - 0 and 1 Hr (See Item 1)
L RATING AT AMBIENT - 4 CFM/Sq Ft (See Item 4)
L RATING AT 400F - Less Than 1 CFM/Sq Ft (See Item 4)

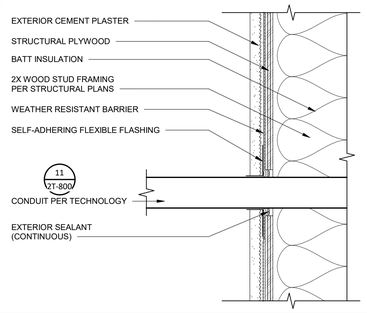


1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide, with square or tapered edges. Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 8 in. (203 mm).
      • The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed. The hourly T Rating of the firestop system is 1 hr for 2 hr fire rated walls and 0 hr for 1 hr fire rated walls.
2. Through Penetrant — One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes and tubes may be used:
   A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
   D. Copper Tube — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tube.
3. Pipe Covering* — Nom 1-1/2 in. (38 mm) thick hollow cylindrical heavy density (3.5 pcf or 24 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the periphery of the opening shall be min 0 in. (point contact) to max 7/8 in. (22 mm).
   • See Pipe Equipment Covering — Materials— (BRGU) Category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/2 in. (13 mm) diam bead of fill material applied at insulated metallic pipe/wall interface on both surfaces of wall. L Ratings apply only when FS-One Sealant is used.
   • HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant, CP 606 Sealant or CP 601S Sealant

*Bearing the UL Classification Mark

21.12.14 - 00000

W-L-5257: PIPE @ WALL ASSEMBLY | 3" = 1'-0" | 18



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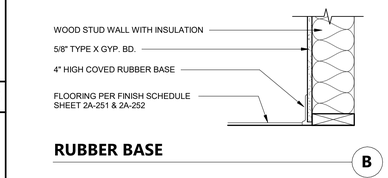
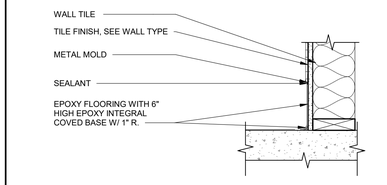
PENETRATION @ EXTERIOR WALL | 3" = 1'-0" | 19



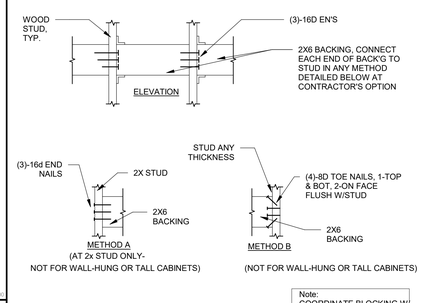
RUBBER BASE | B



EPOXY COVE BASE @ TOILET ROOMS | C

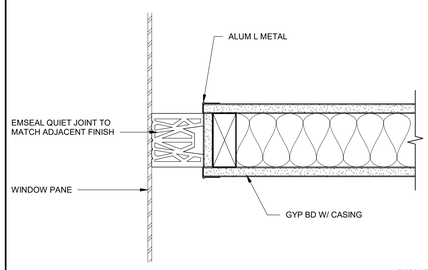
21.12.14 - 00000

FLOOR BASE | 1 1/2" = 1'-0" | 12



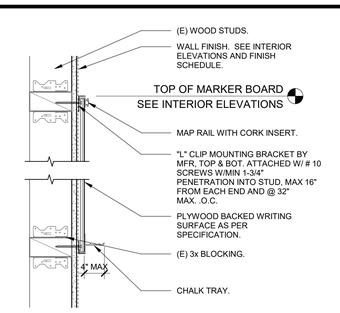
21.12.14 - 00000

TYP. BACKING/BLOCKING - WOOD STUD | 1" = 1'-0" | 13



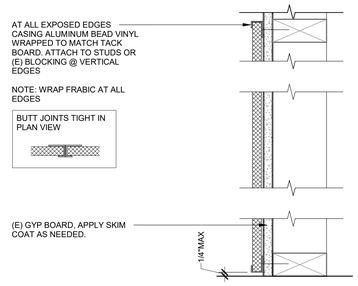
21.12.14 - 00000

WALL TO (E) WINDOW | 3" = 1'-0" | 15



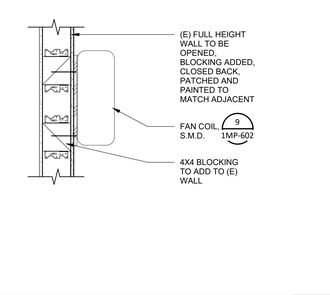
21.12.14 - 00000

MARKER BOARD ANCHORAGE | 1 1/2" = 1'-0" | 6



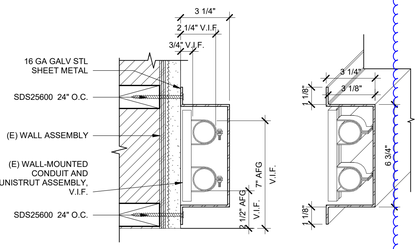
21.12.14 - 00000

TACKBOARD | N.T.S. | 7

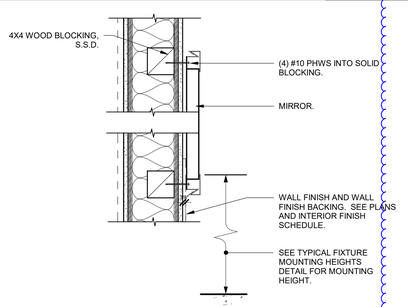


21.12.14 - 00000

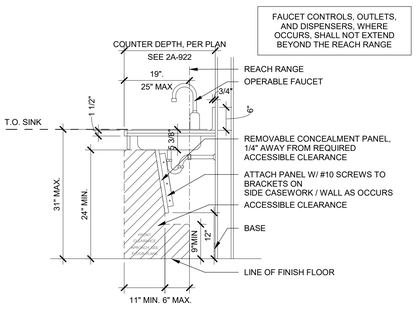
FAN COIL MOUNTING | 1" = 1'-0" | 8



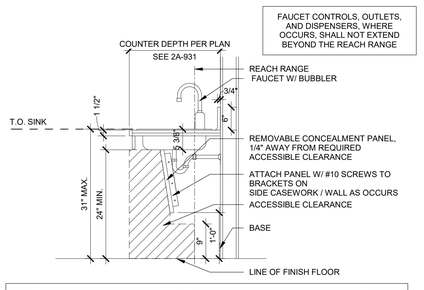
CONDUIT CHASE SECTION | 3" = 1'-0" | 9



MIRROR MOUNTING | 1 1/2" = 1'-0" | 10

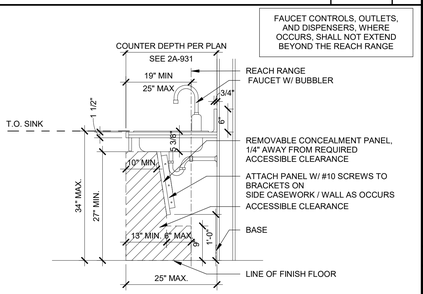


TYP SINK MTG - AGES 9-12 | 3/4" = 1'-0" | 1



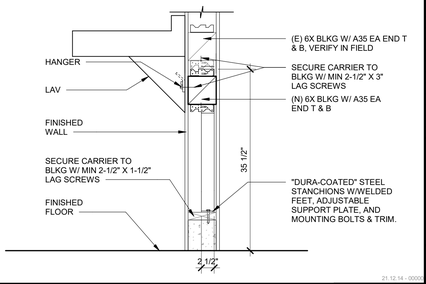
NOTE: PER CBC 11B-606.2 EXCEPTION #5, SINKS DESIGNATED FOR AGE 5 DO NOT REQUIRE KNEE SPACE AND ARE ALLOWED PARALLEL APPROACH. SEE 7/2A-607

SINK TYPICAL MOUNTING - AGES 5-8 | 3/4" = 1'-0" | 2



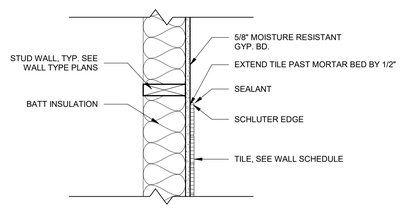
FOR LAVATORY MOUNTING DETAIL SEE 6/2A-502

SINK TYPICAL MOUNTING - ADULTS | 3/4" = 1'-0" | 3



21.12.14 - 00000

LAVATORY MOUNTING | 1" = 1'-0" | 4



TILE TERMINATION | 1 1/2" = 1'-0" | 5

AGENCY APPROVAL DSA# 01-121440

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CYPRESS ENGINEERING GROUP
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PROFESSIONAL STAMP

LICENSED ARCHITECT MARIANA ALVAREZ PEÑA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	12-19-2023	DSA SUBMITTAL

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
INTERIOR DETAILS

INC 2

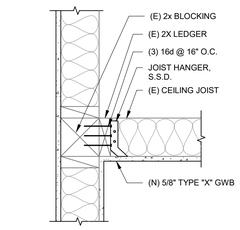
DRAWN BY: MP JOB NUMBER: 23119.01

SHEET NO.
2A-921

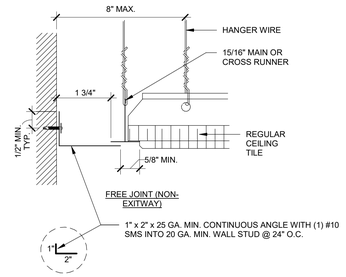
DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:50:08 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt

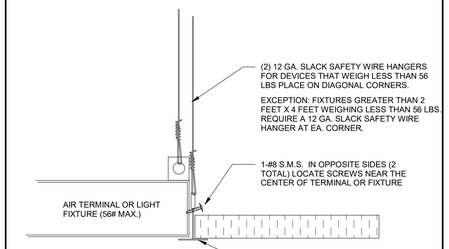


GYPSUM BOARD CEILING- WOOD | 1 1/2" = 1'-0" | 21



21.12.14 - 00000

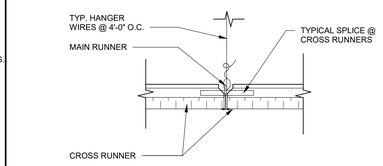
CEILING PERIMETER FOR TEGULAR TILE | 6" = 1'-0" | 16



IR 25-2.13 2.80

21.12.14 - 00000

LIGHT FIXTURES/AIR TERMINAL SUPPORT | 6" = 1'-0" | 11

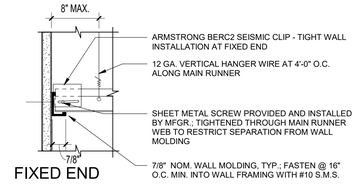


IR 25-2.13 2.41

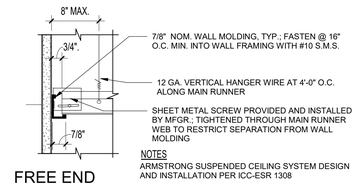
21.12.14 - 00000

RUNNER SPLICE | 3" = 1'-0" | 6

FOR CEILING SYSTEM GENERAL NOTES SEE 2A-924



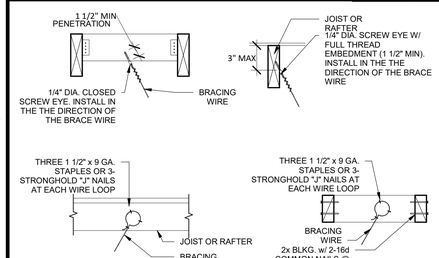
FIXED END



FREE END

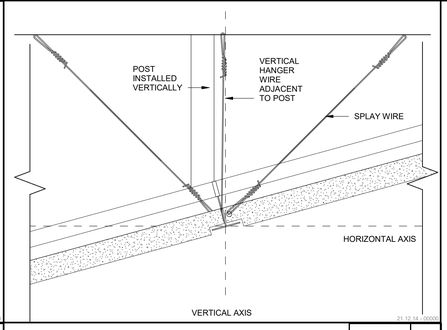
NOTES
ARMSTRONG SUSPENDED CEILING SYSTEM DESIGN AND INSTALLATION PER ICC-ESR 1308

TBAR CEILING - ATTACHMENT @ WALL | 3" = 1'-0" | 23



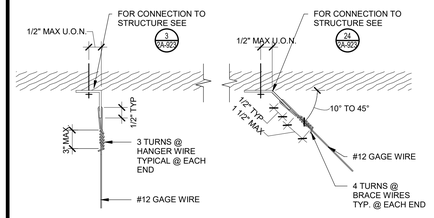
NOTES
1. WHEN FIRE RATED GYP. BOARD IS INSTALLED ON THE BOTTOM FLANGES, USE SCREW EYES W/ SUFFICIENT LENGTH TO AVOUD DAMAGING THE FIRE RATED GYP. BOARD AND MEET MIN. PENETRATION.

BRACING WIRE TO SAWN TIMBER | 1 1/2" = 1'-0" | 24



21.12.14 - 00000

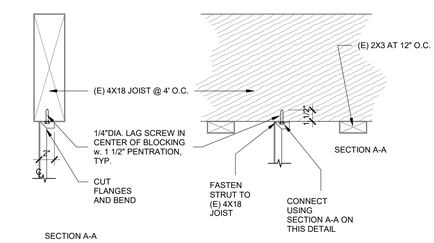
SLOPED CEILING DETAIL | 6" = 1'-0" | 19



HANGER WIRE **BRACING WIRE**

IR 25-2.19 4.10

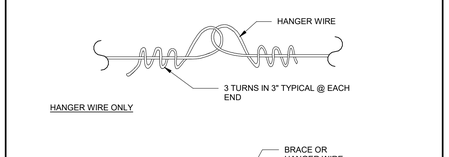
TYP. BRACING WIRE | 6" = 1'-0" | 25



NOTES:
1. FRAMING MEMBERS MUST BE DESIGNED TO CARRY THE CEILING LOADS, RDP TO VERIFY
2. WEB OF CHANNEL TO BEAR WITHIN WIDTH OF WOOD MEMBER

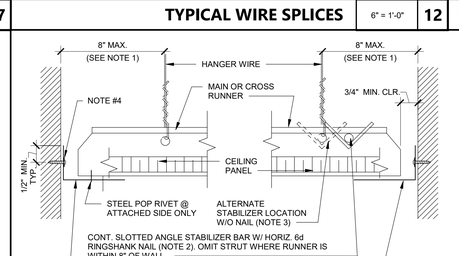
IR 25-2.19 5.60

STRUT CONN @ (E) JOISTS | 1 1/2" = 1'-0" | 20



NOTES:
1. **FIXTURES AT LESS THAN 56 LBS.:** INSTALL (2) #12 GA. SAFETY WIRES (SLACK). ONE ON EACH END OF FIXTURE, EXPOSED AND CONNECTED TO STRUCTURE ABOVE.
2. **FIXTURES AT 56 LBS OR GREATER:** INSTALL (4) #12 GA. SUPPPORT WIRES (TAUT). ONE ON EACH CORNER OF FIXTURE CONNECTED TO STRUCTURE. WIRES SHALL SUPPORT (4) TIMES THE WEIGHT OF THE FIXTURE.
3. **ALL FIXTURES 4'x4' MIN. IN SIZE:** INSTALL (4) #12 GA. SAFETY WIRES (SLACK) AT EACH CORNER OF THE FIXTURE.

SUSPENDED FIXTURE | 3" = 1'-0" | 17



TYPICAL WIRE SPLICES | 6" = 1'-0" | 12

EXITWAY CORRIDOR DETAILS

NOTES:
1. PROVIDE #12 GAGE HANGER WIRES AT THE ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN EIGHT (8) INCHES OF THE SUPPORT OR WITHIN ONE-FOURTH (1/4) OF THE LENGTH OF THE END TEE, WHICHEVER IS LESS, FOR THE PERIMETER OF THE CEILING AREA. PERIMETER WIRES ARE NOT REQUIRED WHEN THE LENGTH OF THE END TEE IS EIGHT (8) INCHES OR LESS.

IR 25-2.13 2.50

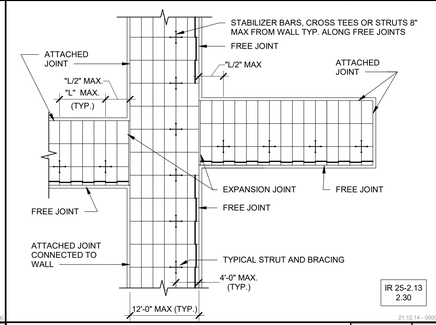
TYP CEILING SECTION @ EXIT CORRIDORS | 3/8" = 1'-0" | 15

NOTES:
WIRE SPLICES ARE SHOWN LOOSELY TIED FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL BE DRAWN TIGHT TO COMPLETE INSTALLATION WHEN CONSTRUCTED.

IR 25-2.13 6.10

21.12.14 - 00000

SUSPENDED FIXTURE | 3" = 1'-0" | 17

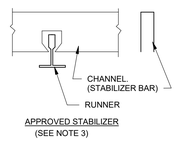


IR 25-2.13 2.30

21.12.14 - 00000

SUSP. CEILING-CORRIDOR CEILING PLAN | 3/32" = 1'-0" | 7

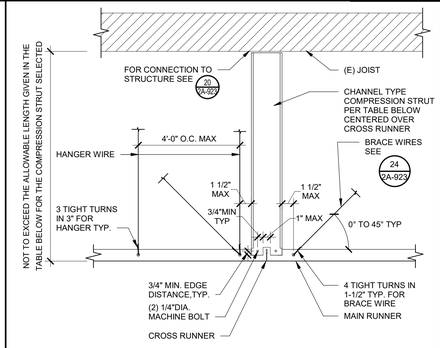
NOTES:
1. PROVIDE #12 GAGE HANGER WIRES AT THE ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN EIGHT (8) INCHES OF THE SUPPORT OR WITHIN ONE-FOURTH (1/4) OF THE LENGTH OF THE END TEE, WHICHEVER IS LESS, FOR THE PERIMETER OF THE CEILING AREA. PERIMETER WIRES ARE NOT REQUIRED WHEN THE LENGTH OF THE END TEE IS EIGHT (8) INCHES OR LESS.
2. NAILS AT ENDS OF HORIZONTAL STABILIZERS ARE TO BE PLACED WITH NAIL HEAD TOWARD CENTER LINE OF SPAN OF STRUT.
3. STABILIZER BAR MAY BE SLOTTED APPROVED ANGLES OR CHANNELS WITH "DIAMOND POINTS" OF SPRING STEEL WHICH SNAP TIGHT TO PREVENT MOVEMENT OF STRUT.
4. FASTEN ANGLE TO WALL STUD OR BLOCKING AS FOLLOWS:
   A. METAL STUD (20 GA. MIN.) WALL: (1) #10 SMS AT 24" O.C. MAX.
   B. WOOD STUD WALL: #10x2" LONG WOOD SCREW AT 16" O.C. MAX.



APPROVED STABILIZER (SEE NOTE 3)

IR 25-2.13 2.60

CEILING PERIMETER | 6" = 1'-0" | 8

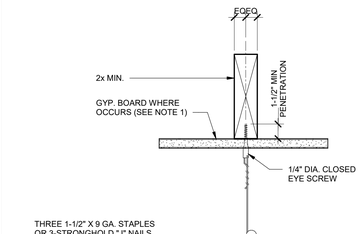


SECTION

CHANNEL COMPRESSION STRUT	MAXIMUM LENGTH
250S125-33	5'-10"
250S137-33	6'-10"
362S137-33	8'-0"
250S137-43	8'10"
400S137-43	10'-10"

IR 25-2.13 3.10 3.21

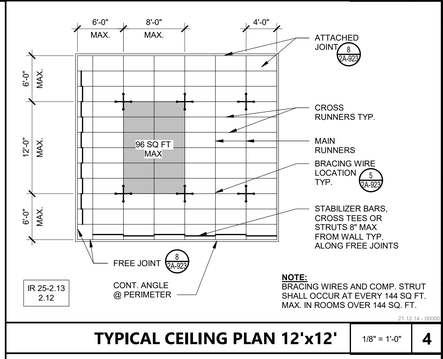
CHANNEL TYPE STRUT | 1 1/2" = 1'-0" | 10



NOTE:
1. WHEN FIRE RATED GYP. BOARD IS INSTALLED ON THE BOTTOM FLANGES, USE SCREW EYES W/ SUFFICIENT LENGTH TO AVOID DAMAGING THE FIRE RATED GYP. BOARD AND MEET MIN. PENETRATION.

IR 25-2.19 4.25

HANGER WIRE TO (E) JOISTS | 3" = 1'-0" | 3

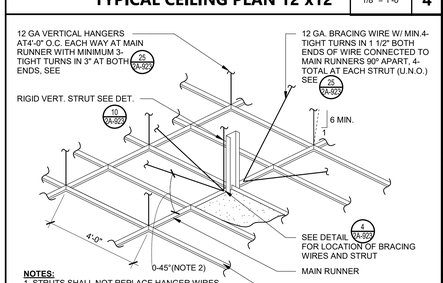


IR 25-2.13 2.12

NOTE:
BRACING WIRES AND COMP. STRUT SHALL OCCUR AT EVERY 144 SQ FT. MAX. IN ROOMS OVER 144 SQ. FT.

21.12.14 - 00000

TYPICAL CEILING PLAN 12'x12' | 1/8" = 1'-0" | 4



NOTES:
1. STRUTS SHALL NOT REPLACE HANGER WIRES.
2. THE MINIMUM ACCEPTABLE ANGLE IS DETERMINED SUCH THAT THE WIRES DO NOT INTERFERE WITH THE RUNNERS, LIGHT FIXTURES, ETC. AND REMAIN STRAIGHT AND UNOBSTRUCTED.

IR 25-2.13 2.35

SUSPENDED CEILING BRACING ASSEMBLY | 3/8" = 1'-0" | 5

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LICENSED ARCHITECT MARINA ALVAREZ PARGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	12-19-2023	DSA SUBMITTAL

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

CEILING DETAILS

INC.2

DRAWN BY: MP JOB NUMBER: 23119.01

SHEET NO.

2A-923

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt

DATE PLOTTED: 10/30/2024 4:25:08 PM

1. CEILING SYSTEM GENERAL NOTES:

1.01 CEILING SYSTEM COMPONENTS SHALL COMPLY WITH ASTM C635-07 AND SECTION 5.1 OF ASTM E580-10A.

1.02 THE CEILING GRID SYSTEM MUST BE RATED HEAVY DUTY AS DEFINED BY ASTM C635-08.

1.03 CEILING SYSTEMS. THE FOLLOWING CEILING SYSTEM(S) IS/ARE PART OF THE SCOPE OF THIS PROJECT:

MANUFACTURER'S NAME ARMSTRONG® SQUARE LAY-IN
PRODUCT EVALUATION REPORT TYPE AND NUMBER ASTM C635 - 08 ICC ESR 1308
MANUFACTURER'S MODEL NUMBER - MAIN RUNNER PRELUDE® XL® 7301
MANUFACTURER'S CATALOG NUMBER - CROSS RUNNER XL7341.

1.04 SEISMIC WALL CLIP: NOT USED

1.05 CEILING PANELS SHALL NOT SUPPORT ANY LIGHT FIXTURES, AIR TERMINALS OR DEVICES.

1.06 FOR CEILING INSTALLATIONS UTILIZING ACOUSTICAL TILE PANELS OF MINERAL OR GLASS FIBER, IT IS NOT MANDATORY TO PROVIDE ¾" CLEARANCE BETWEEN THE ACOUSTICAL TILE PANELS AND THE WALL ON THE SIDES OF THE CEILING WHICH ARE FREE TO SLIP. FOR ALL OTHER CEILING PANEL TYPES, PROVIDE ¾" CLEARANCE BETWEEN THE CEILING PANEL AND THE WALL ON THE SIDES OF THE CEILING FREE TO SLIP.

2. MATERIALS:

2.01 CEILING WIRE SHALL BE CLASS 1 ZINC COATED (GALVANIZED) CARBON STEEL CONFORMING TO ASTM A641-09A. WIRE SHALL BE #12 GAGE (0.106" DIAMETER) WITH SOFT TEMPER AND MINIMUM TENSILE STRENGTH = 70 KSI.

2.02 GALVANIZED SHEET STEEL (INCLUDING THAT USED FOR METAL STUD AND TRACK COMPRESSION STRUTS/POST) SHALL CONFORM TO ASTM A653-11, OR OTHER EQUIVALENT SHEET STEEL LISTED IN SECTION A2.1 OF THE NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS 2007, INCLUDING SUPPLEMENT 2 DATED 2010 (AISI S100-07/S2-10). MATERIAL 43 MIL (18 GAGE) AND LIGHTER SHALL HAVE MINIMUM YIELD STRENGTH OF 33 KSI. MATERIAL 54 MIL (16 GAGE) AND HEAVIER SHALL HAVE A MINIMUM YIELD STRENGTH OF 50 KSI.

2.03 ELECTRICAL METALLIC TUBE (EMT) SHALL BE ANSI C80.3/UL 797 CARBON STEEL WITH G90 GALVANIZING. EMT SHALL HAVE MINIMUM YIELD STRENGTH (FY) OF 30 KSI AND MINIMUM ULTIMATE STRENGTH (FU) OF 48 KSI.

3. ATTACHMENT OF HANGER AND BRACING WIRES:

3.01 SEPARATE ALL CEILING HANGER AND BRACING WIRES AT LEAST SIX (6) INCHES FROM ALL UNBRACED DUCTS, PIPES, CONDUIT, ETC.

3.02 HANGER AND BRACING WIRES SHALL NOT ATTACH TO OR BEND AROUND OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO: PIPING, DUCTWORK, CONDUIT AND EQUIPMENT.

3.03 HANGER WIRES THAT ARE MORE THAN ONE (HORIZONTAL) IN SIX (VERTICAL) OUT OF PLUMB SHALL HAVE COUNTER-SLOPING WIRES.

3.04 SLACK SAFETY WIRES SHALL BE CONSIDERED HANGER WIRES FOR INSTALLATION AND TESTING REQUIREMENTS.

3.05 HANGER AND BRACING WIRE ANCHORAGE TO THE STRUCTURE SHALL BE INSTALLED IN SUCH A MANNER THAT THE DIRECTION OF THE ANCHORAGE ALIGNS CLOSELY WITH THE DIRECTION OF THE WIRE. (E.G. BRACING WIRE CEILING CLIPS MUST BE BENT AS SHOWN IN THE DETAILS AND ROTATED AS REQUIRED TO ALIGN CLOSELY WITH THE DIRECTION OF THE WIRE, SCREW EYES IN WOOD MUST BE INSTALLED SO THEY ALIGN CLOSELY WITH THE DIRECTION OF THE WIRE, ETC.)

4. FASTENERS:

4.01 SHEET METAL SCREWS SHALL COMPLY WITH ASTM C1513-10, ASME B18.6.4-89 (R2005). PENETRATION OF SCREWS THROUGH JOINED MATERIAL SHALL NOT BE LESS THAN THREE EXPOSED THREADS.

6. LIGHT FIXTURES:

6.01 ALL LIGHT FIXTURES SHALL BE POSITIVELY ATTACHED TO THE CEILING SUSPENSION SYSTEMS BY MECHANICAL MEANS TO RESIST A HORIZONTAL FORCE EQUAL TO THE WEIGHT OF THE FIXTURE. A MINIMUM OF TWO SCREWS OR APPROVED FASTENERS ARE REQUIRED AT EACH LIGHT FIXTURE, PER ASTM E580, SECTION 5.3.1.

6.02 SURFACE-MOUNTED LIGHT FIXTURES SHALL BE ATTACHED TO THE MAIN RUNNER WITH AT LEAST TWO POSITIVE CLAMPING DEVICES. THE CLAMPING DEVICE SHALL COMPLETELY SURROUND THE SUPPORTING CEILING RUNNER AND BE MADE OF STEEL WITH A MINIMUM THICKNESS OF #14 GAGE. ROTATIONAL SPRING CATCHES DO NOT COMPLY. A #12 GAGE SLACK SAFETY WIRE SHALL BE CONNECTED FROM EACH CLAMPING DEVICE TO THE STRUCTURE ABOVE. PROVIDE ADDITIONAL SUPPORTS WHEN LIGHT FIXTURES ARE EIGHT (8) FEET OR LONGER OR EXCEED 56 LB. MAXIMUM SPACING BETWEEN SUPPORTS SHALL NOT EXCEED EIGHT (8) FEET.

6.03 LIGHT FIXTURES WEIGHING LESS THAN OR EQUAL TO 10 LB. SHALL HAVE A MINIMUM OF ONE (1) #12 GAGE SLACK SAFETY WIRE CONNECTED FROM THE FIXTURE HOUSING TO THE STRUCTURE ABOVE.

6.04 LIGHT FIXTURES WEIGHING GREATER THAN 10 LB. BUT LESS THAN OR EQUAL TO 56 LBS. MAY BE SUPPORTED DIRECTLY ON THE CEILING RUNNERS, BUT THEY SHALL HAVE A MINIMUM OF TWO (2) #12 GAGE SLACK SAFETY WIRES CONNECTED FROM THE FIXTURE HOUSING AT DIAGONAL CORNERS TO THE STRUCTURE ABOVE.

EXCEPTION: ALL LIGHT FIXTURES GREATER THAN TWO BY FOUR FEET WEIGHING LESS THAN 56 LBS. SHALL HAVE A #12 GAGE SLACK SAFETY WIRE AT EACH CORNER.

6.05 ALL LIGHT FIXTURES WEIGHING GREATER THAN 56 LB. SHALL BE INDEPENDENTLY SUPPORTED BY NOT LESS THAN FOUR (4) TAUT #12 GAGE HANGER WIRES (ONE AT EACH CORNER) ATTACHED FROM THE FIXTURE HOUSING TO THE STRUCTURE ABOVE OR OTHER APPROVED HANGERS. THE FOUR (4) TAUT #12 GAGE WIRES OR OTHER APPROVED HANGERS, INCLUDING THEIR ATTACHMENT TO THE STRUCTURE ABOVE, SHALL BE CAPABLE OF SUPPORTING FOUR (4) TIMES THE WEIGHT OF THE FIXTURE.

7. SERVICES WITHIN THE CEILING:

7.01 ALL FLEXIBLE SPRINKLER HOSE FITTING MOUNTING BRACKETS, CEILING-MOUNTED AIR TERMINALS OR OTHER SERVICES SHALL BE POSITIVELY ATTACHED TO THE CEILING SUSPENSION SYSTEMS BY MECHANICAL MEANS. SCREWS OR APPROVED FASTENERS ARE REQUIRED. A MINIMUM OF TWO ATTACHMENTS ARE REQUIRED AT EACH COMPONENT.

7.02 CEILING-MOUNTED AIR TERMINALS OR OTHER SERVICES WEIGHING LESS THAN OR EQUAL TO 20 LB. SHALL HAVE ONE (1) #12 GAGE SLACK SAFETY WIRE ATTACHED FROM THE TERMINAL OR SERVICE TO THE STRUCTURE ABOVE.

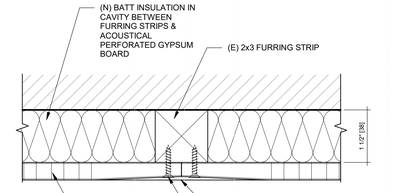
7.03 FLEXIBLE SPRINKLER HOSE FITTINGS, CEILING-MOUNTED AIR TERMINALS OR OTHER SERVICES WEIGHING MORE THAN 20 LB. BUT LESS THAN OR EQUAL TO 56 LB. SHALL HAVE TWO (2) #12 GAGE SLACK SAFETY WIRES (AT DIAGONAL CORNERS) CONNECTED FROM THE TERMINAL OR SERVICE TO THE STRUCTURE ABOVE.

7.04 FLEXIBLE SPRINKLER HOSE FITTINGS, CEILING-MOUNTED AIR TERMINALS OR OTHER SERVICES WEIGHING MORE THAN 56 LB. SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE BY NOT LESS THAN FOUR (4) TAUT #12 GAGE HANGER WIRES ATTACHED FROM THE TERMINAL OR SERVICE TO THE STRUCTURE ABOVE OR OTHER APPROVED HANGERS.

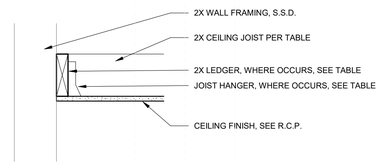
8. OTHER DEVICES WITHIN THE CEILING:

8.01 ALL LIGHTWEIGHT MISCELLANEOUS DEVICES, SUCH AS STROBE LIGHTS, OCCUPANCY SENSORS, SPEAKERS, EXIT SIGNS, ETC., SHALL BE ATTACHED TO THE CEILING GRID. IN ADDITION, DEVICES WEIGHING MORE THAN 10 LBS. SHALL HAVE A #12 GAGE SLACK SAFETY WIRE ANCHORED TO THE STRUCTURE ABOVE. DEVICES WEIGHING MORE THAN 20 LB. SHALL BE SUPPORTED INDEPENDENTLY FROM THE STRUCTURE ABOVE.

CEILING SYSTEM GENERAL NOTES



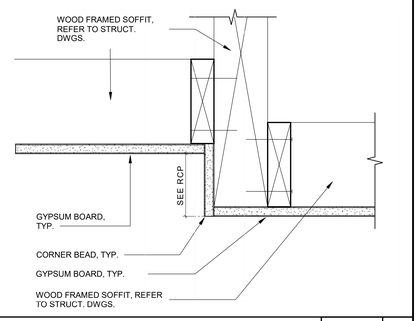
CEILING ATTACHMENT — 1 1/2" = 1'-0" — 11



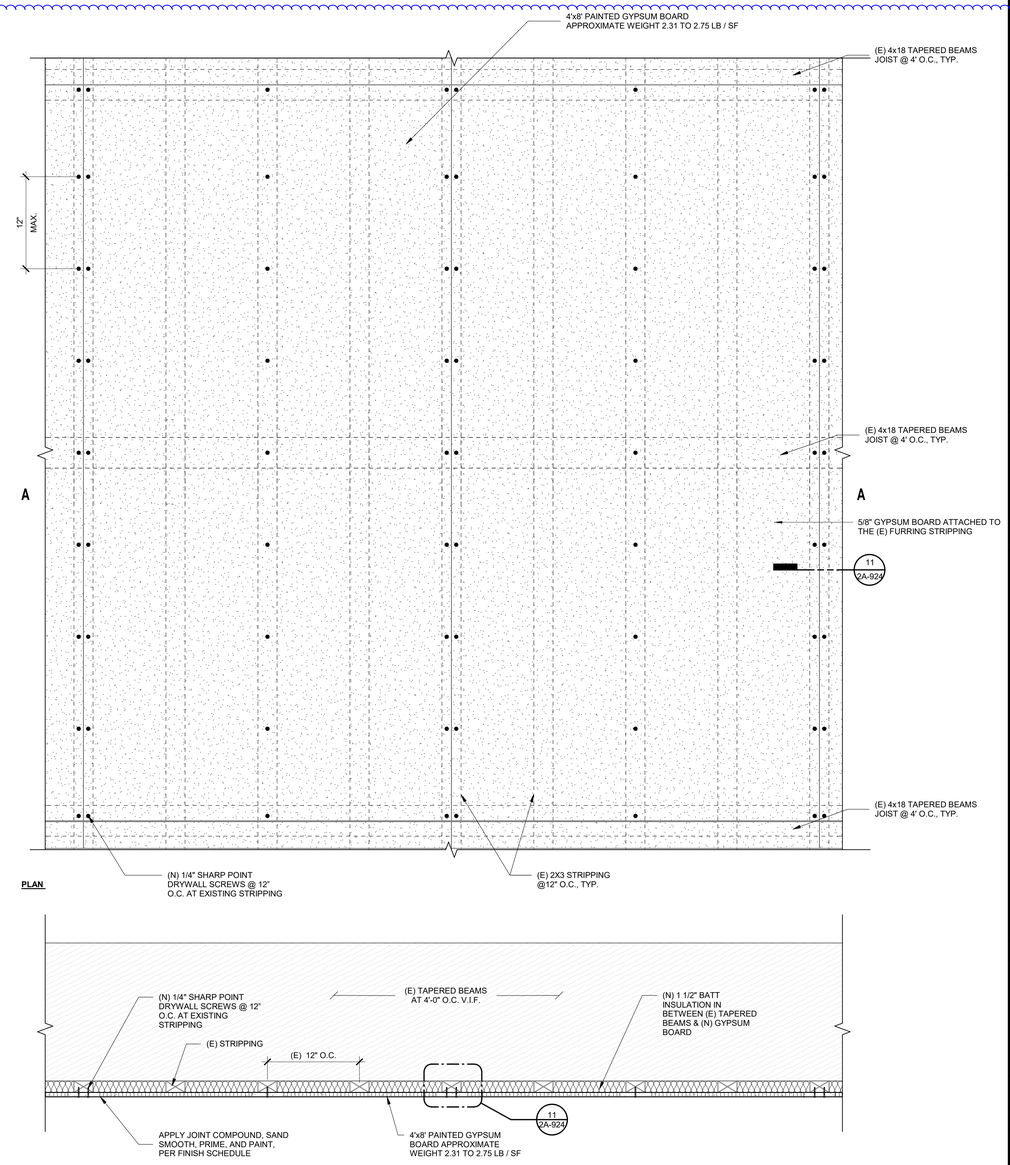
SPAN	HANGER, JOIST SIZE	IF REQUIRED	LEDGER, IF REQUIRED
< 5'-0"	2X4 @ 16" O.C.	LU24	2X4 W/ (2) 16d @ 16" O.C.
5'-1" TO 10'-0"	2X6 @ 16" O.C.	LU26	2X6 W/ (3) 16d @ 16" O.C.
10'-1" TO 15'-0"	2X8 @ 16" O.C.	LU26	2X8 W/ (3) 16d @ 16" O.C.
15'-1" TO 20'-0"	2X12 @ 16" O.C.	LU210	2X12 W/ (4) 16d @ 16" O.C.

NOTES:
1. WHERE LEDGER S ARE NAILED THROUGH PLYWOOD, USE 20d NAILS INSTEAD OF 16d AS SCHEDULED
2. FOR SPANS LONGER THAN 10'-0", PROVIDE FULL-DEPTH 2X BLOCKING @ MID-SPAN

CEILING FRAME - WOOD — 1 1/2" = 1'-0" — 12



GYPSUM BOARD SOFFIT — 3" = 1'-0" — 13



DIRECT ATTACH ACOUSTIC CEILING PANEL TO EXISTING FRAMING — 1 1/2" = 1'-0" — 3

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REVISIONS

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CEILING DETAILS

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DRAWN BY: Author JOB NUMBER: 23119.01

SHEET NO.
2A-924

DATE: OCTOBER 25, 2024

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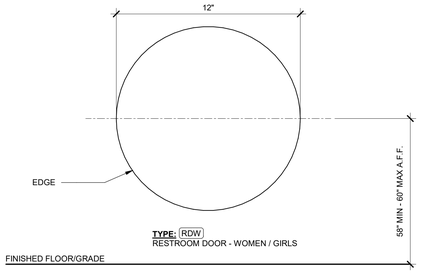
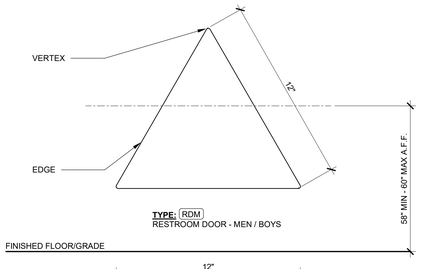
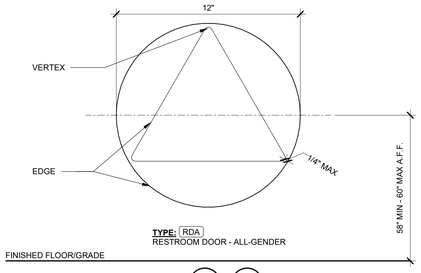


TYPE: RDW
RESTROOM DOOR - WOMEN / GIRLS



TYPE: RDM
RESTROOM DOOR - MEN / BOYS



TYPE: RDA
RESTROOM DOOR - ALL-GENDER

NOTE 1: FOR LOCATION AND MOUNTING SEE (4 2A-925) & (5 2A-925)

NOTE 2: SECOND SURFACE SCREENED COPY ON MATTE CLEAR ACRYLIC

NOTE 3: COLOR TBD. MUST HAVE AT LEAST 70% CONTRAST TO DOOR COLOR

NOTE 4: EDGES SHALL BE EASED OR ROUNDED AT 1/16" MIN OR CHAMFERED AT 1/8" MAX.

NOTE 5: VERTICES ON TRIANGLES SHALL BE RADIUSED BETWEEN 1/8" MIN AND 1/4" MAX.

NOTE 6: CIRCLE & TRIANGLE SYMBOL SHALL BE 1/4" THICK.

NOTE 7: THE INSCRIBED TRIANGLE SHALL BE 1/4" THICK CONTRASTING COLOR ON A 1/4" THICK CIRCLE (1/2" TOTAL THICKNESS) THAT IS IN CONTRAST WITH THE DOOR COLOR (NOTE 3)

21.12.14 - 00000

DOOR SYMBOLS - RESTROOM | 3" = 1'-0" | 18

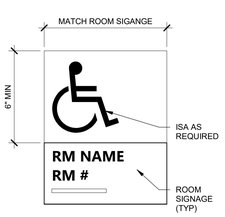
NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE (1 2A-925)

NOTE 2: FOR ROOM SIGNAGE SEE (2 2A-925) (3 2A-925)

NOTE 3: FOR LOCATION AND MOUNTING SEE (4 2A-925) & (5 2A-925)

NOTE 4: ISA SHALL BE JUSTIFIED TO ALIGNED WITH ROOM SIGNAGE

NOTE 5: ISA SHALL CONTRAST WITH THE BACKGROUND



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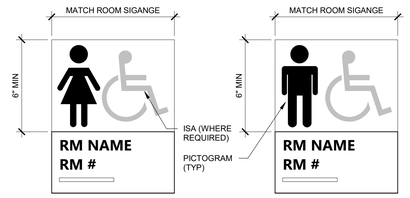
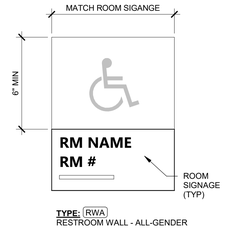
SIGNAGE - ROOM - ISA | 3" = 1'-0" | 11



TYPE: RWW RWG
RESTROOM WALL - WOMEN
RESTROOM WALL - GIRLS

TYPE: RWM RWB
RESTROOM WALL - MEN
RESTROOM WALL - BOYS



TYPE: RWA
RESTROOM WALL - ALL-GENDER

NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE (1 2A-925)

NOTE 2: FOR ROOM SIGNAGE SEE (2 2A-925) (3 2A-925)

NOTE 3: FOR LOCATION AND MOUNTING SEE (4 2A-925) & (5 2A-925)

NOTE 4: PICTOGRAMS SHALL BE PER (6 2A-925)

NOTE 5: ISA SYMBOL REQUIRED AT RESTROOMS IN BUILDINGS WHERE NOT ALL RESTROOMS ARE ACCESSIBLE.

21.12.14 - 00000

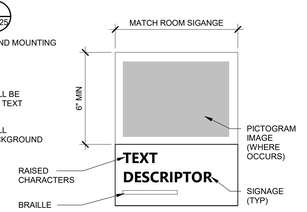
SIGNAGE - RESTROOMS - PICTOGRAMS | 3" = 1'-0" | 13

NOTE 1: FOR SIGNAGE SEE (2 2A-925) (3 2A-925) (8 2A-925)

NOTE 2: FOR LOCATION AND MOUNTING SEE (4 2A-925) & (5 2A-925)

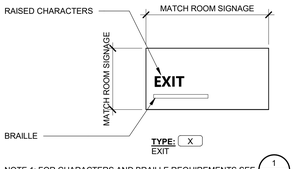
NOTE 3: PICTOGRAM SHALL BE JUSTIFIED TO ALIGN WITH TEXT DESCRIPTOR

NOTE 4: PICTOGRAM SHALL CONTRAST WITH THE BACKGROUND



21.12.14 - 00000

SIGNAGE - PICTOGRAMS | 3" = 1'-0" | 6



TYPE: X
EXIT

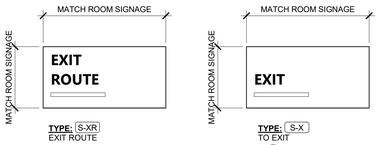
NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE (1 2A-925)

NOTE 2: FOR SIGN DESIGN SEE (2 2A-925) (3 2A-925)

NOTE 3: FOR LOCATION AND MOUNTING SEE (4 2A-925) & (5 2A-925)

21.12.14 - 00000

SIGNAGE - EXIT | 3" = 1'-0" | 7



TYPE: S-XR
EXIT ROUTE

TYPE: S-X
TO EXIT

NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE (1 2A-925)

NOTE 2: FOR SIGN DESIGN SEE (2 2A-925) (3 2A-925)

NOTE 3: FOR LOCATION AND MOUNTING SEE (4 2A-925) & (5 2A-925)

NOTE 4: WHEN PICTOGRAMS ARE USED, SEE (6 2A-925)

NOTE 5: WORDING ON THESE SIGNS IS PER CBC CHAPTER 10

21.12.14 - 00000

SIGNAGE - EXIT ROUTES | 3" = 1'-0" | 8

1. PROVIDE SIGNS WHERE INDICATED ON PLANS.
2. RAISED CHARACTERS SHALL COMPLY WITH SECTION 11B-703.2 AND SHALL BE DUPLICATED IN BRAILLE.
   DEPTH:RAISED CHARACTERS SHALL BE 1/32INCH MINIMUM ABOVE THEIR BACKGROUND
   CASE: CHARACTERS SHALL BE UPPER CASE
   STYLE: CHARACTERS SHALL BE SANS SERIF
   PROPORTIONS: THE WIDTH OF LETTER "O" SHALL BE 60 PERCENT MINIMUM AND 110 PERCENT MAXIMUM OF THE HEIGHT OF LETTER "T"
   HEIGHT: 5/8 INCH MINIMUM AND 2 INCHES MAXIUM
3. BRAILLE SHALL BE CONTRACTED (GRADE 2) AND SHALL COMPLY WITH SECTION 11B-703.3.
   DIMENSIONS: BASE DOT DIAMTER 0.059 INCHES TO 0.063 INCHES
   SPACING IN EACH CELL AT 0.10 INCHES ON CENTER
   SPACING BETWEEN CELLS TO BE 0.30 INCHES
   DOT HEIGHT TO BE BETWEEN 0.025 INCHES TO 0.037 INCHES WITH DOMED TOPS
   POSITION: BRAILLE SHALL BE POSITIONED BELOW THE CORRESPONDING TEXT IN A HORIZONTAL FORMAT
4. CHARACTERS, PICTOGRAMS, AND SYMBOLS OF ACCESSIBILITY SHALL BE LIGHT-ON-DARK OR DARK-ON-LIGHT CONTRAST BETWEEN CHARACTERS, SYMBOLS AND THEIR BACKGROUND PLUS BACKGROUNDS SHALL HAVE A NON=GLARE FINISH PER CBC 11B-703.5.1, 11B-703.6.2, & 11B-703.7.1
5. FOR ALL SIGNS MOUNTED ON GLAZING COORDINATE OPPOSITE SIDE SIGN IN THE SAME LOCATION. WHERE NO SIGN IS SPECIFIED ON OPPOSITE SIDE, PROVIDE A BLANK SIGN TO MATCH PER (4 2A-925)
6. SIGNS AND IDENTIFICATION DEVICES SHALL BE FIELD INSPECTED AFTER INSTALLATION AND APPROVED BY THE ENFORCING AGENCY PRIOR TO THE ISSUANCE OF A FINAL CERTIFICATE OF OCCUPANCY PER CHAPTER 1, DIVISION II, SECTION 111, OR FINAL APPROVAL WHERE NO CERTIFICATE OF OCCUPANCY IS ISSUED. THE INSPECTION SHALL INCLUDE, BUT NOT BE LIMITED TO, VERIFICATION THAT BRAILLE DOTS AND CELLS ARE PROPERLY SPACED AND THE SIZE, PROPORTION AND TYPE OF RAISED CHARACTERS ARE IN COMPLIANCE WITH THESE REGULATIONS.

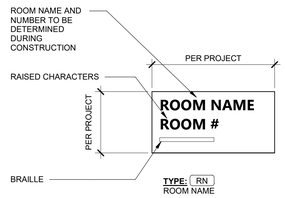
21.12.14 - 00000

SIGNAGE - GENERAL NOTES | 12" = 1'-0" | 1

NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE (1 2A-925) & (3 2A-925)

NOTE 2: FOR LOCATION AND MOUNTING SEE (4 2A-925) & (5 2A-925)

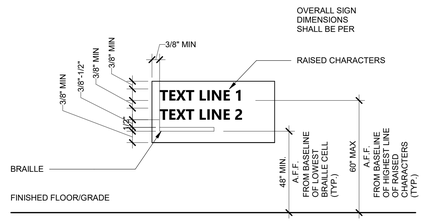
NOTE 3: FOR ROOM NAMES THAT REQUIRE MULTIPLE LINES OF TEXT, EXPAND THE SIGN VERTICALLY TO ACCOMMODATE THE TEXT



TYPE: RN
ROOM NAME

21.12.14 - 00000

SIGNAGE - ROOM IDENTIFICATION | 3" = 1'-0" | 2



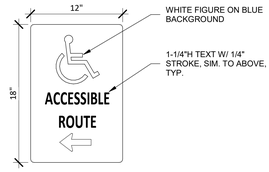
NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE (1 2A-925)

NOTE 2: FOR LOCATION AND MOUNTING SEE (4 2A-925) & (5 2A-925)

NOTE 3: FOR SIGNS WITH ONLY A SINGLE LINE OF TEXT, IT SHALL BE LOCATED AT "TEXT LINE 2"

21.12.14 - 00000

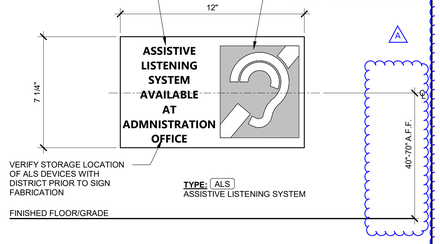
SIGNAGE - CODE DIMENSIONS | 3" = 1'-0" | 3



ACCESSIBLE ROUTE | 1 1/2" = 1'-0" | 19

PER CBC 11B-703 SUBSURFACE CHARACTERS NON-TACTILE 5/8"H TEXT UPPER CASE, NON-GLARE FINISH.

6" HEIGHT INTERNATIONAL SYMBOL OF ACCESS FOR HEARING LOSS PICTOGRAM, 11B-703.7.2.4 SEE FIGURE 11B-703.7.2.4 FOR PROPORTIONS

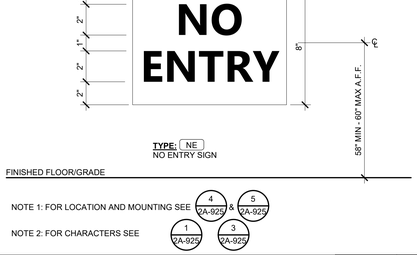


VERIFY STORAGE LOCATION OF ALS DEVICES WITH DISTRICT PRIOR TO SIGN FABRICATION

TYPE: ALS
ASSISTIVE LISTENING SYSTEM

21.12.14 - 00000

SIGNAGE - ALS | 3" = 1'-0" | 14

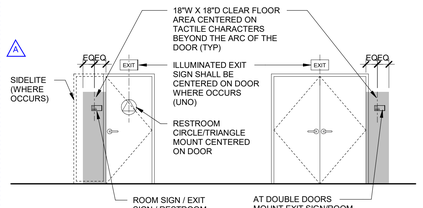


TYPE: NE
NO ENTRY SIGN

NOTE 1: FOR LOCATION AND MOUNTING SEE (4 2A-925) & (5 2A-925)

NOTE 2: FOR CHARACTERS SEE (1 2A-925) (3 2A-925)

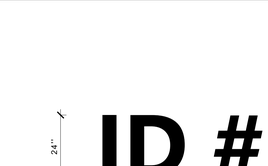
NO ENTRY SIGN | 3" = 1'-0" | 9



NOTE 1:
WHERE NO WALL SPACE IS AVAILABLE ON LATCH SIDE FOR SINGLE DOORS OR THE RIGHT SIDE AT DOUBLE DOORS, SIGNS SHALL BE PLACED ON NEAREST ADJACENT WALL, PREFERABLE LATCH SIDE FOR SINGLE DOORS OR THE RIGHT SIDE AT DOUBLE DOORS

21.12.14 - 00000

SIGNAGE - MOUNTING LOCATIONS | 1/4" = 1'-0" | 4

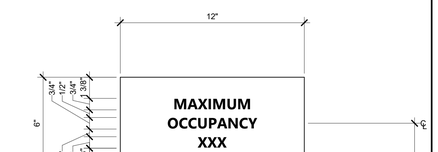


TYPE: BID
BUILDING ID #

NOTE 1: LETTERS TO BE CAST ALUMINUM PAINTED BLACK 1/4" TICK

NOTE 2: SIGNAGE MOUNTING PER (10 2A-925) A

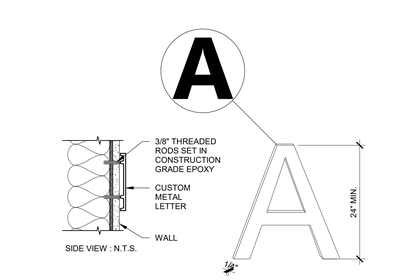
BUILDING SIGNAGE | 3" = 1'-0" | 20



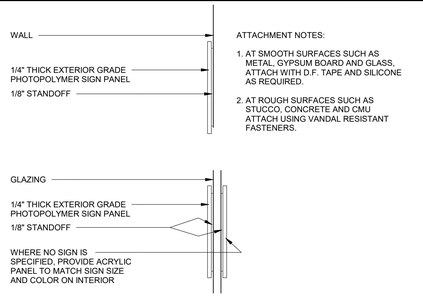
TYPE: MO
MAXIMUM OCCUPANCY

21.12.14 - 00000

SIGNAGE - MAXIMUM OCCUPANCY | 3" = 1'-0" | 15



METAL LETTERS | 1 1/2" = 1'-0" | 10



SIGNAGE - MOUNTING | 3" = 1'-0" | 5

AGENCY APPROVAL DSA# 01-121440

A

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LICENSED ARCHITECT MARIANA ALVAREZ PARGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	12-19-2023	DSA SUBMITTAL

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

SIGNAGE DETAILS

INC 2

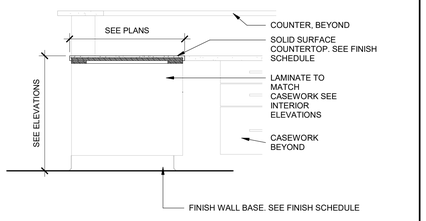
DRAWN BY: MP JOB NUMBER: 23119.01

SHEET NO.

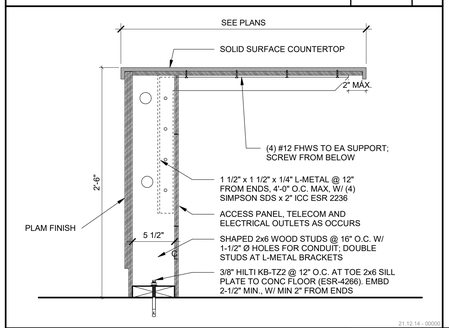
2A-925

DATE: OCTOBER 25, 2024

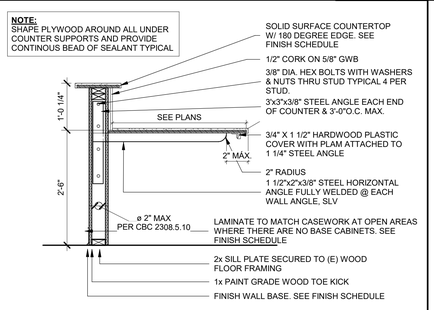
CONSTRUCTION DOCUMENTS



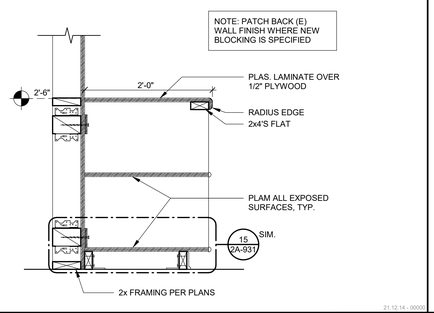
RECEPTION ADA COUNTER | 3/4" = 1'-0" | 16



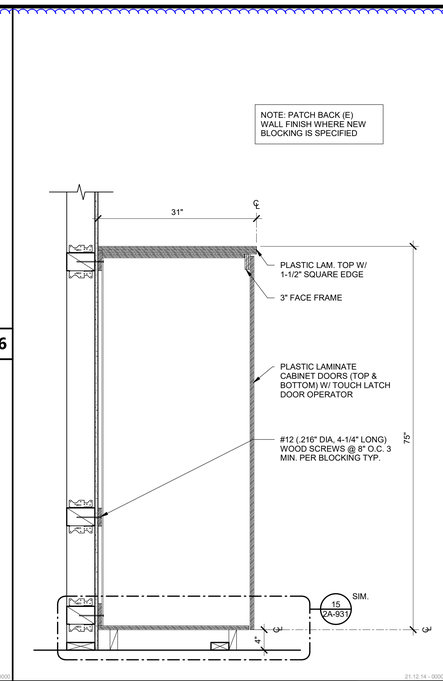
RECEPTION COUNTER | 1 1/2" = 1'-0" | 17



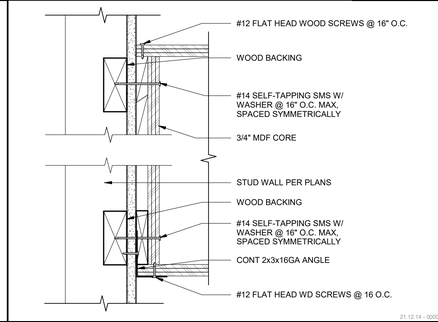
RECEPTION TRANSACTION COUNTER | 3/4" = 1'-0" | 18



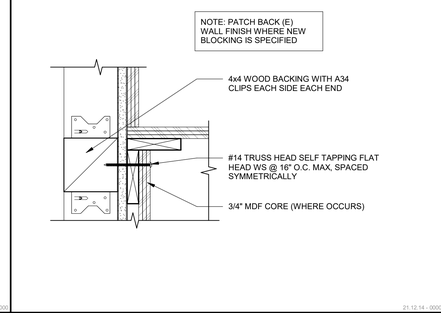
LOWER SHELVES SECTION | 1" = 1'-0" | 19



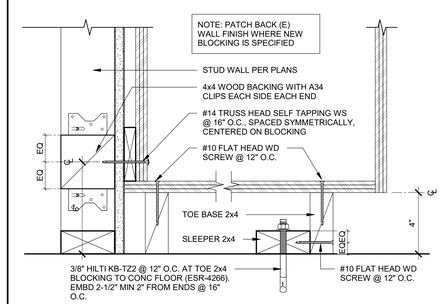
IDF CABINET | 1" = 1'-0" | 12



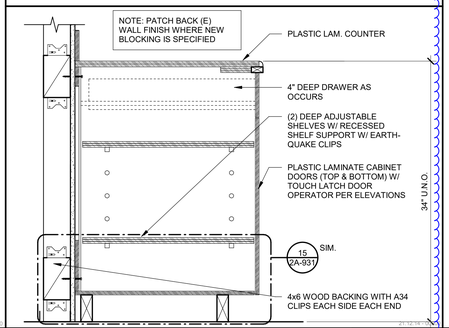
CABINETRY BLOCKING | 3" = 1'-0" | 13



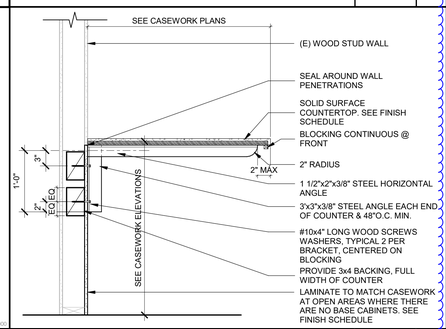
CABINETRY BLOCKING - COUNTER | 3" = 1'-0" | 14



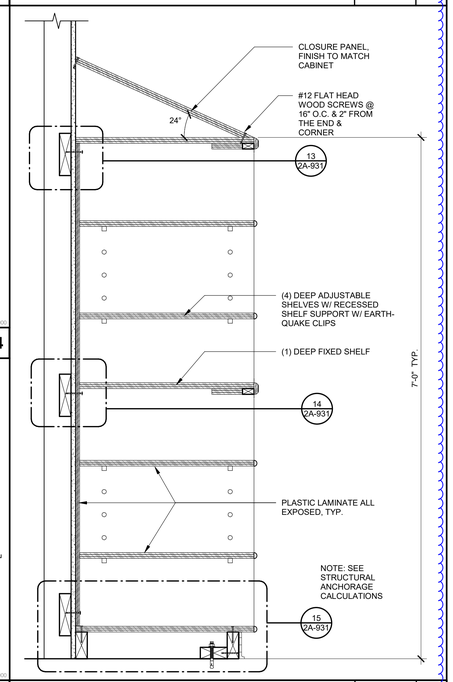
CABINETRY BLOCKING - BASE | 3" = 1'-0" | 15



BASE CABINETS | 1 1/2" = 1'-0" | 7



ADA COUNTER @ RECEPTION | 1" = 1'-0" | 8



BOOKSHELF | 1 1/2" = 1'-0" | 9

CASEWORK NOTES

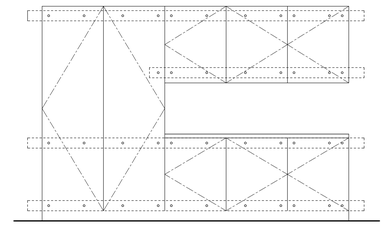
1. SEE INTERIOR ELEVATIONS AND FLOOR PLAN FOR CABINET CONFIGURATIONS AND DIMENSIONS. ONLY THOSE CABINETS CALLED OUT ON INTERIOR ELEVATIONS AND FLOOR PLAN SHALL BE PROVIDED
2. DOOR SWINGS SHALL BE AS SHOWN ON INTERIOR ELEVATIONS, IF NOT ELEVATED, SWINGS SHALL BE AS SHOWN ON DETAIL SHEET ILLUSTRATIONS. SYMBOL 'RS' INDICATES REVERSE SWING.
3. ALL CABINET DIMENSIONS INDICATED ARE NOMINAL OUTSIDE DIMENSIONS, AND SHALL NOT BE EXCEEDED; (EXCEPTION - CABINETS ADJACENT TO WALLS MAY BE INCREASED IN LENGTH TO ELIMINATE THE NEED FOR FILLER STRIPS). A ¼" TOLERANCE IS PERMITTED ON DIMENSIONS OVER 48". FOR 48" AND SMALLER DIMENSIONS, TOLERANCE IS LIMITED TO 10%. HEIGHT DIMENSION OF BASE CABINETS INCLUDES FINISHED TOP.
4. WHERE BACKSPLASH IS INDICATED, IT SHALL BE 4" HIGH @ NON-SINK AREAS & 6" HIGH OR TO UNDERSIDE OF UPPER CABINETS @ WET AREAS(SEE INTERIOR ELEVATIONS), TOP MOUNTED TYPE, HAVING SQUARE TOP WITH SHELF EDGES
5. ALIGN SIDE OF CABINET WITH EDGE OF DOOR FRAME WHERE OCCURS.
6. PAPER AND CHART STORAGE UNITS SHALL BE 27" DEEP UNLESS OTHER WISE NOTED.
7. BACKING NOTES
   A. PROVIDE #12 TEK SCREWS (AT METAL STUDS). SPACE ANCHORS AT 16" O.C. MINIMUM OF ONE SCREW AT EACH TOP AND BOTTOM CORNER OF EACH CABINET UNIT.
   B. STUDS OF WALLS BACKING CABINETS SHALL RUN FROM SLAB TO STRUCTURE ABOVE.
   C. ALL SHEET METAL SCREWS MUST HAVE ICC#. SEE STRUCTURAL DRAWINGS.

SYMBOLS AND NOTATIONS FOR CABINETS

HEIGHT (WHEN NOT STANDARD) — PLAM — MATERIAL
30 — DEPTH (WHEN NOT STANDARD)
27
LENGTH — 301 — 24 — NAAWS - STYLE NUMBER

NAAWS STYLE CATEGORIES:

100 - BASE CABINETS, NO DRAWERS
200 - BASE CABINETS WITH DRAWERS
300 - WALL HUNG CABINETS
400 - TALL STORAGE CABINETS
500 - WARDROBE CABINETS
600 - LIBRARY CABINETS
700 - MOVABLE CABINETS



NOTES | 1/2" = 1'-0" | 2

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LICENSED ARCHITECT — MARINA ALVAREZ-PARGA — C-36107 — REN. 01-31-25 — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	12-19-2023	DSA SUBMITTAL

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
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MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

CASEWORK DETAILS

INC.2

DRAWN BY: MP JOB NUMBER: 23119.01

SHEET NO.

2A-931

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/30/2024 5:50:19 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23119_MTDUSD_MEADOW HOMES ES MOD_INC02_A22_.rvt

M BAR C VERSA-CANOPY 19.2

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LIC # 869960
B AND C51

POINT OF CONTACT: GREG JONES
GREGJ@MBARCONLINE.COM
(775) 787-8845

LEGAL INFORMATION

- USE OF THE PC WITHOUT WRITTEN CONSENT FROM M BAR C CONSTRUCTION, INC. IS STRICTLY PROHIBITED.
- ALL INFORMATION HEREIN IS PROPRIETARY INFORMATION AND UNDER THE OWNERSHIP OF M BAR C CONSTRUCTION, INC.

STANDARD NOTES FOR PC USE

- 4 S.T.E.L. ENGINEERING, INC. IS AVAILABLE TO BID THE GENERATION OF THE FULL DSA SUBMITTAL PACKAGE ACTING AS THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE (DPGRC) OR TO SUPPORT THE DPGRC AS THE SITE SPECIFIC STRUCTURAL ENGINEER OF RECORD (SEOR).
  CONTACT DUSTIN ROSEPINK AT 4 S.T.E.L. ENGINEERING, INC FOR A PROPOSAL FOR SERVICES AT (949) 305-1150, DKRPINK@4STELENG.COM
- FOR CONSTRUCTION COST INFORMATION, CONTACT M BAR C CONSTRUCTION, INC.
- CUSTOM SIZES AND LOADING REQUIRE SUPPLEMENTARY SHOP DRAWINGS AND CALCULATIONS AND ARE OUTSIDE THE SCOPE OF THIS PC.



DSA OTC PLAN REVIEWER AND DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE NOTES

1. THE PC STRUCTURAL MEMBERS ARE DESIGNED TO THE FOLLOWING ASCE 7-16 SEISMIC CRITERIA: S_{DS} = 1.867, S_1 = 1.39, R = 1.25.
2. THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE TO VERIFY SITE SPECIFIC DESIGN PARAMETERS COMPLY WITH DESIGN PARAMETERS FOR THE PC SHOWN ON SHEET S-2.
3. THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE IS RESPONSIBLE FOR VERIFYING SITE-SPECIFIC WIND PARAMETERS AT ANY AND ALL SITES WHERE THIS PC IS USED. THIS PC DESIGN IS BASED ON WIND SPEEDS OF 99 MPH AND 130 MPH FOR RISK CATEGORY II TYPE STRUCTURES UTILIZING EXPOSURE TYPE C PER ASCE 7-16. SEE DESIGN PARAMETER NOTE 1 ON SHEET S-2.
4. A SITE SPECIFIC GEOTECHNICAL REPORT SHALL BE SUBMITTED JUSTIFYING SOILS VALUES SELECTED IF GREATER THAN 100 PCF FOR LATERAL BEARING AND/OR 1,500 PSF FOR VERTICAL BEARING.
   SEE FOUNDATION NOTES ON SHEET S-3.
5. SITE SPECIFIC DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE TO SELECT SOILS CLASS FOR SITE SPECIFIC USE.
6. WET STAMPED & SIGNED COPIES OF PC PLANS ARE NOT REQUIRED FOR SITE SPECIFIC PC USE AS LONG AS THE PC IN NOT MODIFIED.
7. DUSTIN ROSEPINK IS NOT ACTING AS SITE SPECIFIC SEOR UNLESS HE IS THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR A SIGNED LETTER HAS BEEN SUBMITTED WITH DSA-1 FORM STATING HE ACCEPTS THE RESPONSIBILITY AS THE SEOR FOR THE SITE. REFER TO DSA IR A-18.
8. DUSTIN ROSEPINK WILL NOT SIGN ANY DSA FORMS (e.g. DSA-5, DSA-6, etc.), REVIEW OR APPROVE ANY SUBMITTALS (e.g. CONCRETE MIX DESIGNS, SHOP DRAWINGS, etc.) FOR THE SITE SPECIFIC PROJECT UNLESS HE IS ACTING AS THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR THE SITE SPECIFIC STRUCTURAL ENGINEER OF RECORD. REFER TO DSA IR A-18.
9. CUSTOM SIZES & LOADINGS REQUIRE SUPPLEMENTARY SHOP DRAWINGS & CALCULATIONS AND ARE OUTSIDE THE SCOPE OF THIS PC.
10. THE PC STRUCTURE(S) ARE APPROVED FOR BOTH CLEAR AND OBSTRUCTED WIND FLOW AS AN OPEN STRUCTURE.

PROJECT SPECIFIC SEISMIC LOAD DATA

Name	Value	Description
S_S	1.542	MCE_R ground motion (period=0.2s)
S_1	0.54	MCE_R ground motion (period=1.0s)
S_{MS}	1.542	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.028	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

PROJECT SPECIFIC WIND LOAD DATA

ASCE 7-16

Risk Category II ..... 92 mph

DESIGN PARAMETER CHECK LIST

1. VERIFY THE MAXIMUM WIND SPEED AT THE SITE DOES NOT EXCEED 99 MPH OR 130 MPH EXPOSURE C, AS APPLICABLE. VERIFY THE MAXIMUM SEISMIC S_{DS} AT THE SITE DOES NOT EXCEED S_{DS} = 1.867.
2. VERIFY THE SITE SPECIFIC SNOW LOAD AND ENSURE ALL SITE SPECIFIC PC SELECTIONS MEET OR EXCEED THE SITE SPECIFIC SNOW LOAD. THIS PC HAS OPTIONS FOR NO SNOW AND 20 PSF SNOW LOAD. VERIFY THE SITE SPECIFIC DESIGN PROFESSIONAL HAS PROVIDED THE PROPER SITE SPECIFIC VALUES FOR P_g, P_f, P_s, C_e, I, C_t. FOR SNOW LOADS IF THE HORIZONTAL SEPARATION FROM ANY STRUCTURE IS LESS THAN 20 FT, SNOW DRIFT ANALYSIS SHALL BE PROVIDED BY THE PC APPLICANT, AND THE SITE APPLICATION IS NOT ELIGIBLE FOR OVER-THE-COUNTER (OTC) SUBMITTAL.
3. REVIEW THE SITE SPECIFIC GEOTECHNICAL REPORT AND ENSURE ALL SITE SPECIFIC PC SELECTIONS MEET WITH THE GEOTECHNICAL REPORT REQUIREMENTS.
   - VERIFY A GEOHAZARD SECTION HAS BEEN PROVIDED FOR REVIEW TO USE THIS PC.
   - SITES NOT LOCATED IN STATE OR LOCAL GEOHAZARD ZONES UTILIZING THIS PC WITH STRUCTURES NOT EXCEEDING 4,000 SQ FT DO NOT REQUIRE CGS APPROVAL OF THE GEOTECHNICAL REPORT. STRUCTURES MAY BE BROKEN UP INTO MULTIPLE 4,000 SQ FT STRUCTURES WITH SEISMIC BREAKS PER SEISMIC GAPS ON S-2.
4. VERIFY THE SITE SPECIFIC FOUNDATION LOCATIONS MEET WITH SOILS NOTE 8 ON S-3 FOR SET BACK FROM TOP OF SLOPES OR THAT THE GEOTECHNICAL REPORT HAS ALLOWED A SMALLER DISTANCE.
5. VERIFY THE SITE SPECIFIC PLANS PROVIDE THE APPROPRIATE OCCUPANCY AND OCCUPANCY LOAD FACTOR FOR THE SITE. SEE BUILDING DATA ON S-2 FOR SAMPLE ACCEPTABLE OCCUPANCIES AND OCCUPANCY LOAD FACTORS.
6. VERIFY THE SITE SPECIFIC PLANS UTILIZE A RISK CATEGORY II STRUCTURE. RISK CATEGORY II STRUCTURES SHALL NOT PROVIDE SHELTER FOR EMERGENCY VEHICLES OR EQUIPMENT; OR PROVIDE REQUIRED ACCESS TO, REQUIRED EGRESS FROM, OR SHARE A LIFE SAFETY COMPONENT WITH A RISK CATEGORY III OR IV STRUCTURE.
7. VERIFY SELECTION OF USE AND OCCUPANCY CLASSIFICATION PER CBC CHAPTER 3; OCCUPANT LOAD FACTOR PER CBC TABLE 1004.5; RISK CATEGORY PER CBC TABLE 1604A.5; TO BE COMPLETED BY DESIGN PROFESSIONAL AT TIME OF DSA OTC OR PROJECT DSA SUBMITTAL.
8. VERIFY APPROPRIATE SEISMIC SEPARATION PER SEISMIC GAPS ON S-2.
9. VERIFY THE SITE SPECIFIC DESIGN PROFESSIONAL HAS APPROPRIATELY ADDRESSED FIRE SEPARATION AND PROPERTY LINE SETBACKS.
10. VERIFY STEEL SELECTIONS HAVE BEEN PROPERLY COORDINATED WITH BEAM/COLUMN SCHEDULES. REFER TO 2/S-7 & 2/S-9.
11. VERIFY SITE SPECIFIC PURLIN CANTILEVERS HAVE BEEN PROPERLY COORDINATED WITH PURLIN SCHEDULES. REFER TO 1/S-7 & 1/S-9.
12. WET STAMPED & SIGNED COPIES OF PC PLANS ARE NOT REQUIRED FOR SITE SPECIFIC PC USE.
13. WHEN A SITE-SPECIFIC PROJECT IS LOCATED IN A FLOOD ZONE OTHER THAN ZONE X, A LETTER STAMPED AND SIGNED FROM A GEOTECHNICAL ENGINEER IS REQUIRED TO VALIDATE THE ALLOWABLE SOIL VALUES SPECIFIED IN THE PC DRAWINGS ARE STILL APPLICABLE.
14. IF THE PC IS MODIFIED, FULL SUBMITTAL WILL BE REQUIRED AND IT IS NOT ELIGIBLE FOR OVER-THE COUNTER (OTC) APPROVAL.

SHEET INDEX

S-1.....COVER SHEET
S-2.....GENERAL DATA
S-3.....GENERAL NOTES
S-4.....SAMPLE DSA-103 FORMS
S-5.....SECTION PROPERTIES & REBAR DETAILS
S-6.....VC14, VC18, VC20, VC24, VC28 & VC30 FRAMING PLAN & ELEVATIONS
S-7.....VC14, VC18, VC20, VC24, VC28 & VC30 FRAMING SCHEDULES
S-8.....VC140, VC180, VC200, VC240, VC280 & VC300 FRAMING PLAN & ELEVATIONS
S-9.....VC140, VC180, VC200, VC240, VC280 & VC300 FRAMING SCHEDULES
S-10.....PIER FOUNDATION & SPREAD FOOTING SCHEDULES
S-11.....STANDARD DETAILS 1
S-12.....STANDARD DETAILS 2
S-13.....STANDARD DETAILS 3
13 SHEETS

BID INFORMATION

THE STEEL STRUCTURES IN THIS PC ARE PROPRIETARY TO M BAR C CONSTRUCTION, INC. THE STEEL WORK SHALL NOT GO OUT TO BID.

PRE-CHECK (PC) DOCUMENT

CODE: 2019 CBC

A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

4 STEL ENGINEERING
26030 ACERO,
MISSION VIEJO, CA 92691
949.305.1150 | FAX 949.305.1420

M BAR C CONSTRUCTION INC.
1770 LA COSTA MEADOWS DRIVE, SAN MARCOS, CA 92078
ERIK KRIVOPOPICH
PHONE: (760) 744-4131
FAX: (760) 744-4449
ERIK@MBARCONLINE.COM
LIC # 869960 B AND C51
(775) 787-8845

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K. ROSEPINK S 5885 STATE OF CALIFORNIA

BID INFORMATION

THE STRUCTURES AND DESIGNS IN THIS PC ARE PROPRIETARY TO M BAR C CONSTRUCTION, INC. AND 4 S.T.E.L. ENGINEERING, INC. ALL SITES USING THIS PC: M BAR C CONSTRUCTION, INC. SHALL BE THE STEEL CONTRACTOR & 4 S.T.E.L. ENGINEERING, INC. SHALL BE THE SEOR. SEE THE STANDARD NOTES FOR PC USE ON S-1 FOR ADDITIONAL REQUIREMENTS.

PRE-CHECK (PC) DOCUMENT
CODE: 2019 CBC
A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 04-119563 PC
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑ CG ☐
DATE: 02/19/2021

SITE SPECIFIC INFORMATION

REVISIONS

MARK	DATE	DESCRIPTION

4 STEL JOB #	MC03-02-2
DATE	02-05-21
DRAWN BY	MAP
CHECKED	CDL

COVER SHEET

S-1

NOTE: IF DWG. IS NOT 24 x 36, IT IS NOT FULL SIZE

ABBREVIATIONS

&	AND
@	AT
℄	CENTER LINE
A.B.	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS
AWS	AMERICAN WELDING SOCIETY
BLDG	BUILDING
BLK'G	BLOCKING
BM	BEAM
BOTT. OR (B)	BOTTOM
CBC	CALIFORNIA BUILDING CODE
CCD	CONSTRUCTION CHANGE DOCUMENT (DSA)
CCR	CALIFORNIA CODE OF REGULATIONS
CFS	COLD FORMED STEEL
C.J.	CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL.	COLUMN
CONC.	CONCRETE
CONT.	CONTINUOUS
CS	CFS C SECTION WITH FLANGE STIFFENING LIPS
DIA., ø	DIAMETER
DPGRC	DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE
DSA	DIVISION OF THE STATE ARCHITECT
DWG	DRAWING
(E)	EXISTING
EA.	EACH
E.F.	EACH FACE
E.W.	EACH WAY
EXT.	EXTERIOR
FDN	FOUNDATION
FIN.	FINISH
FLR	FLOOR
FLS	FIRE LIFE SAFETY (DSA)
F.O.C.	FACE OF CONCRETE
F.S.	FAR SIDE
FTG.	FOOTING
GA.	GAUGE
GALV.	GALVANIZED
H.S.B.	HIGH STRENGTH BOLT (ASTM A325 U.N.O.)
HORIZ.	HORIZONTAL
HT.	HEIGHT
IAMPO	INTERNATIONAL ASSOCIATION OF MECHANICAL AND PLUMBING OFFICIALS
ICC	INTERNATIONAL CODE COUNCIL
INT.	INTERIOR
IOR	INSPECTOR OF RECORD
IR	INTERPRETATION OF REGULATIONS (DSA)
JT	JOINT
LG.	LONG
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
M.B.	MACHINE BOLT (ASTM A307 U.N.O.)
MAX.	MAXIMUM
MFR.	MANUFACTURER
MIN.	MINIMUM
MISC.	MISCELLANEOUS
(N)	NEW
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NOM.	NOMINAL
N.S.	NEAR SIDE
NTS	NOT TO SCALE
O.C.	ON CENTER
OTC	OVER THE COUNTER (DSA)
O.H.	OPPOSITE HAND
℗ OR PL	PLATE
PJP	PARTIAL JOINT PENETRATION
PC	PRE-CHECK (DSA)
PT	PRESSURE TREATED
PV	PHOTOVOLTAIC
REINFT.	REINFORCEMENT
REQ'D	REQUIRED
SC	SLIP-CRITICAL JOINT PER ASTM SPECS
SCHED.	SCHEDULE
SEOR	STRUCTURAL ENGINEER OF RECORD
SHT'G	SHEATHING
SIM.	SIMILAR
S.M.S.	SHEET METAL SCREW
SQ.	SQUARE
SS	STAINLESS STEEL
ST	SNUG-TIGHTENED JOINT PER ASTM SPECS
STD	STANDARD
(T)	TOP
T&B	TOP AND BOTTOM
T.O.C.	TOP OF CONCRETE
T.O.S.	TOP OF STEEL
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
W/–	WITH
W/O	WITHOUT
WHS	WELDED HEADED STUD (ASTM A108 U.N.O.)
W.P.	WORK POINT
WT.	WEIGHT
WTS	WELDED THREADED STUD (ASTM A108 U.N.O.)

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
2. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY ADDENDA OR CONSTRUCTION CHANGE DOCUMENTS APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR.
3. A 'DSA CERTIFIED' PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE (PART 1, TITLE 24, CCR).
4. A 'DSA CERTIFIED' INSPECTOR WITH CLASS 2 CERTIFICATION IS REQUIRED FOR THIS PROJECT.
5. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE SCHOOL BOARD SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
6. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
7. IF THE PROJECT IS DIVIDED INTO INCREMENTS: THE SCOPE OF WORK FOR EACH INCREMENT MUST BE CLEARLY SPECIFIED ON THE TITLE SHEET OF ALL INCREMENTS SUBMITTED.

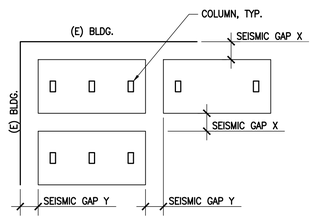
CONSTRUCTION OPTIONS

- ALL CONSTRUCTION OPTIONS INCLUDE OPTIONS FOR CONCRETE DRILLED PIERS AND/OR SPREAD FOOTINGS.

1. 14'-0" MAX WIDTH, 3:12 MAX ROOF SLOPE, 17'-0" MAX COLUMN HEIGHT, 0 psf GROUND SNOW
2. 18'-0" MAX WIDTH, 3:12 MAX ROOF SLOPE, 17'-0" MAX COLUMN HEIGHT, 0 psf GROUND SNOW
3. 20'-0" MAX WIDTH, 3:12 MAX ROOF SLOPE, 17'-0" MAX COLUMN HEIGHT, 0 psf GROUND SNOW
4. 14'-0" MAX WIDTH, 3:12 MAX ROOF SLOPE, 17'-0" MAX COLUMN HEIGHT, 20 psf GROUND SNOW
5. 18'-0" MAX WIDTH, 3:12 MAX ROOF SLOPE, 16'-6" MAX COLUMN HEIGHT, 20 psf GROUND SNOW
6. 20'-0" MAX WIDTH, 3:12 MAX ROOF SLOPE, 16'-9" MAX COLUMN HEIGHT, 20 psf GROUND SNOW

SEISMIC GAPS

OPTION	MAX COLUMN HEIGHT	GAP X	GAP Y
VC14	17'-0"	6"	6"
VC18	17'-0"	7"	7"
VC20	17'-0"	6"	6"
VC24	17'-0"	6¾"	6¾"
VC28	17'-0"	8½"	8½"
VC30	17'-0"	6¼"	6¼"
VC140	17'-0"	7"	7"
VC180	16'-6"	6½"	6½"
VC200	16'-9"	6½"	6½""
VC240	17'-0"	7"	7"
VC280	16'-6"	7½"	7½"
VC300	16'-9"	6"	6"



NOTE
1. SEISMIC GAPS LISTED ARE THE MINIMUM GAPS BETWEEN ANY TWO STRUCTURES (I.E. CANOPIES, BUILDINGS) AND DO NOT NEED TO BE COMBINED OR DOUBLED.
2. DIMENSIONS, QUANTITIES, AND LOCATIONS OF STRUCTURES AND COLUMNS SHOWN ABOVE ARE FOR ILLUSTRATIVE PURPOSES ONLY. SEE SITE-SPECIFIC SHEETS FOR LAYOUTS AND QUANTITIES.

STRUCTURAL DATA

LATERAL RESISTING SYSTEM..... STEEL ORDINARY CANTILEVER COLUMN
FOUNDATION ..... CONCRETE DRILLED PIERS AND SPREAD FOOTINGS
TESTING AND INSPECTION LIST..... SEE SHEETS S-3 & S-4

DESIGN PARAMETERS

RISK CATEGORY II
ROOF LIVE LOAD (L_{R0}):
DECK ONLY ..... 20 psf
POINT LOAD ..... 300 lb

SNOW LOAD :
MAX. DRIFT SNOW LOAD..... 0 psf, 20 psf (SEE CONSTRUCTION OPTIONS)

MAXIMUM DEAD LOAD:
ROOF DECK..... 0.93 psf
SPRINKLER..... 0.56 psf (SEISMIC MASS ONLY. SITE SPECIFIC SPRINKLER CONNECTIONS ARE NOT PROVIDED IN THIS PC. CALCULATIONS AND DETAILS FOR SPRINKLERS PROVIDED BY OTHERS.)

WIND: ASCE 7-16 METHOD 2 - ANALYTICAL PROCEDURE
BASIC WIND SPEED..... 99 mph OR 130 mph
WIND EXPOSURE ..... C(1)
INTERNAL PRESSURE ..... N/A (OPEN STRUCTURE)
WIND DIRECTIONALITY FACTOR ..... K_d = 0.85
VELOCITY PRESSURE COEFFICIENT..... K_z = 0.90
TOPOGRAPHIC FACTOR ..... K_{zt} = 1.00

SEISMIC: ASCE 7-16
SEISMIC IMPORTANCE FACTOR ..... I_E = 1.0
RESPONSE MODIFICATION FACTOR..... R = 1.25
MAPPED SPECTRAL RESPONSE ..... S_S = 2.80
ACCELERATION..... S_1 = 1.39
SITE CLASS ..... D
DESIGN SPECTRAL RESPONSE ..... S_{DS} = 1.867[2]
S_{D1} = 1.390
SEISMIC DESIGN CATEGORY ..... D (E WITH GROUND MOTION ANALYSIS)
SEISMIC FORCE RESISTING SYSTEM ..... STEEL ORDINARY CANTILEVER COLUMN
SEISMIC RESPONSE COEFFICIENT ..... C_S = 1.493 (STRENGTH)
SEISMIC REDUNDANCY FACTOR..... ρ = 1.3
..... ρC_S = 1.941
ANALYSIS PROCEDURE ..... EQUIVALENT LATERAL FORCE

NOTES:

1. THE PC COMPONENTS & CLADDING AND MAIN WIND FORCE RESISTING SYSTEM DESIGN WIND PRESSURE q_h = 23.7 psf DETERMINED FROM THE CRITERIA LISTED ABOVE.
(EXPOSURE C, K_z=0.90, K_{zt}=1.0 , K_d = 0.85, WIND SPEED = 99 MPH).

FOR WIND SPEED = 130 MPH, q_h = 32.74psf
DETERMINED FROM THE CRITERIA LISTED ABOVE.
(EXPOSURE C, K_z=0.90, K_{zt}=1.0 , K_d = 0.85, WIND SPEED = 130 MPH).

THE PC MAY BE USED FOR RISK CATEGORY II TYPE STRUCTURES IN ANY WIND ZONE WHERE $q_h \leq$ 32.7 psf.

EXAMPLE:
SITE BASIC WIND SPEED, V =140 mph
RISK CATEGORY II
WIND: EXPOSURE B
K_d = 0.85
K_z = 0.701
K_{zt} = 1.00
q_h = 29.9 psf < 32.7 psf

THE PC MAY BE USED AT THIS SITE, PENDING DSA SITE SPECIFIC APPROVAL.

2. THE PC SEISMIC FORCE RESISTING SYSTEM IS GOVERNED BY C_S = 1.493 (1.3) = 1.941 FROM THE CRITERIA LISTED ABOVE. (R = 1.25, S_S = 2.8, I_E = 1.00).

THE PC MAY BE UTILIZED AT ANY SITE WITH S_{DS} VALUE THAT RESULTS IN ρC_S FOR THE SITE NOT EXCEEDING 1.941 USING R=1.25 AND ρ =1.3.

BUILDING DATA

TYPE OF CONSTRUCTION..... IIB
OCCUPANCY..... VARIES - SEE EXAMPLES
NUMBER OF STORIES..... 1
BUILDING AREAS..... VARY DUE TO OCCUPANCY - SEE EXAMPLES
MODULE SIZES..... VARY WITH OPTIONS
BUILDING LENGTH:
ALL WIDTHS..... MAX. 500'-0" LENGTH

NOTE: NO SEISMIC AND/OR THERMAL EXPANSION JOINTS REQUIRED ALONG THE LENGTH OF THE STRUCTURES. (ALL JOINTS ARE INTERNAL)

OCCUPANCY AND BUILDING AREA EXAMPLES:
ALL STRUCTURES SHALL BE BASED ON RISK CATEGORY II STRUCTURE.

A OCCUPANCY:

EXAMPLE 1:
STRUCTURES LOCATED OVER LUNCH AREA WITHOUT FIXED SEATING
OCCUPANCY: A-2
OCCUPANCY LOAD: 15 sf/person - MAX 300 FOR RISK II
MAX SQ FT: 4,500 sq ft

EXAMPLE 2:
STRUCTURES LOCATED OVER LUNCH AREA WITH FIXED SEATING
OCCUPANCY: A-2
OCCUPANCY LOAD: 18"/person ALONG LINEAR BENCH - MAX 300 FOR RISK II
MAX SQ FT: 5,400 LINEAR INCHES OF FIXED SEATING UNDER THE STRUCTURE

EXAMPLE 3:
STRUCTURES LOCATED OVER AN AREA DESIGNATED FOR ASSEMBLY (TYPICALLY AMPHITHEATER, OR OTHER SPACE WITH FIXED SEATING OR DESIGNATED AS A STANDING ASSEMBLY AREA)
OCCUPANCY: A
OCCUPANCY LOAD: 7 sf/person - MAX 300 FOR RISK II
MAX SQ FT: 2,100 sq ft

SHADE STRUCTURE

EXAMPLE 1:
STRUCTURES LOCATED OVER A FIELD, BLACKTOP, PLAYGROUND EQUIPMENT,OR OTHER NON DESIGNATED USE SPACES
OCCUPANCY: E
OCCUPANCY LOAD: 20 sf/person - MAX 250 FOR RISK II
MAX SQ FT: 5,000 sq ft

PARKING

EXAMPLE 1:
STRUCTURES LOCATED OVER PARKING
OCCUPANCY: S-2
OCCUPANCY LOAD: 200 sf/person
MAX SQ FT: UNLIMITED PER CBC 406.5.4 AND 406.5.5

CODES

TITLE 24, CCR CODES:

1. 2019 CALIFORNIA ADMINISTRATIVE CODE (CAC) ..... (PART 1, TITLE 24, CCR)
2. 2019 CALIFORNIA BUILDING CODE (CBC), VOLUMES 1 AND 2..... (PART 2, TITLE 24, CCR)
(2018 INTERNATIONAL BUILDING CODE WITH 2019 CALIFORNIA AMENDMENTS)
3. 2019 CALIFORNIA ELECTRICAL CODE ..... (PART 3, TITLE 24, CCR)
(2017 NATIONAL ELECTRICAL CODE WITH 2019 CALIFORNIA AMENDMENTS)
4. 2019 CALIFORNIA MECHANICAL CODE (CMC) ..... (PART 4, TITLE 24, CCR)
(2018 UNIFORM MECHANICAL CODE WITH 2019 CALIFORNIA AMENDMENTS)
5. 2019 CALIFORNIA PLUMBING CODE (CPC) ..... (PART 5, TITLE 24, CCR)
(2018 UNIFORM PLUMBING CODE WITH 2019 CALIFORNIA AMENDMENTS)
6. 2019 CALIFORNIA ENERGY CODE ..... (PART 6, TITLE 24, CCR)
(2018 EDITION CALIFORNIA ENERGY COMMISSION BUILDING ENERGY EFFICIENCY STANDARDS)
7. 2019 CALIFORNIA FIRE CODE (CFC) ..... (PART 9, TITLE 24, CCR)
(2018 INTERNATIONAL FIRE CODE WITH 2019 CALIFORNIA AMENDMENTS)
8. 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE ..... (PART 11, TITLE 24, CCR)
9. 2019 CALIFORNIA REFERENCED STANDARDS CODE ..... (PART 12, TITLE 24, CCR)
NFPA 13 - 2016
NFPA 72 - 2016

REFERENCE CODE SECTIONS FOR APPLICABLE STANDARDS:
2019 CBC, CHAPTER 35
2019 CFC, CHAPTER 80

FIRE LIFE SAFETY

AUTOMATIC FIRE SPRINKLERS REQUIRED? (Y/N)..... N

4 STEL ENGINEERING
26030 ACERO,
MISSION VIEJO, CA 92691
949.305.1150 | FAX 949.305.1420

MBAR C CONSTRUCTION INC.
1770 LA COSTA MEADOWS DRIVE
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PHONE: (760) 744-4131
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LIC # 869960
B AND C-57
(770) 787-8845

ENGINEER'S APPROVAL
REGISTERED PROFESSIONAL ENGINEER DUSTIN K. ROSEMAN S 5885 CIVIL STATE OF CALIFORNIA

BID INFORMATION
THE STRUCTURES AND DESIGNS IN THIS PC ARE PROPRIETARY TO M BAR C CONSTRUCTION, INC. AND 4 S.T.E.L. ENGINEERING, INC. ALL SITES USING THIS PC: M BAR C CONSTRUCTION, INC. SHALL BE THE STEEL CONTRACTOR & 4 S.T.E.L. ENGINEERING, INC. SHALL BE THE SEOR. SEE THE STANDARD NOTES FOR PC USE ON S-1 FOR ADDITIONAL REQUIREMENTS.

PRE-CHECK (PC) DOCUMENT
CODE: 2019 CBC
A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 04-119563 PC
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑ CG ☐
DATE: 02/19/2021

SITE SPECIFIC INFORMATION

REVISIONS

MARK	DATE	DESCRIPTION

4 STEL JOB #	MC03-02-2
DATE	02-05-21
DRAWN BY	MAP
CHECKED	CDL

GENERAL DATA

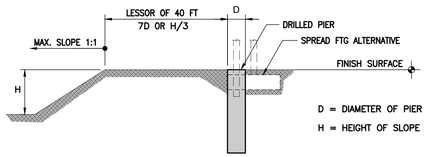
S-2

NOTE: IF DWG. IS NOT 24 x 36, IT IS NOT FULL SIZE

SOILS NOTES

1. A SITE SPECIFIC GEOTECHNICAL REPORT IS REQUIRED.
2. THE GEOTECHNICAL ENGINEER SHALL REVIEW THE SITE CONDITIONS, TESTING RESULTS, ALL APPLICABLE ALLOWABLE INCREASES AND SPECIFY THE FINAL SOIL CLASS TO BE USED FROM THE TABLE BELOW. THE GEOTECHNICAL ENGINEER SHALL PROVIDE IN THE GEOTECHNICAL REPORT THE BASE VALUES WITHOUT INCREASE FOR MINIMUM 24" DIAMETER PIERS; THE ALLOWABLE VERTICAL END BEARING, ALLOWABLE LATERAL BEARING, ALLOWABLE DOWNWARD SKIN FRICTION AND ALLOWABLE SKIN FRICTION TO RESIST UPLIFT. FACTORS OF SAFETY USED FOR THESE BASE VALUES ARE TO BE CLEARLY IDENTIFIED. THE GEOTECHNICAL ENGINEER SHALL ALSO PROVIDE ANY ALLOWABLE INCREASES TO THE BASE VALUES. POSSIBLE ALLOWABLE INCREASES TO BE CONFIRMED BY THE GEOTECHNICAL ENGINEER ARE: DOUBLE LATERAL BEARING VALUES DUE TO ISOLATED FOUNDATIONS, DOUBLE LATERAL BEARING VALUES DUE TO THE STRUCTURE NOT BEING ADVERSELY AFFECTED BY ½" DEFLECTION AT THE SURFACE, A 4/3 INCREASE DUE TO SHORT TERM LOADING AND ANY OTHER ALLOWABLE INCREASES. THE GEOTECHNICAL ENGINEER SHALL MAKE RECOMMENDATION FOR THE SOIL CLASS TO BE USED AFTER ALL INCREASES HAVE BEEN APPLIED, WHERE ALLOWED PER THE 2019 CBC LOAD COMBINATIONS. ALL FOUNDATIONS HAVE BEEN DESIGNED BASED ON THE VALUES PRESENTED IN THE TABLE BELOW. THE GEOTECHNICAL REPORT SHALL ADDRESS IF THE USE OF STEEL CASING THAT IS TWISTED INTO PLACE AND LEFT INSTALLED AFFECTS ANY ALLOWABLE VALUES.
3. THE GEOTECHNICAL ENGINEER MAY SPECIFY DIFFERENT SOILS CLASSES TO BE USED FOR THE DIFFERENT STRUCTURE TYPES (VC14 OR VC20), DIFFERENT AREAS OF THE SITE (I.E. NORTH LOT OR WEST LOT), OR THE ENGINEER MAY SPECIFY ONE SOILS CLASS TO BE USED FOR THE ENTIRE SITE.
4. THE GEOTECHNICAL ENGINEER SHALL ADDRESS IN THE REPORT ANY CONCRETE DURABILITY REQUIREMENTS IN ACCORDANCE WITH ACI 318-14 CHAPTER 19.
5. THE GEOTECHNICAL REPORT SHALL BE SPECIFIC TO THE LOCATION OF THE STRUCTURES. BORING(S) SHALL BE DONE AT THE SPECIFIC LOCATION(S) WHERE THE STRUCTURES ARE TO OCCUR. THE GEOTECHNICAL REPORT SHALL CONFORM TO 2019 CBC SECTION 1803A.
6. A COPY OF THE GEOTECHNICAL REPORT SHALL BE PROVIDED AT THE TIME OF PLAN REVIEW.
7. AT THE TIME OF PLAN REVIEW, THE STRUCTURAL ENGINEER OF RECORD SHALL SELECT A SOILS CLASS ON THE SITE-SPECIFIC PLANS BASED ON THE GEOTECHNICAL REPORT.

   HOLES MAY BE LEFT OPEN FOR ANY AMOUNT OF TIME AS LONG AS THEY ARE PROPERLY COVERED FOR OSHA STANDARDS.
8. FOUNDATIONS ADJACENT TO SLOPED GROUND SURFACES SHALL BE SET BACK PER THE FOLLOWING FIGURE UNLESS OTHERWISE RECOMMENDED BY A SITE SPECIFIC GEOTECHNICAL REPORT.



DESIGN SOIL VERTICAL AND LATERAL BEARING VALUES[1,2,3]

SOIL CLASS	VERTICAL BEARING PRESSURE (psf)	LATERAL BEARING PRESSURE (psf/ft)	MAXIMUM LATERAL BEARING (psf)	MIN. DOWNWARD SKIN FRICTION (psf)	MIN. UPWARD SKIN FRICTION (psf)
CLASS V	1,500	~~133~~	~~2,000~~	130	30
CLASS W	1,500	267	4,000	170	55
CLASS X	2,000	~~400~~	~~6,000~~	200	75
CLASS Y	2,000	~~533~~	~~8,000~~	220	85
CLASS Z	3,000	~~800~~	~~12,000~~	255	110

SPREAD FOOTINGS[1,2,3]

SOILS CLASS	MIN. ALLOWABLE END BEARING (psf)	MIN. ALLOWABLE LATERAL BEARING (psf/ft)	MAX. LATERAL BEARING (psf)	SLIDING FRICTION μ
ALL	1,500	100	2,000	0.25

NOTES:

1. TABLE ALREADY TAKES INTO ACCOUNT ⅓ INCREASE AND DOUBLING OF THE PASSIVE PRESSURE WITHOUT ANY FURTHER INCREASES. (GEOTECHNICAL ENGINEER IS REQUIRED TO SPECIFY THE SOILS CLASS WHERE FINAL VALUES WITH INCREASES ARE NOT ALLOWED TO EXCEED THESE VALUES)
2. DOUBLING THE PASSIVE PRESSURE DUE TO SOIL ARCHING EFFECTS IS NOT ALLOWED IN CONJUCNCTION WITH DOUBLING BASED ON THE ½" DEFLECTION AT THE SURFACE.
3. THE FOUNDAITON DESIGNS FOR THIS PC ARE BASED ON 2019 CBC ALTERNATE BASIC LOAD COMBINATIONS PER SECTION 1605A.3.2 WHERE ⅓ INCREASES ARE ALLOWED.

SPECIAL INSPECTION

1. SOILS:
   - VERIFY THE SITE HAS BEEN PREPARED PROPERLY PRIOR TO PLACEMENT OF CONTROLLED FILL AND/OR EXCAVATIONS FOR FOUNDATIONS.
   - VERIFY THAT THE FOUNDATION EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.
   - VERIFY THAT MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.
2. PIER FOUNDATIONS:
   - INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH PIER.
   - VERIFY LOCATIONS OF PIERS.
3. CONCRETE:
   - VERIFY USE OF REQUIRED DESIGN MIX, DETERMINE THE TEMPERATURE OF THE CONCRETE, AND (WHERE REQUIRED) PERFORM AIR CONTENT TEST.
   - TEST CONCRETE (COMPRESSION TEST).
   - INSPECT PLACEMENT OF FORMWORK, REINFORCING STEEL, EMBEDDED ITEMS, AND CONCRETE. INSPECT CURING AND FORM REMOVAL.
   - SLUMP TEST SHALL BE PERFORMED PER SITE SPECIFIC DSA-103.
4. STEEL:
   - VERIFY THAT ALL MATERIALS ARE APPROPRIATELY MARKED AND THAT:
     - MILL CERTIFICATES INDICATE MATERIAL PROPERTIES THAT COMPLY WITH REQUIREMENTS.
     - MATERIAL SIZES, TYPES AND GRADES COMPLY WITH REQUIREMENTS.
   - TEST UNIDENTIFIED MATERIALS.
   - VERIFY MEMBER LOCATIONS, BRACING AND ALL DETAILS CONSTRUCTED IN THE FIELD.
   - VERIFY STIFFENER LOCATIONS, CONNECTION TAB LOCATIONS, AND ALL CONSTRUCTION DETAILS FABRICATED IN THE SHOP.
   - HIGH STRENGTH SLIP CRITICAL BOLTING.
5. SHOP FABRICATION:
   - VERIFY FABRICATOR'S FABRICATION AND QUALITY CONTROL PROCEDURES.
   - VERIFY ALL ASPECTS OF SHOP FABRICATION INCLUDING MEMBER LOCATIONS, DIMENSIONAL LAYOUT OF ALL PARTS AND PIECES, BOLTING, ETC.
6. SEE DSA APPROVED 103 FOR ADDITIONAL REQUIREMENTS.

GENERAL NOTES

1. DESIGN PER 2019 C.B.C. AND ITS PRESCRIBED LOADING AND MATERIAL SPECIFICATIONS:
   - ASCE 7-16
   - 15TH EDITION AISC STEEL CONSTRUCTION MANUAL
   - 2016 AISI COLD FORMED STEEL STANDARD
   - ACI 318-14
2. THESE STRUCTURES ARE NOT DESIGNED TO BE, NOR SHALL THEY BE, ENCLOSED.
3. ALL DIMENSIONS, CONDITIONS, AND ELEVATIONS ARE TO BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCING WORK OR FABRICATION. IF ANY DISCREPANCIES ARE FOUND OR IF ANY CONDITION EXISTS NOT AS SHOWN ON THE DRAWINGS THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE SHALL BE NOTIFIED IMMEDIATELY.
4. IF THE SNOW LOAD OPTION IS USED THEN THE SITE-SPECIFIC MAX GROUND SNOW LOADING INCLUDING DRIFT MUST BE LESS THAN OR EQUAL TO 20 PSF.
5. ALL SCREWS TO BE ITW BUILDEX TEK SCREWS PER ICC ESR-1976 OR ELCO DRILL SCREW PER ICC ESR-3294.
6. OWNER TO SIGN AUTHORIZATION TO PROCEED PRIOR TO DRILLING.

   SEE SAMPLE BELOW:

M BAR C CONSTRUCTION
"THE STRENGTH BETWEEN SUN AND SHADE"

674 Rancheros Drive
San Marcos, CA 92069
PH: 760.744.4131
FAX: 760.744.4449
CA LIC #869960

Authorization to Proceed

Project Name: _____ Foreman: _____

Site Name: _____ Contractor: _____

As an authorized representative of Contractor listed above, I,_____ agree to the following statements below:

_____(initial) **LAYOUT:** The onsite layout for installation of structural steel for carports and canopies has been inspected and is approved as is.

_____(initial) **ARRAY ORIENTATION/CONCRETE POUR:** The tilt and direction of the canopies have been verified and are approved as is.

ARRAYS:

_____

_____

_____

_____

_____

_____

It is understood that additional costs will apply due to the following delays: re-layout not due to M Bar C, underground site conflicts (unmarked utility lines, including but not limited to water, sewer, fire, irrigation, electrical; encountered underground water; change in soils condition, including but not limited to hard drilling, caving soils, obstructions).

BY: _____ DATE: _____
(signature)

www.mbarconline.com

STEEL NOTES

1. COLD FORMED STEEL SIZES ARE BASED ON BARE STEEL THICKNESS.
2. STRUCTURAL PURLIN, BEAM & COLUMN MEMBERS SHALL HAVE MINIMUM STEEL YIELD STRENGTHS AS INDICATED.
3. STRUCTURAL STEEL SHALL BE ~~HOT-DIP GALVANIZED~~ (MINIMUM ASTM A123 OR A153, CLASS D) ~~OR PAINTED WITH ZINC-RICH PRIMER, UNDERCOAT AND FINISH COAT, OR EQUIVALENT PAINT SYSTEM.~~ COLD-FORMED STEEL MEMBERS SHALL BE 55% ALUMINUM-ZINC ALLOY COATED PER ASTM A792/A792M STANDARD IN ACCORDANCE TO AISI S200 TABLE A4-1, CP 90 COATING DESIGNATION.
4. ALL EXPOSED STEEL FASTENERS, INCLUDING CAST-IN PLACE ANCHOR BOLTS/RODS, SHALL BE STAINLESS STEEL (TYPE 304 MINIMUM), ~~HOT-DIP GALVANIZED (ASTM A153, CLASS D MINIMUM OR ASTM F2329), OR PROTECTED WITH CORROSION PREVENTIVE COATING THAT DEMONSTRATED NO MORE THAN 2% OF RED RUST IN MINIMUM 1,000 HOURS OF EXPOSURE IN SALT SPRAY TEST PER ASTM B117.~~ ZINC-PLATED FASTENERS DO NOT COMPLY WITH THIS REQUIREMENT. (EXAMPLE PROPRIETARY COATINGS THAT COMPLY WITH THE 1000 HOUR REQUIREMENT INCLUDE BUT ARE NOT NECESSARILY LIMITED TO: QUIK GUARD BY SIMPSON, KWIK-COTE BY HILTI, STALGARD BY ELCO, VISTACORR BY SFS INTEC, ETC.)
5. STEEL FABRICATION SHALL COMPLY WITH LATEST AISC SPECIFICATIONS.
6. HOLLOW STRUCTURAL STEEL (HSS) MEMBERS SHALL BE ASTM A1085 GR. 50 U.N.O. ASTM A1085 STEEL HAS THE SAME OR BETTER PROPERTIES AND WELDABILITY THAN ASTM A500 GR. B.
7. COLD FORMED STEEL (CFS) MEMMBERS SHALL BE ASTM A653 SS GR. 55 (F_y = 55 ksi, F_u = 70 ksi) OR ASTM A1011 SS GR. 55 (F_y = 55 ksi, F_u = 70 ksi).
8. ZINC-COATING OF STRUCTURAL STEEL SHALL CONFORM WITH G90 STANDARD OR BETTER. COLD FORMED STEEL (CFS) MEMBERS TO BE GALVANIZED IN ACCORDANCE ASTM A653 G90 STANDARD. HOLLOW STRUCTURAL STEEL (HSS) MEMBERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123, UNLESS NOTED OTHERWISE.
9. ~~ALL STEEL MEMBERS TO BE GALVANIZED OR PAINTED WITH ZINC-RICH PRIMER, UNDERCOAT AND FINISH COAT OR EQUIVALENT PAINT SYSTEM. CONTRACT~~ DOCUMENTS SHALL SPECIFY THE TYPE OF SSPC CORROSION RESISTING SYSTEM TO BE UTILIZED AND THE SSPC GRADE FOR CLEANING, MINIMUM SSPC GRADE SP2.
10. BOLTS SHALL CONFORM TO THE ASTM A307 SPECIFICATIONS UNLESS NOTED OTHERWISE. INSPECTIONS ARE REQUIRED FOR ASTM VERIFICATION AND INSTALLATION. A307 BOLTS ARE NOT CONSIDERED HIGH STRENGTH BOLTS AND THUS HIGH STRENGTH BOLT TESTING IS NOT REQUIRED. PROVIDE SPLIT RING WASHERS OR SOME OTHER METHOD TO KEEP BOLTS FROM LOOSENING.
11. ASTM A307 BOLTS MAY BE SUBSTITUTED WITH THE SAME NUMBER AND SIZE OF SAE J429 GRADE 2 BOLTS.
12. BOLTS SHALL BE TIGHTENED TO SNUG-TIGHT CONDITION UNLESS NOTED OTHERWISE.
13. ASTM A307 BOLTS SHALL HAVE STANDARD WASHERS UNDER THE NUT & BOLT HEAD (F436 WASHERS ARE NOT REQUIRED). STANDARD WASHERS DO NOT REQUIRE HARDNESS TEST.
14. BOLT HOLES FOR ⅞"ø BOLTS SHALL BE AS FOLLOWS:
    STANDARD HOLES: 15/16"ø

CONCRETE NOTES

1. CONCRETE MIN. 4,500 PSI AT 28 DAYS UNLESS THE GEOTECHNICAL REPORT ALLOWS FOR A LOWER STRENGTH (3,000 PSI MIN.). BATCH PLANT INSPECTION NOT REQUIRED.
2. CONRETE SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS BASED ON EXPOSURE CLASS IN ACCORDANCE WITH ACI 318-14 TABLE 19.3.2.1 AS DETERMINED BY A SITE-SPECIFIC GEOTECHNICAL REPORT. THE GEOTECHNICAL ENGINEER SHALL SPECIFY THE EXPOSURE CLASS.

REQUIREMENTS FOR CONCRETE BASED ON EXPOSURE CLASS

EXPOSURE CLASS ACI TABLE 19.3.2.1	MINIMUM CONCRETE STRENGTH F_c	CEMENT TYPE ASTM C150	MAX. WATER/CEMENT RATIO W/M
NOT DETERMINED	4,500 PSI	TYPE V	0.45
~~F0, S0, P0, C0, C1~~	~~3,000 PSI~~	~~TYPE II~~	~~N/A~~
~~S1, P1~~	~~4,000 PSI~~	~~TYPE II~~	~~0.50~~
~~ALL OTHER~~	~~4,500 PSI~~	~~TYPE V~~	~~0.45~~

3. CONCRETE EXPOSED TO THAW AND FREEZE CYCLE SHALL BE AIR ENTRAINED PER ACI 318-14 TABLE 19.3.1.1.
4. CONCRETE TO ATTAIN 1000 PSI PRIOR TO REMOVAL OF SHORING AND/OR INSTALLATION OF BEAMS AND PURLINS. (NOTE: A HIGHER COMPRESSIVE CONCRETE MAY BE USED TO ACHIEVE 1000 PSI SOONER. SUBMIT CONCRETE MIX DESIGN PREPARED BY A QUALIFIED LICENSED PROFESSIONAL ENGINEER FOR APPROVAL BY THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO BEING PLACED.
5. CONCRETE TO REACH 3000 PSI PRIOR TO INSTALLATION OF ROOF DECK. (NOTE: A HIGHER COMPRESSIVE CONCRETE MAY BE USED TO ACHIEVE 3000 PSI SOONER. SUBMIT CONCRETE MIX DESIGN PREPARED BY A QUALIFIED LICENSED PROFESSIONAL ENGINEER FOR APPROVAL BY THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO BEING PLACED.
6. REINFORCEMENT BARS SHALL BE ASTM A615, GR60 TYPICAL, U.N.O.
7. MINIMUM CONCRETE COVER SHALL BE 2½" TO EARTH (DRILLED PIER FOUNDATIONS ONLY), 3" TO EARTH ALL OTHER CONCRETE, 2" TO EXPOSED SURFACES PER CBC TABLE 1808A.8.2
8. ALL REINFORCING STEEL AND OTHER EMBEDDED ITEMS SHALL BE SECURELY POSITIONED PRIOR TO THE POURING OF CONCRETE.
9. ALL CONCRETE WORK SHALL COMPLY WITH ACI 301 & 318 STANDARDS.
10. AGGREGATE GRADATION AND QUALITY SHALL BE IN ACCORDANCE WITH ACI 302-1R.
11. COLD JOINTS SHALL HAVE A ROUGHENED SURFACE. BONDING AGENT SHALL COMPLY WITH ASTM C1059. A SUBMITTAL FOR CONCRETE BONDING AGENT SHALL BE APPROVED BY DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO INSTALLATION. DSA INSPECTOR OF RECORD TO PERIODICALLY INSPECT INSTALLATION OF BONDING AGENT.
12. BATCH PLANT INSPECTION NOT REQUIRED PER CBC 1705A3.3.2. SUBJECT TO:
    - A LICENSED WEIGHMASTER SHALL POSITIVELY IDENTIFY QUANTITY OF MATERIALS AND CERTIFY EACH LOAD BY A BATCH TICKET.
    - BATCH TICKETS, INCLUDING MATERIAL QUANTITIES AND WEIGHTS SHALL ACCOMPANY THE LOAD, SHALL BE TRANSMITTED TO THE INSPECTOR OF RECORD BY THE TRUCK DRIVER WITH LOAD IDENTIFIED THEREON. THE LOAD SHALL NOT BE PLACED WITHOUT A BATCH TICKET IDENTIFYING THE MIX. THE INSPECTOR OF RECORD SHALL KEEP A DAILY RECORD OF PLACEMENTS, IDENTIFYING EACH TRUCK, ITS LOAD, AND TIME OF RECEIPT AT THE JOBSITE, AND APPROXIMATE LOCATION OF DEPOSIT IN THE STRUCTURE AND SHALL MAINTAIN A COPY OF THE DAILY RECORD AS REQUIRED BY THE ENFORCEMENT AGENCY.
13. CONCRETE MAY BE PUMPED, POURED, TAILGATED, OR OTHER SUCH METHODS INTO PLACE. CONCRETE SHALL BE ALLOWED TO FREE FALL THE ENTIRE DEPTH OF THE FOUNDATION, AS INDICATED IN ACI 304R-09, CHAPTER 5. PLACEMENT OF ANY FREE-FALL CONCRETE SHALL BE SUCH THAT THE CONCRETE DOES NOT ALTER THE EMBEDMENT DEPTH OR THE CLEARANCE OF THE REINFORCING BAR CAGE OR OTHER EMBEDDED MATERIALS.

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(760) 787-8845

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K. ROSEPINK S 5885 CIVIL STATE OF CALIFORNIA

BID INFORMATION

THE STRUCTURES AND DESIGNS IN THIS PC ARE PROPRIETARY TO M BAR C CONSTRUCTION, INC. AND 4 S.T.E.L. ENGINEERING, INC. ALL SITES USING THIS PC: M BAR C CONSTRUCTION, INC. SHALL BE THE STEEL CONTRACTOR & 4 S.T.E.L. ENGINEERING, INC. SHALL BE THE SEOR. SEE THE STANDARD NOTES FOR PC USE ON S-1 FOR ADDITIONAL REQUIREMENTS.

PRE-CHECK (PC) DOCUMENT

CODE: 2019 CBC

A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 04-119563 PC
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑ CG ☐
DATE: 02/19/2021

SITE SPECIFIC INFORMATION

REVISIONS

MARK	DATE	DESCRIPTION

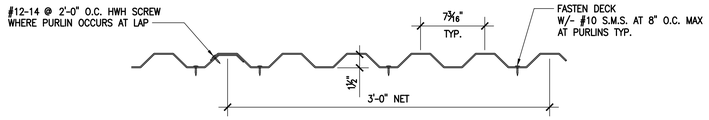
4 STEL JOB #	MC03-02-2
DATE	02-05-21
DRAWN BY	MAP
CHECKED	CDL

GENERAL NOTES

S-3

NOTE: IF DWG. IS NOT 24 x 36, IT IS NOT FULL SIZE

ROOF DECK SPECIFICATIONS						
SECTION PROPERTIES			TOP IN COMPRESSION		BOTTOM IN COMPRESSION	
GA	F_y (ksi)	WEIGHT (psf)	I_+ ($in.^4$/ft.)	S_+ ($in.^3$/ft.)	I_- ($in.^4$/ft.)	S_- ($in.^3$/ft.)
26	80	0.93	0.0613	0.0676	0.0577	0.0575

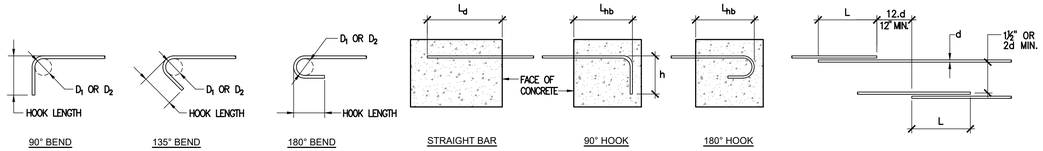


NOTES:

1. MATERIAL AND SECTION PROPERTIES LISTED ABOVE ARE MINIMUM REQUIRED VALUES FOR METAL DECK BASED ON MCELROY MEGARIB 26 GA.
2. METAL ROOF DECK SHALL BE CLASS A PER CBC CHAPTERS 7A AND 15.
3. ACTUAL MANUFACTURER'S PROPERTIES MUST MEET OR EXCEED MCELROY STANDARD PROPERTIES.

3 - DECK DETAIL

N.T.S.



FINISHED BEND DIAMETERS		
BAR SIZE	D_1	D_2
#3	1½"	2¼"
#4	2"	3"
#5	2½"	3¾"
#6, #7, #8	6d	6d

'D_1' - FINISHED BEND DIA. FOR STIRRUP & TIE HOOKS.

'D_2' - BEND DIA. FOR STD HOOKS.

'd' - BAR DIAMETER

STANDARD HOOK LENGTHS				
BAR SIZE	MAIN REINFT.		STIRRUP & TIE HOOKS	
	90°	180°	90°	180°
#3	6"	4"	3½"	4½"
#4	8"	4½"	4½"	4½"
#5	10"	5"	5"	6"
#6	12"	6"	12"	7½"
#7	14"	7"	14"	9"
#8	16"	8"	16"	10"

A STANDARD HOOKS

REINFORCEMENT DEVELOPMENT LENGTHS				
CONCRETE STRENGTH		F'_C = 3,000 PSI		
NOMINAL BAR SIZE	h	L_d		L_{hb}
		TOP BARS	OTHER BARS	
#3	6"	1'-10"	1'-5"	9"
#4	8"	2'-5"	1'-10"	11"
#5	10"	3'-0"	2'-4"	1'-2"
#6	12"	3'-7"	2'-9"	1'-5"
#7	14"	5'-3"	4'-0"	1'-7"
#8	16"	6'-0"	4'-7"	1'-10"

NOTES:

1. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW.

B DEVELOPMENT LENGTHS

REINFORCEMENT LAP SPLICE LENGTH 'L'		
CONCRETE STRENGTH	F'_C=3,000 PSI	
NOMINAL BAR SIZE	TOP BARS	OTHER BARS
#3	2'-4"	1'-10"
#4	3'-2"	2'-5"
#5	3'-11"	3'-0"
#6	4'-8"	3'-7"
#7	6'-9"	5'-3"
#8	7'-9"	6'-0"

NOTES:

1. LAP SPLICE SHALL BE INCREASED 50% WHERE CLEAR SPACE BETWEEN BARS IS LESS THAN 2 BAR DIAMETERS AND/OR THE CLEAR COVER IS LESS THAN ONE BAR DIAMETER.

C OFFSETS AND LAP SPLICES

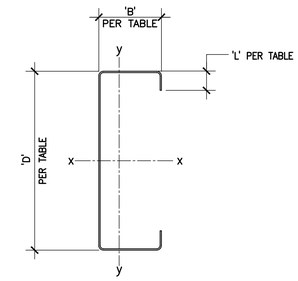
4 - TYPICAL REINFORCEMENT BAR BENDS AND LAPS

N.T.S.

SECTION NAME	D (in)	B (in)	L (in)	GA	WT (lb/ft)	A (in^2)	AXIS X-X			AXIS Y-Y		
							I_x (in^4)	S_{xe} (in^3)	r_x (in)	I_y (in^4)	S_y (in^3)	r_y (in)
CS12 x 4 x 0.102 (12 GA)	12	4.0	1.0	12	7.35	2.16	46.87	6.76	4.66	4.38	1.53	1.42
CS12 x 4 x 0.124 (10 GA)	12	4.0	1.0	10	8.91	2.618	56.37	8.59	4.64	5.198	1.819	1.409
CS14 x 4 x 0.102 (12 GA)	14	4.0	1.0	12	8.04	2.36	67.42	8.22	5.34	4.57	1.55	1.39
CS14 x 4 x 0.124 (10 GA)	14	4.0	1.0	10	9.75	2.86	81.18	10.65	5.32	5.43	1.84	1.37

NOTES:

1. ALL PURLIN SECTIONS ARE ASTM A653, GR 55, F_y=55 ksi
2. ALL LIGHT GAGE STEEL DESIGNED USING 2016 AISI COLD-FORMED STEEL DESIGN MANUAL.
3. PROPERTIES PER AEP STANDARD SIZES.
4. ACTUAL MANUFACTURER'S PROPERTIES MUST MEET OR EXCEED AEP STANDARD PROPERTIES.



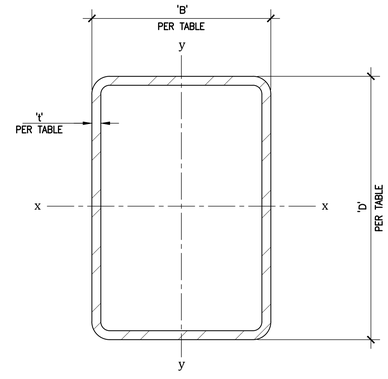
1 - PURLIN & BEAM COLD FORMED C-SECTION

N.T.S.

SECTION NAME	D (in)	B (in)	t (in)	WT (lb/ft)	A (in^2)	AXIS X-X			AXIS Y-Y		
						I_x (in^4)	S_x (in^3)	r_x (in)	I_y (in^4)	S_y (in^3)	r_y (in)
HSS 12 x 6 x 5/16	12	6	5/16	36.1	10.60	196	32.7	4.3	66.70	22.20	2.51
HSS 12 x 6 x 3/8	12	6	3/8	42.79	12.60	228	38.0	4.25	77.30	25.80	2.48

NOTES:

1. ALL COLUMNS SHALL BE ASTM A1085 GR. 50 (F_y=50 ksi)



2 - HSS COLUMN

N.T.S.

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949.305.1150 | FAX 949.305.1420

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ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K. ROSENTRETER S 5885 CIVIL STATE OF CALIFORNIA

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DIV. OF THE STATE ARCHITECT
APP: 04-119563 PC
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SS ☑ FLS ☑ ACS ☑ CG ☐
DATE: 02/19/2021

SITE SPECIFIC INFORMATION

REVISIONS

MARK	DATE	DESCRIPTION

4 STEL JOB #	MC03-02-2
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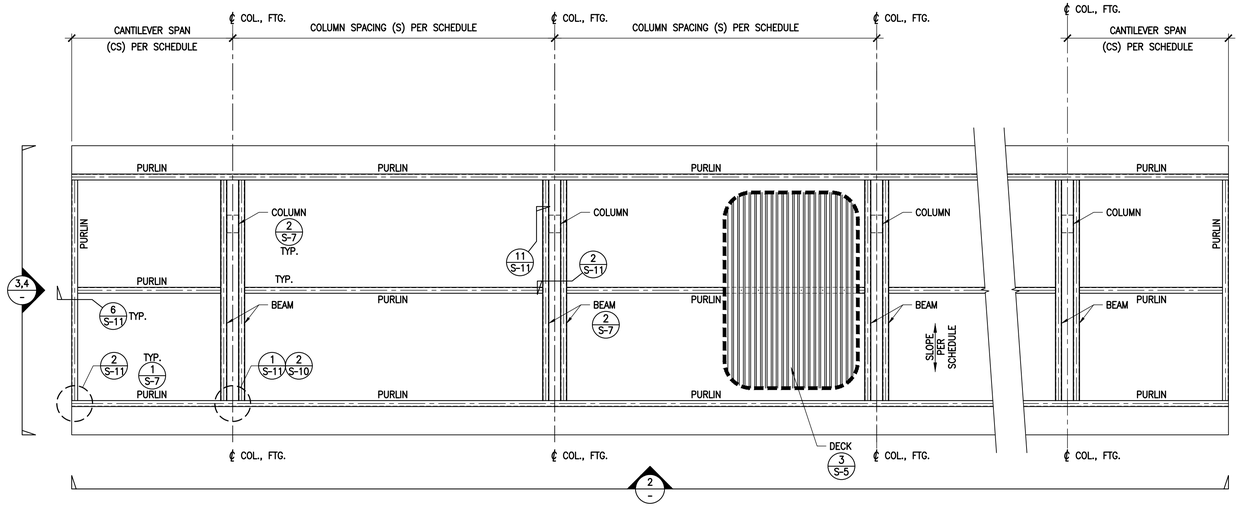
PROPERTIES & REBAR DETAILS

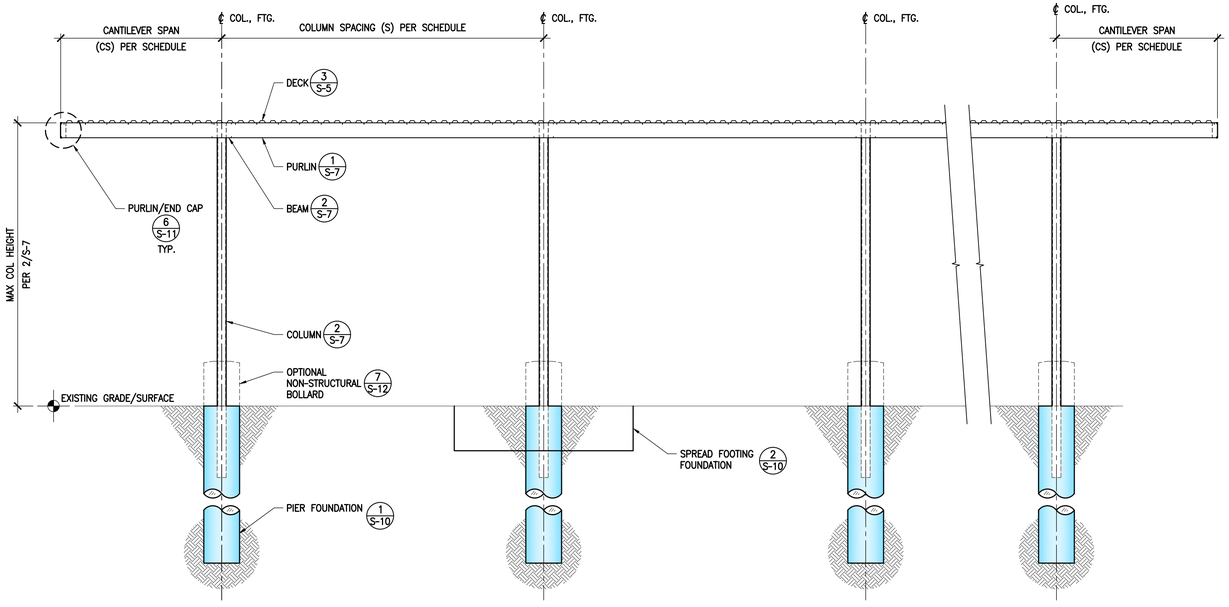
S-5

NOTE: IF PAPER IS NOT 24 x 36, IT IS NOT FULL SIZE



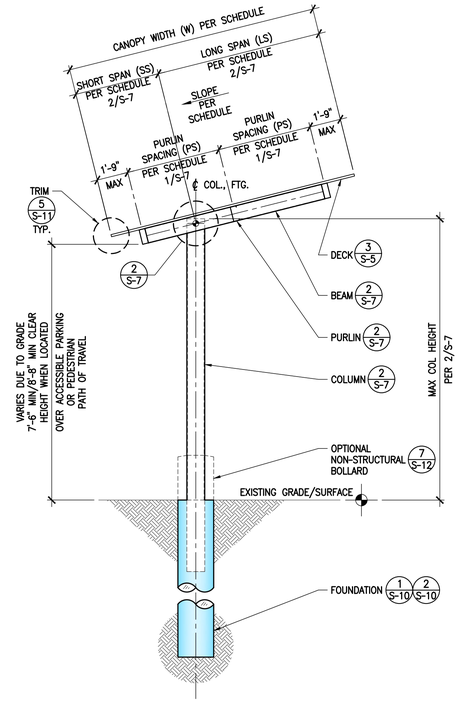
1 - VC14, VC18, VC20, VC24, VC28 & VC30 TYPICAL PLAN VIEW

1/4"=1'-0"



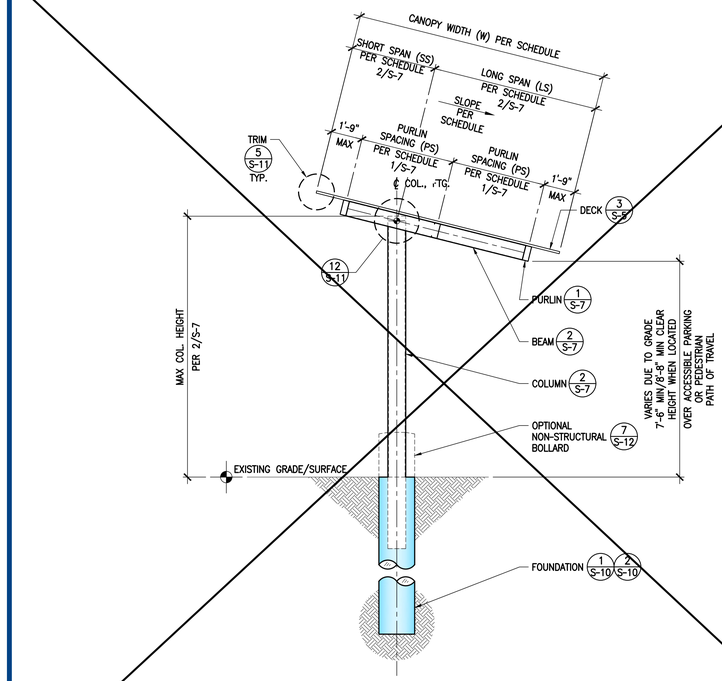
2 - VC14, VC18, VC20, VC24, VC28 & VC30 TYPICAL FRONT ELEVATION

1/4"=1'-0"



3 - VC14, VC18, VC20, VC24, VC28 & VC30 TYPICAL SIDE ELEVATION 1

1/4"=1'-0"



4 - VC14, VC18, VC20, VC24, VC28 & VC30 TYPICAL SIDE ELEVATION 2

1/4"=1'-0"

4 STEL ENGINEERING
26030 ACERO,
MISSION VIEJO, CA 92691
949.305.1150 | FAX 949.305.1420

M BAR C CONSTRUCTION INC.
1770 LA COSTA MEADOWS DRIVE, SAN MARCOS, CA 92078
ERIK KRIVOPOPICH
PHONE: (760) 744-4131
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ERIK@MBARCONLINE.COM
LIC # 869960 B AND C-51 (770) 787-8845

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K. ROSEPINK S 5885 CIVIL STATE OF CALIFORNIA

BID INFORMATION

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PRE-CHECK (PC) DOCUMENT

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DIV. OF THE STATE ARCHITECT
APP: 04-119563 PC
REVIEWED FOR
SS ☑ FLS ☑ ACS ☒ CG ☐
DATE: 02/19/2021

SITE SPECIFIC INFORMATION

REVISIONS

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4 STEL JOB #	MC03-02-2
DATE	02-05-21
DRAWN BY	MAP
CHECKED	CDL

VC14, VC18, VC20, VC24, VC28 & VC30 FRAMING PLAN & ELEVATIONS

S-6

NOTE: IF DWG. IS NOT 24 x 36, IT IS NOT FULL SIZE

PURLIN SCHEDULE

I.D. #	MAX WIND SPEED	MAX GROUND SNOW LOAD	MAX PURLIN SPACING (PS)	MAX COLUMN SPACING (S)	MAX CANTILEVER SPAN (CS)	PURLIN	
						SECTION	DETAIL
VC14	99 MPH	0 psf	63"	27'-0"	10'-0"	CS12 x 4 x 0.102 (12 GA)	1/S-5
VC18	99 MPH	0 psf	87"	27'-0"	10'-0"	CS14 x 4 x 0.102 (12 GA)	1/S-5
VC20	99 MPH	0 psf	99"	19'-0"	9'-0"	CS12 x 4 x 0.102 (12 GA)	1/S-5
VC24	130 MPH	0 psf	42"	25'-0"	7'-9"	CS12 x 4 x 0.102 (12 GA)	1/S-5
VC28	130 MPH	0 psf	34 3/4"	26'-0"	6'-3"	CS12 x 4 x 0.102 (12 GA)	1/S-5
VC30	130 MPH	0 psf	66"	18'-0"	6'-9"	CS12 x 4 x 0.102 (12 GA)	1/S-5

NOTES:
1. REFER TO SHEET 'S-2' FOR CONSTRUCTION OPTIONS.
2. REFER TO DETAIL '4/S-12' FOR ALLOWABLE PURLIN PENETRATIONS.
3. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE.
4. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID'S ROW ONLY.

1 - VC14, VC18, VC20, VC24, VC28 & VC30 TYPICAL PURLIN SCHEDULE

BEAM/COLUMN SCHEDULE

I.D. #	MAX WIND SPEED	MAX GROUND SNOW LOAD	MAX WIDTH (W)	BEAM SHORT SPAN MIN (SS)	BEAM LONG SPAN MAX (LS)	MAX COLUMN SPACING (S)	ROOF SLOPE	BEAM		BEAM TO COLUMN SCHEDULE	COLUMN		MAX COLUMN HEIGHT
								SECTION	DETAIL		SECTION	DETAIL	
VC14	99 MPH	0 psf	14'-0"	4'-3"	9'-9"	27'-0"	3:12 MAX	CS12 x 4 x 0.102 (12 GA)	1/S-5	12/S-11	HSS 12 x 6 x 5/16	2/S-5	17'-0"
VC18	99 MPH	0 psf	18'-0"	7'-0"	11'-0"	27'-0"	3:12 MAX	CS14 x 4 x 0.102 (12 GA)	1/S-5	12/S-11	HSS 12 x 6 x 5/16	2/S-5	17'-0"
VC20	99 MPH	0 psf	20'-0"	8'-0"	12'-0"	19'-0"	3:12 MAX	CS12 x 4 x 0.102 (12 GA)	1/S-5	12/S-11	HSS 12 x 6 x 5/16	2/S-5	17'-0"
VC24	130 MPH	0 psf	14'-0"	5'-3"	8'-9"	25'-0"	3:12 MAX	CS12 x 4 x 0.102 (12 GA)	1/S-5	12/S-11	HSS 12 x 6 x 5/16	2/S-5	17'-0"
VC28	130 MPH	0 psf	18'-0"	8'-6"	9'-6"	26'-0"	3:12 MAX	CS12 x 4 x 0.124 (10 GA)	1/S-5	12/S-11	HSS 12 x 6 x 3/8	2/S-5	17'-0"
VC30	130 MPH	0 psf	20-0"	8'-9"	11'-3"	18'-0"	3:12 MAX	CS12 x 4 x 0.124 (10 GA)	1/S-5	12/S-11	HSS 12 x 6 x 5/16	2/S-5	17'-0"

NOTES:
1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. THE SHORT SPAN AND LONG SPANS MAY BE ADJUSTED WITH THE FOLLOWING REQUIREMENT:
   THE OVERALL CANOPY WIDTH IS NOT EXCEEDED, NEITHER SPAN IS LESS THAN THE MIN SHORT SPAN & NEITHER SPAN EXCEEDS THE MAX LONG SPAN.

2 - VC14, VC18, VC20, VC24, VC28 & VC30 TYPICAL BEAM/COLUMN SCHEDULE

4 STEEL ENGINEERING
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VC14, VC18, VC20, VC24, VC28 & VC30 FRAMING SCHEDULES

S-7

NOTE: IF DWG. IS NOT 24 x 36, IT IS NOT FULL SIZE

NON-CONSTRAINED PIER FOUNDATION SCHEDULE

I.D. #	MAX WIND SPEED	MAX GROUND SNOW LOAD	FOUNDATION LONGITUDINAL REINFORCEMENT	FOUNDATION DIAMETER (D)	MIN COLUMN EMBEDMENT (CE)	MAX TIE SPACING AT TOP (TS)	FOUNDATION DETAIL	PIER FOUNDATION MINIMUM DEPTH (SEE SOIL NOTES ON S-3)				
								SOIL CLASS V	SOIL CLASS W	SOIL CLASS X	SOIL CLASS Y	SOIL CLASS Z
VC14	99 MPH	0 psf	4- #8	2'-0"	3'-6"	6"	3/-	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
VC18	99 MPH	0 psf	4- #8	2'-0"	3'-6"	6"	3/-	10'-0"	11'-3"	10'-0"	10'-0"	10'-0"
VC20	99 MPH	0 psf	4- #8	2'-0"	3'-6"	6"	3/-	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
VC24	130 MPH	0 psf	4- #8	2'-0"	3'-6"	6"	3/-	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
VC28	130 MPH	0 psf	5- #8	2'-0"	3'-6"	6"	3/-	10'-0"	10'-0"	11'-0"	10'-0"	10'-0"
VC30	130 MPH	0 psf	4- #8	2'-0"	3'-6"	6"	3/-	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
VC140	99 MPH	20 psf	4- #8	2'-0"	3'-6"	6"	3/-	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
VC180	99 MPH	20 psf	4- #8	2'-0"	3'-6"	6"	3/-	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
VC200	99 MPH	20 psf	4- #8	2'-0"	3'-6"	6"	3/-	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
VC240	130 MPH	20 psf	4- #8	2'-0"	3'-6"	6"	3/-	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
VC280	130 MPH	20 psf	5- #8	2'-6" ** 2'-0"	3'-6"	6"	3/-	10'-0" **	10'-0"	10'-0"	10'-0"	10'-0"
VC300	130 MPH	20 psf	4- #8	2'-0"	3'-6"	6"	3/-	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"

NOTES:
1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. SEE SOILS NOTES ON SHEET S-3 FOR INFORMATION ON SOILS CLASS SELECTION.
4. FOR SITUATIONS WHERE WATER MITIGATION IS NECESSARY, OR FOR OTHER CONDITIONS REQUIRING MITIGATION, REFER TO DETAIL 2/- FOR SLEEVED FOUNDATION OPTION.
5. ** DENOTES 30" DIAMETER FOUNDATION REQUIRED

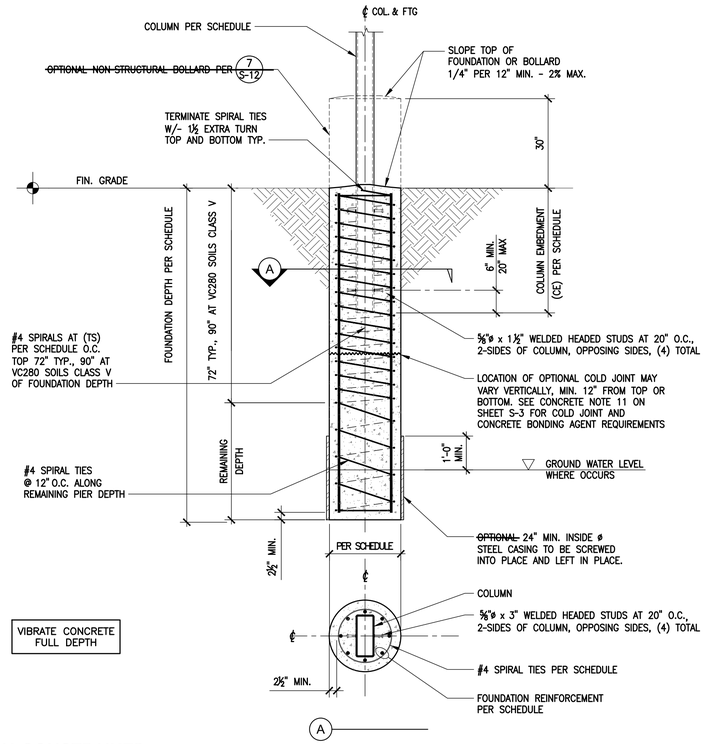
1 - PIER FOUNDATION SCHEDULE

SPREAD FOOTING SCHEDULE

I.D. #	MAX WIND SPEED	MAX GROUND SNOW LOAD	FOUNDATION DETAIL	SPREAD FOOTING MINIMUM DIMENSIONS FOR SOIL CLASS V (SOILS NOTES S-3)
VC14	99 MPH	0 psf	4/-	8'-9" (SQ.) x 2'-6" DEEP
VC18	99 MPH	0 psf	4/-	9'-6" (SQ.) x 2'-6" DEEP
VC20	99 MPH	0 psf	4/-	9'-6" (SQ.) x 2'-6" DEEP
VC24	130 MPH	0 psf	4/-	10'-6" (SQ.) x 2'-6" DEEP
VC28	130 MPH	0 psf	4/-	11'-6" (SQ.) x 2'-6" DEEP
VC30	130 MPH	0 psf	4/-	10'-9" (SQ.) x 2'-6" DEEP
VC140	99 MPH	20 psf	4/-	8'-9" (SQ.) x 2'-6" DEEP
VC180	99 MPH	20 psf	4/-	9'-0" (SQ.) x 2'-6" DEEP
VC200	99 MPH	20 psf	4/-	8'-6" (SQ.) x 2'-6" DEEP
VC240	130 MPH	20 psf	4/-	10'-3" (SQ.) x 2'-6" DEEP
VC280	130 MPH	20 psf	4/-	10'-9" (SQ.) x 2'-6" DEEP
VC300	130 MPH	20 psf	4/-	10'-3" (SQ.) x 2'-6" DEEP

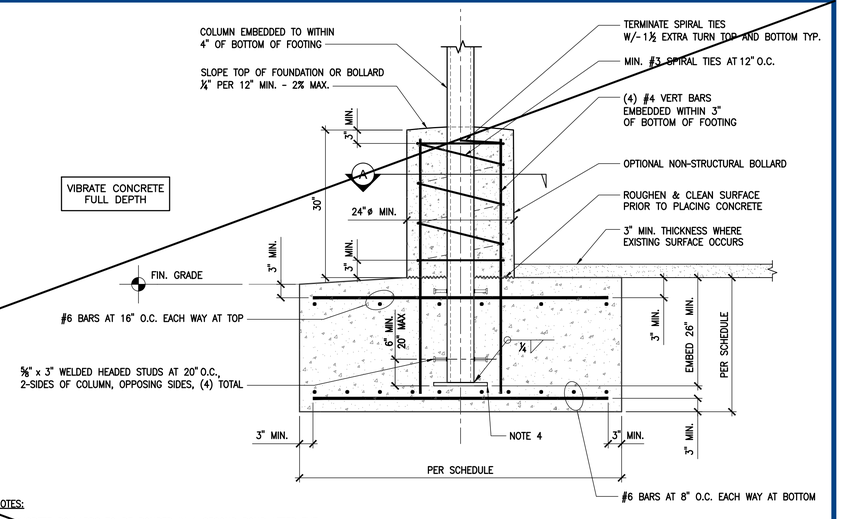
NOTES:
1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. SEE SOILS NOTES ON SHEET S-3 FOR INFORMATION ON SOILS CLASS SELECTION.

2 - SPREAD FOOTING SCHEDULE

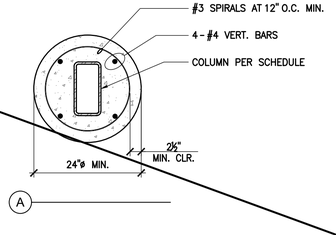


3 - NON-CONSTRAINED PIER FOUNDATION

1/2"=1'-0"



NOTES:
1. CONCRETE BOLLARDS TO BE POURED IN A SECOND POUR AFTER THE FOUNDATION BELOW GRADE IS POURED. DSA INSPECTOR TO PERIODICALLY INSPECT THE INSTALLATION OF BONDING AGENT WHEN USED.
2. BOLLARD REBAR CAGE SHALL BE CONSTRUCTED INDEPENDENTLY FROM THE FOUNDATION USING 4-#4 VERTICAL BARS. BOLLARD VERTICAL BARS MAY BE TIED TO FOUNDATION BARS PRIOR TO CONCRETE POUR OR WET SET PER NOTE 3.
3. VERTICAL BARS IN THE NONSTRUCTURAL BOLLARD ARE PERMITTED TO BE WET SET INTO THE STRUCTURAL FOUNDATION, PROVIDED THE FOUNDATION IS SUFFICIENTLY WORKABLE SO AS NOT TO REQUIRE HAMMERING IN OR ANY OTHER SUCH METHOD. WET SET SHALL BE PERFORMED USING #4 BARS WITH MINIMUM 20" EMBEDMENT.
4. 1" THICK A36 STEEL PLATE. PLATE TO EXTEND PAST ALL SIDES OF COLUMN BY 4" MIN.



4 - SPREAD FOOTING

3/4"=1'-0"

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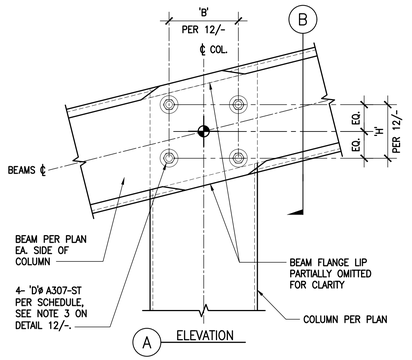
PIER FOUNDATION & SPREAD FOOTING SCHEDULES

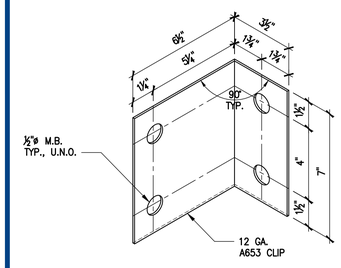
S-10

NOTE: IF DWG. IS NOT 24 x 36, IT IS NOT FULL SIZE



11 - BEAM TO COLUMN - 4 BOLT

1-1/2"=1'-0"

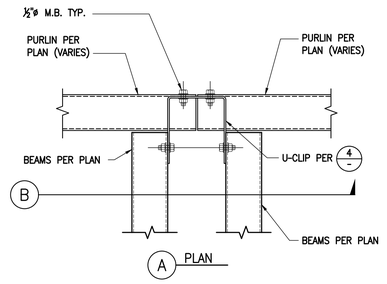


NOTES:

1. USE ⅝" ø M.B. AT VC18, VC20 OPTIONS

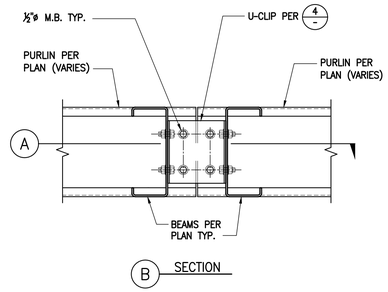
3 - L-CLIP INTERIOR PURLIN TO BEAM

3"=1'-0"



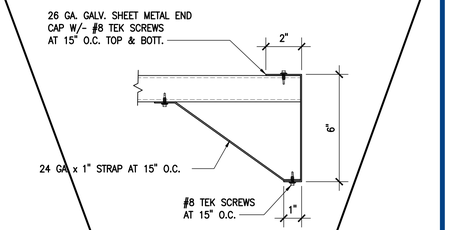
NOTES:

1. ROOF DECK NOT SHOWN FOR CLARITY.
2. PURLINS AT CANTILEVER SHALL BE CONTINUOUS.



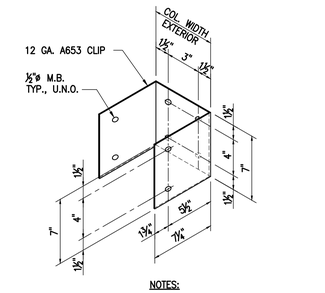
1 - EXTERIOR PURLIN TO BEAM

1-1/2"=1'-0"



8 - ROOF DECK TRIM DETAIL (OPTIONAL)

1-1/2"=1'-0"



NOTES:

1. USE ⅝" ø M.B. AT VC18, VC20 OPTIONS

4 - U-CLIP EXTERIOR PURLIN TO BEAM

1-1/2"=1'-0"

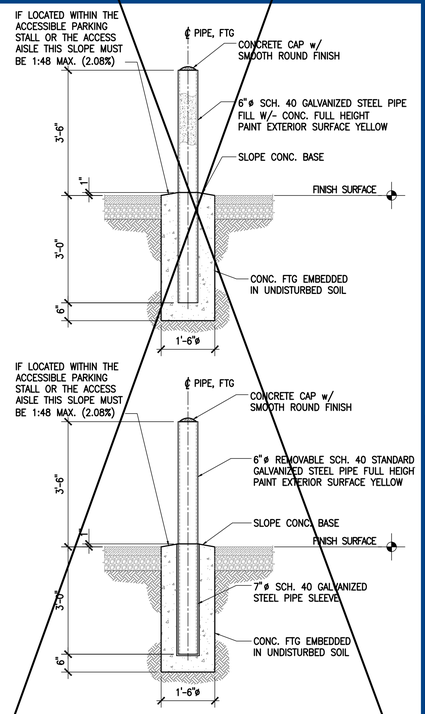
BEAM TO COLUMN CONNECTION SCHEDULE						
I.D. #	MAX WIND SPEED	MAX GROUND SNOW LOAD	# OF BOLTS (n)	BOLTED CONNECTION DETAIL	BOLT DIAMETER (D) ASTM A307-ST	BOLT PATTERN (B x H)
VC14	99 MPH	0 psf	4	11/-	1"	6" x 8"
VC18	99 MPH	0 psf	4	11/-	1"	6" x 8"
VC20	99 MPH	0 psf	4	11/-	1"	6" x 8"
VC24	130 MPH	0 psf	4	11/-	1"	8" x 8"
VC28	130 MPH	0 psf	4	11/-	1"	8" x 8"
VC30	130 MPH	0 psf	4	11/-	1"	6" x 8"
VC140	99 MPH	20 psf	4	11/-	7/8"	6" x 8"
VC180	99 MPH	20 psf	4	11/-	7/8"	6" x 8"
VC200	99 MPH	20 psf	4	11/-	7/8"	6" x 8"
VC240	130 MPH	20 psf	4	11/-	1"	6" x 8"
VC280	130 MPH	20 psf	4	11/-	1"	6" x 8"
VC300	130 MPH	20 psf	4	11/-	1"	6" x 8"

NOTES:

1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. BOLTS SHALL BE A307-ST WITH STANDARD NUTS PER ASTM A563 AND WASHERS TYPICAL U.N.O.
4. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.
5. WASHERS REQUIRED AT BOLTED CONNECTION ON THE OUTSIDE OF BEAMS IN DETAIL 11/-.

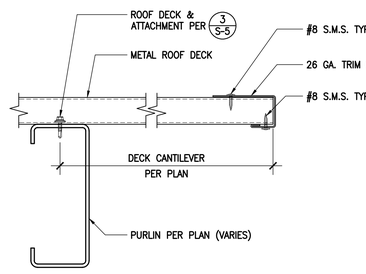
12 - BEAM TO COLUMN SCHEDULE

N.T.S.



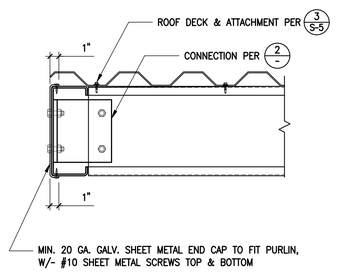
10 - TYPICAL BOLLARD

1/2"=1'-0"



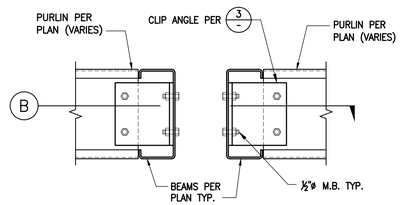
5 - ROOF DECK TRIM DETAIL

3"=1'-0"



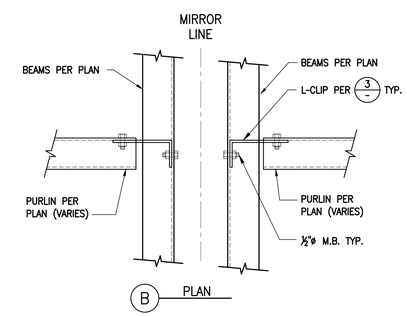
6 - END ENCLOSURE DETAIL

1-1/2"=1'-0"



NOTES:

1. ROOF DECK NOT SHOWN FOR CLARITY.



2 - INTERIOR PURLIN TO BEAM

1-1/2"=1'-0"

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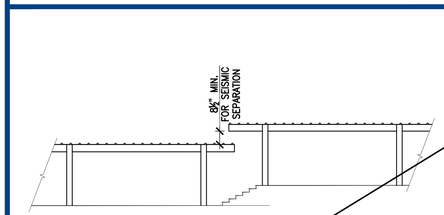
STANDARD DETAILS 1

S-11

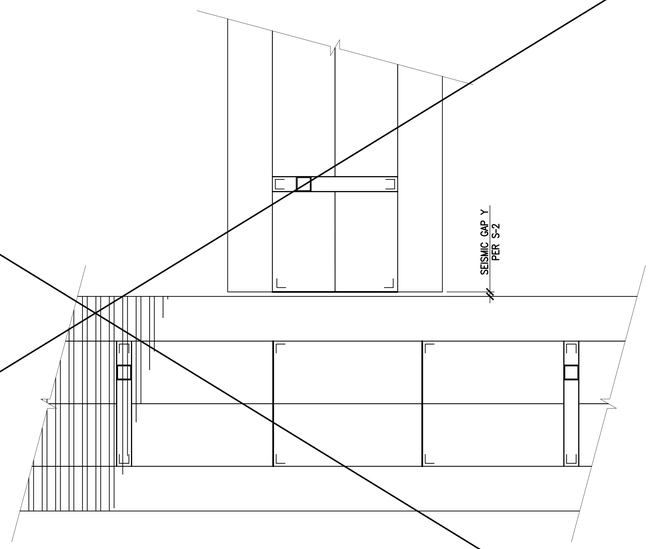
NOTE: IF DWG. IS NOT 24 x 36, IT IS NOT FULL SIZE



NOTES:

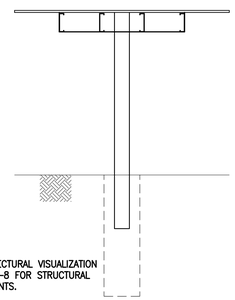
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.
2. OPTION ONLY ALLOWED IF SITE SPECIFIC MAXIMUM DRIFT SNOW LOAD IS LESS THAN THE ALLOWABLE SNOW LOAD OF THE STRUCTURE SELECTIONS.

10 - ELEVATION AT STAIRS 3/32"=1'-0"



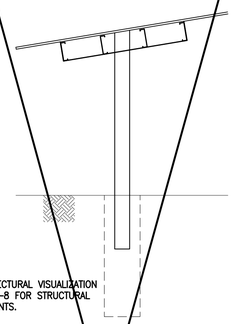
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

9 - 90 DEGREE ROOF CONNECTION OPTION 1/4"=1'-0"



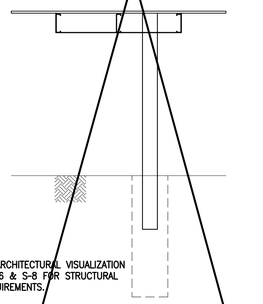
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

5 - CENTERED ROOF ELEVATION OPTION 1 1/4"=1'-0"



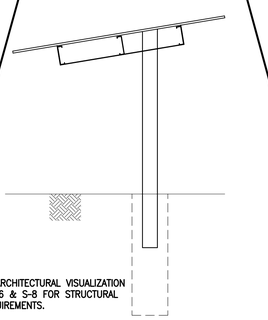
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

6 - CENTERED ROOF ELEVATION OPTION 2 1/4"=1'-0"



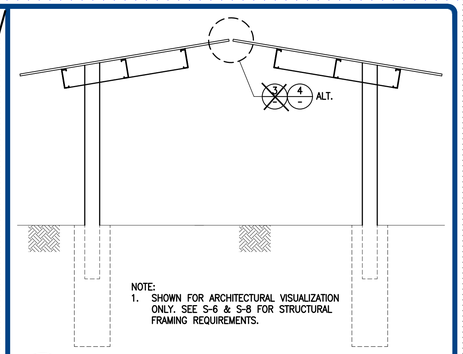
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

7 - OFFSET ROOF ELEVATION OPTION 1 1/4"=1'-0"



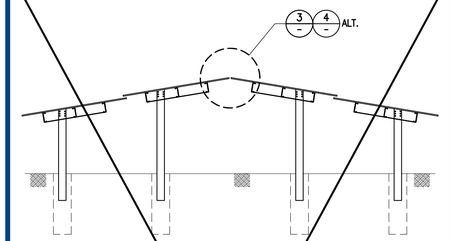
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

8 - OFFSET ROOF ELEVATION OPTION 2 1/4"=1'-0"



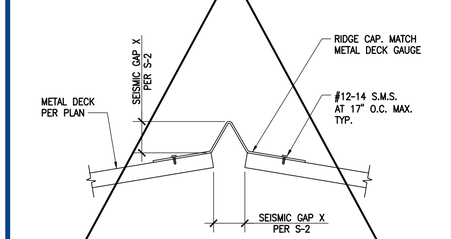
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

1 - GABLE ROOF ELEVATION OPTION 1/4"=1'-0"

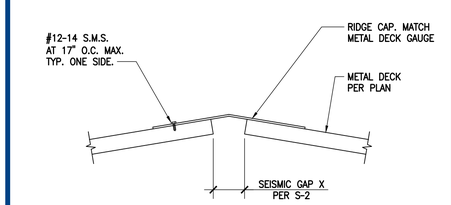


NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

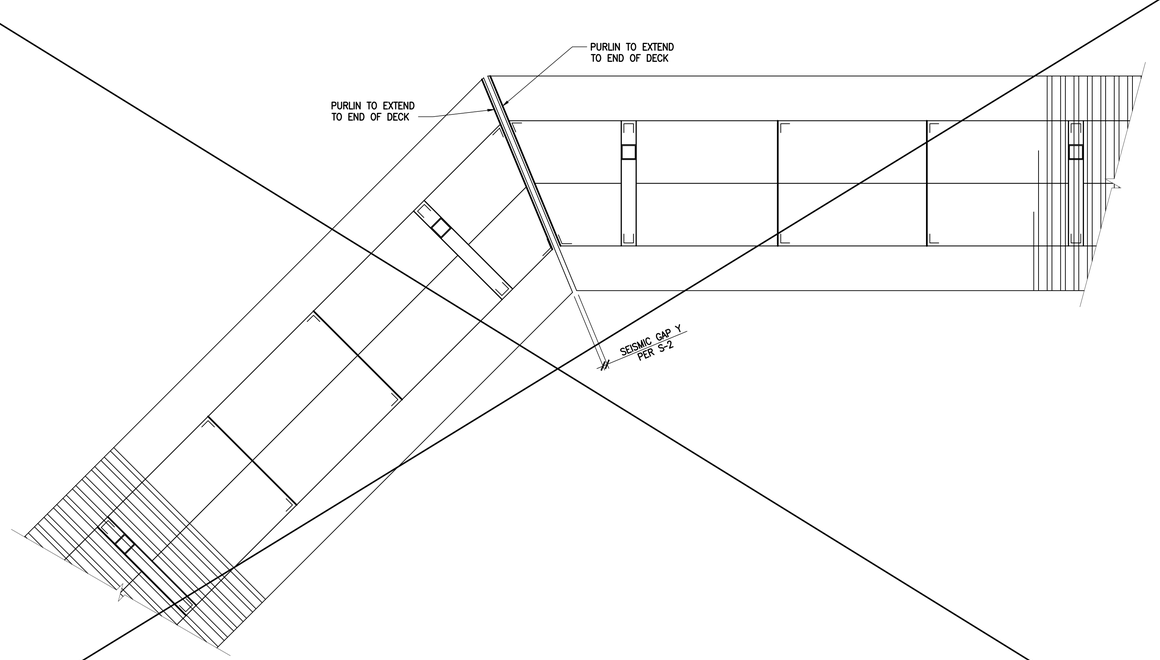
2 - DOUBLE GABLE ROOF ELEVATION OPTION 2 3/32"=1'-0"



3 - RIDGE CAP 1-1/2"=1'-0"



4 - RIDGE CAP ALTERNATE 1-1/2"=1'-0"



NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

11 - 45 DEGREE ANGLED ROOF CONNECTION OPTION 1/4"=1'-0"

4 STEEL ENGINEERING
26030 ACERO,
MISSION VIEJO, CA 92691
949.305.1150 | FAX 949.305.1420

M BAR C CONSTRUCTION INC.
1770 LA COSTA MEADOWS DRIVE, SAN MARCOS, CA 92078
ERIK KRIVOPOPICH
PHONE: (760) 744-4131
FAX: (760) 744-4449
ERIK@MBARCONLINE.COM
LIC # 869960
B AND CCT
(770) 787-8845

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER
DUSTIN K. ROSENTRETER
S 5885
12-31-21
STATE OF CALIFORNIA

BID INFORMATION

THE STRUCTURES AND DESIGNS IN THIS PC ARE PROPRIETARY TO M BAR C CONSTRUCTION, INC. AND 4 S.T.E.L. ENGINEERING, INC. ALL SITES USING THIS PC: M BAR C CONSTRUCTION, INC. SHALL BE THE STEEL CONTRACTOR & 4 S.T.E.L. ENGINEERING, INC. SHALL BE THE SEOR. SEE THE STANDARD NOTES FOR PC USE ON S-1 FOR ADDITIONAL REQUIREMENTS.

PRE-CHECK (PC) DOCUMENT

CODE: 2019 CBC

A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 04-119563 PC
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑ CG ☐
DATE: 02/19/2021

SITE SPECIFIC INFORMATION

REVISIONS		
MARK	DATE	DESCRIPTION

4 STEL JOB #	MC03-02-2
DATE	02-05-21
DRAWN BY	MAP
CHECKED	CDL

STANDARD DETAILS 3

S-13

NOTE: IF DWG. IS NOT 24 x 36, IT IS NOT FULL SIZE

I. GENERAL REQUIREMENTS

A. THE STRUCTURAL DRAWINGS AND PROJECT SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THE MEANS, METHODS, PROCEDURES AND SEQUENCE OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND ENSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.

B. DURING THE CONSTRUCTION PERIOD, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF PERSONNEL AND PROPERTY ON AND AROUND THE JOBSITE. THE CONTRACTOR SHALL PROVIDE SHORING, BRACING, GUYS, ETC. IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL STANDARDS.

C. ALL CONSTRUCTION, TESTING, AND INSPECTIONS SHALL CONFORM TO THE BUILDING CODE REFERENCED UNDER THE HEADING "BASIS OF DESIGN" BELOW.

D. STANDARDS REFERENCED IN THESE DRAWINGS SHALL BE THE LATEST EDITION, UNLESS OTHERWISE NOTED.

E. SEE DRAWINGS OTHER THAN STRUCTURAL FOR: FLOOR FINISHES; DEPRESSIONS IN FLOOR SLABS; OPENINGS IN WALLS AND FLOORS REQUIRED BY ARCHITECTURAL AND MEP FEATURES; EXTERIOR PAVING; CURBS; SLOPES; DRAINS; PADS; NON-STRUCTURAL PARTITIONS; EMBEDDED ITEMS; ETC. COORDINATE THESE ITEMS WITH THE STRUCTURAL DRAWINGS.

F. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT THE JOB SITE BEFORE COMMENCING WORK AND SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT.

G. OMISSIONS OR DISCREPANCIES BETWEEN THE VARIOUS ELEMENTS OF THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND STRUCTURAL ENGINEER AND RESOLVED BEFORE PROCEEDING WITH THE WORK.

H. DO NOT SCALE THE DRAWINGS; USE WRITTEN DIMENSIONS ONLY. WHERE NO DIMENSIONS ARE PROVIDED OR WHERE DIMENSIONS PROVIDED CONFLICT WITH OTHER DRAWINGS, CONSULT THE ARCHITECT AND SEOR BEFORE PROCEEDING WITH THE WORK.

I. WHERE MEMBER LOCATIONS ARE NOT DIMENSIONED, MEMBERS SHALL BE LOCATED ON COLUMN LINES OR EQUALLY SPACED BETWEEN MEMBERS ON COLUMN LINES OR BETWEEN MEMBERS OTHERWISE LOCATED. CENTERLINES OF COLUMNS, WALLS, FRAMING MEMBERS, AND FOUNDATIONS COINCIDE WITH GRIDLINES, UNLESS OTHERWISE NOTED.

J. TYPICAL DETAILS ARE INTENDED TO APPLY TO APPLICABLE SITUATIONS, UNLESS OTHERWISE NOTED. TYPICAL DETAILS MAY NOT BE SPECIFICALLY LOCATED.

K. DETAILS SHALL BE APPLIED TO EVERY LIKE CONDITION WHETHER OR NOT THEY ARE REFERENCED IN EVERY INSTANCE. FOR CONDITIONS NOT SPECIFICALLY SHOWN, USE DETAILS SIMILAR TO THOSE PROVIDED.

L. CONTRACTOR SHALL COORDINATE SEWER AND UTILITY LINE LOCATIONS WITH THE FOUNDATION LOCATIONS AND SIZES SHOWN ON THE STRUCTURAL DRAWINGS. ANY INTERFERENCE BETWEEN SEWER/UTILITY LINES AND FOUNDATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND SEOR BEFORE PROCEEDING WITH THE WORK.

M. THE CONTRACTOR SHALL VERIFY THAT CONSTRUCTION LOADS DO NOT EXCEED THE CAPACITY OF THE STRUCTURE AT THE TIME THE LOADS ARE PLACED.

II. EXISTING CONSTRUCTION

A. WORK SHOWN IS NEW UNLESS OTHERWISE NOTED AS EXISTING, (E).

B. EXISTING CONSTRUCTION SHOWN IN THESE DRAWINGS WAS OBTAINED FROM LIMITED SITE INVESTIAGTIONS AND INDICATED FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, REVIEW ALL AVAILABLE EXISTING DRAWINGS AND VERIFY DIMENSIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND SEOR OF ALL DISCREPANCIES AND EXCEPTIONS BEFORE PROCEEDING WITH THE WORK.

C. THE REMOVAL, CUTTING, DRILLING, ETC. OF EXISTING WORK SHALL BE PERFORMED WITH GREAT CARE AND SMALL TOOLS IN ORDER TO MAINTAIN THE STRUCTURAL INTEGRITY OF THE BUILDING. IF EXISTING STRUCTURAL MEMBERS NOT INDICATED FOR REMOVAL INTERFERE WITH THE NEW WORK, THE SEOR SHALL BE NOTIFIED IMMEDIATELY. APPROVAL SHALL BE OBTAINED PRIOR TO REMOVAL OF THE EXISTING MEMBERS.

D. THE CONTRACTOR SHALL SAFELY SHORE EXISTING CONSTRUCTION WHEREVER EXISTING SUPPORTS ARE REMOVED TO ALLOW INSTALLATION OF THE NEW WORK. THE EXISTING CONSTRUCTION SHALL BE CONNECTED AND/OR EMBEDDED INTO THE NEW CONSTRUCTION AS SHOWN OR SPECIFIED.

E. ALL SHORING METHODS AND SEQUENCING OF DEMOLITION SHALL BE SPECIFIED BY A LICENSED CIVIL OR STRUCTURAL ENGINEERING IN THE STATE OF CALIFORNIA TO BE RETAINED BY THE CONTRACTOR. SEE SPECIFICATIONS FOR DETAILED REQUIREMENTS.

F. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES BEFORE BEGINNING WORK. SPECIAL CARE SHALL BE TAKEN TO PROTECT UTILITIES THAT ARE TO REMAIN IN SERVICE DURING CONSTRUCTION.

G. THE CONTRACTOR SHALL PROMPTLY REPAIR DAMAGE CAUSED DURING OPERATIONS WITH SIMILAR MATERIALS AND WORKMANSHIP.

H. THE CONTRACTOR SHALL LOCATE EXISTING REINFORCING STEEL WHERE EXISTING CONCRETE IS TO BE CUT, CORED OR SAWN. LOCATION SHALL BE DONE USING A NON-DESTRUCTIVE METHOD. DO NOT DAMAGE EXISTING REINFORCING WITHOUT NOTIFYING THE ARCHITECT AND SEOR.

J. ALL EXISTING CONCRETE SURFACES IN CONTACT WITH NEW CONCRETE SHALL BE INTENTIONALLY ROUGHENED TO ¼" AMPLITUDE WITH EXPOSED AGGREGATE. APPLY BONDING AGENT.

III. BASIS OF DESIGN

A. THE STRUCTURAL DESIGN OF THIS PROJECT IS GOVERNED BY THE 2022 CALIFORNIA BUILDING CODE (CBC).

B. RISK CATEGORY = III

D. LIVE LOADS:
1. ROOF = 20 PSF

E. WIND DESIGN DATA:
1. BASIC WIND SPEED = 115 mph (3 SECOND GUST)
2. EXPOSURE CATEGORY = C

F. SEISMIC DESIGN DATA:
1. I = 1.25
2. S_{DS} = 1.566
3. Ss : 1.957 , S_1 : 0.6, S_{D1} : NULL
4. SITE CLASS = DEFAULT
5. SEISMIC DESIGN CATEGORY = D

IV. WOOD

A. ALL WOOD FRAMING SHALL CONFORM TO NATIONAL DESIGN SPECIFICATIONS (NDS) FOR WOOD CONSTRUCTION AND APA PDS, PLYWOOD DESIGN SPECIFICATION.

B. ALL WOOD FRAMING SHALL BE DOUGLAS FIR LARCH, UNLESS OTHERWISE NOTED. GRADE SHALL BE AS FOLLOWS:
1. JOISTS = DF NO.1
2. WALL STUDS = DF NO.1
3. SILL PLATES = PRESSURE TREATED DF NO.1
4. POSTS = DF NO.1
5. BEAMS = DF NO.1
6. BLOCKING AND MISCELLANEOUS = DF NO.2

C. REJECTION OF WOOD MEMBERS: THE PROVISION IN DOC PS 20 (AS REFERENCED BY CBC 2303.1.1) WHICH PERMITS FIVE PERCENT OF THE MATERIAL TO FALL BELOW GRADE SHALL NOT BE CONSTRUED TO PERMIT BELOW-GRADE MATERIAL TO BE USED AS LOAD-CARRYING MEMBERS WHICH HAVE BEEN DESIGNED FOR SPECIFIC ALLOWABLE STRESSES AND ACCEPTABLE SAFETY FACTORS. MATERIALS WHICH FALL BELOW GRADE SHALL BE REJECTED FOR LOAD-CARRYING USE. WOOD MEMBERS WHICH ARE REQUIRED TO CARRY DESIGN LOADS AND WHICH THE PROJECT ARCHITECT, SEOR OR INSPECTOR JUDGE TO BE MISGRADED SHALL BE REINSPECTED BY A QUALIFIED LUMBER GRADING INSPECTOR TO VERIFY THE PROPER GRADING OF THE MATERIAL. WOOD MEMBERS WHICH HAVE PERMISSIBLE GRADE CHARACTERISTICS OR DEFECTS IN SUCH COMBINATION AS TO AFFECT THE SERVICEABILITY OF THE MEMBER SHALL BE REJECTED BY THE PROJECT INSPECTOR WITH THE CONCURRENCE OF THE ARCHITECT OR SEOR.

D. ALL LUMBER IN CONTACT WITH CONCRETE OR CONCRETE MASONRY 6'-0" OR LESS ABOVE THE GROUND SHALL BE PRESSURE TREATED.

E. MAXIMUM MOISTURE CONTENT SHALL BE 15% AT TIME OF FRAMING FOR NEW WOOD MEMBERS ADJACENT TO EXISTING WOOD MEMBERS. ALL OTHER MEMBERS SHALL HAVE A MAXIMUM MOISTURE CONTENT OF 19% AT TIME OF FRAMING. REFER TO ARCHITECTURAL DRAWINGS, PROJECT SPECIFICATIONS AND CLADDING MANUFACTURERS' INFORMATION FOR MORE STRINGENT MOISTURE CONTENT REQUIREMENTS.

F. STRUCTURAL SHEATHING SHALL BE AS FOLLOWS (MIN THICKNESS AND MIN APA RATING):
1. ROOF SHEATHING: STRUCT.1 15/32" APA RATED SHEATHING 32/16", EXPOSURE 1, PS1-09, 5 PLY PLYWOOD
2. WALL SHEATHING: STRUCT.1 5/32" APA RATED SHEATHING, EXPOSURE 1, PS1-09, 5 PLY PLYWOOD.

G. UNLESS OTHERWISE NOTED, INSTALL ROOF SHEATHING WITH LONG DIRECTION PERPENDICULAR TO SUPPORTS AND WITH PANELS CONTINUOUS OVER TWO OR MORE SPANS.

H. WOOD CONNECTORS SHALL BE AS MANUFACTURED BY SIMPSON STRONG TIE OR EQUAL PRODUCT IF APPROVED BY SEOR. SIMPSON DESIGNATIONS USED IN THESE DRAWINGS.

I. NAILS SHALL BE COMMON WIRE GAGE, UNLESS OTHERWISE NOTED AND CONFORM TO CBC TABLE 2304.10.1.

J. LAG BOLTS AND UNFINISHED MACHINE BOLTS SHALL CONFORM TO ASTM A307. PROVIDE WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD.

K. ANCHOR RODS SHALL CONFORM TO ASTM F1554 GR 36.

L. FASTENERS INSTALLED IN PRESSURE TREATED OR FIRE RETARDANT TREATED WOOD SHALL BE GALVANIZED.

M. PROVIDE LATERAL SUPPORT FOR BEAMS, JOISTS, AND RAFTERS PER CBC SECTION 2308.4.6.

V. POST-INSTALLED ANCHORS

A. POST-INSTALLED ANCHORS INCLUDE EXPANSION ANCHORS, EPOXY ANCHORS AND REINFORCING STEEL DOWELS, SCREW ANCHORS AND POWDER-ACTUATED FASTENERS. AS DETAILED IN THE DRAWINGS.

B. DO NOT DAMAGE OR CUT EXISTING REINFORCING STEEL WHILE INSTALLING POST-INSTALLED ANCHORS. NOTIFY SEOR IF EXISTING REINFORCING STEEL INTERFERES WITH INSTALLATION OF POST-INSTALLED ANCHORS.

C. ALL MIS-DRILLED OR UNACCEPTABLE HOLES SHALL NOT BE USED AND SHALL BE GROUTED SOLID.

D. ALL POST-INSTALLED ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE ICC-ES REPORT AND MANUFACTURER'S RECOMMENDATIONS.

E. PROVIDE SPECIAL INSPECTION FOR THE INSTALLATION OF ALL POST-INSTALLED ANCHORS, UNLESS OTHERWISE NOTED.

F. FIELD TEST POST-INSTALLED ANCHORS, UNLESS OTHERWISE NOTED. FIELD TESTING SHALL BE IN COMPLIANCE WITH THE FOLLOWING:
1. 10% OF POST-INSTALLED ANCHORS USED FOR SILL PLATE BOLTING SHALL BE TESTED; 100% OF ALL OTHER POST-INSTALLED ANCHORS USED FOR STRUTURAL APPLICATIONS SHALL BE TESTED.
2. 50% OF POST-INSTALLED ANCHORS USED FOR NON-STRUCTURAL APPLICATIONS SHALL BE TESTED, INCLUDING ONE HALF OF ALL ANCHORS IN EACH GROUP.
   a. IF ANY ANCHOR FAILS TESTING, ALL ANCHORS OF THE SAME TYPE THAT ARE UNTESTED SHALL BE TESTED UNTIL 20 CONSECUTIVE ANCHORS PASS.
   b. NO TESTING REQUIRED FOR POWDER-ACTUATED FASTENERS USED TO ATTACH TRACKS OF INTERIOR, NON-STRUCTURAL PARTITION WALLS WHERE THERE ARE AT LEAST THREE FASTENERS PER PIECE OF TRACK.
3. NO TESTING REQUIRED OF REINFORCING STEEL DOWELS ACROSS COLD JOINTS IN CONCRETE SLABS ON GRADE.
4. TORQUE TESTING MAY BE USED FOR TORQUE CONTROLLED POST-INSTALLED ANCHORS; TENSION TEST ALL OTHER POST-INSTALLED ANCHORS.
5. TORQUE TESTING SHALL BE IN ACCORDANCE WITH CBC SECTION 1910A.5.5.2.
6. TENSION TESTING SHALL BE IN ACCORDANCE WITH CBC SECTION 1910A.5.5.1.
7. ALL FIELD TESTING SHALL BE DONE UNDER THE OBSERVATION OF THE PROJECT INSPECTOR.
8. TESTING SHALL OCCUR AT LEAST 24 HOURS AFTER THE ANCHOR HAS BEEN INSTALLED.

G. EPOXY ANCHORS AND REINFORCING STEEL DOWELS
1. FOR INSTALLATION IN CONCRETE, EPOXY SHALL BE ONE OF THE FOLLOWING:
   a. SET-3G PER ICC-ES ESR-4057 AS MANUFACTURED BY SIMPSON STRONG TIE
   b. HIT-RE 500 V3 PER ICC-ES ESR-3814 AS MANUFACTURED BY HILTI, INC.
   c. HY-200 PER ICC-ES ESR-4868 AS MANUFACTURED BY HILTI, INC.
2. EPOXIED ANCHOR RODS SHALL BE CARBON STEEL THREADED RODS PER APPROPRIATE ICC-ES REPORT, EPOXIED REINFORCING STEEL DOWELS SHALL BE ASTM A615 GR 60 UNLESS OTHERWISE NOTED.
3. MINIMUM ANCHOR EMBEDMENT AND TENSION TEST VALUES ARE AS FOLLOWS:

EPOXY ANCHORS IN NORMAL-WEIGHT CONCRETE (f'c = 3000 PSI MIN)

REBAR SIZE	EMBED (IN)	TENSION TEST VALUE (LBS)		
		HY-200	HIT-RE 500-V3	SET-3G
#3	3	3159	3931	4353
#4	4	5615	6053	6984
#5	5	8459	8459	9760
#6	6	11119	11119	12830

EPOXY ANCHORS IN NORMAL-WEIGHT CONCRETE (f'c = 3000 PSI MIN)

THREADED ROD DIAMETER (IN)	EMBED (IN)	TENSION TEST VALUE (LBS)		
		HY-200	HIT-RE 500-V3	SET-3G
3/8	3	3056	3778	4344
1/2	4	5901	6053	6984
5/8	5	8459	8459	9760
3/4	6	11119	11119	12830

5. NO TESTING IS REQUIRED FOR #3 REINFORCING STEEL EPOXIED DOWELS AT CURBS AND HOUSEKEEPING PADS.

H. EXPANSION ANCHORS
1. FOR INSTALLATION IN CONCRETE, EXPANSION ANCHORS SHALL BE ONE OF THE FOLLOWING:
   a. STRONG BOLT 2 PER ICC-ES ESR-3037 AS MANUFACTURED BY SIMPSON STRONG TIE.
   b. KWIK BOLT TZ2 PER ICC-ES ESR-4266 AS MANUFACTURED BY HILTI, INC.
2. USE STAINLESS STEEL AT EXTERIOR, WEATHER-EXPOSED OR DAMP LOCATIONS; CARBON STEEL EXPANSION ANCHORS MAY BE USED AT ALL OTHER LOCATION, UNLESS OTHERWISE NOTED.
3. MINIMUM ANCHOR EMBEDMENT AND TORQUE TEST VALUES ARE AS FOLLOWS:

KWIK BOLT TZ2 IN NORMAL WEIGHT CONCRETE (f'c = 3000 PSI MIN)

ANCHOR DIAMETER	EMBED (IN)	MINIMUM HOLE	TORQUE TEST VALUES (FT-LBS)	
(IN)		DEPTH (IN)	CARBON STEEL	STAINLESS STEEL
3/8	2 1/2	2 3/4	30	30
1/2	2 1/2	2 3/4	50	40
5/8	3 1/4	3 3/4	40	60
3/4	4	4 1/4	110	125

STRONG BOLT 2 IN NORMAL WEIGHT CONCRETE (f'c = 3000 PSI MIN)

ANCHOR DIAMETER	EMBED (IN)	MINIMUM HOLE	TORQUE TEST VALUES (FT-LBS)	
(IN)		DEPTH (IN)	CARBON STEEL	STAINLESS STEEL
3/8	1 7/8	2	30	30
1/2	2 3/4	3	60	65
5/8	3 3/8	3 5/8	90	80
3/4	4 1/8	4 3/8	150	150

4. WHERE EXPANSION ANCHORS ARE INSTALLED IN CONTACT WITH WOOD FRAMING, PROVIDE AN OVERSIZE WASHER IN ORDER TO ACHIEVE TORQUE REQUIRED BY ICC-ES REPORT. USE 1/4"x3"x3" WASHER, MINIMUM.
5. CONTRACTOR SHALL PROVIDE ANCHORS WITH SUFFICIENT TOTAL LENGTH FOR THE SPECIFIED EMBEDMENT LENGTH, THICKNESS OF FASTENED PART, WASHER AND NUT.

I. SCREW ANCHORS
1. FOR INSTALLATION IN CONCRETE, SCREW ANCHORS SHALL BE ONE OF THE FOLLOWING:
   a. TITEN HD PER ICC-ES ESR-2713 AS MANUFACTURED BY SIMPSON STRONG TIE.
   b. KWIK HUS-EZ PER ICC-ES ESR-3027 AS MANUFACTURED BY HILTI, INC.
2. MINIMUM ANCHOR EMBEDMENT AND TENSION TEST VALUES ARE AS FOLLOWS:

TITEN HD IN NORMAL WEIGHT CONCRETE (f'c = 3000 PSI MIN)

ANCHOR DIAMETER	EMBED (IN)	MINIMUM HOLE	TENSION TEST
(IN)		DEPTH (IN)	VALUE (FT-LBS)
3/8	2 1/2	3	1200
1/2	3 1/4	3 3/4	2973
5/8	4	4 1/2	3935
3/4	5 1/2	6	5895

KWIK HUS-EZ IN NORMAL WEIGHT CONCRETE (f'c = 3000 PSI MIN)

ANCHOR DIAMETER	EMBED (IN)	MINIMUM HOLE	TENSION TEST
(IN)		DEPTH (IN)	VALUE (FT-LBS)
1/4	2 1/2	2 7/8	1133
3/8	2 1/2	2 3/4	2093
1/2	2 1/4	2 5/8	1547
5/8	3 1/4	3 5/8	3049
3/4	4	4 3/8	4118

J. POWDER-ACTUATED FASTENERS
1. PAF SHALL BE ONE OF THE FOLLOWING:
   a. SIMPSON STRONG TIE POWDER-ACTUATED FASTENERS PER ICC-ES ESR-2138 FOR ANCHORAGE OF METAL TO CONCRETE, MASONRY OR STEEL.
   b. HILTI, INC. X-U PER ICC-ES ESR-2269 FOR ANCHORAGE OF METAL TO CONCRETE OR STEEL
   c. HILTI, INC. X-CP 72 PER ICC-ES ESR-2379 FOR ANCHORAGE OF SILL PLATES TO CONCRETE
2. PROVIDE 0.08"x1.1"x1.1" SQUARE OR 0.08"x1.425" DIAMETER ROUND WASHER AT EACH PAF.
3. MINIMUM PAF EMBED INTO CONCRETE SHALL BE 1", UNLESS OTHERWISE NOTED.
4. MINIMUM PAF EMBED INTO STEEL SHALL BE PER MANUFACTURER.

A

ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
(E)	EXISTING
AB	ANCHOR BOLT
ADDL	ADDITIONAL
AR	ANCHOR ROD
ARCH	ARCHITECT OR ARCHITECTURAL
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BOT	BOTTOM
BRG	BEARING
BTWN	BETWEEN
CJ	CONTROL/CONSTRUCTION JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTER LINE
CLR	CLEAR OR CLEARANCE
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION(S)
CONT	CONTINUOUS
CTR	CENTER
CTRD	CENTERED
CTRSK	COUNTERSINK
db	DIAMETER OF BOLT OR REBAR
DBL	DOUBLE
DET	DETAIL
DF	DOUGLAS FIR
DIA	DIAMETER
DIM(S)	DIMENSION(S)
DWG(S)	DRAWING(S)
EA	EACH
EF	EACH FACE
EMBED	EMBEDMENT
EN	EDGE NAIL
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EXP	EXPANSION
EXT	EXTERIOR
FN	FIELD NAILING
FND	FOUNDATION
FS	FAR SIDE
FTG	FOOTING
GA	GAGE, GAUGE
GLB	GLUE-LAMINATED BEAM
GR	GRADE
GYP	GYPSUM
HD	HOLDOWN
HDR	HEADER
HGR	HANGER
HORIZ	HORIZONTAL
HSB	HIGH STRENGTH BOLT
HSS	HOLLOW STRUCTURAL SECTION (TUBE STEEL)
HT	HEIGHT
HVAC	HEATING VENTING AND AIR CONDITIONING
INFO	INFORMATION
LBS	POUNDS
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LONG	LONGITUDINAL
LVL	LAMINATED VENEER LUMBER
MAX	MAXIMUM
MB	UNFINISHED MACHINE BOLT
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OH	OPPOSITE HAND
OPNG(S)	OPENING(S)
PAF	POWDER ACTUATED FASTENER
PERP	PERPENDICULAR
PJP	PARTIAL JOINT PENETRATION
PL	PLATE
PLY	PLYWOOD
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSL	PARALLEL STRAND LUMBER
REF	REFERENCE
REINF	REINFORCE(D) (ING) OR (MENT)
REQD	REQUIRED
REV	REVISION
SAD	SEE ARCHITECTURAL DRAWINGS
SCD	SEE CIVIL DRAWINGS
SCHED	SCHEDULE(D)
SECT	SECTION
SEOR	STRUCTURAL ENGINEER OF RECORD
SF	SQUARE FOOT (FEET)
SFRS	SEISMIC FORCE RESISTING SYSTEM
SHT	SHEET
SIM	SIMILAR
SMD	SEE MECHANICAL DRAWINGS
SMS	SHEET METAL SCREW(S)
SOG	SLAB ON GRADE
SPEC(S)	SPECIFICATION(S)
SQ	SQUARE
STAGG'D	STAGGERED
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
SYMM	SYMMETRICAL
T&B	TOP AND BOTTOM
THRD'D	THREADED
TO	TOP OF
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VERT	VERTICAL
VIF	VERIFY IN FIELD
W/	WITH
W/O	WITHOUT
WF	WIDE FLANGE
WP	WORK POINT
WT	WEIGHT

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER — DONHAN AKALAN — NO. 5594 — STRUCTURAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
GENERAL NOTES

INCREMENT: INC.2

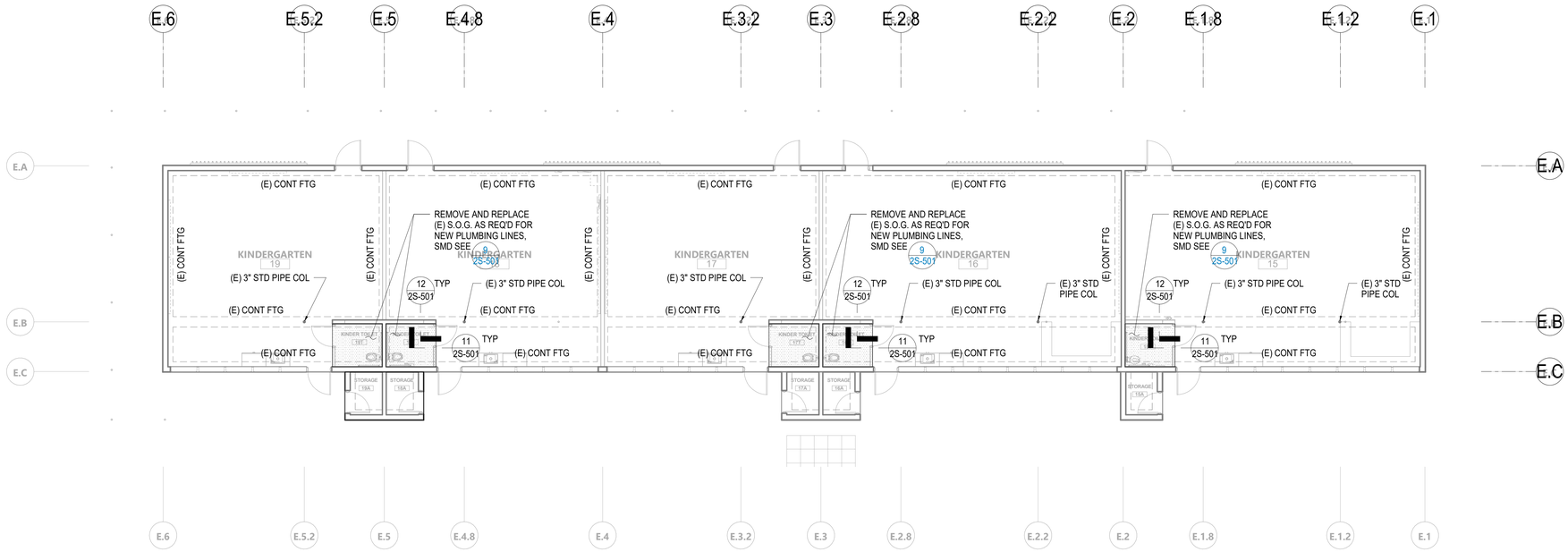
DRAWN BY: SN JOB NUMBER: 23119.01

SHEET NO.
2S-100

DATE: OCTOBER 25TH, 2024

CONSTRUCTION DOCUMENTS 100%

DATE PLOTTED: 10/24/2024 9:34:24 AM FILE LOCATION: Z:\Shared\Projects\2023\23162 - Meadow Homes ES Modernization\Drawings\Structural\Increment 2\23162 - Meadow Homes ES Modernization - R23.rvt



1 FOUNDATION PLAN BUILDING E

1/8" = 1' - 0"

SHEET NOTES:

1. SEE GENERAL NOTES ON SHEET 2S-100.
2. SEE TYPICAL CONCRETE DETAILS ON SHEETS 2S-501.
3. REMOVE & REPLACE (E) S.O.G. AS REQUIRED, SEE SHEET 2S-501, COORDINATE WITH ARCH AND M/E/P DWGS.
4. SEE TYPICAL FRAMING DETAILS ON SHEETS 2S-800 AND 2S-801.
5. COORDINATE LOCATION OF MECHANICAL UNITS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS. SMD FOR ANCHORAGE REQUIREMENTS.

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196

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SHEET TITLE

BUILDING E - FOUNDATION PLAN

INCREMENT: INC.2

DRAWN BY: SN JOB NUMBER: 23119.01

SHEET NO.

2S-201

DATE: OCTOBER 25TH, 2024

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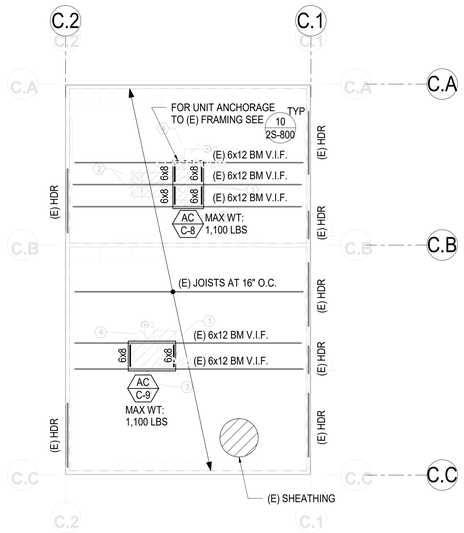
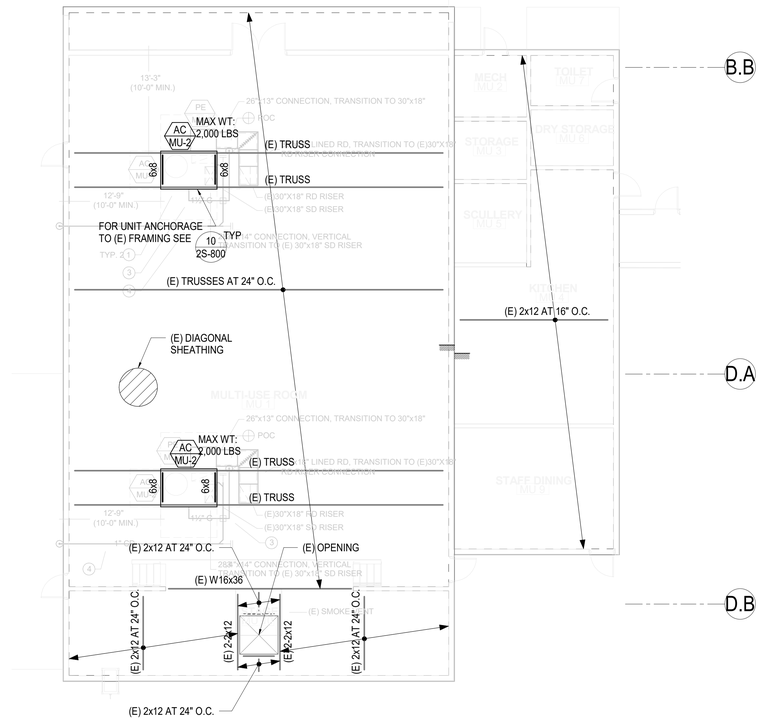


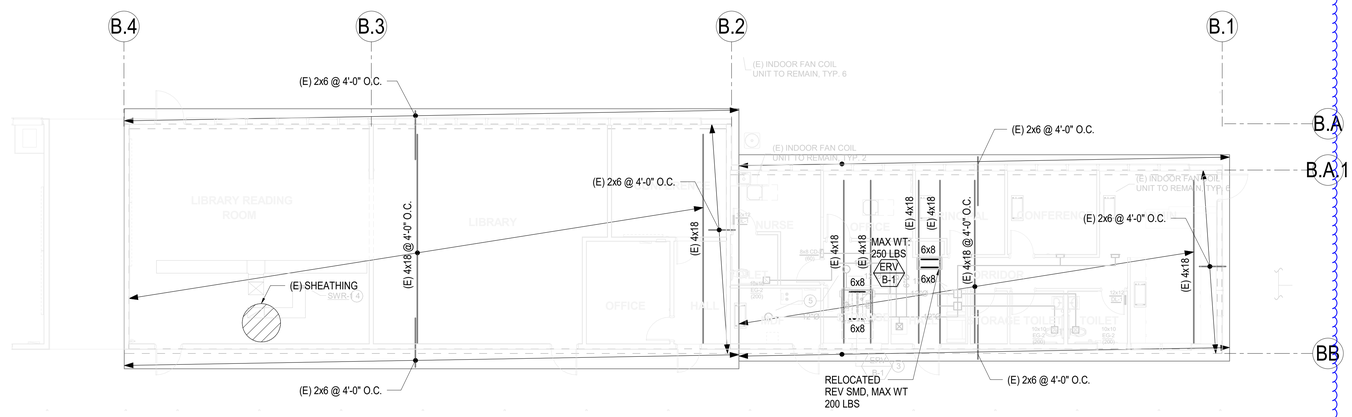
3 ROOF FRAMING PLAN BUILDING C

1/8" = 1'-0"



1 ROOF FRAMING PLAN MULTI USE BUILDING

1/8" = 1'-0"



2 ROOF FRAMING PLAN BUILDING B.1

1/8" = 1'-0"

SHEET NOTES:
1. SEE GENERAL NOTES ON SHEET 2S-100.
2. SEE TYPICAL FRAMING DETAILS ON SHEETS 2S-800 AND 2S-801.
3. AT CONTRACTOR OPTION, NEW FRAMING MAY BE INSTALLED FROM ABOVE PROVIDED THAT FULL SECTIONS OF EXISTING PLYWOOD IS REMOVED AND REINSTALLED PER 11 2S-800

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SHEET TITLE
ROOF FRAMING PLAN - BLDG B.1, C AND MULTI USE BUILDING
INCREMENT: INC.2

DRAWN BY: Author JOB NUMBER: 23119.01

SHEET NO.
2S-202
DATE: OCTOBER 25TH, 2024

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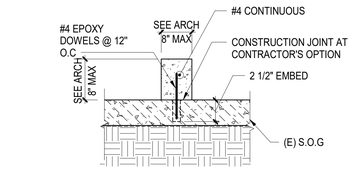
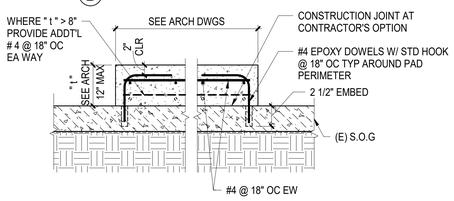


B CURB AT SLAB-ON-GRADE



A HOUSEKEEPING PAD

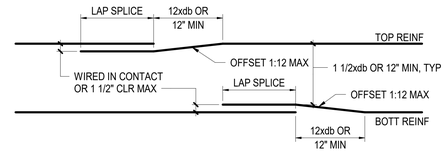
CONCRETE STRENGTH		3000 PSI			
REINFORCING CONFIGURATION		CASE 1		CASE 2	
BAR SIZE \ BAR LOCATION		TOP	OTHER	TOP	OTHER
"CLASS A LAP SPLICE AND STRAIGHT DEVELOPMENT LENGTH, Ld (INCHES)"	#3	22	17	32	25
	#4	29	22	43	33
	#5	36	28	54	41
	#6	43	33	64	50
	#7	63	48	94	72
	#8	72	55	107	82
CLASS B LAP SPLICE (INCHES)	#3	28	22	42	32
	#4	37	29	56	43
	#5	47	36	70	54
	#6	56	43	84	64
	#7	81	63	122	94
	#8	93	72	139	107

NOTES:
1. VALUES IN THE TABLE ARE FOR NON-EPOXY COATED GRADE 60 REINFORCING STEEL AND NORMAL WEIGHT CONCRETE.
2. CASES 1 AND 2 ARE DEPENDENT ON THE TYPE OF CONCRETE ELEMENT, CONCRETE COVER AND CENTER-TO-CENTER SPACING OD REINFORCING BARS. THEY ARE DEFINED AS:
   CASE 1:
   BEAM AND COLUMNS:
   - CONCRETE COVER >= db
   - CENTER-TO-CENTER SPACING >= 2x db, AND
   - STIRRUPS OR TIES PROVIDED THROUGHTOUT ld

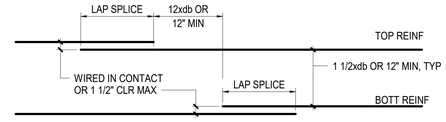
   OTHER ELEMENTS:
   - CONCRETE COVER >= db AND
   - CENTER-TO-CENTER SPACING >= 3x db

   CASE 2:
   BEAM AND COLUMNS:
   - CONCRETE COVER < db
   - CENTER-TO-CENTER SPACING < 2x db

   OTHER ELEMENTS:
   - CONCRETE COVER < db AND
   - CENTER-TO-CENTER SPACING < 2x db
3. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF FRESH CONCRETE BELOW. OTHER BAR INCLUDE ALL VERTICAL REINFORCING, ALL HORIZONTAL WALL REINFORCING AND HORIZONTAL REINFORCING WITH LESS THAN 12" OF FRESH CONCRETE BELOW BAR.
4. PROVIDE CLASS B LAP SPLICES, U.O.N.
5. FOR LIGHTWEIGHT CONCRETE, MULTIPLY THE VALUES IN THIS TABLE BY 1.3.
6. WHERE ld IS NOT OBTAINABLE DUE TO SPACE RETRICTIONS, PROVIDE A STANDARD HOOK PER DETAIL (2/-)
7. FOR EPOXY-COATED BARS, MULTIPLY THE VALUE IN THIS TABLE BY 1.5.
8. SPLICES OF HORIZONTAL REINFORCING BARS IN WALLS AND SLABS SHALL BE STAGGERED. SPLICES OF HORIZONTAL REINFORCING BARS IN WALLS AND SLABS CONTAINING TWO CURTAINS OF REINFORCEMENT SHALL NOT OCCUR IN THE SAME LOCATION; SPLICES SHALL BE OFFSET BY THE MAXIMUM OF 12 INCHES AND 12 BAR DIAMETERS.



a BEAM SPLICE DETAIL



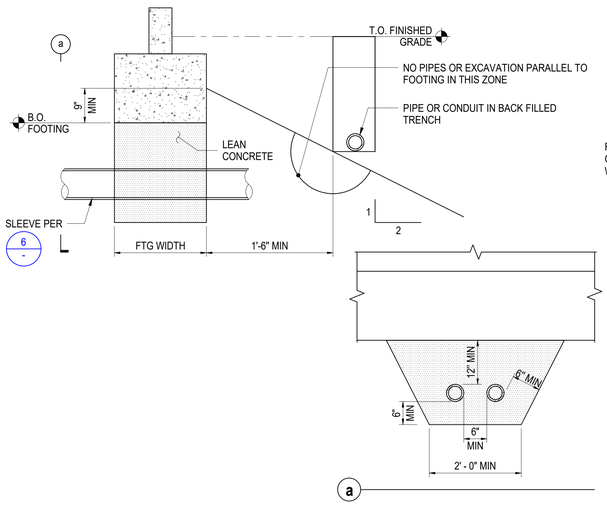
b STRAGGERED WALL OR SLAB SPLICE DETAIL

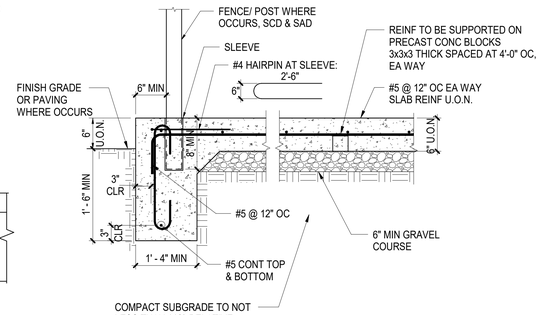
10 CURBS AND HOUSEKEEPING PADS AT (E) S.O.G

NTS

7 LAP SPLICE + STRAIGHT BAR DEVELOPMENT LENGTHS

NTS





COMPACT SUBGRADE TO NOT LESS THAN 90% RELATIVE COMPACTION AT OPTIMUM MOISTURE CONTENT PLUS OR MINUS 2% IN ACCORDANCE WITH ASTM D1557.

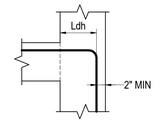
EDGE OF SLAB

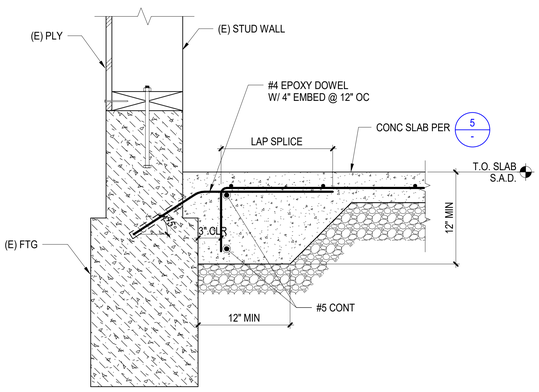
SLAB-ON-GRADE

NOTE:
OVER EXCAVATE TO REMOVE ANY CRACKED OR LOOSE EXISTING MATERIAL BELOW SLAB AND FOOTING EXCAVATIONS. BACKFILL WITH LEAN CONCRETE f'c=1500 PSI @ 28 DAYS AS REQUIRED.

HOOKED BAR DEVELOPMENT LENGTH, Ldh			
BAR SIZE	CONCRETE STRENGTH		
	3000 PSI	4000 PSI	5000 PSI
#3	0' - 8"	0' - 7"	0' - 6"
#4	0' - 11"	0' - 9"	0' - 9"
#5	1' - 2"	1' - 0"	0' - 11"
#6	1' - 4"	1' - 2"	1' - 1"
#7	1' - 7"	1' - 5"	1' - 3"
#8	1' - 10"	1' - 7"	1' - 5"

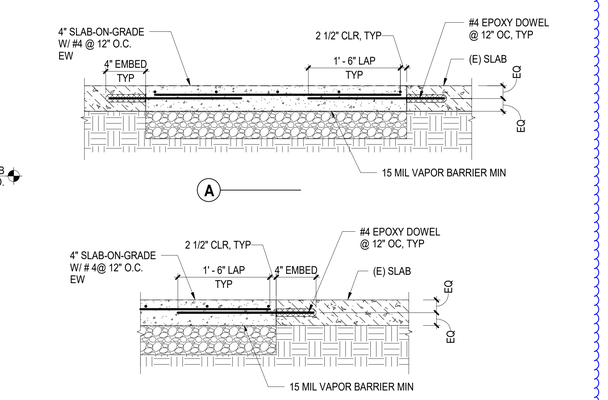
NOTES:
1. THE HOOKED BAR DEVELOPMENT LENGTHS IN THIS TABLE ARE FOR NORMALWEIGHT CONCRETE. FOR LIGHTWEIGHT CONCRETE, THE HOOKED BAR DEVELOPMENT LENGTH SHALL NOT BE LESS THEN 10xdb, 7 ½" AND 1.3xLdh PER THE TABLE ABOVE.
2. THE HOOKED BAR DEVELOPMENT LENGTHS IN THIS TABLE APPLY TO MEMBERS WITH:
   a. SIDE COVER EQUAL TO AT LEAST 2 ½".
   b. END COVER EQUAL TO AT LEAST 2".





11 DEPRESSED SLAB DETAIL

1 1/2" = 1'-0"



8 TYPICAL EXCAVATION PARALLEL TO FTG

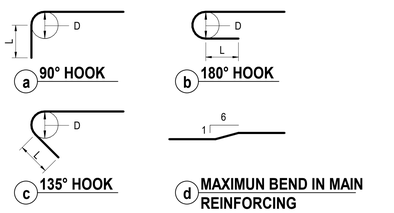
NTS

5 SLAB ON GRADE DETAIL

NTS

2 HOOKED BAR DEVELOPMENT LENGTHS

NTS



MAIN REINFORCING HOOKS			
BAR SIZE	BEND DIAMETER, D (IN)	90° HOOK L (IN)	180° HOOK L (IN)
#3	2 1/4	4 1/2	2 1/2
#4	3	6	2 1/2
#5	3 3/4	7 1/2	2 1/2
#6	4 1/2	9	3
#7	5 1/4	10 1/2	3 1/2
#8	6	12	4

STIRRUP + TIE REINFORCING HOOKS			
BAR SIZE	BEND DIAMETER, D (IN)	90° HOOK L (IN)	180° HOOK L (IN)
#3	1 1/2	3	3
#4	2	3	3
#5	2 1/2	3 3/4	3 3/4

NOTE:
1. DO NOT DAMAGE (E) FOOTING REINFORCING BARS.

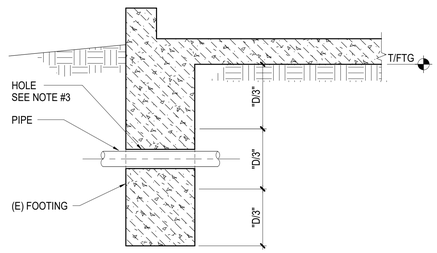
12 SECTION AT EXISTING FOOTING

1 1/2" = 1'-0"

NOTE:
1. AT JOINTS, LAP (E) VAPOR BARRIER W/ NEW VAPOR BARRIER.
2. COORDINATE LOCATION OF SLAB PENETRATIONS WITH ARCHITECTURAL AND M/E/P DWGS.

9 (E) SLAB-ON-GRADE REPAIR

NTS



NOTES:
1. PRIOR TO DRILLING FOR HOLE, LOCATE (E) REINFORCING. DO NOT CUT (E) REINFORCING AND MAINTAIN 1 1/2" CLR AROUND HOLE.
2. MAXIMUM PIPE SIZE 6" DIA UNLESS OTHERWISE NOTED.
3. PROVIDE 1" MINIMUM GAP BETWEEN PIPE AND HOLE ALL AROUND PIPE.
4. LOCATE PIPE WITHIN MIDDLE 1/3 OF (E) FOOTING DEPTH.
5. MINIMUM CLEAR DISTANCE BETWEEN SLEEVES SHALL BE 4x LARGEST SLEEVE DIAMETER.
6. CAULK SEAL GAP AT SLEEVE-TO-PIPE/CONDUIT INTERFACE ON EXTERIOR SIDE OF FOOTING.

6 PIPE PENETRATION THRU (E) FOOTING

1" = 1'-0"

3 TYPICAL BAR HOOKS

NTS

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REGISTERED PROFESSIONAL ENGINEER — GOKHAN AKALAN — NO. 5594 — STRUCTURAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
TYPICAL CONCRETE DETAILS

INCREMENT: INC.2

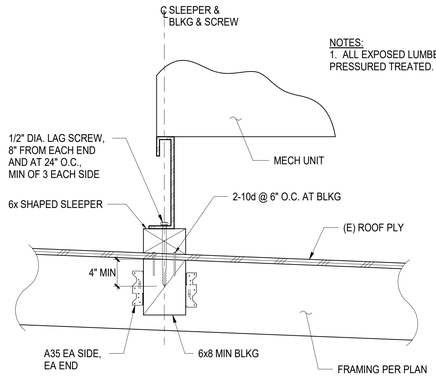
DRAWN BY: SN JOB NUMBER: 23119.01

SHEET NO.
2S-501

DATE: OCTOBER 25TH, 2024

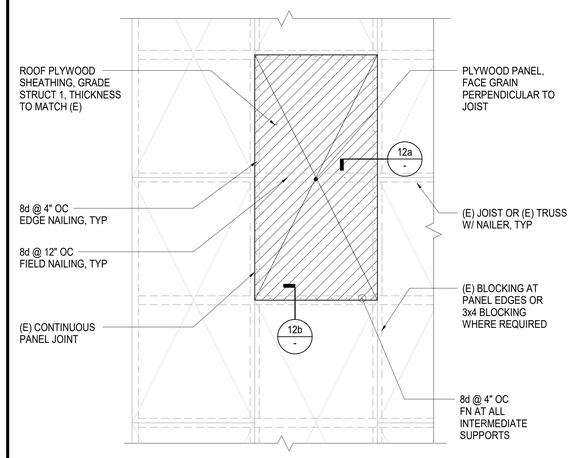
CONSTRUCTION DOCUMENTS 100%

DATE PLOTTED: 10/24/2024 9:34:25 AM FILE LOCATION: Z:\Shared\Projects\2023\23162 - Meadow Homes ES Modernization\Drawings\Structural\Increment 2\23162 - Meadow Homes ES Modernization - R23.rvt



10 MECHANICAL UNIT SUPPORT DETAIL

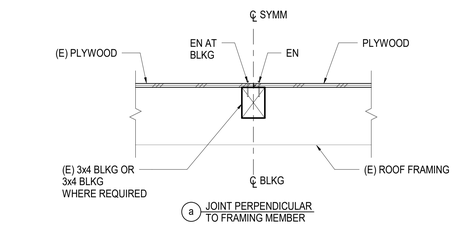
NTS

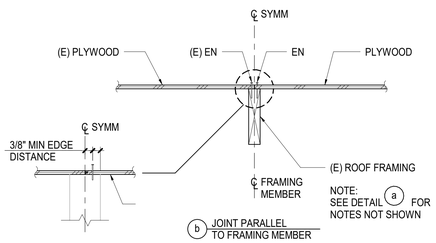


NOTES:
1. FOR 8d NAILS, PROVIDE 1 3/8 MIN PENETRATION INTO FRAMING.
2. REPLACE DAMAGED SHEET FULLY.

11 PLYWOOD SHEATHING AT ROOF

NTS





12 PLYWOOD NAILING

NTS

FASTENING SCHEDULE

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION
ROOF		
1. Blocking between ceiling joists, rafters or trusses to top plate or other framing below	3-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	Each end, toenail
Blocking between rafters or truss not at the wall top plate, to rafter or truss	2-8d common (2 1/2" × 0.131") 2-3" × 0.131" nails 2-3" 14 gage staples	Each end, toenail
	2-16 d common (3 1/2" × 0.162") 3-3" × 0.131" nails 3-3" 14 gage staples	End nail
Flat blocking to truss and web filler	16d common (3 1/2" × 0.162") @ 6" o.c. 3" × 0.131" nails @ 6" o.c. 3" × 14 gage staples @ 6" o.c	Face nail
2. Ceiling joists to top plate	3-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	Each joist, toenail
3. Ceiling joist not attached to parallel rafter, laps over partitions (no thrust)	3-16d common (3 1/2" x 0.163") 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Face nail
4. Ceiling joist attached to parallel rafter (heel joint)	Per Table 2308.7.3.1	Face nail
5. Collar tie to rafter	3-10d common (3" × 0.148"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Face nail
6. Rafter or roof truss to top plate	3-10 common (3" × 0.148"); or 3-16d box (3 1/2" × 0.135"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131 nails; or 4-3" 14 gage staples, 7/16" crown	Toenail[c]
7. Roof rafters to ridge valley or hip rafters; or roof rafter to 2-inch ridge beam	2-16d common (3 1/2" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3"14 gage staples, 7/16" crown; or	End nail
	3-10d common (3 1/2" × 0.148"); or 4-16d box (3 1/2" × 0.135"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Toenail
WALL		
8. Stud to stud (not at braced wall panels)	16d common (3 1/2" × 0.162");	24" o.c. face nail
	10d box (3" × 0.128"); or 3" × 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	16" o.c. face nail
9. Stud to stud and abutting studs at intersecting wall corners (at braced wall panels)	16d common (3 1/2" × 0.162"); or	16" o.c. face nail
	16d box (3 1/2" × 0.135"); or	12" o.c. face nail
	3" × 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	12" o.c. face nail
10. Built-up header (2" to 2" header)	16d common (3 1/2" × 0.162"); or	16" o.c. each edge, face nail
	16d box (3 1/2" × 0.135")	12" o.c. each edge, face nail
11. Continuous header to stud	4-8d common (2 1/2" × 0.131"); or 4-10d box (3" × 0.128")	Toenail
12. Top plate to top plate	16d common (3 1/2" × 0.162"); or	16" o.c. face nail
	10d box (3" × 0.128"); or 3" × 0.131" nails; or 3" 14 gage staples, 7/16" crown	12" o.c. face nail
13. Top plate to top plate, at end joints	8-16d common (3 1/2" × 0.162"); or 12-10d box (3" × 0.128"); or 12-3" × 0.131" nails; or 12-3" 14 gage staples, 7/16" crown	Each side of end joint, face nail (minimum 24" lap splice length each side of end joint)
14. Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common (3 1/2"x0.163"); or	16" o.c. face nail
	16d box (3 1/2" × 0.135"); or 3" × 0.131" nails; or 3" 14 gage staples, 7/16" crown	12" o.c. face nail
15. Bottom plate to joist, rim joist, band joist or blocking at braced wall panels	2-16d common (3 1/2 " × 0.162"); or 3-16d box (3 1/2" × 0.135"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	16" o.c. face nail
16. Stud to top or bottom plate	4-8d common (2 1/2" × 0.131"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, 7/16" crown; or	Toenail
	2-16d common (3 1/2" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	End nail
17. Top plates, laps at corners and intersections	2-16d common (3 1/2" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	Face nail
18. 1" brace to each stud and plate	2-8d common (2 1/2" × 0.131"); or 2-10d box (3" × 0.128"); or 2-3" 14 gage staples, 7/16" crown	Face nail
19. 1" × 6" sheathing to each bearing	2-8d common (2 1/2" × 0.131"); or 2-10d box (3" × 0.128")	Face nail
20. 1" × 8" and wider sheathing to each bearing	3-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128")	Face nail

FASTENING SCHEDULE (CONT.)

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION
FLOOR		
21. Joist to sill, top plate, or girder	3-8d common (2 1/2" × 0.131"); or floor 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	Toenail
22. Rim joist, band joist, or blocking to top plate, sill or other framing below	8d common (2 1/2" × 0.131"); or floor 10d box (3" × 0.128"); or 3" × 0.131" nails; or 3" 14 gage staples, 7/16" crown	6" o.c., toenail
23. 1" × 6" subfloor or less to each joist	2-8d common (2 1/2" × 0.131"); or 2-10d box (3" × 0.128")	Face nail
24. 2" subfloor to joist or girder	2-16d common (3 1/2" × 0.162")	Face nail
25. 2" planks (plank & beam – floor & roof)	2-16d common (3 1/2" × 0.162")	Each bearing, face nail
26. Built-up girders and beams, 2" lumber layers	20d common (4" × 0.192")	32" o.c., face nail at top and bottom staggered on opposite sides
	10d box (3" × 0.128"); or 3" × 0.131" nails; or 3" 14 gage staples, 7/16" crown	24" o.c. face nail at top and bottom staggered on opposite sides
	And: 2-20d common (4" × 0.192"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	Ends and at each splice, face nail
27. Ledger strip supporting joists or rafters	3-16d common (3 1/2" × 0.162"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Each joist or rafter, face nail
28. Joist to band joist or rim joist	3-16d common (3 1/2" × 0.162"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	End nail
29. Bridging or blocking to joist, rafter or truss	2-8d common (2 1/2" × 0.131"); or 2-10d box (3" × 0.128"); or 2-3" × 0.131" nails; or 2-3" 14 gage staples, 7/16" crown	Each end, toenail
Wood structural panels (WSP), subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing		
		Edges (inches) / **Intermediate supports (inches)**
30. 3/8" – 1/2"	6d common or deformed (2" × 0.113") (subfloor and wall)	6 / 12
	8d common or deformed (2 1/2" × 0.113") (roof)	6 / 12
	2 3/8" × 0.113" nail (subfloor and wall)	6 / 12
	1 3/4" 16 gage staple, 7/16" crown (subfloor and wall)	4 / 8
	2 3/8" × 0.113" nail (roof)	4 / 8
	1 3/4" 16 gage staple, 7/16" crown (roof)	3 / 6
31. 19/32" – 3/4"	8d common (2 1/2" × 0.131"); or 6d deformed (2" × 0.113") (subfloor and wall)	6 / 12
	8d common or deformed 2 1/2" x 0.131"); (roof) or RSRS-01 (2 3/8" x 0.113") nail (roof)[d]	6 / 12
	2 3/8" × 0.113" nail; or 2" 16 gage staple, 7/16" crown	4 / 8
32. 7/8" – 1 1/4"	10d common (3" × 0.148"); or 8d deformed (2 1/2" × 0.131")	6 / 12
Other exterior wall sheathing		
33. 1/2" fiberboard sheathing[b]	1 1/2" galvanized roofing nail (7/16" head diameter); or 1 1/4" 16 gage staple with 7/16" or 1" crown	3 / 6
34. 25/32" fiberboard sheathing[b]	1 3/4" galvanized roofing nail (7/16" diameter head); or 1 1/2" 16 gage staple with 7/16" or 1" crown	3 / 6
Wood structural panels, combination subfloor underlayment to framing		
35. 3/4" and less	8d common (2 1/2" × 0.131"); or 6d deformed (2" × 0.113")	6 / 12
36. 7/8" – 1"	8d common (2 1/2" × 0.131"); or 8d deformed (2 1/2" × 0.131")	6 / 12
37. 1 1/8" – 1 1/4"	10d common (3" × 0.148"); or 8d deformed (2 1/2" × 0.131")	6 / 12
Panel siding to framing		
38. 1/2" or less	6d corrosion-resistant siding (1 7/8" × 0.106"); or 6d corrosion-resistant casing (2" × 0.099")	6 / 12
39. 5/8"	8d corrosion-resistant siding (2 3/8" × 0.128"); or 8d corrosion-resistant casing (2 1/2 " × 0.113")	6 / 12
Wood structural panels (WSP), subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing [a]		
		Edges (inches) / **Intermediate supports (inches)**
40. 1/4 "	4d casing (1 1/2" × 0.080"); or 4d finish (1 1/2" × 0.072")	6 / 12
41. 3/8 "	6d casing (2" × 0.099"); or 6d finish (Panel supports at 24 inches)	6 / 12

For SI: 1 inch = 25.4 mm.

a. Nails spaced at 6 inches at intermediate supports where spans are 48 inches or more. Nails for wall sheathing are permitted to be common, box or casing.
b. Spacing shall be 6 inches on center on the edges and 12 inches on center at intermediate supports for nonstructural applications. Panel supports at 16 inches (20 inches if strength axis in the long direction of the panel, unless otherwise marked).
c. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule and the ceiling joist is fastened to the top plate in accordance with this schedule, the number of toenails in the rafter shall be permitted to be reduced by one nail.
d. RSRS-01 is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F1667.

9 NAILING SCHEDULE

NTS

AGENCY APPROVAL DSA# 01-121400

196

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PROFESSIONAL STAMP

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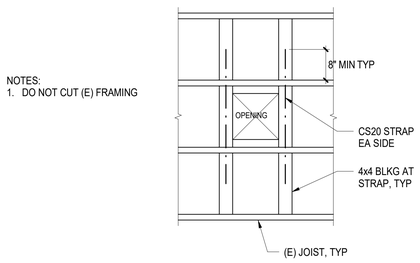
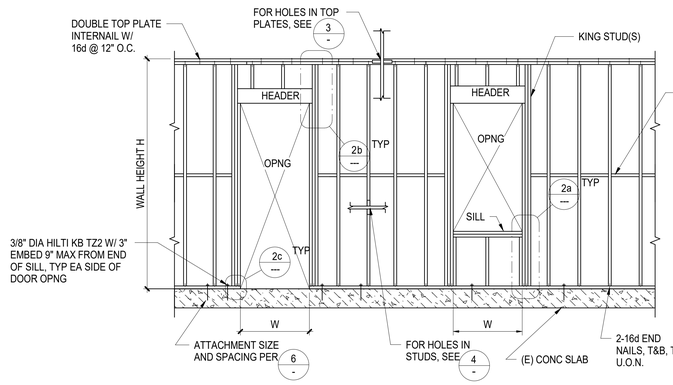


14 SMALL OPENING IN DIAPHRAGM (21"x21" MAX)

NTS



NON-BEARING WALL STUD SCHEDULE		
WALL HEIGHT	STUD SIZE	SPACING
H < 14'-0"	2x6 2x4	16"

b

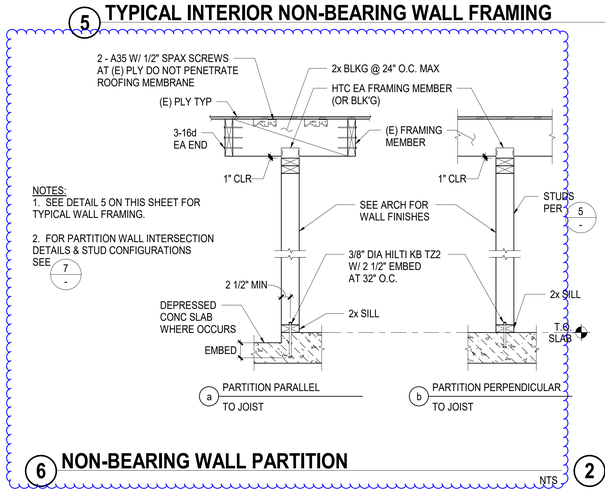
NON-BEARING WALL SCHEDULE AT OPENINGS				
OPENING WIDTH	KING STUD(S)	HEADER DEPTH	BEARING STUD(S)	SILL
W< 6'-0"	2x	6x	1-2x	2-2x

a

NOTE:
STUD, SILL, AND HEADER WIDTHS TO MATCH WALL FRAMING SIZE.

5 TYPICAL INTERIOR NON-BEARING WALL FRAMING

NTS

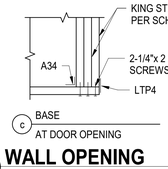


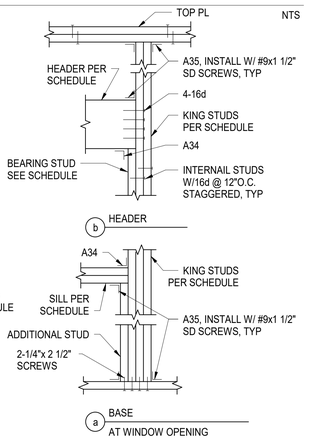
NOTES:
1. SEE DETAIL 5 ON THIS SHEET FOR TYPICAL WALL FRAMING.
2. FOR PARTITION WALL INTERSECTION DETAILS & STUD CONFIGURATIONS SEE 7

6 NON-BEARING WALL PARTITION

NTS

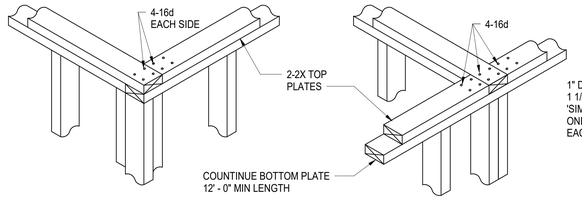
NOTES:
1. FOR MEMBER SIZES, SEE 5
2. USE 20d NAILS AT 3x STUDS

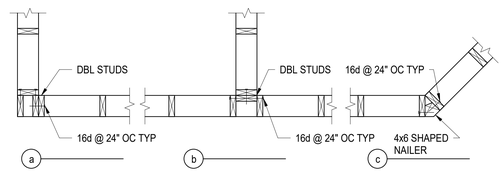




2 WALL OPENING

NTS





7 WALL INTERSECTIONS

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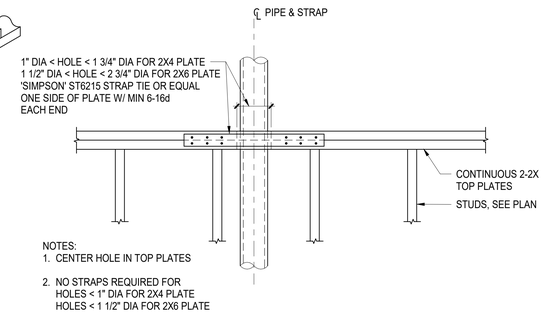
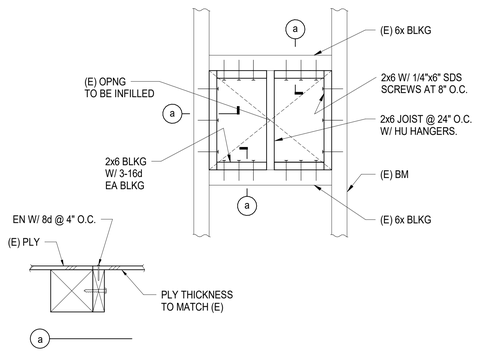


NOTES:
1. CENTER HOLE IN TOP PLATES
2. NO STRAPS REQUIRED FOR
HOLES < 1" DIA FOR 2X4 PLATE
HOLES < 1 1/2" DIA FOR 2X6 PLATE

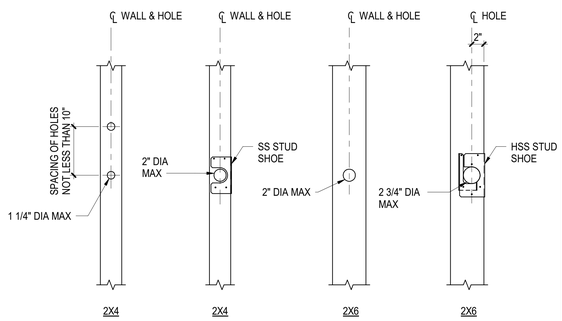
3 TOP PLATE PENETRATIONS

NTS



8 INFILL OF EXISTING OPENING

NTS



4 PENETRATIONS IN STUDS

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SYMBOL LEGEND

SINGLE LINE SYMBOL	DOUBLE LINE SYMBOL	DESCRIPTION
		LONG SWEEP 90° ELBOW - RECTANGULAR, ROUND OR OVAL
		45° ELBOW - RECTANGULAR, ROUND OR OVAL
		30° ELBOW - RECTANGULAR, ROUND OR OVAL
		90° ELBOW - RECTANGULAR DUCT WITH TURNING VANES
		45° LATERAL - ROUND TO ROUND OR OVAL TO OVAL
		90° TAKEOFF WITH 45° TAPER - RECTANGULAR TO RECTANGULAR (FOR BRANCH TAKEOFF LONGER THAN 50'-0", USE 15)
		90° TAKEOFF WITH 45° ELONGATED TEE - ROUND TO ROUND
		Y BRANCH - ROUND OR OVAL DUCT
		90° RADIUS SPLIT - RECTANGULAR DUCT, PROVIDE SPLITTER DAMPER, X/Y PROPORTIONAL SPLIT
		90° RECTANGULAR SPLIT - RECTANGULAR DUCT, PROVIDE SPLITTER DAMPER, X/Y PROPORTIONAL SPLIT
		TRANSITION - RECTANGULAR TO ROUND OR RECTANGULAR TO OVAL
		FLEXIBLE DUCT - ROUND
		FLEXIBLE DUCT - RECTANGULAR

SINGLE LINE SYMBOL	DOUBLE LINE SYMBOL	DESCRIPTION
		SECTION AT SUPPLY AIR OR MAKE-UP AIR DUCT UP
		SECTION AT RETURN AIR OR COMBUSTION AIR DUCT UP
		SECTION AT EXHAUST AIR OR RELIEF AIR DUCT UP
		SUPPLY AIR DUCT DOWN
		RETURN AIR DUCT DOWN
		EXHAUST AIR DUCT DOWN
		ROUND DUCT UP - SUPPLY, RETURN OR EXHAUST
		ROUND DUCT DOWN - SUPPLY, RETURN OR EXHAUST
		CEILING DIFFUSER - ONE, TWO, THREE AND FOUR WAY THROW
		CEILING - RETURN AND EXHAUST REGISTERS
		SIDEWALL - SUPPLY DIFFUSER, RETURN AND EXHAUST REGISTERS
		MANUAL BALANCE DAMPER WITH DUCT ACCESS DOOR
	M	MOTORIZED BALANCE DAMPER WITH DUCT ACCESS DOOR
FSD OR F/D	FSD OR F/D	FIRE DAMPER WITH DUCT ACCESS DOOR FIRE/SMOKE DAMPER WITH DUCT ACCESS DOOR
24 x 12	24 x 12	ACOUSTICALLY LINED DUCT. DIMENSIONS ARE INSIDE
	12x12 CD-1 300	REGISTER NECK SIZE AND TAG DESIGN CFM; PANEL AT T-BAR CEILING

SYMBOL	ABBRV.	IDENTIFICATION
	CW	COLD WATER (DOMESTIC)
	HW	HOT WATER
	HWR	HOT WATER RETURN
	V	VENT
	TP	TRAP PRIMER LINE
	S OR W	SOIL OR WASTE ABOVE GRADE
	S OR W	SOIL OR WASTE BELOW GRADE
	AW	ACID WASTE
	GW	GREASE WASTE
	RWL	RAIN WATER LEADER
	OD	OVERFLOW DRAIN
	CD	CONDENSATE DRAIN
	E	CAP
	CONT	CONTINUATION
		BALL VALVE
OR		VALVE
	CKV	CHECK VALVE
	T&PRV	TEMP. & PRESS. RELIEF VALVE
	GPR	GAS PRESSURE REGULATOR
		CIRCULATION PUMP (DOMESTIC)
	WHA	WATER HAMMER ARRESTOR
	TP	TRAP PRIMER ACCESS PANEL
	GCO/FCO	GRADE CLEAN-OUT/FLOOR CLEAN-OUT
	WCO	WALL CLEAN-OUT
	HB	HOSE BIBB
		UNION
	AN	PIPE ANCHOR
		FLEXIBLE CONNECTOR

SYMBOL	ABBRV.	IDENTIFICATION
	P.O.C.	POINT OF CONNECTION
		REMOVE EXISTING
		LINE BREAK
		TEE DOWN
		90 DOWN
		CONCENTRIC & ECCENTRIC REDUCERS
	AD, AP	ACCESS DOOR, ACCESS PANEL
	MAV	MANUAL AIR VENT
T	T	THERMOSTAT MOUNTED @ 48" AFF. MAX.
CO2	CO2	CARBON DIOXIDE (CO2) SENSOR
	AD	AREA DRAIN
	FD	FLOOR DRAIN
	FS	FLOOR SINK
OR	VB	VALVE IN BOX
	TH	THERMOMETER
	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
	DCDA	DOUBLE CHECK DETECTOR ASSEMBLY
FC A-1		EQUIPMENT DESIGNATION; TAG NUMBER
1 MP2.1		SECTION 1 / SHEET MP2.1

MEP COMPONENT ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTER 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE, OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCED NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.

B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25, AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP [X] MD [X] PP [X] E [ ] - DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

A

ABBREVIATIONS

&	AND	EQUIP	EQUIPMENT	P/T	PRESSURE/TEMPERATURE
°F	DEGREES FAHRENHEIT	ESP	EXTERNAL STATIC PRESSURE	PD	PRESSURE DROP
AAV	AUTOMATIC AIR VENT	EW	ENTERING WATER	PH	PHASE
AC	AIR CONDITIONER	EWB	ENTERING WET BULB	PLF	POUNDS PER LINEAR FOOT
AD	ACCESS DOOR	EWT	ENTERING WATER TEMPERATURE	POC	POINT OF CONNECTION
AFF	ABOVE FINISH FLOOR	EXT	EXTERIOR	PRV	PRESSURE REDUCING VALVE
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	FD	FLOOR DRAIN	PSI	POUNDS PER SQUARE INCH
AL	ACOUSTICALLY LINED	FFE	FINISHED FLOOR ELEVATION	PSI (G) (A)	POUNDS PER SQUARE INCH (GAUGE) (ABSOLUTE)
AMP	AMPERE	FLA	FULL LOAD AMPS	QTY	QUANTITY
AN	PIPE ANCHOR	FLEX	FLEXIBLE	RA	RETURN AIR
AP	ACCESS PANEL	FPM	FEET PER MINUTE	RAD	RETURN AIR DAMPER
APPROX.	APPROXIMATE	FS	FLOOR SINK	RH	RELATIVE HUMIDITY
ARCH	ARCHITECT / ARCHITECTURAL	FT	FEET	RL	REFRIGERANT LIQUID
AW	ACID WASTE	FT HD	FEET HEAD	RM	ROOM
BDD	BACK DRAFT DAMPER	FTR	FLUE THRU ROOF	RP	REDUCED PRESSURE
BFP	BACKFLOW PREVENTER	G	GAS - LOW PRESSURE	RPM	REVOLUTIONS PER MINUTE
BHP	BRAKE HORSEPOWER	GA	GAUGE	RS	REFRIGERANT SUCTION
BLDG	BUILDING	GAL	GALLON	RV	RELIEF VALVE
BOD	BOTTOM OF DUCT	GPM	GALLONS PER MINUTE	SA	SUPPLY AIR
BOP	BOTTOM OF PIPE	GPR	GAS PRESSURE REGULATOR	SC	SENSIBLE COOLING
BTU	BRITISH THERMAL UNIT	GW	GREASE WASTE PIPING	SD	SMOKE DAMPER
BTUH	BRITISH THERMAL UNITS PER HOUR	HP	HORSEPOWER	SEER	SEASONAL ENERGY EFFICIENCY RATIO
BTWN	BETWEEN	HR	HOUR	SM	SHEET METAL
CA	COMBUSTION AIR	HTG	HEATING	SOV	SHUT-OFF VALVE
CD	CONDENSATE DRAIN	HW	HOT WATER	SP	STATIC PRESSURE
CFH	CUBIC FEET PER HOUR	HWR	HOT WATER RETURN	SPEC	SPECIFICATION
CFM	CUBIC FEET PER MINUTE	HZ	HERTZ	SQ	SQUARE
CHWR	CHILLED WATER RETURN	IE	INVERT ELEVATION	SQFT, FT²	SQUARE FEET
CHWS	CHILLED WATER SUPPLY	IN	INCH	SQIN, IN²	SQUARE INCHES
CIRC	CIRCULATING	INV	INVERT	STRUCT	STRUCTURAL
℄	CENTERLINE	KW	KILOWATTS	T	THERMOSTAT, "X" INDICATES DEVICE CONTROLLED. 48" AFF (TO TOP OF STAT)
CLG	COOLING, CEILING	KWH	KILOWATT HOUR	TC	TOTAL COOLING
CLR	CLEAR	LAT	LEAVING AIR TEMPERATURE	TDH	TOTAL DYNAMIC HEAD
CONC	CONCRETE	LBS	POUNDS	TEMP	TEMPERATURE
CONN	CONNECTION	LVR	LOUVER	TH	THERMOMETER
CONT	CONTINUED, CONTINUATION	LWB	LEAVING WET BULB	THRU	THROUGH
COOL	COOLING	LWT	LEAVING WATER TEMPERATURE	TP	TRAP PRIMER
COP	COEFFICIENT OF PERFORMANCE	MAD, MD	MANUAL AIR DAMPER	TSP	TOTAL STATIC PRESSURE
CW	COLD WATER	MAV	MANUAL AIR VENT	TV	TURNING VANES
D/L	DOOR LOUVER	MAX	MAXIMUM	TW	TEMPERED WATER
DB	DRY BULB	MBH	1000 BTU PER HOUR	TYP	TYPICAL
DCV	DOUBLE CHECK VALVE	MCA	MINIMUM CIRCUIT AMPS	UL	UNDERWRITER'S LABORATORIES
DF	DRINKING FOUNTAIN	MCP	MECHANICAL CONTROL PANEL	UON	UNLESS OTHERWISE NOTED
DN	DOWN	MECH	MECHANICAL	V	VOLT OR VENT
DP	DIFFERENTIAL PRESSURE	MFR	MANUFACTURER	VB	VALVE IN VALVE BOX
DWGS	DRAWINGS	MPG	GAS - MEDIUM PRESSURE	VFD	VARIABLE FREQUENCY DRIVE
(E)	EXISTING	MIN	MINIMUM	VTR	VENT THROUGH ROOF
EA	EXHAUST AIR	MOCP	MAXIMUM OVERCURRENT PROTECTION	W	WATTS OR WASTE
EAD	EXHAUST AIR DAMPER	(N)	NEW	W	WITH
EAT	ENTERING AIR TEMPERATURE	NC	NORMALLY CLOSED	WB	WET BULB
EDB	ENTERING DRY BULB	NIC	NOT IN CONTRACT	WC	WATER COLUMN
EER	ENERGY EFFICIENCY RATIO	NO	NORMALLY OPEN	WH	WATER HEATER
EFF	EFFICIENCY	NTS	NOT TO SCALE	WT	WEIGHT
ELEC	ELECTRICAL	OA	OUTSIDE AIR		
ELEV	ELEVATION	OAD	OUTSIDE AIR DAMPER		
ENT	ENTERING	OC	ON CENTER		
EQ	EQUAL	OD	OUTSIDE DIAMETER		

GENERAL NOTES

1. CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMISSION OF FINAL BID TO VERIFY ALL EXISTING SITE CONDITIONS WHICH MAY AFFECT THE COMPLETION OF THE INSTALLATION. ALL METHODS AND REQUIREMENTS FOR INSTALLATION SHALL BE DETERMINED PRIOR TO BID DATE. CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF RECORD OF ANY REQUIRED MODIFICATIONS WHICH ARE NOT REFERENCED ON THESE PLANS PRIOR TO SUBMITTING BID. SUBMITTAL OF THE CONTRACTOR'S BID DEMONSTRATES THE CONTRACTOR'S AWARENESS OF ALL SITE CONDITIONS AND REQUIRED WORK TO BE PERFORMED.
2. CONTRACTOR SHALL INCLUDE AND PROVIDE IN BID ALL LABOR AND MATERIALS NECESSARY FOR A COMPLETE AND OPERATIONAL INSTALLATION OF ALL SYSTEMS.
3. THE DRAWINGS INCLUDED IN THIS SET ARE DIAGRAMMATIC. THEY ARE REPRESENTATIVE OF THE ENGINEER OF RECORD'S DESIGN INTENT FOR ALL EQUIPMENT AND RELATED PIPING ETC. INDIVIDUAL POWER NEEDS, CONTROLS AND OTHER CONNECTIONS SHALL BE COORDINATED AND COMPLETED/ PROVIDED FOR COMPLETE SYSTEM OPERATION BY CONTRACTOR.
4. EQUIPMENT LOCATIONS AND PIPE ROUTING ARE NOT PRECISE AND SHALL BE COORDINATED, VERIFIED, AND DETERMINED IN THE FIELD. CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND ROUTE PIPING IN LOCATIONS WHICH MEET CODE REQUIREMENTS AND DO NOT INTERFERE WITH ANY BUILDING STRUCTURES, UTILITIES, OR OTHER TRADE EQUIPMENT.
5. (E) DUCTWORK AND ITEMS TO BE REMOVED ARE SHOWN HATCHED. SEE LEGEND. COORDINATE CLOSELY WITH (N) DUCTWORK AND P.O.C.'S SHOWN. ALL OTHER (E) DUCTWORK, ETC. TO REMAIN.
6. ALL EQUIPMENT, EQUIPMENT CONNECTIONS, PIPING, MOUNTING LOCATIONS ETC. ARE TO BE VERIFIED WITH OWNER'S REPRESENTATIVE AND EQUIPMENT SUPPLIER PRIOR TO BEGINNING OF THE ROUGH-IN.
7. ALL WORK SHALL BE PERFORMED TO STATE, LOCAL, NATIONAL AND DISTRICT STANDARDS AND CODES. COORDINATE SPECIFIC REQUIREMENTS WITH DISTRICT STANDARDS AND AUTHORITY HAVING JURISDICTION.
8. ALL EQUIPMENT SHALL BE NEW AND CLEARLY LABELED AND IDENTIFIED. LABELS SHALL NOT BE COVERED BY OTHER CONSTRUCTION ELEMENTS.
9. UNLESS OTHERWISE NOTED IN CONTRACT DOCUMENTS, CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT AND WORK FOR A PERIOD OF ONE YEAR.
10. UNLESS OTHERWISE NOTED OR REFERENCED ON THE DRAWINGS, EVERYTHING IS NEW.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED SAW CUTTING, CORE DRILLING, PATCHING, REFINISHING, ETC. AS REQUIRED FOR INSTALLATION OF SYSTEMS. ANY PENETRATIONS OR OPENINGS MADE IN WALLS OR STRUCTURES SHALL BE PATCHED AND/OR SEALED AS REQUIRED TO MAINTAIN THE INTEGRITY OF THE WALL OR STRUCTURE.
12. CONTRACTOR IS RESPONSIBLE FOR COMPLETING ALL FINAL CONNECTIONS TO OWNER FURNISHED EQUIPMENT AND SHALL INCLUDE THE PRICE OF INSTALLING ALL CONNECTIONS AS REQUIRED IN THEIR BIDS.
13. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE APPROVAL OF THE ENGINEER OF RECORD. ALL APPROVALS BY THE ENGINEER OF RECORD MUST BE SECURED PRIOR TO COMPLETION OF ANY PURCHASE ORDERS OR ROUGH-IN WORK.
14. THESE DRAWINGS AND ASSOCIATED SPECIFICATIONS ARE TO BE CONSIDERED CONTRACT DOCUMENTS FOR AGENCY REVIEW/ APPROVAL AND CONTRACTOR BIDDING PURPOSES.
15. AT THE COMPLETION OF THE PROJECT THE CONTRACTOR SHALL PROVIDE THE OWNER WITH A COMPLETE SET OF AS-BUILT DRAWINGS.
16. ANY AND ALL WORK THAT REQUIRES AN INTERRUPTION TO BUILDING SERVICES(S) (ELECTRICAL/ HVAC/ PLUMBING ETC.) MUST BE COORDINATED WITH THE DISTRICT A MINIMUM OF 48 HOURS IN ADVANCE. ANY SERVICE DOWNTIME SHALL NOT OCCUR DURING SCHOOL OPERATION HOURS.
17. IN INSTANCES WHERE A CONFLICT BETWEEN THE DRAWINGS AND THE SPECIFICATIONS AND INSTALLATION MANUALS FOR THE PROJECT EXISTS, THE CONTRACTOR SHALL ADHERE TO THE MORE STRINGENT REQUIREMENT.
18. ANY EXISTING BUILDING STRUCTURES OR SURFACES DAMAGED BY DEMOLITION OR DURING INSTALLATION ACTIVITIES SHALL BE REPAIRED, PATCHED, AND/OR REFINISHED TO THE SATISFACTION OF THE OWNER.
19. FURNISH AND INSTALL MANUAL AIR DAMPERS AT ALL DUCT BRANCH TAKEOFFS TO A SINGLE SUPPLY DIFFUSER.
20. FOR ALL VOLUME DAMPERS LOCATED ABOVE CEILINGS, PROVIDE 12" LONG 1/2" WIDE FLUORESCENT ORANGE TAPE TO MARK DAMPER LOCATIONS.
21. ALL DUCTWORK, CONDUITS, BOXES, SURFACE MOUNTED RACEWAYS, SUPPORT DEVICES, AND ASSOCIATED FITTINGS SHALL BE MOUNTED IN CONCEALED LOCATIONS ABOVE CEILINGS, DUCTS, TRUSSES, BEAMS, ETC. WHERE WORK HAS TO BE INSTALLED IN EXPOSED LOCATIONS, IT SHALL BE PAINTED TO MATCH THE ADJACENT SURFACES OR PER ARCHITECT'S DIRECTION.
22. CONTRACTOR SHALL PREPARE AND SUBMIT THE CALIFORNIA ENERGY COMMISSION TITLE 24 CERTIFICATE OF ACCEPTANCE FORMS RELATED TO INSTALLED EQUIPMENT AND SYSTEMS.
23. SAFETY: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
24. CONTRACTOR'S EQUIPMENT: COORDINATE WITH OWNER'S REPRESENTATIVE FOR APPROVED LOCATION OF JOB SITE ACCESS, PARKING, AND LOCATION OF CONTRACTOR'S EQUIPMENT AND MATERIAL STORAGE AREA. COORDINATE WITH OWNER FOR LOCATION AND PROCEDURES.
25. ALL BUILDING MATERIALS MUST BE ASBESTOS FREE.
26. CONSTRUCTION SCHEDULING: CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION OPERATIONS WITH OWNER'S REPRESENTATIVE PRIOR TO SCHEDULING AND START OF THE WORK. CONTRACTOR SHALL PROVIDE PROTECTION TO ALL EXISTING SPACES AND SYSTEMS WHICH ARE IN USE, ADJOINING THE PROJECT, AND NOT PART OF THE PROJECT.
27. TITLE 24 COMPLIANCE: THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK IS TO BE IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS (2022 CBC). SHOULD ANY CONDITIONS BE DISCOVERED NOT COVERED BY THE CONTRACT DOCUMENTS WHERE IN THE FINISHED WORK DOES NOT COMPLY WITH 2022 CBC, A CONSTRUCTION CHANGE DOCUMENT OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK, SHALL BE SUBMITTED TO AND APPROVED BY THE DSA BEFORE PROCEEDING WITH THE WORK.
28. INSTALLER QUALIFICATIONS: EACH EMPLOYEE SHALL BE CERTIFIED BY MANUFACTURER FOR PROPER INSTALLATION OF SYSTEMS, INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, PIPING, CONTROLS, AND ACCESSORIES INDICATED AND FURNISHED FOR INSTALLATION. INSTALLER CERTIFICATION SHALL BE VALID AND CURRENT FOR DURATION OF PROJECT. INSTALLER SHALL HAVE DEMONSTRATED PAST EXPERIENCE WITH PRODUCTS BEING INSTALLED FOR PERIOD WITHIN FIVE (5) CONSECUTIVE YEARS BEFORE TIME OF BID.

DSA GENERAL NOTES

1. THE INTENT OF THE CONTRACT DOCUMENTS IS TO MODERNIZE THE SCHOOL'S CAMPUS. SHOULD ANY CONDITIONS DEVELOP NOT COVERED BY THE CONTRACT DOCUMENTS, A CONSTRUCTION CHANGE DOCUMENT DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK.
2. THE SEISMIC SUPPORT AND ANCHORAGE OF THE EQUIPMENT DESCRIBED ON THESE DRAWINGS HAVE BEEN ENGINEERED BY THE ENGINEER OF RECORD FOR CONFORMANCE WITH APPROPRIATE BUILDING CODES. THE ENGINEER OF RECORD WAS NOT RESPONSIBLE FOR THE EQUIPMENT DESIGN.
3. ALL MECHANICAL AND PLUMBING EQUIPMENT SHALL BE BRACED OR ANCHORED TO RESIST A HORIZONTAL FORCE ACTING IN ANY DIRECTION USING THE CRITERIA FROM CHAPTER 16A CALIFORNIA BUILDING CODE (CBC) 2022.
4. WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER AND THE FIELD REPRESENTATIVE OF THE DIVISION OF THE STATE ARCHITECT.
5. NO DEMOLITION SHALL BEGIN UNTIL PLANS INCLUDING THE DEMOLITION WORK HAVE BEEN APPROVED BY DSA.

LIST OF GOVERNING CODES

2022 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24, C.C.R.
2022 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24, C.C.R.
2022 CALIFORNIA ELECTRICAL CODE, PART 3, TITLE 24, C.C.R.
2022 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24, C.C.R.
2022 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24, C.C.R.
2022 CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24, C.C.R.
2022 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24, C.C.R.
2022 CALIFORNIA GREEN BUILDING STANDARDS CODE, PART 11, TITLE 24, C.C.R.
2022 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24, C.C.R.
TITLE 19, C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.

ALL SECTION NUMBERS BELOW REFER TO GROUP 1, CHAPTER 4, PART 1, TITLE 24, C.C.R.
1. ADDENDA, CONSTRUCTION CHANGES PER SECTION 4-338.
2. INSPECTOR APPROVED BY DSA. INSPECTOR AND CONTINUOUS INSPECTION OF WORK PER SECTION 4-333(b) AND 4-342.
3. TESTS AND TESTING LABORATORY PER SECTION 4-335.
4. SPECIAL INSPECTION PER SECTION 4-333(c).
5. CONTRACTOR SHALL SUBMIT VERIFIED REPORTS PER SECTION 4-336 AND 4-343(c).
6. ADMINISTRATION OF CONSTRUCTION PER PART 1, TITLE 24, C.C.R. - DUTIES OF ARCHITECT, STRUCTURAL ENGINEER OR PROFESSIONAL ENGINEER PER SECTION 4-333(a) AND 4-341.
7. GOVERNING CODES: TITLE 24.
8. A COPY OF PARTS 1, 2, 3, 4, AND 5 OF TITLE 24 SHALL BE KEPT AVAILABLE IN THE FIELD DURING CONSTRUCTION.
9. DSA SHALL BE NOTIFIED OF START OF CONSTRUCTION PER SECTION 4-331.
10. SUPERVISION BY THE DIVISION OF THE STATE ARCHITECT PER SECTION 4-334.

DRAWING INDEX

2MP-001 LEGENDS & NOTES - MECHANICAL & PLUMBING
2MP-002 SCHEDULES - MECHANICAL & PLUMBING
2MP-201 BLDGS A&C - DEMO & NEW FLOOR PLANS - MECHANICAL & PLUMBING
2MP-202 BLDG B - DEMO & NEW FLOOR PLANS - MECHANICAL & PLUMBING
2MP-203 BLDG D - DEMO & NEW FLOOR PLANS - MECHANICAL & PLUMBING
2MP-204 BLDG E - DEMO & NEW FLOOR PLANS - MECHANICAL & PLUMBING
2MP-205 BLDGS MULTI-USE - DEMO & NEW FLOOR PLANS - MECHANICAL & PLUMBING
2MP-301 BLDGS B, C, & MU - DEMO & NEW ROOF PLAN - MECHANICAL & PLUMBING
2MP-401 BLDG B, I & E - DEMO & NEW RESTROOM PLANS - MECHANICAL & PLUMBING
2MP-402 BLDG E - DEMO & NEW RESTROOM PLANS - MECHANICAL & PLUMBING
2MP-501 CONTROLS - MECHANICAL
2MP-601 DETAILS - MECHANICAL & PLUMBING
2MP-602 DETAILS - MECHANICAL & PLUMBING
2MP-801 T24 - MECHANICAL

AGENCY APPROVAL DSA# 01-121400

196
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STRUCTURAL ENGINEER
BASE Design Inc.
582 Market St. Ste 1402
San Francisco, CA 94104
TEL (415) 466-2997

ELECTRICAL ENGINEER
ATIUM ENGINEERING
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San Ramon, CA 94582
TEL (913) 961-1658

TECHNOLOGY ENGINEER
KMM Services Inc.
5433 El Camino Ave. Ste 5
Carmichael, CA 95608
TEL (916) 359-4000

PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER — MEGHAN SERTUCHE — No. M31059 — EXP. JUNE 30, 2025 — MECHANICAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/25/24	DSA V2

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
LEGENDS & NOTES - MECHANICAL & PLUMBING

INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.
2MP-001

DATE: JULY 29, 2024

CONSTRUCTION DOCUMENTS

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AIR DISTRIBUTION SCHEDULE

TAG	MANUFACTURER	MODEL NO.	DESCRIPTION	BORDER TYPE	MOUNTING DETAIL	NOTES
CD-1	TITUS	MCD	CEILING DIFFUSER	SURFACE MOUNT	10/1MP-601	1
CD-2	TITUS	MCD	CEILING DIFFUSER	LAY-IN MOUNT	10/1MP-601	1
EG-1	TITUS	8R	EXHAUST GRILLE	SURFACE MOUNT	10/1MP-601	1
EG-2	TITUS	8R	EXHAUST GRILLE	LAY-IN MOUNT	10/1MP-601	1
RG-2	TITUS	8R	RETURN GRILLE	LAY-IN MOUNT	10/1MP-601	1
SWR-1	TITUS	350 RL	SIDE WALL RETURN	SURFACE MOUNT	11/2MP-601	1, 2
SWS-1	TITUS	300 RL	SIDE WALL SUPPLY	SURFACE MOUNT	11/2MP-601	1, 2

1. PRIME AND PAINT PER ARCHITECT'S INSTRUCTIONS.
2. PROVIDE W/ OPPOSED BLADE DAMPER.

PLUMBING FIXTURES SCHEDULE

ITEM	DESCRIPTION	MANUFACTURER	MODEL NO.	ROUGH-IN CONNECTIONS (IN.)					FLUSH VALVE	SEAT	FAUCET	CARRIER	DRAIN ASSEMBLY	P-TRAP	STOP / SUPPLY	INSULATION KIT	ADA (Y/N)	NOTES
				TRAP	W	V	CW	HW										
CS-1	CLASSROOM SINK	ELKAY	DRKADQ222065-2LM (6½" DEEP)	1-1/2"	2"	1-1/2"	1/2"	—	—	—	MOEN 8103 (W/ 1.5 GPM AERATOR)	—	ELKAY LKAD35	DEARBORN BRASS 710-1	BRASSCRAFT SCR19X C	TRUEBRO LAV GUARD 2	Y	1
DF-1	DRINKING FOUNTAIN	HAWS	1117L	1-1/2"	2"	1-1/2"	1/2"	—	—	—	—	HAWS 6717	—	HAWS SUPPLIED W/ DF	BRASSCRAFT SCR19X C	—	Y	2, 3
L-1	WALL HUNG LAVATORY	AMERICAN STANDARD	LUCERNE 0356.421	1-1/2"	2"	1-1/2"	1/2"	—	—	—	MOEN 8884	JAY R. SMITH 0722	MCGUIRE 155WC	DEARBORN BRASS 710-1	BRASSCRAFT SCR19X C	TRUEBRO LAV GUARD 2	Y	2, 3, 5, 6
MS-1	MOP SINK	AMERICAN STANDARD	FLORWELL SERVICE SINK 7745.811	3"	3"	2"	3/4"	3/4"	—	—	CHICAGO FAUCETS 897-RCF	—	7721.038	—	—	—	N	4
S-1	SINGLE COMPARTMENT SINK	ELKAY	LRAD151765 (6½" DEEP)	1-1/2"	2"	1-1/2"	1/2"	1/2"	—	—	MOEN 8278	—	ELKAY LKAD35	DEARBORN BRASS 710-1	BRASSCRAFT SCR19X C	TRUEBRO LAV GUARD 2	Y	2, 3
WC-1	FLOOR MOUNT WATER CLOSET (ADA HT.)	AMERICAN STANDARD	MADERA FLOWISE 3461.001	INT	4"	2"	1-1/2"	—	MOEN 8310M128 (1.28 GPF)	BEMIS 1955SSCT	—	—	—	—	—	—	Y	2, 3
WC-2	FLOOR MOUNT WATER CLOSET (STD. HT.)	AMERICAN STANDARD	MADERA FLOWISE 3451.001	INT	4"	2"	1-1/2"	—	MOEN 8310M128 (1.28 GPF)	BEMIS 1955SSCT	—	—	—	—	—	—	N	2, 3
WC-3	FLOOR MOUNT WATER CLOSET (KINDER. HT.)	AMERICAN STANDARD	BABY DEVORO FLOWISE 2282.001	INT	4"	2"	1-1/2"	—	MOEN 8310M128 (1.28 GPF)	AMERICAN STANDARD 5001G.055	—	—	—	—	—	—	N	2, 3

1. PROVIDE WITH ELKAY LK1141A BUBBLER.
2. FOR RESTROOM PLUMBING FIXTURE HEIGHTS REFER TO ARCHITECT DETAILS.
3. FOR ADA FIXTURE LOCATIONS SEE ARCHITECT PLANS.
4. PROVIDE W/ VINYL RIM GUARD & 7721.038 FLAT GRID DRAIN.
5. 0.5 GPM ECONO-FLOW VANDAL PROOF NON-AERATING WATER SUPPLY.
6. PROVIDE WITH LOOSE KEY AND B3-16A SUPPLY.

WATER HEATERS SCHEDULE

TAG	TYPE	MANUFACTURER	MODEL NO.	LOCATION	CAPACITY GAL	GAS INPUT MBH	RECOVERY GPH	ELECTRICAL			WEIGHT LBS	MOUNTING DETAIL	NOTES
								KW	AMPS	V / PH			
WH-A-1	ELECTRIC W/ STORAGE	A.O. SMITH	DEL-20	BLD A CUSTODIAN C1	20	—	14	3	—	120 / 1	185	7/2MP-602	1, 2
WH-D-1	ELECTRIC W/ STORAGE	A.O. SMITH	DEL-20	BLD D.1 CUSTODIAN C2	20	—	14	3	—	120 / 1	185	7/2MP-602	1, 2
WH-D-2	ELECTRIC W/ STORAGE	A.O. SMITH	DEL-20	BLD D.2 CUSTODIAN C3	20	—	14	3	—	120 / 1	185	7/2MP-602	1, 2

1. PROVIDE W/ HOLDRITE 30-SWHP-WM WALL HUNG PLATFORM
2. SEE DETAIL 8/2MP-602 FOR PIPING.

INSTANT WATER HEATERS SCHEDULE

TAG	TYPE	MANUFACTURER	MODEL NO.	LOCATION	CAPACITY GAL	RECOVERY GPH	ELECTRICAL		WEIGHT LBS	MOUNTING DETAIL	NOTES
							KW	V / PH			
WH-B.1-A4	ELECTRIC TANKLESS POINT OF USE	CHRONOMITE	CM-15L/120	NURSE A4	—	—	1.8	120 / 1	5	—	1, 2

1. PROVIDE WITH ALL FAUCET CONTROLS, WATER CONNECTIONS, AND FITTINGS. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
2. PROVIDE WITH FIELD ADJUSTABLE TEMPERATURE. SET TO 105°F.

PACKAGED AIR CONDITIONING UNITS SCHEDULE (OWNER FURNISHED CONTRACTOR INSTALLED)

TAG	LOCATION	MANUFACTURER	MODEL NO.	POWER EXHAUST	COOLING MBH		GAS HEATING MBH		AIRFLOW CFM	ESP IN. W.G.	OUTSIDE AIR MIN. CFM	OUTSIDE AIR MAX. DCV CFM	FAN RPM	MOTOR BHP	SEER	AFUE %	ELECTRICAL			WEIGHT LBS	MOUNTING DETAIL	NOTES
					TOTAL	SENSIBLE	INPUT	OUTPUT									V / PH	MCA	MOCP			
AC-MU-1	MU ROOF	CARRIER	48GCDM12C3M5	PE-MU-1	123.18	91.09	180 140	147.6 98	4,000	1.50	400	1000	1,885	3.52	17.2 IEER	82	208 / 3	59	70	1825	1/2MP-601	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
AC-MU-2	MU ROOF	CARRIER	48GCDM12C3M5	PE-MU-2	123.18	91.09	180 140	147.6 98	4,000	1.50	400	1000	1,885	3.52	17.2 IEER	82	208 / 3	59	70	1825	1/2MP-601	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
AC-C-8	BLD C ROOF	CARRIER	48GCLT04A3A3-3A3A00	—	35.67	25.56	60	49	1,200	1.50	200	500	2,340	0.94	16	81	208 / 1	30	40	660	2/2MP-601	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13
AC-C-9	BLD C ROOF	CARRIER	48GCLT04A3A3-3A3A00	—	35.67	25.56	60	49	1,200	1.50	200	500	2,340	0.94	16	81	208 / 1	30	40	660	2/2MP-601	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13

1. WEIGHT INCLUDES ALL OPTIONS AND ACCESSORIES.
2. FURNISHED WITH ULTRA LOW LEAK ECONOMIZER, SEE POWER EXHAUST / ECONOMIZER SCHEDULE IF APPLICABLE.
3. FURNISHED WITH LOUVERED HAIL GUARDS, UN POWERED CONVENIENCE OUTLET, AND HINGED ACCESS PANELS.
4. PROVIDE WITH MERV 13 FILTERS.
5. FURNISHED WITH ECONOMIZER / POWERED EXHAUST CONTROLLER. COORDINATE WITH MANUFACTURER.
6. VERTICAL SUPPLY DISCHARGE & HORIZONTAL RETURN CONFIGURATION.
7. FURNISHED W/ CANFAB 1008-1C11A-CBC VIBRATION ISOLATION - STRUCTURALLY CALCULATED ROOF CURB OR EQUAL.
8. FURNISHED W/ FLUE DISCHARGE DEFLECTOR
9. PROVIDE MANUFACTURER SMOKE DETECTOR FIELD INSTALLED IN SUPPLY DUCT, WIRED TO SHUT DOWN UPON DETECTION OF SMOKE, PER 2022 CMC 608 & COORDINATE W/ ELECTRIC CONTRACTOR.
10. CONTRACTOR SHALL PROVIDE VICONICS VT8650, SEE 2MP-501.
11. IF EQUIPMENT MODEL SPECIFIED IS NO LONGER AVAILABLE AT TIME OF CONSTRUCTION FOR ANY REASON INCLUDING NEW REGULATORY REQUIREMENTS, PROVIDE THE NEW EQUIVALENT MODEL & INCLUDE EXPECTED PRICE DIFFERENCES IN BID.
12. FURNISHED W/ CANFAB 1005-CB11F-CBC - STRUCTURALLY CALCULATED ROOF CURB OR EQUAL.
13. VERTICAL SUPPLY& RETURN DISCHARGE CONFIGURATION.

POWER EXHAUST / ECONOMIZER SCHEDULE MU (OWNER FURNISHED CONTRACTOR INSTALLED)

TAG	MANUFACTURER	MODEL NO.	AC UNIT SERVED	AIRFLOW CFM	ESP IN. W.G.	MOTOR HP	ELECTRICAL			WEIGHT LBS	NOTES
							V / PH	MCA	MOCP		
PE-MU-1	CANFAB	1124-PE / MPE	AC-MU-1	4000	-	2.0	208 / 3	7.75	13.95	SEE NOTE 2	1, 2, 3, 4
PE-MU-2	CANFAB	1124-PE / MPE	AC-MU-2	4000	-	2.0	208 / 3	7.75	13.95	SEE NOTE 2	1, 2, 3, 4

1. PROVIDE WITH MODULATING SPEED POWER EXHAUST AND PRESSURE TRANSDUCER TO CONTROL TO BUILDING PRESSURE.
2. POWER EXHAUST WEIGHT INCLUDED IN AC UNIT TOTAL WEIGHT. SEE AC UNIT SCHEDULE.
3. ECONOMIZER DRY BULB OAT SENSOR & CONTROL.
4. IF EQUIPMENT MODEL SPECIFIED IS NO LONGER AVAILABLE AT TIME OF CONSTRUCTION FOR ANY REASON INCLUDING NEW REGULATORY REQUIREMENTS, PROVIDE THE NEW EQUIVALENT MODEL & INCLUDE EXPECTED PRICE DIFFERENCES IN BID.

FANS SCHEDULE

TAG	MANUFACTURER	MODEL NO.	TYPE	AREA SERVED	AIRFLOW CFM	ESP IN. W.G.	FAN RPM	SOUND POWER SONES	MOTOR			WEIGHT LBS	MOUNTING DETAIL	NOTES
									WATTS	HP	V / PH			
EF-E-15T	GREENHECK	SP-A200	CEILING EXHAUST FAN	BLD E KINDER 15T	120	0.25	648	1.1	19	—	115 / 1	35	3 OR 4/2MP-601	1, 2, 3
EF-E-16T	GREENHECK	SP-A200	CEILING EXHAUST FAN	BLD E KINDER 16T	120	0.25	648	1.1	19	—	115 / 1	35	3 OR 4/2MP-601	1, 2, 3
EF-E-17T	GREENHECK	SP-A200	CEILING EXHAUST FAN	BLD E KINDER 17T	120	0.25	648	1.1	19	—	115 / 1	35	3 OR 4/2MP-601	1, 2, 3
EF-E-18T	GREENHECK	SP-A200	CEILING EXHAUST FAN	BLD E KINDER 18T	120	0.25	648	1.1	19	—	115 / 1	35	3 OR 4/2MP-601	1, 2, 3
EF-E-19T	GREENHECK	SP-A200	CEILING EXHAUST FAN	BLD E KINDER 19T	120	0.25	648	1.1	19	—	115 / 1	35	3 OR 4/2MP-601	1, 2, 3

1. CONTROL W/ LIGHTS BY WALL SWITCH / OCCUPANCY SENSOR.
2. PROVIDE WITH UL LISTING, FAN MOUNTED SPEED CONTROL, AND BACKDRAFT DAMPER.
3. PROVIDE WITH FACTORY ISOLATION KIT.

ENERGY RECOVERY VENTILATOR SCHEDULE (OWNER FURNISHED CONTRACTOR INSTALLED)

TAG	MANUFACTURER	MODEL NO.	LOCATION	SUPPLY				EXHAUST				ELECTRICAL			WEIGHT LBS	MOUNTING DETAIL	NOTES
				AIRFLOW CFM	ESP IN. W.G.	FAN SPEED	WATTS	AIRFLOW CFM	ESP IN. W.G.	FAN RPM	WATTS	V / PH	MCA	MOCP			
ERV-B-1	TRANE LOSSNAY	TLGHF0600RVX02A	BUILDING B.1	600	0.86	100%	515	600	0.86	100%	515	208 / 1	5.2	15	125	4/2MP-601	1, 2, 3, 4

1. UNIT TO OPERATE ON BUILDING SCHEDULE BY EMS, SEE 2MP-501.
2. FURNISHED WITH MERV 14 OUTDOOR AIR FILTER AND MERV 8 EXHAUST AIR FILTER.
3. 4 FAN SPEEDS (25%, 50%, 75%, 100%)
4. FURNISHED W/ TZ-62DR-EA LOSSNAY CONTROLLER. SEE 2MP-501 FOR CONTROL DIAGRAM.

ROOF HOOD SCHEDULE

TAG	MANUFACTURER	MODEL NO.	TYPE	HOOD SIZE (IN)			THROAT SIZE (IN)		WEIGHT LBS	MOUNTING DETAIL	NOTES
				W	L	H	W	L			
RH-B-1	GREENHECK	GRSI- 15	INTAKE	29 Ø	—	12	14 Ø	—	35	12/2MP-601	1, 2, 3, 4
RH-B-2	GREENHECK	GRSR- 15	RELIEF	29 Ø	—	12	14 Ø	—	35	12/2MP-601	1, 2, 3, 4

1. WEIGHT INCLUDES ACCESSORIES.
2. PROVIDE WITH BACKDRAFT DAMPER & BIRD SCREEN.
3. PROVIDE W/ ROOF CURB.
4. SEE ARCH DRAWINGS FOR PAINTING

AGENCY APPROVAL DSA# 01-121400

196

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER — MEYIN SERT LIAO — No. M31059 — EXP. JUNE 30, 2025 — MECHANICAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/25/24	DSA V2

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

SCHEDULES - MECHANICAL & PLUMBING

INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.

2MP-002

DATE: JULY 29, 2024

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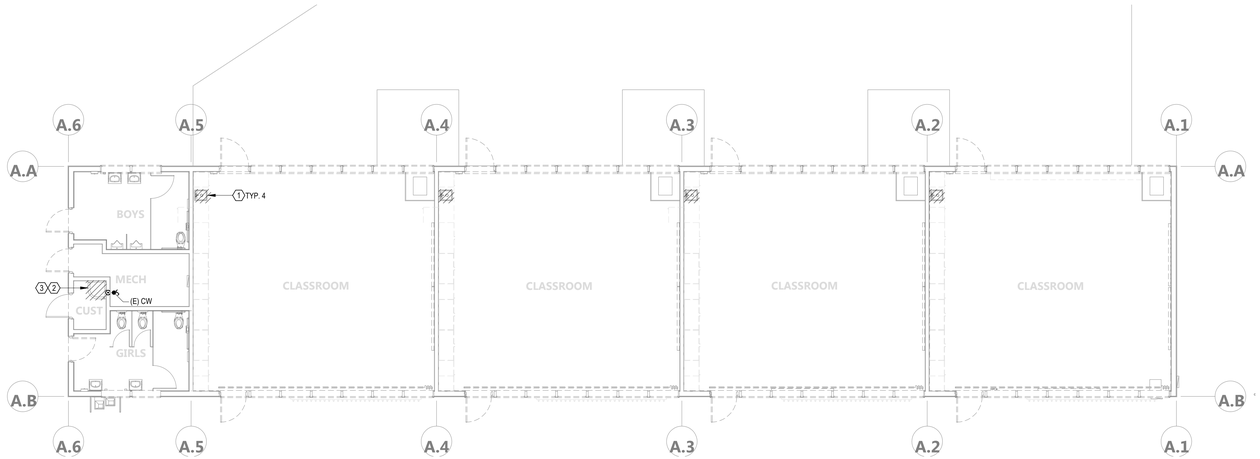
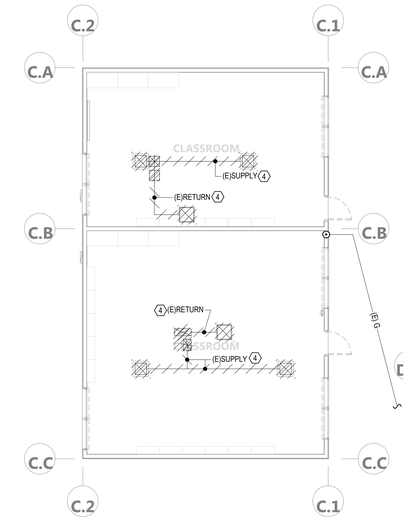


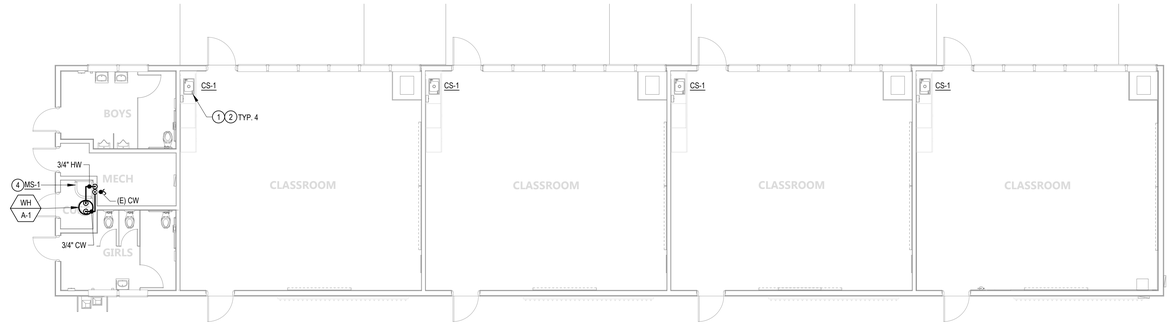
1 2MP-201 BLDG A FLOOR PLAN - DEMO - MECHANICAL & PLUMBING

SCALE: 1/8" = 1'-0"



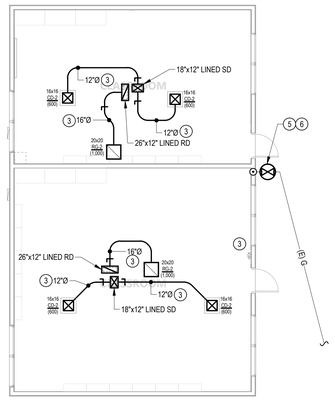
2 2MP-201 BLDG C FLOOR PLAN - DEMO - MECHANICAL & PLUMBING

SCALE: 1/8" = 1'-0"



2 2MP-201 BLDG A FLOOR PLAN - NEW - MECHANICAL & PLUMBING

SCALE: 1/8" = 1'-0"



3 2MP-201 BLDG C FLOOR PLAN - NEW - MECHANICAL & PLUMBING

SCALE: 1/8" = 1'-0"

NEW SHEET NOTES

1. CONNECT SINK TO (E) PLUMBING CONNECTIONS, EXTEND PLUMBING AS REQUIRED.
2. CS-1 CLASSROOM SINKS SHALL HAVE NEW PIPES, TRAPS, & FITTINGS FROM THE WALL CONNECTIONS TO THE SINK.
3. (E) T-BAR CEILING TO BE REINSTALLED WITH NEW DUCT DUCTWORK & REGISTERS. LOCATE REPLACEMENT REGISTERS IN LOCATIONS OF THE REMOVED (E) REGISTERS. REFER TO ARCHITECT DRAWINGS FOR FURTHER DETAILS ON T-BAR CEILING.
4. CONNECT MOP SINK TO (E) PLUMBING CONNECTIONS, EXTEND PLUMBING AS REQUIRED.
5. INSTALL GAS SOV IN VALVE BOX W/ LID LABELED "BUILDING GAS SHUT OFF VALVE", SEE DETAIL 10/2MP-602. FIELD VERIFY UNDERGROUND GAS LOCATION & ROUTING.
6. INSTALL SIGN MOUNTED ON BUILDING NEARBY LABELED "BUILDING GAS SHUT OFF VALVE IN UNDERGROUND VALVE BOX"

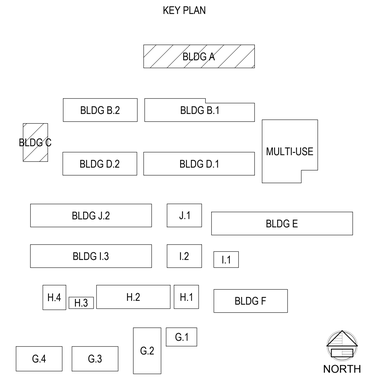
DEMOLITION SHEET NOTES

1. REMOVE (E) SINK, PROTECT (E) UTILITIES IN WALL FOR CONNECTION TO NEW SINK.
2. REMOVE (E) UTILITY SINK, PROTECT (E) UTILITIES IN FOR CONNECTION TO NEW UTILITY SINK.
3. REMOVE (E) WATER HEATER & HW PIPING TO UTILITY SINK.
4. REMOVE (E) DUCTWORK & REGISTERS COMPLETE. REMOVE & PRESERVE (E) T-BAR CEILING AS REQUIRED FOR DEMOLITION WORK. T-BAR CEILING TO BE REINSTALLED WITH NEW DUCTWORK IS COMPLETE. REFER TO ARCHITECT DRAWINGS FOR FURTHER DETAILS ON T-BAR CEILING.

GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW BUILDING STRUCTURES, SERVICES, AND OWNER'S PROPERTY DURING THE ENTIRE PERIOD OF CONSTRUCTION.
2. COORDINATE THE LOCATIONS OF ROOF/WALL OPENINGS, PENETRATIONS, DUCTWORK, PIPING, AND ALL MECHANICAL AND PLUMBING EQUIPMENT WITH RESPECT TO BUILDING STRUCTURE AND OTHER BUILDING SERVICES TO AVOID CONFLICT.
3. SEE ARCHITECT'S DRAWINGS FOR PATCHING AND REPAIR OF ROOF, WALL, AND FLOOR PENETRATIONS.
4. INFORMATION SHOWN IS BASED ON AVAILABLE AS-BUILTS AND THE LOCATION OF ALL EQUIPMENT, DUCTS, PENETRATIONS, PIPING, AND OTHER PROJECTIONS SHOWN ON THE PLANS IS APPROXIMATE. NOT ALL EXISTING ITEMS ARE IDENTIFIED OR SHOWN ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS, INCLUDING ALL RELEVANT DIMENSION,S EQUIPMENT COUNTS, AND LOCATIONS PRIOR TO SUBMITTING A BID.
5. SEE PLANS AND SPECIFICATIONS FOR ALL OTHER DISCIPLINES FOR ADDITIONAL SCOPE OF WORK THAT MAY NOT BE SHOWN HERE. COORDINATE WITH GENERAL CONTRACTOR TO CONFIRM ENTIRE SCOPE OF WORK HAS BEEN INCLUDED.

KEY PLAN



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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER — METIN SERT UYSAL — No. M31059 — EXP. JUNE 30, 2025 — MECHANICAL — STATE OF CALIFORNIA

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BLDGS A & C - DEMO & NEW FLOOR PLANS

INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23119.01

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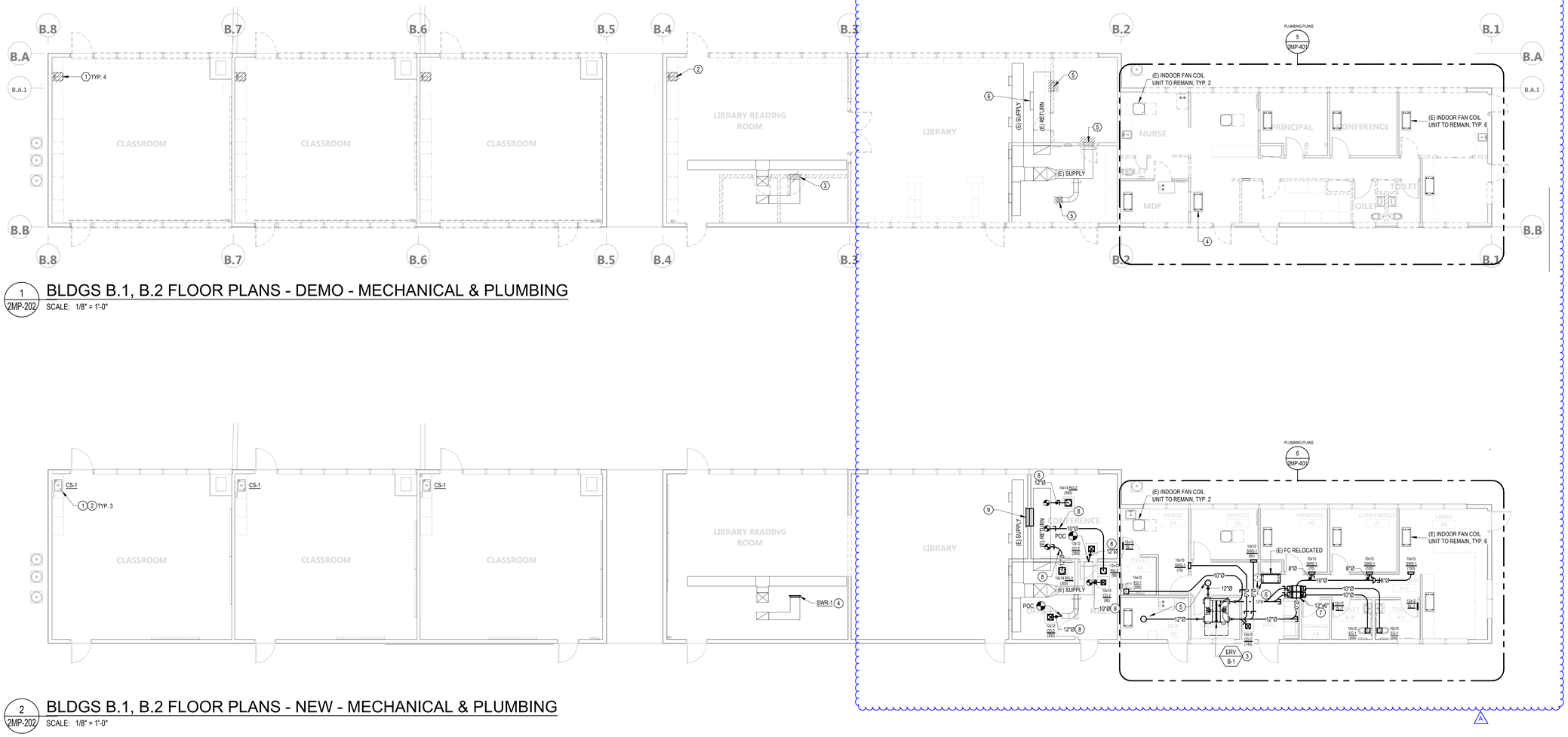


1 2MP-202 BLDGS B.1, B.2 FLOOR PLANS - DEMO - MECHANICAL & PLUMBING

SCALE: 1/8" = 1'-0"

2 2MP-202 BLDGS B.1, B.2 FLOOR PLANS - NEW - MECHANICAL & PLUMBING

SCALE: 1/8" = 1'-0"

NEW SHEET NOTES

1. CONNECT SINK TO (E) PLUMBING CONNECTIONS, EXTEND PLUMBING AS REQUIRED.
2. CS-1 CLASSROOM SINKS SHALL HAVE NEW PIPES, TRAPS, & FITTINGS FROM THE WALL CONNECTIONS TO THE SINK.
3. INSTALL ERV-B-1 HUNG IN CEILING SPACE W/ DUCTWORK.
4. ADD NEW DUCT MOUNTED RETURN GRILLE. MATCH (E) SIZE OF THE REMOVED WALL RETURN GRILLE.
5. DUCT RISER TO ROOF HOODS RH-B-1 & RH-B-2 SEE ROOF PLAN 5/2MP-301.
6. RELOCATED (E) INDOOR FAN COIL & THERMOSTAT. EXTEND (E) REFRIGERANT PIPING, POWER, & CONTROL WIRES TO NEW LOCATION. PROVIDE NEW CONDENSATE DRAIN TO (E) CD RECEPTOR. REFER ELECTRICAL DRAWINGS FOR POWER.
7. TRANSITION TO RECTANGULAR DUCT FOR DUCT CROSSING CLEARANCES.
8. CONNECT NEW DUCT BRANCHES FROM (E) DUCT MAINS TO NEW CEILING REGISTERS.
9. ADD RETURN DUCT EXTENSION AS REQUIRED TO RELOCATE (E) RETURN GRILLE &W/ BALANCE DAMPER FOR LIBRARY.

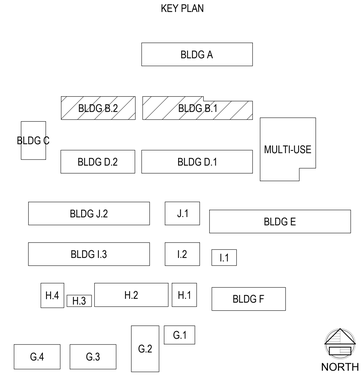
DEMOLITION SHEET NOTES

1. REMOVE (E) SINK, PROTECT (E) UTILITIES IN WALL FOR CONNECTION TO NEW SINK.
2. REMOVE (E) SINK, CAP UTILITIES IN WALL OR BELOW FLOOR.
3. REMOVE (E) WALL RETURN REGISTER & DUCT TRANSITIONS TO REGISTER. CAP DUCT END @ UPPER MAIN RETURN DUCT.
4. (E) INDOOR FAN COIL & THERMOSTAT TO BE RELOCATED, PRESERVE FAN COIL & THERMOSTAT . PROTECT (E) REFRIGERANT PIPING, POWER, & CONTROL WIRES TO BE EXTENDED TO NEW LOCATION. REFER TO NEW FLOOR PLAN FOR NEW LOCATION & ELECTRICAL DRAWINGS FOR POWER.
5. REMOVE (E) SIDE WALL REGISTERS COMPLETE. NEW DUCTWORK EXTENSION CONNECTIONS WILL BE AT THESE LOCATIONS AS SHOWN ON NEW FLOOR PLAN BELOW.
6. (E) RETURN REGISTER TO REMOVED & RELOCATED TO NEW WALL . SEE NEW FLOOR PLAN BELOW.

GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW BUILDING STRUCTURES, SERVICES, AND OWNER'S PROPERTY DURING THE ENTIRE PERIOD OF CONSTRUCTION.
2. COORDINATE THE LOCATIONS OF ROOF/WALL OPENINGS, PENETRATIONS, DUCTWORK, PIPING, AND ALL MECHANICAL AND PLUMBING EQUIPMENT WITH RESPECT TO BUILDING STRUCTURE AND OTHER BUILDING SERVICES TO AVOID CONFLICT.
3. SEE ARCHITECT'S DRAWINGS FOR PATCHING AND REPAIR OF ROOF, WALL, AND FLOOR PENETRATIONS.
4. INFORMATION SHOWN IS BASED ON AVAILABLE AS-BUILTS AND THE LOCATION OF ALL EQUIPMENT, DUCTS, PENETRATIONS, PIPING, AND OTHER PROJECTIONS SHOWN ON THE PLANS IS APPROXIMATE. NOT ALL EXISTING ITEMS ARE IDENTIFIED OR SHOWN ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS, INCLUDING ALL RELEVANT DIMENSION,S EQUIPMENT COUNTS, AND LOCATIONS PRIOR TO SUBMITTING A BID.
5. SEE PLANS AND SPECIFICATIONS FOR ALL OTHER DISCIPLINES FOR ADDITIONAL SCOPE OF WORK THAT MAY NOT BE SHOWN HERE. COORDINATE WITH GENERAL CONTRACTOR TO CONFIRM ENTIRE SCOPE OF WORK HAS BEEN INCLUDED.

KEY PLAN



AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER — MEYIN SERT LYAU — No. M31059 — EXP. JUNE 30, 2025 — MECHANICAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/25/24	DSA V2

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
BLDGS B.1, B.2 - DEMO & NEW FLOOR PLANS
INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.
2MP-202

DATE: JULY 29, 2024

CONSTRUCTION DOCUMENTS

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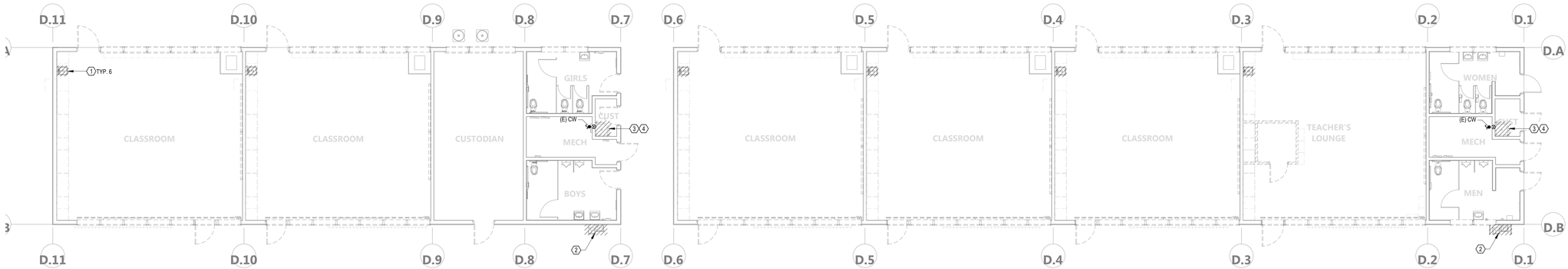
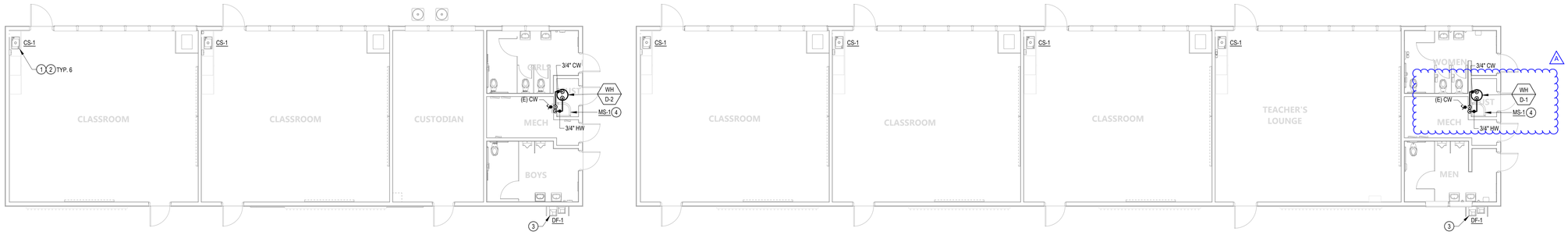


1 / 2MP-203 BLDGS D.1, D.2 FLOOR PLANS - DEMO - MECHANICAL & PLUMBING

SCALE: 1/8" = 1'-0"



2 / 2MP-203 BLDGS D.1, D.2 FLOOR PLANS - NEW - MECHANICAL & PLUMBING

SCALE: 1/8" = 1'-0"

NEW SHEET NOTES

1. CONNECT SINK TO (E) PLUMBING CONNECTIONS, EXTEND PLUMBING AS REQUIRED.
2. CS-1 CLASSROOM SINKS SHALL HAVE NEW PIPES, TRAPS, & FITTINGS FROM THE WALL CONNECTIONS TO THE SINK.
3. CONNECT DRINKING FOUNTAIN TO (E) PLUMBING CONNECTIONS, EXTEND PLUMBING AS REQUIRED.
4. CONNECT MOP SINK TO (E) PLUMBING CONNECTIONS, EXTEND PLUMBING AS REQUIRED.

DEMOLITION SHEET NOTES

1. REMOVE (E) SINK, PROTECT (E) UTILITIES IN WALL FOR CONNECTION TO NEW SINK.
2. REMOVE (E) DRINKING FOUNTAIN, PROTECT (E) UTILITIES IN WALL FOR CONNECTION TO NEW DRINKING FOUNTAIN.
3. REMOVE (E) UTILITY SINK, PROTECT (E) UTILITIES IN FOR CONNECTION TO NEW UTILITY SINK.
4. REMOVE (E) WATER HEATER & HW PIPING TO UTILITY SINK.

GENERAL NOTES

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2. COORDINATE THE LOCATIONS OF ROOF/WALL OPENINGS, PENETRATIONS, DUCTWORK, PIPING, AND ALL MECHANICAL AND PLUMBING EQUIPMENT WITH RESPECT TO BUILDING STRUCTURE AND OTHER BUILDING SERVICES TO AVOID CONFLICT.
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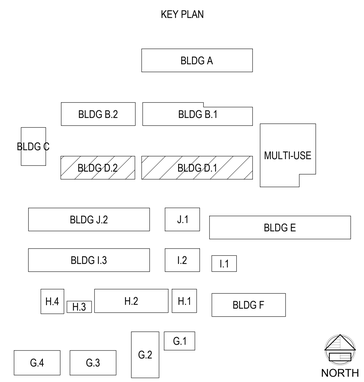

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER
MEITH SERTYUCI
No. M31059
EXP. JUNE 30, 2025
MECHANICAL
STATE OF CALIFORNIA

REVISIONS

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SHEET TITLE

BLDGS D.1, D.2 - DEMO & NEW FLOOR PLANS

INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.

2MP-203

DATE: JULY 29, 2024

CONSTRUCTION DOCUMENTS

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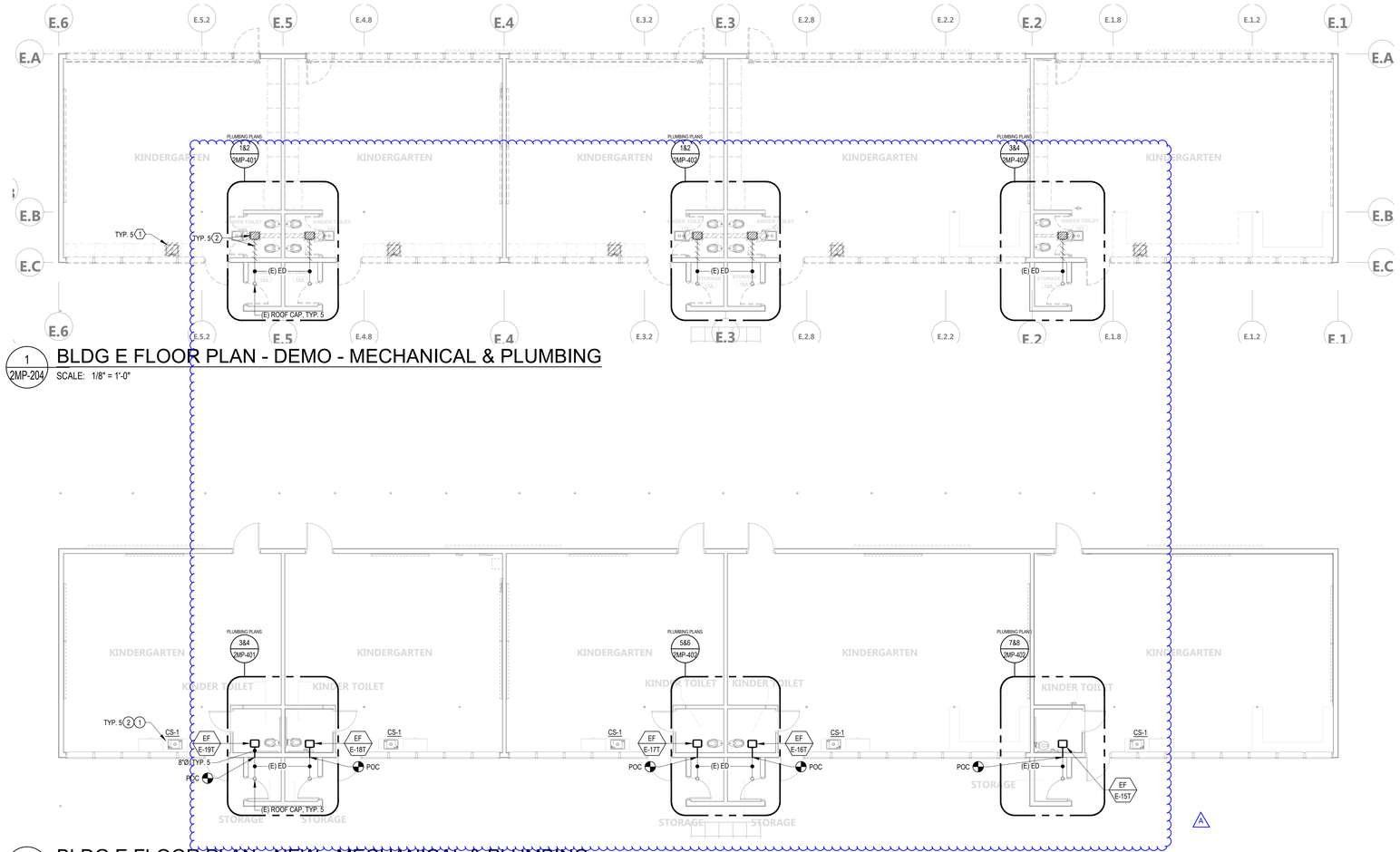

1 / 2MP-204 BLDG E FLOOR PLAN - DEMO - MECHANICAL & PLUMBING

SCALE: 1/8" = 1'-0"

2 / 2MP-204 BLDG E FLOOR PLAN - NEW - MECHANICAL & PLUMBING

SCALE: 1/8" = 1'-0"

NEW SHEET NOTES

1. CONNECT SINK TO (E) PLUMBING CONNECTIONS, EXTEND PLUMBING AS REQUIRED.
2. CS-1 CLASSROOM SINKS SHALL HAVE NEW PIPES, TRAPS, & FITTINGS FROM THE WALL CONNECTIONS TO THE SINK.

DEMOLITION SHEET NOTES

1. REMOVE (E) SINK, PROTECT (E) UTILITIES IN WALL FOR CONNECTION TO NEW SINK.
2. REMOVE (E) CEILING EXHAUST FAN COMPLETE. (E) ED IN RESTROOM TO BE REMOVED AS REQUIRED FOR CONNECTION TO NEW EXHAUST FAN AND (E) ED IN EXTERIOR LOWER ROOF TO ROOF CAPS TO BE REUSED.

GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW BUILDING STRUCTURES, SERVICES, AND OWNER'S PROPERTY DURING THE ENTIRE PERIOD OF CONSTRUCTION.
2. COORDINATE THE LOCATIONS OF ROOF/WALL OPENINGS, PENETRATIONS, DUCTWORK, PIPING, AND ALL MECHANICAL AND PLUMBING EQUIPMENT WITH RESPECT TO BUILDING STRUCTURE AND OTHER BUILDING SERVICES TO AVOID CONFLICT.
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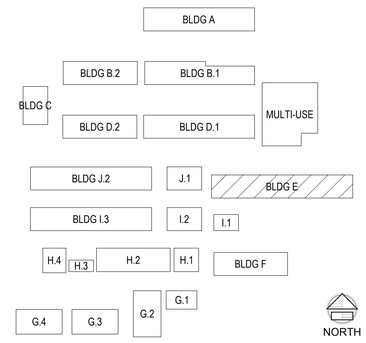

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER
MEIN SERTTUM
No. M31059
EXP. JUNE 30, 2025
MECHANICAL
STATE OF CALIFORNIA

REVISIONS

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PROJECT OWNER & TITLE

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1936 Carlotta Drive
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1371 Detroit Ave
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SHEET TITLE

BLDG E - DEMO & NEW FLOOR PLANS

INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.

2MP-204

DATE: JULY 29, 2024

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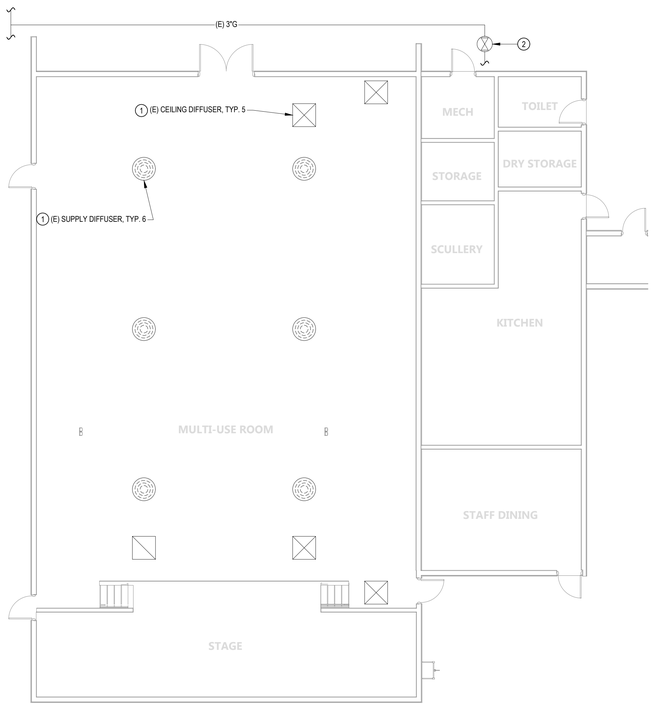

1 / 2MP-205 MULTI-USE BLDG FLOOR PLAN - NEW - MECHANICAL & PLUMBING

SCALE: 1/8" = 1'-0"

GENERAL NOTES

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3. SEE ARCHITECT'S DRAWINGS FOR PATCHING AND REPAIR OF ROOF, WALL, AND FLOOR PENETRATIONS.
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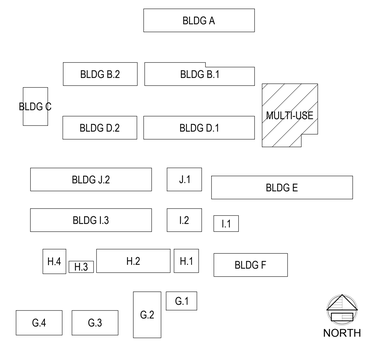
(#) NEW SHEET NOTES

1. (E) DUCTS AND REGISTERS TO BE CLEANED & REUSED.
2. (E) GAS SOV. INSTALL SIGN MOUNTED ON BUILDING LABELED "BUILDING GAS SHUT OFF VALVE".

KEY PLAN



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PROFESSIONAL STAMP

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SHEET TITLE
MULTI-USE - DEMO & NEW FLOOR PLANS
INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.
2MP-205
DATE: JULY 29, 2024

CONSTRUCTION DOCUMENTS

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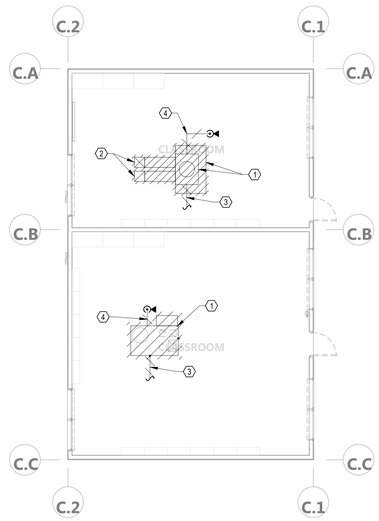
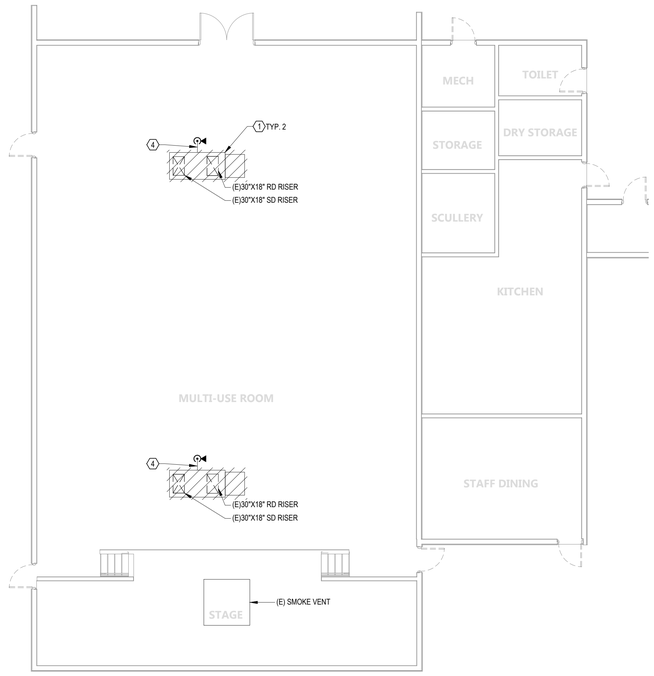


1 2MP-301 **BLDG C ROOF PLAN - DEMO - MECHANICAL & PLUMBING**
SCALE: 1/8" = 1'-0"



3 2MP-301 **MULTI-USE BLDG ROOF PLAN - DEMO - MECHANICAL & PLUMBING**
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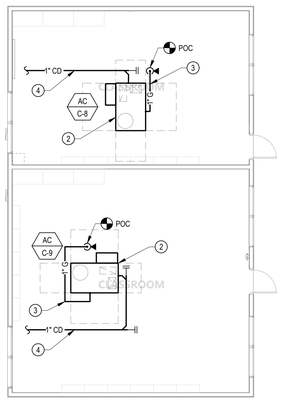
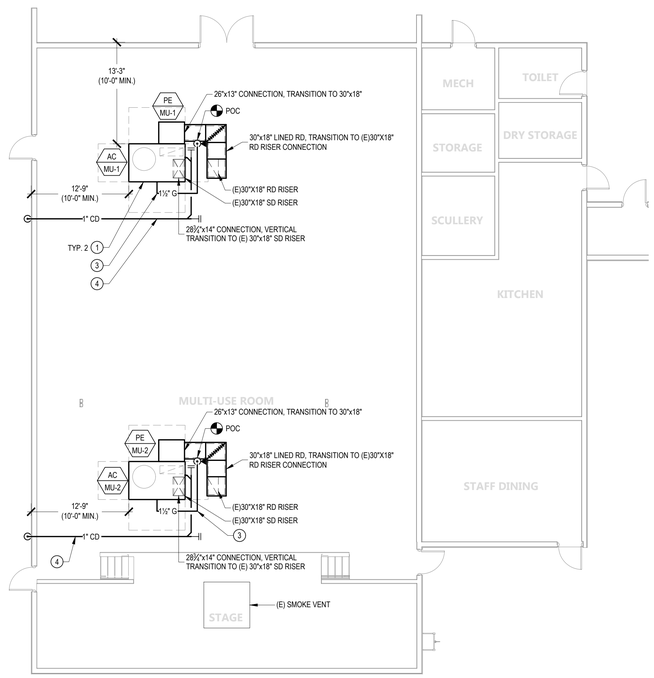
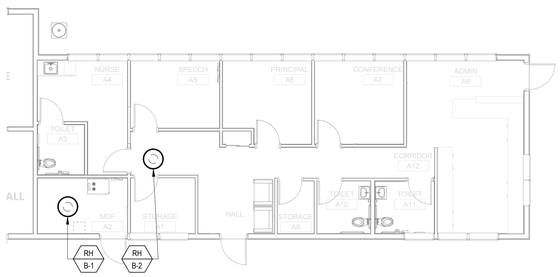


2 2MP-301 **BLDG C ROOF PLAN - NEW - MECHANICAL & PLUMBING**
SCALE: 1/8" = 1'-0"





5 2MP-301 **BLDG B.1 ROOF PLAN - NEW - MECHANICAL & PLUMBING**
SCALE: 1/8" = 1'-0"

4 2MP-301 **MULTI-USE BLDG ROOF PLAN - NEW - MECHANICAL & PLUMBING**
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3. SEE ARCHITECT'S DRAWINGS FOR PATCHING AND REPAIR OF ROOF, WALL, AND FLOOR PENETRATIONS.
4. INFORMATION SHOWN IS BASED ON AVAILABLE AS-BUILTS AND THE LOCATION OF ALL EQUIPMENT, DUCTS, PENETRATIONS, PIPING, AND OTHER PROJECTIONS SHOWN ON THE PLANS IS APPROXIMATE. NOT ALL EXISTING ITEMS ARE IDENTIFIED OR SHOWN ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS, INCLUDING ALL RELEVANT DIMENSION,S EQUIPMENT COUNTS, AND LOCATIONS PRIOR TO SUBMITTING A BID.
5. SEE PLANS AND SPECIFICATIONS FOR ALL OTHER DISCIPLINES FOR ADDITIONAL SCOPE OF WORK THAT MAY NOT BE SHOWN HERE. COORDINATE WITH GENERAL CONTRACTOR TO CONFIRM ENTIRE SCOPE OF WORK HAS BEEN INCLUDED.
6. FOR DUCT SUPPORT ON ROOF SEE DETAIL 9/2MP-601.

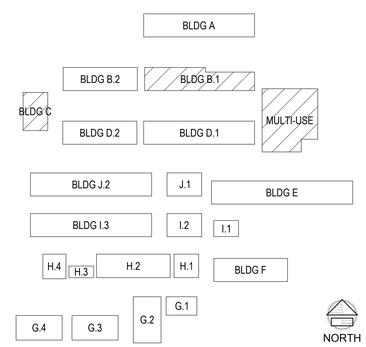
(E) DEMOLITION SHEET NOTES

1. REMOVE (E) AC UNIT & (E) ROOF CURB COMPLETE. PRESERVE ROOF OPENING FOR NEW AC UNIT.
2. REMOVE (E) EXTERIOR DUCTWORK ON ROOF. CAP & SEAL (E) ROOF PENETRATIONS, REFER TO ARCHITECT DRAWINGS FOR ROOFING DETAILS.
3. REMOVE (E) CD PIPING COMPLETE.
4. REMOVE (E) GAS PIPING BACK TO POC SHOWN ON NEW ROOF PLAN.

(N) NEW SHEET NOTES

1. INSTALL AC UNIT ON ROOF CURB. ENSURE CORRECT UNIT ORIENTATION & ALIGNED WITH THE (E) SUPPLY CONNECTION AND CONNECT TO (E) SUPPLY AND RUN LINED EXPOSED RETURN DUCTWORK TO (E) RETURN DUCTWORK CONNECTION. (E) DUCTWORK & CONNECTIONS SHALL BE FIELD VERIFIED. SEE ARCHITECT & STRUCTURAL DRAWINGS FOR ROOFING & FRAMING DETAILS.
2. INSTALL AC UNIT ON ROOF CURB. ENSURE CORRECT UNIT ORIENTATION. SEE ARCHITECT & STRUCTURAL DRAWINGS FOR ROOFING & FRAMING DETAILS.
3. INSTALL GAS PIPING WITH SHUTOFF VALVE, DIRT LEG, AND FLEX CONNECTION AT AC UNIT.CONNECT GAS PIPING TO AC UNIT PER DETAIL 6/2MP-602. FOR PIPE SUPPORT SEE DETAIL 4/2MP-602.
4. INSTALL CD PIPING WITH P-TRAP TO AC UNIT. ROUTE & SLOPE TO NEAREST ROOF DRAIN OR GUTTER, ELBOW DOWN, AND SPILL WITH 1" AIR GAP. CONNECT CD PIPING TO AC UNIT PER DETAIL 6/2MP-602. FOR PIPE SUPPORT SEE DETAIL 4/2MP-602. FOR DISCHARGE TO ROOF DRAIN SEE DETAIL 5/2MP-602.

KEY PLAN



AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER — METIN SERT UYSAL — No. M31059 — EXP. JUNE 30, 2025 — MECHANICAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/25/24	DSA V2

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
BLDGS B.1, C & MU - DEMO & NEW ROOF PLAN

INCREMENT: INC.2

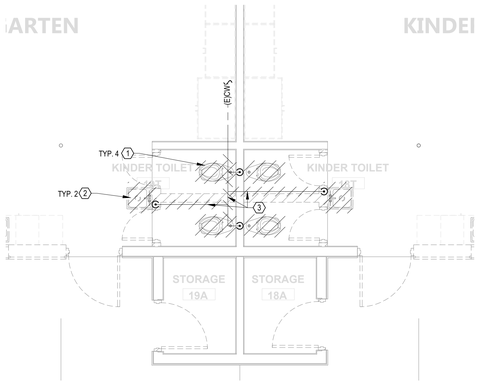
DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.
2MP-301

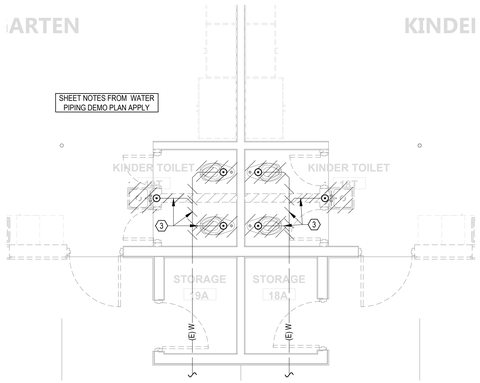
DATE: JULY 29, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/25/2024 10:44 AM FILE LOCATION: E:\Shared Drives\HVAC\19-6 Nineteen Six\23145 - Meadow Homes ES Mod\03 Dwgs\Meadow Homes ES Mod Inc 2.dwg



1 2MP-401 WATER PIPING
BLDG E RESTROOM PARTIAL DEMO PLAN
SCALE: 1/4" = 1'-0"



2 2MP-401 WASTE & VENT PIPING
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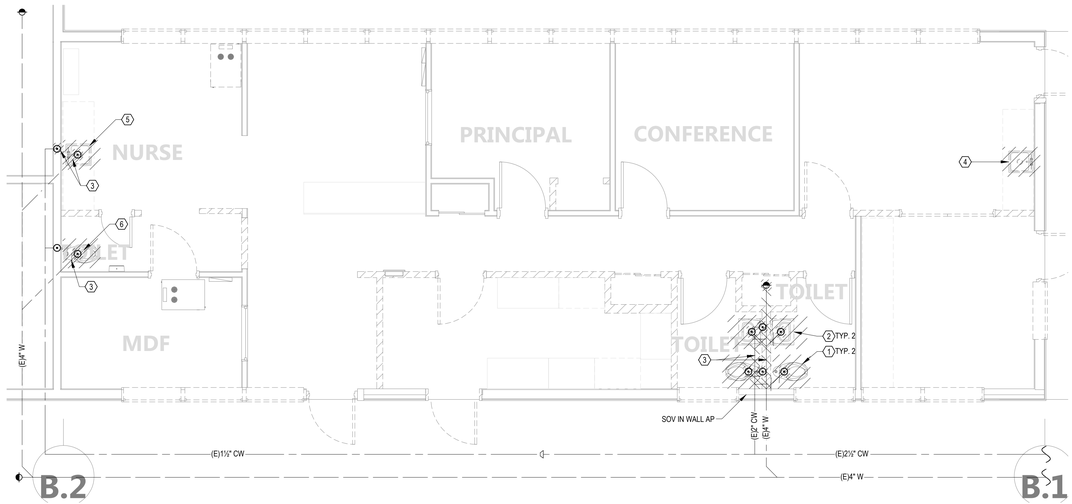
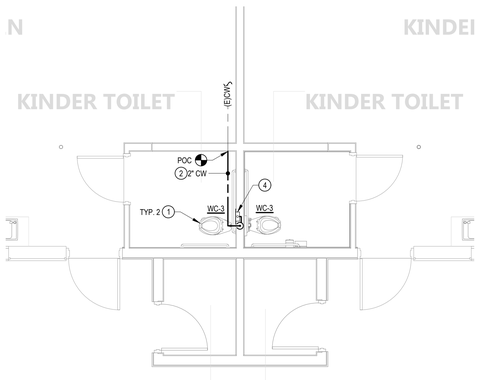
SCALE: 1/4" = 1'-0"



5 2MP-401 BLDG B.1 RESTROOM PARTIAL DEMO PLAN
SCALE: 1/4" = 1'-0"



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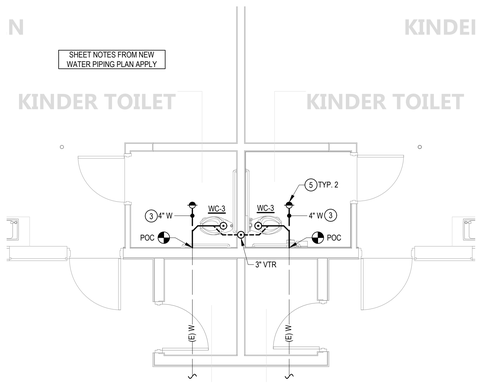

4 2MP-401 WASTE & VENT PIPING
BLDG E RESTROOM PARTIAL NEW PLAN
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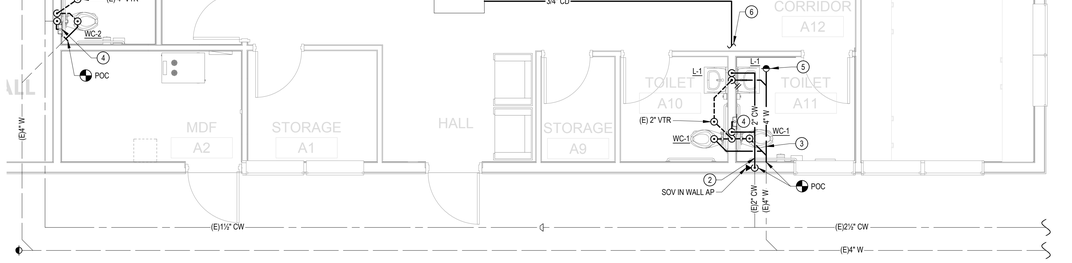

6 2MP-401 BLDG B.1 RESTROOM PARTIAL NEW PLAN
SCALE: 1/4" = 1'-0"

NEW SHEET NOTES

1. INSTALL RESTROOM PLUMBING FIXTURES.
2. OVERHEAD CW FROM POC HUNG IN CEILING SPACE & DROP DOWN BRANCHES TO FIXTURES.
3. UNDERGROUND WASTE FROM POC TO FIXTURES.
4. WHA IN WALL ACCESS PANEL, SEE DETAIL 2/2MP-602.
5. FLOOR CLEAN OUT, SEE DETAIL 3/2MP-602.
6. CD SLOPED TO SINK TAIL PIECE.

DEMOLITION SHEET NOTES

1. REMOVE (E) FLOOR MOUNT WATER CLOSET COMPLETE.
2. REMOVE (E) LAVATORY, SUPPORTS, & UTILITIES COMPLETE.
3. REMOVE (E) UTILITY LINES & BRANCH LINES COMPLETE BACK TO POC. REFER TO NEW PLANS FOR POC'S.
4. REMOVE (E) SINK COMPLETE. CAP UTILITIES CONCEALED IN WALL & UNDERGROUND. PATCH WALL & SLAB / FLOOR AS REQUIRED TO MATCH FINAL FINISHES.
5. REMOVE (E) SINK, PROTECT (E) UTILITIES FOR EXTENSION CONNECTION TO NEW SINK.
6. REMOVE (E) FLOOR MOUNT WATER CLOSET, PROTECT (E) UTILITIES FOR EXTENSION CONNECTION TO NEW WATER CLOSET.

GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW BUILDING STRUCTURES, SERVICES, AND OWNER'S PROPERTY DURING THE ENTIRE PERIOD OF CONSTRUCTION.
2. COORDINATE THE LOCATIONS OF ROOF/WALL OPENINGS, PENETRATIONS, DUCTWORK, PIPING, AND ALL MECHANICAL AND PLUMBING EQUIPMENT WITH RESPECT TO BUILDING STRUCTURE AND OTHER BUILDING SERVICES TO AVOID CONFLICT.
3. SEE ARCHITECT'S DRAWINGS FOR PATCHING AND REPAIR OF ROOF, WALL, AND FLOOR PENETRATIONS.
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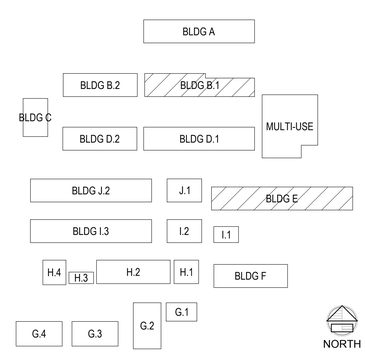
5. SEE PLANS AND SPECIFICATIONS FOR ALL OTHER DISCIPLINES FOR ADDITIONAL SCOPE OF WORK THAT MAY NOT BE SHOWN HERE. COORDINATE WITH GENERAL CONTRACTOR TO CONFIRM ENTIRE SCOPE OF WORK HAS BEEN INCLUDED.
6. SAW CUT AND TRENCH THE EXISTING RESTROOM FLOORS WITHIN THE RESTROOMS AS REQUIRED TO INSTALL THE NEW WASTE, VENT, TRAP PRIMER LINES BELOW THE SLABS BACK TO THE POC'S. CHIP AND PATCH BACK (E) CONC. CURBS AS REQUIRED FOR (N) WASTE / VENT / TP CONNECTIONS IN (E) WALLS W/ CURBS. TRENCHING SHALL NOT DAMAGE ANY STRUCTURAL MEMBERS INCLUDING BUT NOT LIMITED TO THE SPREAD FOOTINGS, GRADE BEAMS, WALLS, ECT. TRENCHING SHALL NOT UNDERMINE (E) FOOTINGS. REFER TO ARCHITECT PLANS & DETAILS FOR FLOOR PATCHING & REPAIR WORK.
7. EXISTING SLAB SHALL BE DEMOLISHED AS REQUIRED FOR NEW WORK.
8. PROVIDE FLOOR CLEAN OUTS & WALL CLEANOUTS AS NEEDED FOR NEW PLUMBING FIXTURE LAYOUTS.
9. FOR VTR SEE DETAIL 1/2MP-602.
10. FOR FLOOR CLEAN OUTS SEE DETAIL 3/2MP-602.

KEY PLAN



AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER — MEHRAN SERTIPOUR — No. M31059 — EXP. JUNE 30, 2025 — MECHANICAL — STATE OF CALIFORNIA

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SHEET TITLE
BLDG B.1 & E - DEMO & NEW RESTROOM PLANS
INCREMENT: INC.2

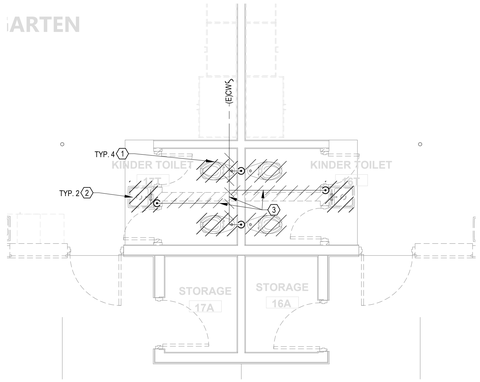
DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.
2MP-401

DATE: JULY 29, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/25/2024 10:45 AM FILE LOCATION: E:\Shared Drives\HVAC\19-6 Nineteen Six\23145 - Meadow Homes ES Mod\03 Dwgs\Meadow Homes ES Mod Inc 2.dwg



1 2MP-402 WATER PIPING
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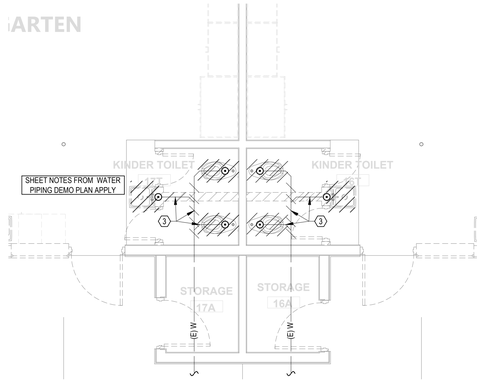

2 2MP-402 WASTE & VENT PIPING
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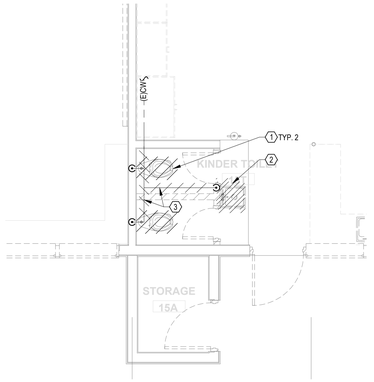

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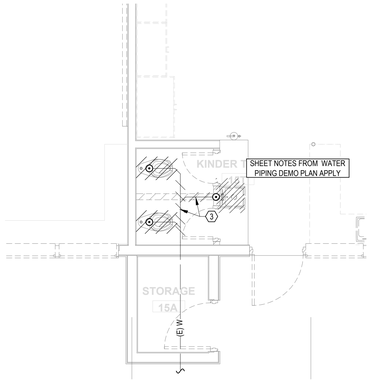

4 2MP-402 WASTE & VENT PIPING
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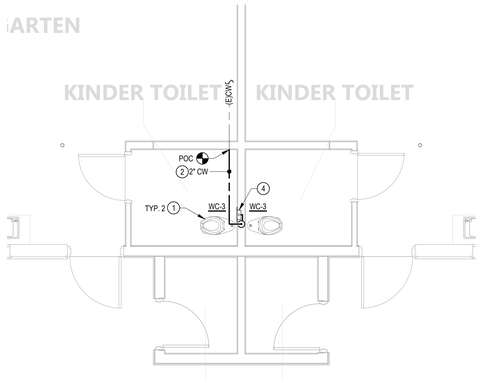

5 2MP-402 WATER PIPING
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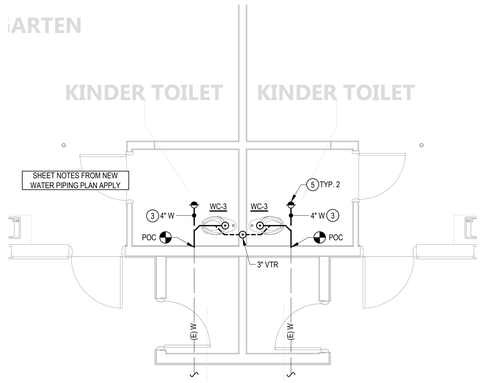

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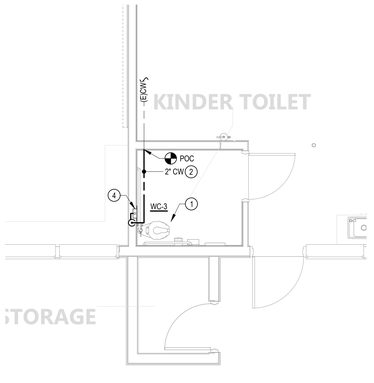

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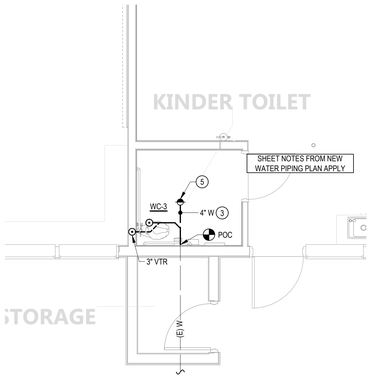

8 2MP-402 WASTE & VENT PIPING
BLDG E RESTROOM PARTIAL NEW PLAN
SCALE: 1/4" = 1'-0"

NEW SHEET NOTES

1. INSTALL RESTROOM PLUMBING FIXTURES.
2. OVERHEAD CW FROM POC HUNG IN CEILING SPACE & DROP DOWN BRANCHES TO FIXTURES.
3. UNDERGROUND WASTE FROM POC TO FIXTURES.
4. WHA IN WALL ACCESS PANEL, SEE DETAIL 2/2MP-602.
5. FLOOR CLEAN OUT, SEE DETAIL 3/2MP-602.

DEMOLITION SHEET NOTES

1. REMOVE (E) FLOOR MOUNT WATER CLOSET COMPLETE.
2. REMOVE (E) LAVATORY, SUPPORTS, & UTILITIES COMPLETE.
3. REMOVE (E) UTILITY LINES & BRANCH LINES COMPLETE BACK TO POC. REFER TO NEW PLANS FOR POC'S.

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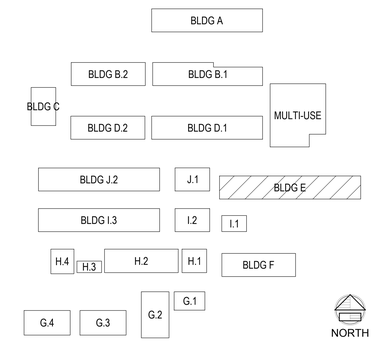
KEY PLAN



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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER
MARTIN SERTIN
No. M31059
EXP. JUNE 30, 2025
MECHANICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/25/24	DSA V2

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SHEET TITLE
BLDG E - DEMO & NEW RESTROOM PLANS
INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.
2MP-402
DATE: JULY 29, 2024

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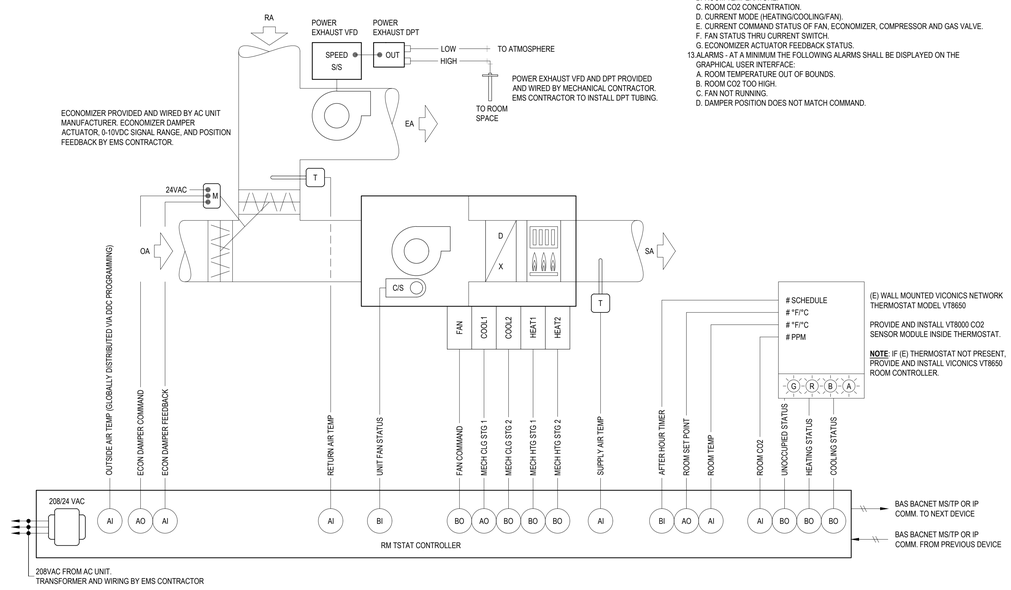
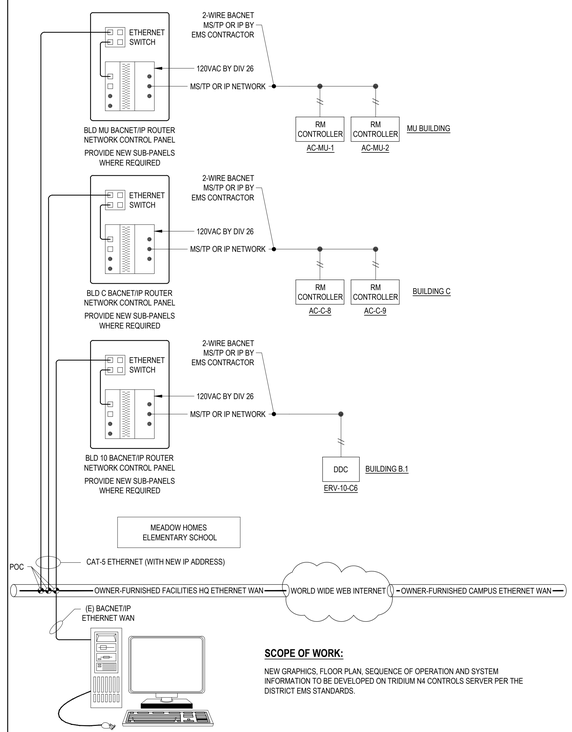
DATE PLOTTED: 10/25/2024 10:45 AM FILE LOCATION: E:\Shared Drives\HVAC\19-6 Nineteen Six\23145 - Meadow Homes ES Mod\03 Dwgs\Meadow Homes ES Mod Inc 2.dwg

SEQUENCE OF OPERATION

1. SYSTEM OVERVIEW
   A. AC UNIT WILL BE DIRECTLY CONTROLLED BY ITS OWN DEDICATED EMS (ENERGY MANAGEMENT SYSTEM) UNITARY CONTROLLER.
   B. EMS UNITARY CONTROLLER WILL BE CONNECTED TO A WALL MOUNTED ELECTRONIC ZONE TEMPERATURE SENSOR WITH INTEGRAL CO2 SENSOR.
   C. ELECTRONIC ZONE TEMPERATURE SENSOR SHALL HAVE A TOUCH SCREEN LCD INTERFACE WHICH INCLUDES: 1) PUSHBUTTONS FOR WARMER/COOLER SETPOINT CONTROL; 2) VISUAL DISPLAY OF ROOM TEMPERATURE, ROOM CO2 AND AMBIENT OSA TEMPERATURE; AND 3) PUSHBUTTON AFTER-HOURS OVERRIDE TIMER CONTROL WITH USER ADJUSTABLE DURATION. THE AFTER-HOURS OVERRIDE DURATION SHALL HAVE THE ABILITY TO BE LIMITED FROM THE FRONT-END.
2. UNIT FAN OPERATION
   A. WHEN THE ZONE IS IN OCCUPIED MODE OR IN AFTER-HOURS MODE, THE FAN SHALL RUN CONTINUOUSLY.
   B. DURING THE UNOCCUPIED MODE AS DETERMINED BY EMS TIME SCHEDULE, THE UNIT FAN CYCLES WITH DEMAND AND THE TEMPERATURE IS CONTROLLED BY THE UNOCCUPIED SPACE TEMPERATURE HEATING AND COOLING SETPOINTS.
3. MINIMUM OUTDOOR AIR VENTILATION
   A. WITH REFERENCE TO MECHANICAL EQUIPMENT SCHEDULE OSA DESIGN REQUIREMENTS, THE AIR BALANCER SHALL PROVIDE THE EMS SYSTEM WITH INFORMATION FOR TWO (2) SEPARATE MINIMUM OUTDOOR AIR (DESIGN OA CFM) DAMPER SETPOINTS: ONE FOR LOW FAN SPEED AND ANOTHER FOR HIGH FAN SPEED. DESIGN OSA CFM IS LISTED ON EQUIPMENT SCHEDULE.
4. DEMAND CONTROL VENTILATION
   A. EMS UNITARY CONTROLLER WILL BE CONNECTED TO A WALL MOUNTED CO2 SENSOR TO MONITOR ZONE CO2 CONCENTRATION.
   B. DURING OCCUPIED MODE A PROPORTIONAL CONTROL LOOP SHALL BE USED TO MAINTAIN THE CO2 CONCENTRATION BELOW 1,000 PPM (ADJUSTABLE). AS CO2 CONCENTRATION VARIES BETWEEN 800 PPM (ADJUSTABLE) AND 1,000 PPM (ADJUSTABLE), THE OUTSIDE AIR DAMPER SHALL MODULATE BETWEEN MINIMUM OSA SETPOINT AND FULLY OPEN.
   C. SHOULD THE CO2 SENSOR FAIL TO OPERATE WITHIN ACCEPTABLE RANGE, THE OUTSIDE AIR DAMPER SHALL BE SET TO 30% (ADJUSTABLE) MORE THAN MINIMUM OUTSIDE AIR SETPOINT.
5. AUTOMATIC DEMAND SHED CONTROLS
   A. EMS SHALL BE PROGRAMMED WITH CAPABILITY TO IMPLEMENT CENTRALIZED DEMAND SHED FOR ALL NON-CRITICAL ZONES. CRITICAL ZONES SHALL NOT BE IMPACTED BY DEMAND SHED CONSERVATION MEASURES.
   B. UPON THE ACTIVATION OF A DEMAND SHED COMMAND FROM THE EMS SERVER, THE THERMOSTAT'S OCCUPIED COOLING AND HEATING SETPOINTS SHALL BE OFFSET UP AND DOWN BY 4°F OR MORE.
   C. IN ADDITION TO THE IMPLEMENTATION OF AUTOMATIC DEMAND SHED CONTROL STRATEGIES, THE EMS SHALL ALLOW FOR SYSTEM-WIDE GLOBAL ADJUSTMENT TO ALL COOLING AND HEATING SETPOINTS FROM MAIN EMS SERVER APART FROM DEMAND SHED CONSERVATION MEASURES AND SHALL ALLOW FOR ALL GLOBAL SETPOINT CHANGE COMMANDS TO BE DEACTIVATED.
6. ZONE PRE-OCCUPANCY PURGE
   A. THE EMS SHALL SCHEDULE THE ZONE TO BE IN OCCUPIED MODE ONE HOUR PRIOR TO THE ACTUAL TIME OF ANTICIPATED OCCUPANCY.
7. ECONOMIZER CONTROL
   A. EMS UNITARY CONTROLLER SHALL BE DIRECTLY CONNECTED TO DISCHARGE AIR AND RETURN AIR TEMPERATURE SENSORS. GLOBAL DDC PROGRAMMING SHALL BE USED TO BROADCAST CENTRALIZED AMBIENT OUTSIDE AIR TEMPERATURE.
   B. EMS UNITARY CONTROLLER SHALL ALSO BE DIRECTLY CONNECTED TO ECONOMIZER (OUTSIDE/RETURN AIR) DAMPER ACTUATOR, INCLUDING POSITION FEEDBACK SIGNAL.
   C. SEE MINIMUM OUTDOOR AIR VENTILATION FOR OUTSIDE AIR DAMPER MINIMUM CFM SETPOINT.
   D. THE EMS UNITARY CONTROLLER SHALL CONTINUOUSLY COMPARE THE CURRENT OSA TEMPERATURE TO THE ESTABLISHED AIR ECONOMIZER HIGH LIMIT SHUT OFF (ECON LOCK OUT) TEMPERATURE SET POINT (ADJUSTABLE) AND RETURN AIR TEMPERATURE.
   E. WHEN CURRENT OSA TEMP IS LESS THAN OR EQUAL TO ECON LOCK OUT TEMP AND THE RETURN AIR TEMPERATURE, EMS UNITARY CONTROLLER SHALL USE THE OUTSIDE AIR FOR FREE COOLING.
   F. WHEN THE OUTDOOR AIR DAMPER IS OPEN 100% FOR MORE THAN 5 MINUTES (ADJUSTABLE) AND THE NEED-COOLING SIGNAL CONTINUES TO INCREASE OR REACHES A MAXIMUM OF 100%, MECHANICAL COOLING WILL BE ACTIVATED.
   G. THE ECONOMIZER WILL REMAIN IN USE DURING MECHANICAL COOLING AS LONG AS DISCHARGE AIR TEMPERATURE REMAINS ABOVE 55°F (ADJUSTABLE) AND CURRENT OSA TEMP IS LESS THAN ECON LOCK OUT TEMP AND RETURN AIR TEMP.
   H. WHEN OSA TEMP IS ABOVE ECON LOCK OUT TEMP OR RETURN AIR TEMP, ECONOMIZER WILL BE DEACTIVATED AND ECONOMIZER SHALL BE COMMANDED TO MINIMUM CFM SETPOINT.
   I. ECONOMIZER WILL BE COMMANDED TO MINIMUM CFM SETPOINT WHEN UNIT IS IN HEATING MODE.
   J. WHEN UNIT FAN IS NOT OPERATING, OUTSIDE AIR DAMPER SHALL BE COMMANDED CLOSED.
   K. NOTE: ALL POWER EXHAUST FAN OPERATIONS SHALL BE CONTROLLED BY SEPARATE NON-EMS EXTERNAL DEVICES AS PROVIDED BY MANUFACTURER.
   L. POWER EXHAUST (PE) SHALL MONITOR BUILDING PRESSURE INSIDE ROOM.
   M. PE FAN SHALL MODULATE TO MAINTAIN ROOM PRESSURE SETPOINT OF 0.03" (ADJ.).
8. HEATING OPERATION
   A. THE CONTROLLER COMPARES THE HEATING SETPOINT WITH THE SPACE TEMPERATURE AND DETERMINES A NEED-HEATING CONTROL SIGNAL TO STAGE A GAS REGULATING VALVE ON THE UNIT.
   B. ECONOMIZER SHALL BE COMMANDED TO MINIMUM CFM SETPOINT AND MECHANICAL COOLING SHALL BE LOCKED OUT DURING HEATING MODE.
9. COOLING OPERATION
   A. THE CONTROLLER COMPARES THE COOLING SETPOINT WITH THE SPACE TEMPERATURE AND DETERMINES A NEED-COOLING SIGNAL.
   B. THE FIRST STAGE OF COOLING WILL ENABLE THE ECONOMIZER TO PROVIDE FREE COOLING FOR AS LONG AS POSSIBLE.
   C. THE SECOND STAGE WILL ENABLE THE COMPRESSOR(S).
   D. MECHANICAL HEATING SHALL BE LOCKED OUT DURING COOLING MODE.
10. FAULT DETECTION DIAGNOSTICS
    A. THE EMS DDC CONTROLLER SHALL MONITOR FAULT STATUS OF THE FOLLOWING FAULT DETECTION DIAGNOSTIC CONDITIONS AND BROADCAST RESULTS VIA EMS NETWORK.
    B. UNIT NOT ECONOMIZING WHEN ENABLED - IF ECONOMIZER DAMPER ACTUATOR FEEDBACK STATUS DOES NOT MATCH THE COMMANDED ECONOMIZER SETPOINT WHEN THE ECONOMIZER IS ENABLED FOR MORE THAN 3 MINUTES (ADJUSTABLE), AN ALARM SHALL BE GENERATED AND BROADCAST.
    C. UNIT ECONOMIZING WHEN DISABLED - IF ECONOMIZER DAMPER ACTUATOR FEEDBACK STATUS INDICATES THAT THE ECONOMIZER DAMPER IS OPEN BEYOND THE MIN CFM SETPOINT WHEN THE ECONOMIZER IS NOT ENABLED FOR MORE THAN 3 MINUTES (ADJUSTABLE), AN ALARM SHALL BE GENERATED AND BROADCAST.
    D. DAMPER MODULATION FAULT - IF ECONOMIZER DAMPER ACTUATOR FEEDBACK PERCENT DOES NOT MATCH THE COMMANDED ECONOMIZER DAMPER PERCENT FOR MORE THAN 3 MINUTES (ADJUSTABLE), AN ALARM SHALL BE GENERATED AND BROADCAST.
    E. EXCESS OUTDOOR AIR - IF ECONOMIZER DAMPER ACTUATOR FEEDBACK STATUS INDICATES THAT THE ECONOMIZER DAMPER IS OPEN BEYOND MIN CFM SETPOINT IN HEATING MODE, AN ALARM SHALL BE GENERATED AND BROADCAST.
11. SETPOINTS
    A. OCCUPIED HOURS SETPOINTS SHALL BE 68°F TO 74°F. (USER ADJUSTABLE AT THERMOSTAT WITHIN THIS RANGE).
    B. UNOCCUPIED HOURS SETPOINTS SHALL BE 60°F HEATING AND 90°F COOLING.
    C. DEADBAND SHALL BE 2°F.
12. MONITORING - THE FOLLOWING CONDITIONS SHALL BE MONITORED AND DISPLAYED AT BMS OPERATOR WORKSTATION/GRAPHICAL USER INTERFACE:
    A. SUPPLY, RETURN AND OUTSIDE AIR TEMPERATURES.
    B. ROOM TEMPERATURE.
    C. ROOM CO2 CONCENTRATION.
    D. CURRENT MODE (HEATING/COOLING/FAN).
    E. CURRENT COMMAND STATUS OF FAN, ECONOMIZER, COMPRESSOR AND GAS VALVE.
    F. FAN STATUS THRU CURRENT SWITCH.
    G. ECONOMIZER ACTUATOR FEEDBACK STATUS.
13. ALARMS - AT A MINIMUM THE FOLLOWING ALARMS SHALL BE DISPLAYED ON THE GRAPHICAL USER INTERFACE:
    A. ROOM TEMPERATURE OUT OF BOUNDS.
    B. ROOM CO2 TOO HIGH.
    C. FAN NOT RUNNING.
    D. DAMPER POSITION DOES NOT MATCH COMMAND.



2 PACKAGED AC UNIT CONTROL SCHEMATIC



1 EMS SYSTEM ARCHITECTURE

GENERAL NOTES

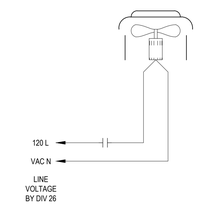
1. THE CONTROLS CONTRACTOR SHALL HAVE THE RESPONSIBILITY AS THE EXPERT IN THE PROPER APPLICATION OF CONTROL COMPONENTS AND DDC SYSTEMS. THE FINAL DESIGN, INSTALLATION, AND OPERATION OF THE CONTROL SYSTEM IS THE RESPONSIBILITY OF THE CONTROLS CONTRACTOR. CONTROLS CONTRACTOR SHALL VISIT THE SITE BEFORE BIDDING AND DETERMINE THE REQUIRED NUMBER OF CONTROL PANELS AND OPTIMAL LOCATION FOR EACH.
2. THE CONTROLS CONTRACTOR SHALL MAKE ADDITIONS AND/OR MODIFICATIONS TO THE DESIGN AS REQUIRED AT NO ADDITIONAL COST. CONTROLS CONTRACTOR SHALL WORK WITH THE MECHANICAL ENGINEER AND OBTAIN APPROVAL FOR ANY NECESSARY REVISIONS.
3. CONTROLS CONTRACTOR SHALL COORDINATE EXACT REQUIREMENT FOR CONTROL HARDWARE WITH ALL ASSOCIATED TRADES AND OWNER. REFER TO DRAWINGS FOR PRELIMINARY OPERATING SEQUENCES.
4. CONTROLS CONTRACTOR SHALL SUBMIT DETAILED SEQUENCES FOR ENGINEER'S REVIEW AND APPROVAL.
5. CONTROLS CONTRACTOR SHALL PROVIDE ALL CONTROLS, WIRING DIAGRAMS, "AS-BUILT" DRAWINGS, SYSTEM START-UP, AND PROGRAMMING.
6. CONTROLS CONTRACTOR TO WIRE COMMUNICATION BUS FROM NETWORK ROUTER TO ALL LOCAL BACNET CONTROLLERS.
7. CONTROLS CONTRACTOR TO PROVIDE THE NETWORK ROUTER, TEMPERATURE CONTROL PANELS, AND ALL LOCAL CONTROL PANELS FOR ALL EQUIPMENT AS REQUIRED.
8. CONTROLS CONTRACTOR TO PROVIDE ALL TEMPERATURE WIRING FOR ALL TEMPERATURE CONTROL WORK.
9. PROVIDE EMT CONDUIT AND JUNCTION BOXES FOR ALL TEMPERATURE CONTROL WORK RUNNING IN WALL SPACES.
10. PROVIDE RIGID CONDUIT FOR ALL EXTERIOR TEMPERATURE CONTROL WORK.
11. USE PLENUM RATED CABLE AND "J" HOOKS FOR ALL ABOVE CEILING AND FURRED SPACE TEMPERATURE CONTROL WORK.
12. ELECTRICAL CONTRACTOR TO PROVIDE ALL POWER WIRING FOR TEMPERATURE CONTROL PANELS AND LINE VOLTAGE THERMOSTATS. CONTROLS CONTRACTOR SHALL COORDINATE REQUIREMENTS WITH ELECTRICAL CONTRACTOR.
13. MECHANICAL/CONTROLS CONTRACTOR TO COORDINATE WITH ELECTRICAL AND VERIFY CIRCUITS ARE CORRECT BEFORE WIRING CONTROLS.
14. MECHANICAL/CONTROLS CONTRACTOR TO PROVIDE ALL CONTROL COMPONENTS NECESSARY TO FULFILL THE DESIGN INTENT OF THE DRAWINGS.

SCOPE OF WORK:

NEW GRAPHICS, FLOOR PLAN, SEQUENCE OF OPERATION AND SYSTEM INFORMATION TO BE DEVELOPED ON TRIDIUM N4 CONTROLS SERVER PER THE DISTRICT EMS STANDARDS.

SEQUENCE OF OPERATION

1. THE EXHAUST FAN SHALL BE HARD WIRED WITH THE ROOM LIGHTS AND OPERATE DURING NORMAL BUILDING OCCUPANCY HOURS.

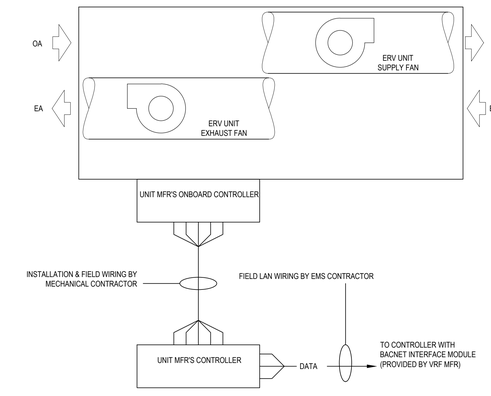


4 EXHAUST FAN CONTROL SCHEMATIC

SEQUENCE OF OPERATION

1. THE ERV UNIT SHALL OPERATE DURING NORMAL BUILDING OCCUPANCY HOURS BY EMS TIMECLOCK.
2. MONITORING - THE FOLLOWING CONDITIONS SHALL BE MONITORED BY THE EMS VIA BACNET INTERFACE:
   A. SUPPLY FAN STATUS
   B. EXHAUST FAN STATUS
3. ALARM - IF THE FAN RUNS WHILE COMMANDED OFF OR DOES NOT RUN WHEN COMMANDED ON, AN ALARM SHALL BE DISPLAYED AND ANNUNCIATED AT OPERATOR'S CONSOLE

MINIMUM BACNET POINT INTEGRATION POINTS PER ZONE
ON/OFF STATUS
ON/OFF COMMAND
MODE STATUS
MODE COMMAND
FAN STATUS
FAN COMMAND
SET POINT STATUS
SET POINT COMMAND



3 ERV CONTROL SCHEMATIC

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER — MEITH SERT TJADEN — No. M31059 — EXP. JUNE 30, 2025 — MECHANICAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/25/24	DSA V2

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
CONTROLS - MECHANICAL

INCREMENT: INC.2

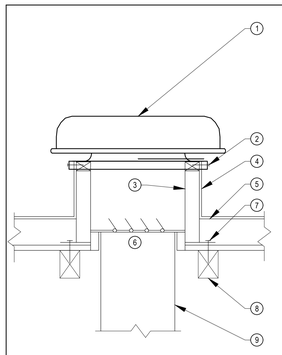
DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.
2MP-501

DATE: JULY 29, 2024

CONSTRUCTION DOCUMENTS

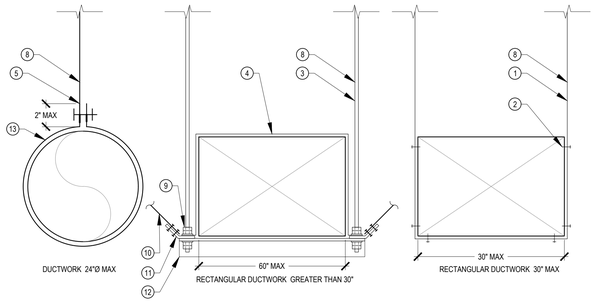
DATE PLOTTED: 10/25/2024 10:45 AM FILE LOCATION: E:\Shared Drives\HVAC\19-6 Nineteen Six\23145 - Meadow Homes ES Mod\03 Dwgs\Meadow Homes ES Mod Inc 2.dwg



DETAIL NOTES:

1. ROOF HOOD.
2. SECURE TO ROOF CURB WITH #12 SELF TAPPING SCREWS AT 12" ON CENTER. MINIMUM 2 PER SIDE.
3. FACTORY CURB WITH NAILER.
4. FOR ROOFING AND FLASHING, SEE ARCHITECT'S DRAWINGS.
5. ROOF DECK.
6. BACKDRAFT DAMPER.
7. 3/8"Ø LAG BOLT THRU CURB AND ROOF WITH 3" MINIMUM EMBEDMENT INTO BLOCKING.
8. 4x BLOCKING. SECURE TO STRUCTURE WITH SIMPSON A35 CLIPS, EACH SIDE & EACH END.
9. DUCT SIZE PER PLANS.

12 ROOF HOOD MOUNTING N.T.S.

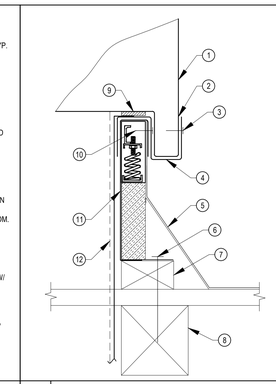


DETAIL NOTES:

1. 1"x16 GA HANGER STRAP, LENGTH AS REQUIRED, TYP. 100 LBS MAX PER STRAP.
2. #10 SMS, TYP
3. 3/8"Ø HANGER ROD
4. 1"x18 GA STRAP OVER DUCT.
5. 1-1/2"x 16GA HANGER STRAP W/ 3/8"Ø BOLT, NUT AND STAR WASHER, TYP. 100 LBS MAX PER STRAP.
6. NOTE # NOT USED.
7. NOTE # NOT USED.
8. SEE 6/2MP-601 AND 7/2MP-601 FOR TOP CONNECTION
9. DOUBLE NUTS WITH LOCKWASHER, TOP AND BOTTOM.
10. 3/16 Ø GALV. PRETENSIONED AIRCRAFT BRACING CABLE, ASTM A1023, TYP. SEE 7/2MP-601 FOR TOP CONNECTION.
11. TOLCO FIG 991 CABLE SWAY BRACE ATTACHMENT W/ CABLE CLAMP, EACH END.
12. 2" x 2" x 1/4" ANGLE.
13. 1" x 16 GAUGE CONTINUOUS COLLAR DRAWN STRAP TIGHT AROUND DUCT.

NOTE:
1. HANGER SHALL BE LOCATED AT 8'-0" O.C. MAX AND AT ALL CHANGES IN DIRECTION.
2. DUCT SUPPORTS SHOWN W/O BRACING SHALL HAVE A CROSS SECTIONAL AREA LESS THAN 6 SQFT & MAX. WEIGHT OF 20 LB./FT.

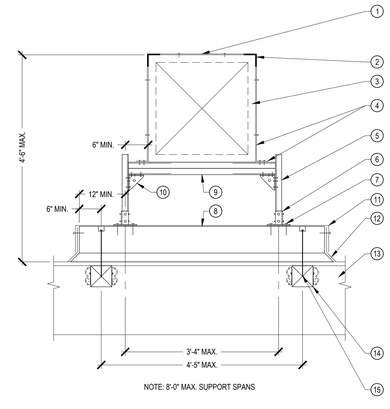
5 DUCT HANGER N.T.S.



DETAIL NOTES:

1. UNIT. FOR LOCATION, SEE PLANS
2. UNIT BASE RAIL, 14 GAUGE STEEL
3. 14 GA. x 7"L HOLD DOWNS SECURED TO UNIT BASE RAIL WITH (4) #10 x1/2" TEK SCREWS, TYP (2) @ SHORT SIDES & (3) @ LONG SIDES. SPACE EVENLY W/ 5" TO CORNER DISTANCES.
4. UNIT HOLD DOWNS AROUND CURB W/ 16" MAX. SPACING BETWEEN HOLD DOWNS. MIN. 3 PER A SIDE.
5. FOR FLASHING, SEE ARCHITECT'S DRAWINGS
6. SEE STRUCTURAL DETAILS FOR ANCHORAGE INFORMATION.
7. PRESSURE TREATED DOUGLAS FIR LEVELING RAIL
8. BLOCKING, SEE STRUCTURAL DRAWINGS.
9. SEALING GASKET
10. SECURE HOLD DOWN TO UNIT CURB WITH (4) #10 x 1/2" TEK SCREWS, TYP.
11. VIBRATION ISOLATION CURB BY UNIT MFR. 2" DEFLECTION ISOLATOR CALDYN CQA TYPE (SEE OPM-0401-13 REPORT FOR DETAILS)
12. DUCTWORK WITH ACOUSTIC LINER

1 ROOFTOP AIR CONDITIONER MOUNTING ON NEW ISOLATED CURB N.T.S.

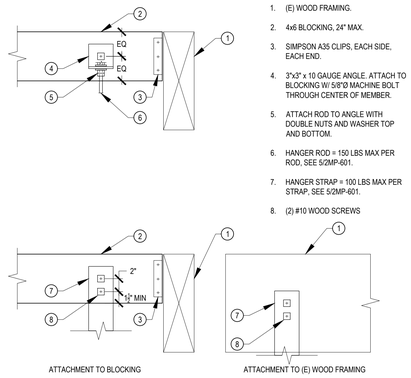


NOTE: 8'-0" MAX. SUPPORT SPANS

DETAIL NOTES:

1. MAX. 30"x30" DUCT, SEE PLANS FOR SIZES. BREAK TOP OF DUCT FOR 100% POSITIVE DRAINAGE.
2. 3"x3"x6" LONG 16 GA STRAP. CORNER GUARDS UNDER STRAP. #10 SM SCREWS (2) PER DUCT SIDE SEAL AIR TIGHT.
3. 2" ACOUSTICAL LINER. SEE SPECS.
4. 2"x16 GA. S.M. STRAP, SECURE TO SUPPORT WITH (2) 3/8"Ø BOLTS AND CHANNEL NUTS EA. SIDE.
5. "UNISTRUT" P1000 CHANNEL.
6. "UNISTRUT" P2942 POST BASE, SECURE TO CHANNEL WITH (2) 1/2"Ø BOLTS & NUTS.
7. SECURE POST BASE TO SLEEPER W/ (2) 1/2"Ø x 3"L CENTERED LAG SCREWS.
8. 6x10 MIN. SLEEPER.
9. "UNISTRUT" P1001 CHANNEL.
10. "UNISTRUT" P2484, SECURE TO CHANNELS W/ (4) 1/2"Ø BOLTS AND CHANNEL NUTS.
11. COUNTER FLASHING SEE ARCHITECT DETAILS.
12. ROOF UP AND UNDER COUNTER FLASHING SEE ARCHITECT DETAILS.
13. (E) STRUCTURE, SEE STRUCTURAL DRAWINGS FOR INFO NOT NOTED.
14. 6x6 BLOCKING WITH A35 FRAMING CLIPS EACH SIDE, EACH END.
15. COUNTER BORE SLEEPER & ATTACH TO BLOCKING W/ 1/2"Ø x 12"L LAG SCREW, MIN. 3" PENETRATION INTO BLOCKING.

9 DUCT SUPPORT ON ROOF N.T.S.



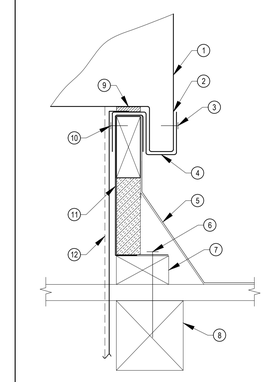
ATTACHMENT TO BLOCKING

ATTACHMENT TO (E) WOOD FRAMING

DETAIL NOTES:

1. (E) WOOD FRAMING.
2. 4x6 BLOCKING, 24" MAX.
3. SIMPSON A35 CLIPS, EACH SIDE, EACH END.
4. 3"x3" x 10 GAUGE ANGLE. ATTACH TO BLOCKING W/ 5/8"Ø MACHINE BOLT THROUGH CENTER OF MEMBER.
5. ATTACH ROD TO ANGLE WITH DOUBLE NUTS AND WASHER TOP AND BOTTOM.
6. HANGER ROD = 150 LBS MAX PER ROD, SEE 5/2MP-601.
7. HANGER STRAP = 100 LBS MAX PER STRAP, SEE 5/2MP-601.
8. (2) #10 WOOD SCREWS

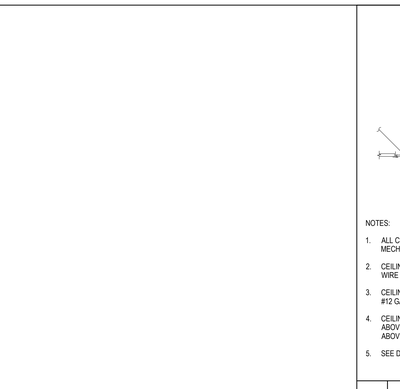
6 TOP CONNECTION N.T.S.



DETAIL NOTES:

1. UNIT. FOR LOCATION, SEE PLANS
2. UNIT BASE RAIL, 14 GAUGE STEEL
3. SECURE HOLD DOWN TO UNIT BASE RAIL WITH (4) #10 x1/2" TEK SCREWS, TYPICAL OF (4) LOCATIONS
4. UNIT HOLD DOWNS AROUND CURB W/ 16" MAX. SPACING BETWEEN HOLD DOWNS. MIN. 3 PER A SIDE.
5. FOR FLASHING, SEE ARCHITECT'S DRAWINGS
6. SEE STRUCTURAL DETAIL 9/1S-801 FOR ANCHORAGE INFORMATION.
7. PRESSURE TREATED DOUGLAS FIR LEVELING RAIL
8. BLOCKING, SEE STRUCTURAL DRAWINGS.
9. SEALING GASKET
10. SECURE HOLD DOWN TO UNIT CURB WITH (4) #10 x 1/2" TEK SCREWS, TYP.
11. 14" HIGH CURB BY UNIT MFR.
12. DUCTWORK WITH ACOUSTIC LINER

2 ROOFTOP AIR CONDITIONER MOUNTING ON NEW CURB N.T.S.



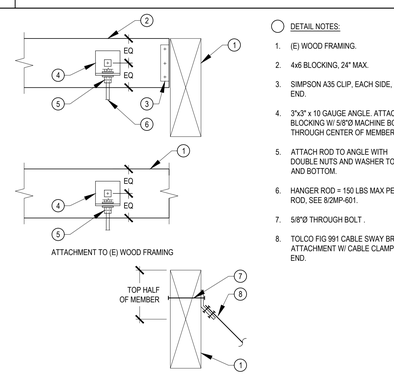
DETAIL NOTES:

1. FLEX DUCT @ CEILINGS (5'-0" MAX LENGTH).
2. SEE 6/2MP-601 FOR HANGER STRAP AND TOP CONNECTION.
3. METAL DUCT.
4. 3/8" BAND ON DUCT COLLARS, (TYP.).
5. CEILING, SEE ARCHITECT'S DRAWINGS.
6. REGISTER.
7. #10-1-1/4" SMS ATTACHED TO T-BAR AND AIR TERMINAL FRAME. MIN 4 ATTACHMENTS.

NOTES:

1. ALL CEILING MOUNTED AIR TERMINALS SHALL BE POSITIVELY ATTACHED TO THE CEILING SUSPENSION SYSTEM BY MECHANICAL MEANS. SCREWS OR APPROVED FASTENERS ARE REQUIRED. A MINIMUM OF TWO ATTACHMENTS ARE REQUIRED.
2. CEILING MOUNTED AIR TERMINALS WEIGHING LESS THAN OR EQUAL TO 20 LBS. SHALL HAVE ONE (1) #12 GAGE SLACK SAFETY WIRE ATTACHED FROM THE TERMINAL TO THE STRUCTURE.
3. CEILING MOUNTED AIR TERMINALS WEIGHING MORE THAN 20 LBS. BUT LESS THAN OR EQUAL TO 56 LBS SHALL HAVE TWO (2) #12 GAGE SLACK SAFETY WIRES (AT DIAGONAL CORNERS) CONNECTED FROM THE TERMINAL TO THE STRUCTURE ABOVE.
4. CEILING MOUNTED AIR TERMINALS WEIGHING MORE THAN 56 LBS SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE BY NOT LESS THAN FOUR (4) TAUT #12 GAGE HANGER WIRES ATTACHED FROM THE TERMINAL TO THE STRUCTURE ABOVE.
5. SEE DETAILS 6&7/2MP-601 FOR ATTACHMENT TO STRUCTURE.

10 REGISTER DETAIL - CEILING MOUNTED N.T.S.

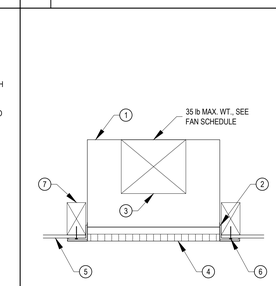


ATTACHMENT TO (E) WOOD FRAMING

DETAIL NOTES:

1. (E) WOOD FRAMING.
2. 4x6 BLOCKING, 24" MAX.
3. SIMPSON A35 CLIP, EACH SIDE, EACH END.
4. 3"x3" x 10 GAUGE ANGLE. ATTACH TO BLOCKING W/ 5/8"Ø MACHINE BOLT THROUGH CENTER OF MEMBER.
5. ATTACH ROD TO ANGLE WITH DOUBLE NUTS AND WASHER TOP AND BOTTOM.
6. HANGER ROD = 150 LBS MAX PER ROD, SEE 8/2MP-601.
7. 5/8"Ø THROUGH BOLT .
8. TOLCO FIG 991 CABLE SWAY BRACE ATTACHMENT W/ CABLE CLAMP, EA END.

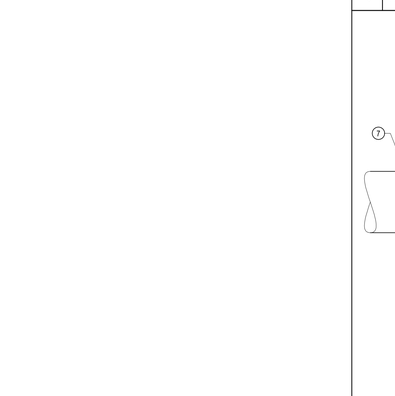
7 TOP CONNECTION N.T.S.



DETAIL NOTES:

1. EXHAUST FAN. FOR LOCATION, SEE PLANS.
2. FACTORY-SUPPLIED BRACKETS. REFER TO AND FOLLOW MANUFACTURER INSTALLATION INSTRUCTIONS AND PROVIDE ALL NECESSARY HARDWARE.
3. DUCTWORK. CONNECT TO FAN WITH FLEX CONNECTOR. FOR SIZES, SEE FLOOR PLANS.
4. FACTORY GRILLE ATTACHED TO FAN HOUSING PER MANUFACTURES RECOMMENDED INSTALLATION INSTRUCTIONS.
5. CEILING ASSEMBLY. SEE ARCHITECT'S DRAWINGS.
6. FACTORY MOUNTING BRACKET ATTACHED TO 2x6 BLOCK W/ (4) - #10x2" WOOD SCREW, ONE AT EA CORNER.
7. 2x6 BLOCKING ATTACHED TO (E) FRAMING W/ SIMPSON A35 EA END.

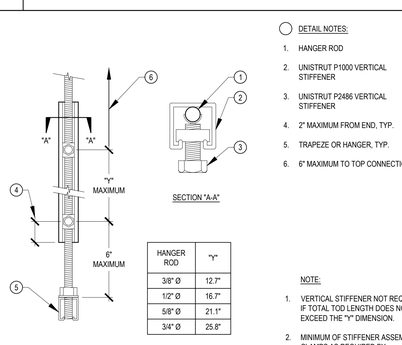
3 CEILING EXHAUST FAN DETAIL (MOUNTING OPTION 1) N.T.S.



DETAIL NOTES:

1. WALL.
2. 2x BLOCKING ALL AROUND.
3. REGISTER.
4. #8 WOOD SCREWS, TYP. OF 4.
5. SHEET METAL BOX WITH 1/2" ACOUSTIC LINING.
6. DUCT DIAMETER PLUS 3" MINIMUM.
7. METAL DUCT.

11 REGISTER DETAIL - SIDEWALL MOUNTED N.T.S.



HANGER ROD	"Y"
3/8" Ø	12.7"
1/2" Ø	16.7"
5/8" Ø	21.1"
3/4" Ø	25.8"

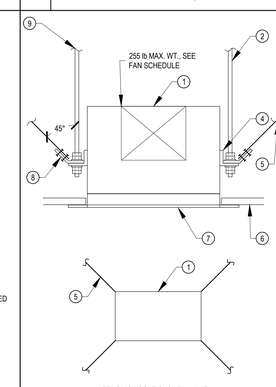
DETAIL NOTES:

1. HANGER ROD
2. UNISTRUT P1000 VERTICAL STIFFENER
3. UNISTRUT P2486 VERTICAL STIFFENER
4. 2" MAXIMUM FROM END, TYP.
5. TRAPEZE OR HANGER, TYP.
6. 6" MAXIMUM TO TOP CONNECTION.

NOTE:

1. VERTICAL STIFFENER NOT REQUIRED IF TOTAL TOD LENGTH DOES NOT EXCEED THE "Y" DIMENSION.
2. MINIMUM OF STIFFENER ASSEMBLY CLAMPS AS REQUIRED BY MANUFACTURER.

8 ROD STIFFENER N.T.S.



BRACING LOCATIONS - PLAN VIEW

DETAIL NOTES:

1. CEILING EXHAUST FAN. FOR LOCATION, SEE PLANS.
2. 3/8" THREADED ROD, (TYP. OF 4). ATTACH TO STRUCTURE. MAX. LENGTH 19" W/O ROD STIFFENER. PROVIDE ROD STIFFNER WHERE ROD LENGTH FOR SEISMIC BRACING TO UPPER ATTACHMENT EXCEEDS 18", SEE DETAIL 8/2MP-601.
3. NOTE # NOT USED
4. FACTORY-SUPPLIED BRACKETS. PROVIDE DOUBLE NUTS WITH LOCKWASHER AT TOP AND BOTTOM OF FLANGE. REFER TO AND FOLLOW MANUFACTURER INSTALLATION INSTRUCTIONS AND PROVIDE ALL NECESSARY HARDWARE.
5. 3/16"Ø AIRCRAFT CABLE, PRETENSIONED AT 5 LBS, TYP. ATTACH TO STRUCTURE, SEE TOP CONNECTION DETAIL 7/2MP-601.
6. CEILING ASSEMBLY. SEE ARCHITECT'S DRAWINGS.
7. FACTORY GRILLE.
8. TOLCO FIG 991 CABLE SWAY BRACE ATTACHMENT W/ CABLE CLAMP, EACH END.
9. FOR TOP CONNECTIONS REFER TO TOP CONNECTION DETAIL 7/2MP-601.

4 CEILING EXHAUST FAN OR ERV DETAIL (HANGING OPTION 2) N.T.S.

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER
MEITH SERTIC
No. M31059
EXP. JUNE 30, 2025
MECHANICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/25/24	DSA V2

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
DETAILS - MECHANICAL & PLUMBING

INCREMENT: INC.2

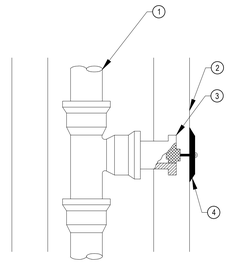
DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.
2MP-601

DATE: JULY 29, 2024

CONSTRUCTION DOCUMENTS

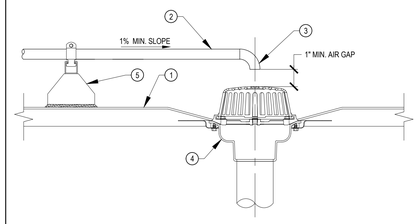
DATE PLOTTED: 10/25/2024 10:45 AM FILE LOCATION: E:\Shared Drives\HVAC\19-6 Nineteen Six\23145 - Meadow Homes ES Mod\03 Dwgs\Meadow Homes ES Mod Inc 2.dwg



DETAIL NOTES:

1. VENT, SOIL,WASTE OR LEADER STACK
2. WALL
3. WALL CLEANOUT
4. WALL PLATE AS SPECIFIED

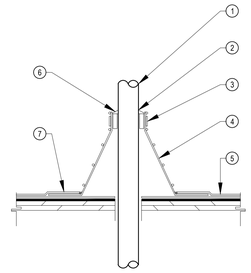
9 WALL CLEANOUT DETAIL N.T.S.



DETAIL NOTES:

1. ROOF, SEE ARCH. DRAWINGS
2. CONDENSATE DRAIN, FOR LOCATION & SIZES, SEE PLANS
3. ELBOW DOWN & SPILL WITH MIN. 1" AIR GAP OVER CENTER OF ROOF DRAIN
4. ROOF DRAIN, SEE ARCH. DRAWINGS
5. SEE PIPE SUPPORT ON ROOF DETAIL

5 CONDENSATE DRAIN TO ROOF DRAIN N.T.S.



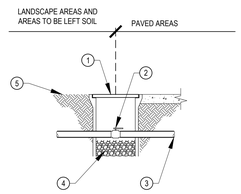
DETAIL NOTES:

1. PIPE. SEE DWGS FOR SIZE.
2. SEAL WATERTIGHT WITH MASTIC.
3. STAINLESS STEEL CLAMPING RING.
4. PRE-MOLDED PIPE FLASHING.
5. (E) ROOF. SEE ARCH DWGS.
6. PIPE SEAL MUST HAVE INTACT RIB AT TOP EDGE, REGARDLESS OF PIPE DIAMETER.
7. SEAL FLASHING WATERTIGHT TO ROOF PER ROOFING MANUFACTURER'S INSTRUCTIONS.

NOTE:

1. FIELD VERIFY ACTUAL ROOFING MATERIAL.

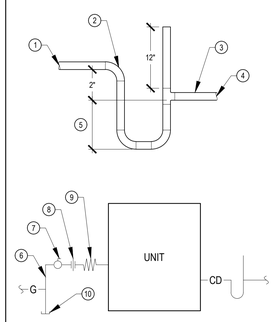
1 PIPE PENETRATION N.T.S.



DETAIL NOTES:

1. PRECAST CONCRETE TRAFFIC RATED BOX W/ CAST IRON COVER ADJUST BOX TO FINISHED GRADE. CHRISTY B09 W/ MARK BUILDING GAS SHUT OFF VALVE ON COVER.
2. GAS SHUTOFF VALVE IN CHRISTY VALVE BOX.
3. GAS LINE.
4. 4" MIN. BED OF PEA GRAVEL.
5. FINISHED GRADE.

10 GAS SHUT-OFF VALVE N.T.S.



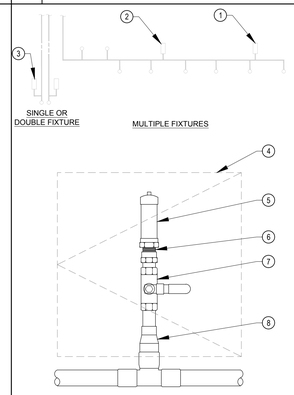
DETAIL NOTES:

1. CONNECT CD TO UNIT PER MANUFACTURER'S INSTALLATION REQUIREMENTS.
2. LONG RADIUS ELBOW, TYP.
3. PITCH MINIMUM 1/8" PER FOOT.
4. ROUTE TO POC. SEE PLANS.
5. UNIT TOTAL INCHES STATIC PRESSURE ±2".
6. NATURAL GAS PIPE.
7. GAS SHUTOFF VALVE TYP AT EACH UNIT.
8. UNION.
9. FLEXIBLE CONNECTOR.
10. DIRT LEG.

NOTES:

1. CD PIPE SIZE SHALL NOT BE SMALLER THAN UNIT DRAIN CONNECTION SIZE.
2. FOR PIPE SIZES AND LOCATIONS, SEE PLANS.

6 GAS AND CONDENSATE DRAIN CONNECTION TO EQUIPMENT N.T.S.



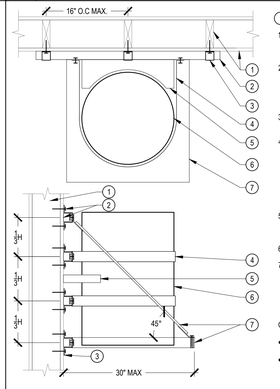
DETAIL NOTES:

1. INSTALL WATER HAMMER ARRESTOR JUST BEFORE LAST FIXTURE ON BRANCH LINE.
2. INSTALL AN ADDITIONAL WATER HAMMER ARRESTOR IF THE BRANCH LINE IS GREATER THAN 20' LONG.
3. INSTALL WATER HAMMER ARRESTOR ON ALL FIXTURES WITH QUICK CLOSING VALVES.
4. WALL ACCESS PANEL. LABEL PANEL "WATER HAMMER ARRESTOR" W/ PHENOLIC PLASTIC ENGRAVED LABEL.
5. WATTS SERIES 15 OR EQUAL WATER HAMMER ARRESTOR. SIZE PER MANUFACTURER'S INSTRUCTIONS.
6. FITTING ADAPTER.
7. BALL VALVE. SIZE TO EQUAL WATER HAMMER ARRESTOR SIZE.
8. FITTING REDUCER (IF REQUIRED).

NOTES:

1. COMBINE SHUT-OFF VALVES, TRAP PRIMERS AND WATER HAMMER ARRESTORS BEHIND SINGLE WALL ACCESS PANEL WHERE POSSIBLE.

2 WATER HAMMER ARRESTOR DETAIL N.T.S.



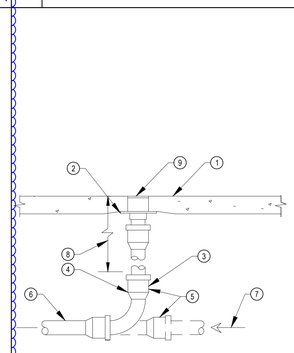
DETAIL NOTES:

1. (E)WALL W/ 2x WOOD STUDS @ 16" MAX. O.C. SEE ARCHITECT DRAWINGS & VERIFY CONDITIONS.
2. B-LINE B22 OR EQUAL STRUT CHANNEL MIN. 36"L. ATTACH TO WALL WITH 3/8"Ø×2½" LAG BOLTS W/ WASHERS (6) PER STRUT THRU TOP & BOTTOM OF U-STYLE STRUT BRACKETS AND INTO STUDS.
3. U-STYLE STRUT BRACKETS UNISTRUT P1047 OR EQUAL.
4. HOLDRITE SEISMIC RESTRAINT STRAP. ATTACH TO STRUTS WITH 1/2"Ø BOLTS, WASHERS AND CHANNEL NUTS. TYPICAL PER CPC 2022 507.2: AT UPPER ONE THIRD (1/3) AND LOWER ONE-THIRD (1/3). A MINIMUM DISTANCE OF FOUR (4) INCHES SHALL BE MAINTAINED ABOVE THE CONTROLS WITH THE STRAPPING.
5. 2x8 CHOCK BLOCK. CUT TO RADIUS OF WATER HEATER & MOUNT @ 1/2 WATER HEATER HEIGHT.
6. WATER HEATER.
7. HOLDRITE 30-SWHP-WM WALL HUNG PLATFORM WITH DRAIN PAN & SUPPORT RODS. ATTACH TO STRUTS WITH 1/2" Ø BOLTS, WASHERS, AND CHANNEL NUTS. TYPICAL.

GENERAL NOTES:

- MAX WEIGHT = 300 LBS
- SEE HOLDRITE MOUNTING INSTRUCTIONS FOR FURTHER DETAIL

7 WATER HEATER FINISH WALL MOUNTING (WOOD STUD) N.T.S.



DETAIL NOTES:

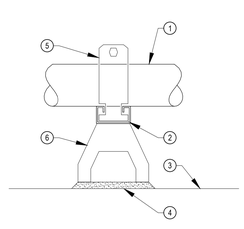
1. (E) FLOOR SLAB ON GRADE
2. MEMBRANE CLAMP
3. LONG SWEEP ELBOW AT END OR TURN OF RUN
4. HUB AND SPIGOT CAST IRON PIPE BELOW FLOOR
5. COMBINED WYE AND EIGHT BEND IN RUN ENTER TOP OF PIPE.
6. SANITARY SEWER LINE
7. DIRECTION OF FLOW
8. AS REQUIRED DEPTH OF SEWER
9. ADJUSTABLE FLOOR GRATE. PROVIDE FINAL ADJUSTMENT AND GROUT FINISH AS REQUIRED AFTER FLOOR FINISHES ARE COMPLETE.

3 FLOOR CLEANOUT DETAIL N.T.S.

DETAIL NOTES:

1. CHECK VALVE, TYPICAL.
2. BALL VALVE, TYPICAL.
3. COLD WATER, SEE PLANS.
4. EXPANSION TANK AMTROL ST-5C-DD OR EQUAL. SECURE TO WALL WITH SEISMIC RESTRAINT STRAP.
5. WATER HEATER.
6. HOT WATER TO MOP SINK, SEE PLANS.
7. UNION, TYPICAL.
8. TEMPERATURE AND PRESSURE RELIEF. DRAIN FULL SIZE TO MOP SINK.
9. HOLDRITE SEISMIC RESTRAINT STRAP. PER CPC 2022 507.2: AT UPPER ONE THIRD (1/3) AND LOWER ONE-THIRD (1/3). A MINIMUM DISTANCE OF FOUR (4) INCHES SHALL BE MAINTAINED ABOVE THE CONTROLS WITH THE STRAPPING.
10. HOLDRITE WALL HUNG PLATFORM WITH DRAIN PAN.
11. 1" DRAIN, RUN TO MOP SINK.

8 WATER HEATER PIPING N.T.S.



DETAIL NOTES:

1. FOR PIPE SIZES AND TYPES, SEE PLANS.
2. PROVIDE GAP BETWEEN INTEGRAL STRUT CHANNEL AND HARDWARE USED TO SECURE PIPE TO ALLOW FOR MOVEMENT OF SYSTEM.
3. ROOF DECK.
4. SET SUPPORT IN MASTIC COMPATIBLE WITH ROOF SURFACE.
5. PROVIDE STANDARD STRUT CLAMPS.
6. B-LINE DURA-BLOCK WITH INTEGRAL CHANNEL AND PIPE BRACKETS. WIDTH AS REQUIRED FOR NUMBER OF PIPES.

NOTES:

1. REFER TO SPECIFICATIONS FOR SPACING BETWEEN SUPPORT BLOCKS. ADDITIONALLY PROVIDE BLOCK WITHIN 2'-0" OF ANY CHANGE OF DIRECTION. LIMIT TRIBUTARY WEIGHT TO 40 LBS SUPPORTED @ EACH BLOCK.

4 PIPE SUPPORT ON ROOF N.T.S.

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER
WEIN SERTTWU
No. M31059
EXP. JUNE 30, 2025
MECHANICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/25/24	DSA V2

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
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MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

DETAILS - MECHANICAL & PLUMBING

INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.

2MP-602

DATE: JULY 29, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/25/2024 10:45 AM FILE LOCATION: E:\Shared Drives\HVAC\19-6 Nineteen Six\23145 - Meadow Homes ES Mod\03 Dwgs\Meadow Homes ES Mod Inc 2.dwg

STATE OF CALIFORNIA
Mechanical Systems
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — **NRCC-MCH-E**

This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, or 141.0(b)2 for alterations.

Project Name:	Meadow Homes Inc 2	**Report Page:**	**(Page 1 of 11)**
Project Address:		**Date Prepared:**	2024-07-26T14:09:08-04:00

A. GENERAL INFORMATION

01	Project Location (city)	Concord	04	Total Conditioned Floor Area	4002
02	Climate Zone	12	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1
♦ School or Classroom					

B. PROJECT SCOPE

This table Includes mechanical systems or components that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, 170.2(b) or 141.0(b)2 and 180.2(b)2 for alterations.

01	02	03
Air System(s)	Wet System Components	Dry System Components
☒ Heating Air System	☐ Water Economizer	☒ Air Economizer
☒ Cooling Air System	☐ Pumps	☐ Electric Resistance Heat
Mechanical Controls	☒ System Piping	☒ Fan Systems
☒ Mechanical Controls (existing to remain, altered or new)	☐ Cooling Towers	☒ Ductwork (existing to remain, altered or new)
	☐ Chillers	☒ Ventilation
	☐ Boilers	☐ Zonal Systems/ Terminal Boxes

STATE OF CALIFORNIA
Mechanical Systems
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — **NRCC-MCH-E**

Project Name:	Meadow Homes Inc 2	**Report Page:**	**(Page 2 of 11)**
		Date Prepared:	2024-07-26T14:09:08-04:00

C. COMPLIANCE RESULTS

Table C will indicate if the project data input into the compliance document is compliant with mechanical requirements. This table is not editable by the user. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D., or the table indicated as not compliant for guidance.

01		02		03		04		05		06		07		08	09
System Summary 110.1, 110.2, 140.4, 170.2(c)	AND	Pumps 140.4(k), 170.2(c)4I	AND	Fans/ Economizers 140.4(c), 140.4(e), 170.2(c)	AND	System Controls 110.2, 120.2, 140.4(f), 170.2(c)	AND	Ventilation 120.1, 160.2	AND	Terminal Box Controls 140.4(d), 170.2(c)4B	AND	Distribution 120.3, 140.4(l), 160.2, 160.3	AND	Cooling Towers 110.2(e)2	Compliance Results
(See Table F)		(See Table G)		(See Table H)		(See Table I)		(See Table J)		(See Table K)		(See Table L)		(See Table M)	
Yes	AND		AND	Yes	AND	Yes	AND	Yes	AND		AND	Yes	AND		COMPLIES with Exceptional Conditions
Mandatory Measures Compliance (See Table Q for Details)										COMPLIES					

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

Transfer air is being used in at least one zone to meet minimum ventilation requirements. See Table J for details. Transfer air must be designed per §120.1(e) for air classification and recirculation limitations and be documented within construction documents.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Space Conditioning System Information

01	02	03	04	05	06
System Name	Quantity	System Serving	System Status	Space Type	Utilizing Recovered Heat
AC-MU-1&2	2	Single zone	Alteration		☐

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F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters and DOAS systems)

01	02	03	04	05	06	07	08	09	10	11
Name or Item Tag	Equipment Category per Tables 110.2, 140.4(a)2 and 170.2(c)3ai	Equipment Type per Tables 110.2 and Title 20	Smallest Size Available[1] 140.4(a) and 170.2(c)1	Equipment Sizing per Mechanical Schedule (kBtu/h) 140.4(a&b), 170.2(c)1 & 170.2(c)2						
				Heating Output[2,3]			Cooling Output[2,3]		Load Calculations[3,4]	
				Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Total Sensible Cooling Load (kBtu/h)
AC-MU-1&2	Unitary AC/ Condensers	AC, air-cooled pkg (3 phase)	NA: Altered per 141.0(b)2E and 180.2(b)2				123.18	123.18		123.18

[1] FOOTNOTES: Equipment shall be the smallest size, within the available options of the desired equipment line, necessary to meet the design heating and cooling loads of the building per 140.4(a) and 170.2(c)1. Healthcare facilities are excepted.
[2] It is common practice to show rated output capacity on the equipment schedule. Sensible cooling output comes from specification sheet tables.
[3] If equipment is heating only, leave cooling output and load blank. If equipment is cooling only, leave heating output and load blank.
[4] Authority Having Jurisdiction may ask for load calculations used for compliance per 140.4(b) and 170.2(c).

Dry System Equipment Efficiency (other than Package Terminal Air Conditioners (PTAC) and Package Terminal Heat Pumps (PTHP), DX-DOAS and Dual Fuel Heat Pumps)

01	02	03	04	05	06	07	08	09
Name or Item Tag	Size Category (Btu/h)	Heating Mode				Cooling Mode		
		Rating Condition (°F)	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency
AC-MU-1&2	>=65,000 and <135,000					EER IEER	11.2 14.8	11.4 17.2

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G. PUMPS

This section does not apply to this project.

H. FAN SYSTEMS & AIR ECONOMIZERS

This table is used to demonstrate compliance with prescriptive requirements found in 140.4(c), 140.4(e), 140.4(m), 170.2(c)3, and 170.2(c)4A for fan systems. Fan systems serving only process loads are exempt from these requirements and do not need to be included in Table H.

System Name	AC-MU-1&2	Quantity	2	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	4,000	Site Elevation	45	Economizer	Fixed Temperature
01	02	03	04			05		06	07	08	09			10	11
Fan Name or Item Tag	Fan Type	Qty	Component			Airflow through Component (%)		Water Gauge (w.g)	Allowance: Component Allowance	Allowance: Fan Allowance (watt/cfm)[3]	Design: Design Electrical Input Power Method			Design: Motor Nameplate Horsepower	Design: Fan Electrical Input Power (kW)
AC-MU-1&2	Supply	1	Economizer Return Damper			90			0.04	0.4694	Manufacturer provided				2.62
			Gas heat			100			0.05						
			MERV 13-16 Filter downstream of thermal conditioning equipment			100			0.23						
			Altered: Supply Fan System			100			0.13						
Supply Fan Base Allowance (watt/cfm)		0.232	Exhaust/Return/Relief/Transfer Fan Base Allowance(watt/cfm)					0	Fan System Allowance (kW)[3]		2.8			Fan System Electrical Input Power (kW)	2.62

[1] FOOTNOTES: Fans serving spaces with design background noise goals below NC35
[2] Low-turndown single-zone VAV fan system must be capable of and configured to reduce airflow to 50 percent of design airflow and use no more than 30 percent of the design wattage at that airflow. No more than 10 percent of the design load served by the equipment shall have fixed loads.
[3] Fan system allowance includes fan system base allowance.
[4] Filter pressure loss can only be counted once per fan system.

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H. FAN SYSTEMS & AIR ECONOMIZERS

[1] Complex Fan System means a fan system that combines a single cabinet fan system with other supply fans, exhaust fans, or both.
[6] Computer room economizers must meet requirements of 140.9(a) and will be documented on the NRCC-PRC-E document.

H. EXHAUST AIR HEAT RECOVERY 140.4(q), 170.2(c)4O

01	02	03	04	05	06	07	08	09	10	11
Fan System Name	Qty	Hours of Operation per Year	Design Supply Airflow Rate	Outdoor Airflow	% Outdoor Air at Full Design Airflow	Exemptions to Exhaust Air Heat Recovery Requirement per 140.4(q) & 170.2(c)4O	Exhaust Air Heat Recovery 140.4(q) & 170.2(c)4O	Type Of Heat Recovery Rating	Required Recovery Ratio	Energy Recovery Bypass
AC-MU-1&2			4,000	1,000	0.25	NA: Total airflow exhausted and relieved within 20ft +75% per Exception 6 to 140.4(q)				

Fan Energy Index (FEI)

01	02	03
Name or Item Tag	FEI Exception	FEI
AC-MU-1&2	Altered Fan System	

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I. SYSTEM CONTROLS

This table is used to demonstrate compliance with mandatory controls in 110.2 and 120.2 and prescriptive controls in 140.4(f) and (n), 170.2(c)4D 170.2(c)4L or requirements in 141.0(b)2E 180.2(b)2 for altered space conditioning systems.

01	02	03	04	05	06	07	08	09	10
System Name	System Zoning	Conditioned Floor Area Being Served (ft²)	Thermostats 110.2(b) & (c)[1], 120.2(a) 160.3(a)2A or 141.0(b)2E & 180.2(b)2	Shut-Off Controls 120.2(e) & 160.3(a)2O	Isolation Zone Controls 120.2(g) & 160.3(a)2F	Demand Response 110.12 120.2(b) & 160.3(a)2B	Supply Air Temp. Reset 140.4(f) & 170.2(c)4D	Window Interlocks per 140.4(n) & 170.2(c)4D	Direct Digital Control (DDC) per 120.2
AC-MU-1&2	Single zone	NA: Altered per 141.0(b)2E	Setback + DR Tstat per 110.12	NA: Altered per 141.0(b)2E	NA: Altered per §141.0(b)2E	DR Tstat per 110.12	NA: Alteration	NA: Alteration Project	NA: Single Zone

[1]FOOTNOTES: Gravity gas wall heaters, gravity floor heaters, gravity room heaters, non-central electric heaters, fireplaces or decorative gas appliances, wood stoves are not required to have setback thermostats.

J. VENTILATION AND INDOOR AIR QUALITY

This table is used to demonstrate compliance with mandatory ventilation requirements in 120.1 120.2(e)3B 140.4(p) and 140.4(q) for all nonresidential and hotel/motel and d-124refpwlk/(162.2, 160.3(a)3D, 170.2(a)4N, 170.2(q)4D for high-rise residential occupancies. For alterations, only ventilation systems being altered within the scope of the permit application need to be documented in this table. In lieu of this table, the required outdoor ventilation rates and airflows may be shown on the plans or the calculations can be presented in a spreadsheet.

01	☐	Check the box if the project is showing ventilation calculations on the plans, or attaching the calculations instead of completing this table.
02	☒	Check this box if the project included Nonresidential, Hotel/Motel Spaces or Multifamily Common Use Spaces
	☐	
03	☐	Check the box if the project is using natural ventilation in any nonresidential or hotel/motel spaces to meet required ventilation rates per 120.1(c)2.

Nonresidential and Hotel/ Motel Multifamily Common Use Ventilation Systems

04	05			06		07
System Name	AC-MU-1&2	System Design OA CFM Airflow[1]	800	System Design Transfer Air CFM	800	Air Filtration per 120.1(c) 141.0(b)2 and 160.2(c)21[2]
						Provided
08	09	10	11	12	13 14	15
						16

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J. VENTILATION AND INDOOR AIR QUALITY

Space Name or Item Tag	Mechanical Ventilation Required per 120.1(c)[3] & 160.2(c)3					Exh. Vent per 120.1(c)4 & 160.2(c)4		DCV or Sensor Controls per 120.1(d)3, 120.1(d)5, and 120.1(e)3[4] 160.2(c)5D 160.2(c)5E	
	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of Shower heads/ toilets	# of people[5]	Required Min OA CFM	Required Min CFM	Provided per Design CFM		
MU	Multipurpose assembly	4002			600.3			DCV	Provided per §120.1(d)4
								Occ Sensor	NA: Alteration
17	Total System Required Min OA CFM				600.3	18		Ventilation for this System Complies?	Yes

[1] FOOTNOTES: System CFM should include both mechanical and natural ventilation for the zone/system
[2] Air filtration requirements apply to the following three system types per 120.1(c)1A: space conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply side of balanced ventilation systems including heat recovery and energy recovery ventilation systems providing outside air to occupiable space.
[3] Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.
[4] See Standards Tables 120.1-A and 120.1-B.
[5] For lecture halls with fixed seating, the expected number of occupants shall be determined in accordance with the California Building Code.
[6] 120.2(e)3 requires systems serving rooms that are required by 130.1(c) to have lighting occupancy sensing controls to also have occupancy sensing zone controls for ventilation. Examples of spaces which require lighting occupancy sensors include offices 250ft² or smaller, multipurpose rooms less than 1,000 ft², classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stack aisles, corridors, stairwells, parking garages, and loading and unloading zones, unless excepted by 130.1(c).

K. TERMINAL BOX CONTROLS

This section does not apply to this project.

L. DISTRIBUTION (DUCTWORK and PIPING)

This table is used to show compliance with mandatory pipe insulation requirements found in 120.3 and mandatory requirements found in 120.4(g) for duct sealing.

01	☐	Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be installed with a cover suitable for outdoor service. Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space shall have a Class I or Class II vapor retarder. All penetrations and joints of which shall be sealed.

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L. DISTRIBUTION (DUCTWORK and PIPING)

Duct Leakage Testing

The answers to the questions below apply to the following duct systems:	AC-MU-1&2		
		NR/ Common Use: Duct leakage testing shall not exceed 15% per NA7.5.3 required for these systems?	No
		Dwelling Units: Total duct leakage of duct system shall not exceed 15% or duct system to outside shall not exceed 10% per RA3.1.4 required for systems?	---
		Duct leakage testing per CMC Section 603.9.2 required for these systems?	No

11	No	The scope of the project includes only duct systems serving healthcare facilities
12	Yes	Duct system provides conditioned air to an occupiable space for a constant volume, single zone, space-conditioning system.
13	Yes	The space conditioning system serves less than 5,000 ft² of conditioned floor area.
14	No	The combined surface area of the ducts is more than 25% of the total surface area of the entire duct system:
15	No	The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.
16	No	The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2.
17	Exposed Ductwork located in occupied space	All Ductwork and plenums with pressure class ratings shall be constructed to Seal Class A
18	Yes	All ductwork is an extension of an existing duct system
19	No	Ductwork serving individual dwelling unit
20	Yes	< 25 ft of new or replacement space conditioning ducts installed
21	R-0.0	Duct Insulation R-value
22	Yes	Ductwork Existing To Remain
23	Yes	Duct System Connected To Altered Space Conditioning System

M. COOLING TOWERS

This section does not apply to this project.

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N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-4

Form/Title
NRCI-MCH-01-E - Must be submitted for all buildings

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-4

Form/Title	Systems/Spaces To Be Field Verified
NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap.	AC-MU-1&2
NRCA-MCH-05-A - Air Economizer Controls	AC-MU-1&2
NRCA-MCH-06-A Demand Control Ventilation Systems must be submitted for all systems required to employ demand controlled ventilation (refer to 120.1(c)3) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO_2) concentration setpoints.	MU
NRCA-MCH-12-A FDD for Packaged Direct Expansion Units	AC-MU-1&2

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no NRCV forms required for this project.

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Q. MANDATORY MEASURES DOCUMENTATION LOCATION

This table is used to indicate where mandatory measures are documented in the plan set or construction documentation.

01		02
Compliance with Mandatory Measures documented through MCH Mandatory Measures Note Block	No	Plan sheet or construction document location
03		04
Mandatory Measure		**Plan sheet or construction document location**
Heating Equipment Efficiency per 110.1		2MP-002
Cooling Equipment Efficiency per 110.1		2MP-002
Furnace Standby Loss Control per 110.2(d)		2MP-002
Duct Insulation per 120.4		230500
Heat Pump with Supplemental electric Resistance Heater Controls per 110.2(b)		N/A
The air duct and plenum system is designed per 120.4(a)-(f)		230500
Kitchen range hoods shall be rated for sound in accordance with Section 7.2 of ASHRAE 62.2		N/A

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Project Address:		**Date Prepared:**	2024-07-26T14:09:08-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Rod Revera	Documentation Author Signature: Rod Revera
Company: Cypress Engineering Group	Signature Date: 07/26/24
Address: 8 Harris Court Suite A8	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Monterey, CA 93940	Phone: 831.218.1802

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Metin Serttunc	Responsible Designer Signature: Metin Serttunc
Company: Cypress Engineering Group	Date Signed: 07/26/24
Address: 8 Harris Court Suite A8	License: M31059
City/State/Zip: Monterey, CA 93940	Phone: 831.218.1802

AGENCY APPROVAL DSA# 01-121400

19-6
911 W HEDDING ST., SUITE 101
SAN JOSE, CA 95126
TEL (408) 715-4470

CEG JOB NO: 23145

CYPRESS Engineering Group
831.218.1802
8 Harris Court, Suite A8
Monterey, CA 93940
cypresseg.com
HVAC. Plumbing. Fire Protection
Building Commissioning
Industrial Refrigeration
Environmental Compliance
Training & Technical Support

CONSULTANTS

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CIVIL ENGINEER
CARROLL ENGINEERING
1101 South Winchester Blvd., Suite H184
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STRUCTURAL ENGINEER
BASE Design Inc.
582 Market St. Ste 1402
San Francisco, CA 94104
TEL (415) 466-2997

ELECTRICAL ENGINEER
ATIUM ENGINEERING
3533 York Ln.
San Ramon, CA 94582
TEL (913) 961-1658

TECHNOLOGY ENGINEER
KMM Services Inc.
5433 El Camino Ave. Ste 5
Carmichael, CA 95608
TEL (916) 359-4000

PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER — METIN SERTTUNC — No. M31059 — EXP. JUNE 30, 2025 — MECHANICAL — STATE OF CALIFORNIA

REVISIONS

#	NO.	DATE	DESCRIPTION
	A	10/25/2024 10/25/24	ADDENDUM #1 DSA V2

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
T24 - MECHANICAL

INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23119.01

SHEET NO.
2MP-801

DATE: JULY 29, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/25/2024 10:46 AM FILE LOCATION: E:\Shared Drives\HVAC\19-6 Nineteen Six\23145 - Meadow Homes ES Mod\03 Dwgs\Meadow Homes ES Mod Inc 2.dwg

ELECTRICAL COMPONENT ANCHORAGE NOTES

ALL ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS
2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICAL AND TELECOM UTILITIES. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE, OR MOBILE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4'-0" OR GREATER ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT, IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE ATTACHMENTS OF THE FOLLOWING ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT BE DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS.

1. COMPONENTS WEIGHTING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
2. COMPONENTS WEIGHTING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR HUNG FROM A WALL.

THE ANCHORAGE OF ALL ELECTRICAL COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

ELECTRICAL DISTRIBUTION SYSTEMS BRACING NOTES

ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25, AND 1617A.1.26

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G. HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

ELECTRICAL DISTRIBUTIONS SYSTEMS (E):

☒ OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

☐ OPTION 2: SHALL COMPLY WITH THE APPLICABLE HCAI (OSHPD) PRE-APPROVAL (OPM #) #_____.

ABBREVIATIONS

A	AMPERE	EMT	ELECTRICAL METALLIC TUBING	NIC	NOT IN CONTRACT
ABV	ABOVE	EOL	END OF LINE RESISTOR	NIEC	NOT IN ELECTRICAL CONTRACT
AF	AMPERE FRAME, AMPERE FUSE	EQP	EQUIPMENT	NO	NORMALLY OPEN
AFF	ABOVE FINISHED FLOOR	FA	FIRE ALARM	NTS	NOT TO SCALE
AIC	AMPERE INTERRUPTING CAPACITY	FACP	FIRE ALARM CONTROL PANEL	NUM, #	NUMBER
ARCH	ARCHITECTURAL	(F)	FUTURE	(N)	NEW
AS	AMPERE SWITCH	FIN	FINISH	OC	ON CENTER
AT	AMPERE TRIP	FLR	FLOOR	P	POLE
ATS	AUTOMATIC TRANSFER SWITCH	G, GND	GROUND	PA	PUBLIC ADDRESS
BKR	BREAKER	GRC	GALVANIZED RIGID CONDUIT	PB	PULL BOX
BLDG	BUILDING	HGT	HEIGHT	PF	POWER FACTOR
C	CONDUIT	HP	HORSEPOWER	PH	PHASE
CATV	CABLE TELEVISION	IC	INTERCOM	PNL	PANEL
CB	CIRCUIT BREAKER	IDF	INTERMEDIATE DISTRIBUTION FRAME	PVC	POLYVINYL CHLORIDE
CBC	CALIFORNIA BUILDING CODE	IMC	INTERMEDIATE METAL CONDUIT	(R)	EXISTING TO BE RELOCATED
CD	CANDELA	INFO	INFORMATION	REQD	REQUIRED
CEC	CALIFORNIA ELECTRICAL CODE	JB	JUNCTION BOX	REQT(S)	REQUIREMENT(S)
CFC	CALIFORNIA FIRE CODE	KAIC	KILOAMPERE INTERRUPTING CAPACITY	RM	ROOM
CKT	CIRCUIT	KV	KILOVOLT	RSC	RIGID STEEL CONDUIT
CL	CENTER LINE	KVA	KILOVOLT AMPERE	SAD	SEE ARCHITECTURAL DOCUMENTS
CLG	CEILING	KW	KILOWATT	SHT	SHEET
CO	CONDUIT ONLY	LTG	LIGHTING	SPD	SURGE PROTECTIVE DEVICE
COMM	COMMUNICATIONS	LV	LOW VOLTAGE	STC	SIGNAL TERMINAL CABINET
CSFM	CALIFORNIA STATE FIRE MARSHALL	MAX	MAXIMUM	SW	SWITCH
CTR	CENTER	KCMIL	THOUSAND CIRCULAR MILS	SWBD	SWITCHBOARD
(D)	DEMOLISH	MDF	MAIN DISTRIBUTION FRAME	T24	CALIFORNIA ENERGY CODE
DET	DETAIL	MECH	MECHANICAL	TC	TERMINAL CABINET
DIM	DIMENSION	MH	MANHOLE	TEL	TELEPHONE
DIST	DISTRIBUTION	MIN	MINIMUM	TYP	TYPICAL
DP	DISTRIBUTION PANEL	MTD	MOUNTED	UON	UNLESS OTHERWISE NOTED
DWG	DRAWING	MTG	MOUNTING	V	VOLT
(E)	EXISTING	NC	NORMALLY CLOSED	W	WATT, WIRE
ELEC	ELECTRICAL	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	WP	WEATHERPROOF
EM	EMERGENCY			XFMR	TRANSFORMER

OWNERSHIP OF INSTRUMENTS OF SERVICE

1. ALL REPORTS, DRAWINGS, SPECIFICATIONS, COMPUTER FILES, FIELD DATA, NOTES AND OTHER DOCUMENTS AND INSTRUMENTS PREPARED BY THE CONSULTANT AS INSTRUMENTS OF SERVICE SHALL REMAIN THE PROPERTY OF THE CONSULTANT. THE CONSULTANT SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.
2. THE CLIENT ACKNOWLEDGES THE CONSULTANT'S CONSTRUCTION DOCUMENTS, INCLUDING ELECTRONIC FILES, AS INSTRUMENTS OF PROFESSIONAL SERVICE. NEVERTHELESS, THE FINAL CONSTRUCTION DOCUMENTS PREPARED UNDER THIS AGREEMENT SHALL BECOME THE PROPERTY OF THE CLIENT UPON COMPLETION OF THE SERVICES AND PAYMENT IN FULL OF ALL MONIES DUE TO THE CONSULTANT. THE CLIENT SHALL NOT REUSE OR MAKE ANY MODIFICATION TO THE CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF THE CONSULTANT. THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS THE CONSULTANT, ITS OFFICERS, DIRECTORS, EMPLOYEES AND SUBCONSULTANTS (COLLECTIVELY, CONSULTANT) AGAINST ANY DAMAGES, LIABILITIES OR COSTS, INCLUDING REASONABLE ATTORNEY'S FEES AND DEFENSE COSTS, ARISING FROM OR ALLEGEDLY ARISING FROM OR IN ANY WAY CONNECTED WITH THE UNAUTHORIZED REUSE OR MODIFICATION OF THE CONSTRUCTION DOCUMENTS BY THE CLIENT OR ANY PERSON OR ENTITY THAT ACQUIRES OR OBTAINS THE CONSTRUCTION DOCUMENTS FROM OR THROUGH THE CLIENT WITHOUT THE WRITTEN AUTHORIZATION OF THE CONSULTANT.

CODES AND STANDARDS

1. 2022 CALIFORNIA BUILDING CODE (CBC), VOLUMES #1 AND #2 (PART 2,TITLE 24, CCR).
2. 2022 CALIFORNIA ELECTRICAL CODE (PART 3, TITLE 24, CCR).
3. 2022 CALIFORNIA MECHANICAL CODE (CMC) (PART 4, TITLE 24, CCR).
4. 2022 CALIFORNIA PLUMBING CODE (CPC) (PART 5, TITLE 24, CCR).
5. 2022 CALIFORNIA ENERGY CODE (PART 6,TITLE 24, CCR).
6. 2022 CALIFORNIA FIRE CODE (CFC) (PART 9,TITLE 24, CCR).
7. 2022 CALIFORNIA GREEN CODE (PART 11, TITLE 24, CCR).
8. 2022 CALIFORNIA REFERENCED STANDARDS CODE (PART 12, TITLE 24, CCR).
9. 2022 NFPA 72 NATIONAL FIRE ALARM CODE.
10. 2022 NFPA 13 STANDARDS FOR FIRE SPRINKLER SYSTEMS.
11. ADA STANDARDS FOR ACCESSIBLE DESIGN: ADA ACCESSIBILITY GUIDELINES (ADAAG) 28, PART 36 APPENDIX A.
12. ADA STANDARDS FOR ACCESSIBLE DESIGN - CODE OF REGULATIONS (INCLUDING AMENDMENTS).

ACCEPTANCE TESTING

THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE.

LIGHTING CONTROLS ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT).

MECHANICAL SYSTEM ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECTS SUBMITTED ON OR AFTER OCTOBER 1, 2021.

ENVELOPE AND PROCESS EQUIPMENT ACCEPTANCE TESTS SHALL BE PERFORMED BY THE INSTALLING CONTRACTOR, ENGINEER/ARCHITECT OF RECORD OR THE OWNER'S AGENT.

A LISTING OF CERTIFIED ATT CAN BE FOUND AT: HTTPS://WWW.ENERGY.CA.GOV/PROGRAMS-AND-TOPICS/PROGRAMS/ACCEPTANCE-TEST-TECHNICIAN-CERTIFICATION-PROVIDER-PROGRAM/ACCEPTANCE.

THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.

PROJECT INSPECTORS WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.

NEW VS. EXISTING

	(N) CONDUIT - CONCEALED IN WALLS OR CEILING.
	(E) CONDUIT - CONCEALED IN WALLS OR CEILING.
	(E) CONDUIT - TO BE REMOVED.
$	(N) DEVICE OR EQUIP (EXAMPLE)
$	(E) DEVICE OR EQUIP (EXAMPLE)
$	(E) DEVICE OR EQUIP TO BE REMOVED (EXAMPLE)

WIRING, CONDUIT, AND RACEWAY SYMBOLS

	CONDUIT - CONCEALED IN WALLS OR CEILING.
	CONDUIT - EXPOSED.
	CONDUIT - UNDERGROUND / DIRECT BURIAL.
	CONDUIT HOME RUN TO PANEL, TERMINAL CABINET, ETC. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODES. ALL 20A/1P BRANC CIRCUITS SHALL BE #12 AWG WIRES WITH #12 AWG NEUTRALS AND GROUNDS RUN A MAXIMUM OF 3 BRANCH CIRCUITS PER CONDUIT.
	CONDUIT - FLEX WITH CONNECTION.
	CONDUIT - STUB UP.
	CONDUIT - STUB DOWN.
	CONDUIT - EMERGENCY POWER SYSTEM.
	CONDUIT - CAPPED.
	CONDUIT - CONTINUATION.
	SURFACE MOUNTED WIRE RACEWAY - INSTALL AT + 36" AFF UON.
	SURFACE MOUNTED WIRE RACEWAY UP/DOWN
Y X Y X	IN-GRADE PULL BOX. SINGLE LINE = NON-TRAFFIC RATED. DOUBLE LINE = TRAFFIC RATED. "Y" = UNIQUE BOX IDENTIFIER. "X" = SYSTEM: P = POWER C = COMMUNICATIONS F = FIRE ALARM L = LIGHTING E = EV CHARGER

POWER DISTRIBUTION SYMBOLS (SINGLE LINE)

	TRANSFORMER (SINGLE LINE)
T	TRANSFORMER (RISER)
	STANDARD / EMERGENCY PANEL BOARD
	STANDARD / EMERGENCY DISTRIBUTION PANELBOARD
	SWITCHBOARD
	EMERGENCY GENERATOR
	CIRCUIT BREAKER, DRAW-OUT, 3-POLE UON.
	CIRCUIT BREAKER, 3-POLE UON.
	FUSED SWITCH, 3-POLE UON.
	AUXILIARY CONTACT - NORMALLY OPENED.
	AUXILIARY CONTACT - NORMALLY CLOSED.
	AUTOMATIC TRANSFER SWITCH WITH GENERATOR STARTING AND TRANSFER SWITCH STATUS CONTACTS.
	GROUND ROD
X M	METER WITH CURRENT TRANSFORMERS. "X" INDICATES METER IDENTIFIER, SEE SCHEDULE. U = UTILITY METER M# = OWNER METER, SEE SPECIFICATIONS
M X	METER INSTALLED WITHIN EQUIPMENT
M X	METER IN STANDALONE ENCLOSURE
	CURRENT TRANSFORMERS

POWER DISTRIBUTION SYMBOLS (PLANS)

	PANELBOARD - FLUSH MOUNTED.
	PANELBOARD - SURFACE MOUNTED.
	DISTRIBUTION PANEL
SWBD	SWITCHBOARD
PULL	SWITCHBOARD SECTION - PULL SECTION
MTR	SWITCHBOARD SECTION - METER SECTION
MAIN	SWITCHBOARD SECTION - MAIN BREAKER SECTION
MTR/MN	SWITCHBOARD SECTION - METER AND MAIN BREAKER SECTION
DIST	SWITCHBOARD SECTION - DISTRIBUTION SECTION
	MOTOR
	EQUIPMENT WITHOUT MOTOR
	EQUIPMENT WITH MOTOR
	UNFUSED DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH
	COMBINATION MAGNETIC STARTER/FUSED DISCONNECT SWITCH
	MAGNETIC STARTER - NEMA SIZE INDICATED.
VFD	VARIABLE FREQUENCY DRIVE
$	MOTOR RATED SWITCH
T	TRANSFORMER
	GROUND ROD
G	GENERATOR
CH 2	EQUIPMENT TAG - SEE EQUIPMENT SCHEDULE "CH" = EQUIPMENT TYPE "2" = UNIQUE IDENTIFIER

RECEPTACLE AND POWER SYMBOLS

POKE THRU	FLR	WALL	CLG	AT HGT	
					SIMPLEX RECEPTACLES
					DUPLEX RECEPTACLES
					QUADRUPLEX RECEPTACLES
					GFCI DUPLEX RECEPTACLES
					GFCI QUADRUPLEX RECEPTACLES
					HALF-CONTROLLED DUPLEX RECEPTACLES
					HALF-CONTROLLED QUADRUPLEX RECEPTACLES
X	X	X			SPECIAL DUPLEX RECEPTACLES, SEE BELOW
X	X	X			SPECIAL QUADRUPLEX RECEPTACLES, SEE BELOW
		$			HALF-SWITCHED RECEPTACLES
J	J	J			JUNCTION BOX

TYPICAL RECEPTACLE NOMENCLATURE

R1-3 / R1-3 +Y* / R1-3 X

"R1" DENOTES PANEL NAME
"3" DENOTES CIRCUIT NUMBER
"X" DENOTES SPECIAL RECEPTACLE TYPE (IF APPLICABLE)
"Y" DENOTES MOUNTING HEIGHT (IF APPLICABLE)

SPECIAL RECEPTACLE DESIGNATIONS

LTR	RATING	NEMA	PLUG TYPE PROVIDED WITH EQUIP
A	125V, 1Ø, 30A, 2P, 3W	5-30R	WITH 5-30P PLUG
B	125V, 1Ø, 50A, 2P, 3W	5-50R	WITH 5-50P PLUG
C	125/250V, 1Ø, 20A, 3P, 4W	14-20R	WITH 14-20P PLUG
D	125/250V, 1Ø, 30A, 3P, 4W	14-30R	WITH 14-30P PLUG
F	125/250V, 1Ø, 50A, 3P, 4W	14-50R	WITH 14-50P PLUG
G	125/250V, 1Ø, 60A, 3P, 4W	14-60R	WITH 14-60P PLUG
H	250V, 1Ø, 20A, 2P, 3W	6-20R	WITH 6-20P PLUG
J	250V, 1Ø, 30A, 2P, 3W	6-30R	WITH 6-30P PLUG
K	250V, 1Ø, 50A, 2P, 3W	6-50R	WITH 6-50P PLUG
L	-	-	"L" INDICATES ASSOCIATED RECEPTACLE IS LOCKING TYPE, PROVIDE MATCHING PLUG FOR EACH RECEPTACLE
M	250V, 1Ø, 20A, 2P, 3W	6-20R	WITH 6-20P PLUG
N	250V, 1Ø, 30A, 2P, 3W	6-30R	WITH 6-30P PLUG
P	250V, 1Ø, 50A, 2P, 3W	6-50R	WITH 6-50P PLUG
R	250V, 3Ø, 20A, 3P, 4W	15-20R	WITH 15-20P PLUG
S	250V, 3Ø, 30A, 3P, 4W	15-30R	WITH 15-30P PLUG
T	250V, 3Ø, 50A, 3P, 4W	15-50R	WITH 15-50P PLUG
U	125V, 1Ø, 20A, 2P, 3W	5-20R	(2) INTEGRAL USB PORTS, SEE SPECS
V	480V, 3Ø, 30A, 3P, 4W	L16-30R	WITH L16-30P PLUG
X	125V, 1Ø, 20A, 2P, 3W	5-20R	ISOLATED GROUND WITH INTEGRAL TRANSIENT SUPPRESSOR AND DEDICATED GREEN/YELLOW CONDUCTOR BACK TO GROUND BUS AT PANEL
Y	125V, 1Ø, 20A, 2P, 3W	5-20R	DEDICATED CIRCUIT

NOTES

1. WALL MOUNTED DEVICES SHALL BE MOUNTED AT 18" AFF TO BOTTOM OF DEVICE, UON.
2. WALL MOUNTED DEVICES SHOWN AT A DEFINED HEIGHT SHALL BE MOUNTED WITH THE BOTTOM AT 1" ABOVE COUNTER BACKSPLASH, UON.
   2.1. LOCATIONS WITH OPEN FORWARD APPROACH: +44" AFF MAX
   2.2. LOCATIONS WITH PARALLEL APPROACH: +46" AFF MAX
3. FOR HALF-SWITCHED RECEPTACLES, MOUNT SWITCH AT 48" AFF TO CENTER OF SWITCH, UON
4. WHERE POWER AND LOW VOLTAGE FLOOR BOXES OR POKE THRUS ARE SHOWN IN THE SAME LOCATION, THOSE DEVICES SHALL BE LOCATED WITHIN THE SAME ENCLOSURE, UON
5. SIZE JUNCTION BOXES AS REQ'D PER CODE. TAPE AND TAG WIRES. COORDINATE WITH EQUIPMENT AND PROVIDE FLEX CONDUIT AND/OR RECEPTACLES AS REQUIRED TO CONNECT EQUIPMENT.
6. FOR SPECIAL RECEPTACLES, COORDINATE WIRE SIZE, WIRE QUANTITY, CONDUIT SIZE, AND RECEPTACLE TYPE WITH ACTUAL EQUIPMENT SUBMITTED AND PURCHASED. EQUIPMENT NOTED ON PLANS SHALL BE CONSIDERED AS THE BASIS OF DESIGN AND CONTRACTOR SHALL PROVIDE CONNECTIVITY AS REQUIRED FOR ACTUAL EQUIPMENT PURCHASED AND INSTALLED TO PROVIDE A FULLY FUNCTIONAL SYSTEM.

GENERAL SYMBOLS

3 / E2.1 ; 3 / -	PLAN OR DETAIL DESIGNATION "3" DENOTES DETAIL OR PLAN NUMBER "E2.1" DENOTES SHEET NUMBER. "-" DENOTES SAME SHEET.
2 / E1.0 ; 2 / -	SECTION OR ELEVATION DESIGNATION "2" DENOTES SECTION OR ELEVATION NUMBER "E1.0" DENOTES SHEET NUMBER. "-" DENOTES SAME SHEET.
#	SHEET NOTE TAG - SEE APPLICABLE NOTE ON SAME SHEET
XXXX	FEEDER SCHEDULE TAG, SEE APPLICABLE SCHEDULE
XXXX	CONDUIT SCHEDULE TAG, SEE APPLICABLE SCHEDULE

GENERAL NOTES

A. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO BIDDING AND ALLOW FOR ALL FIELD CONDITIONS. OBTAIN CONTRACT DOCUMENTS FOR ALL OTHER TRADES AND BE RESPONSIBLE FOR ALL ELECTRICAL WORK NOTED AND CALLED OUT ON THE CONTRACT DOCUMENTS. COORDINATE ELECTRICAL WORK WITH ALL OTHER TRADES ON PROJECT. COORDINATE ALL CONDUIT RUNS, ELECTRICAL EQUIPMENT AND PANEL LOCATIONS WITH ALL OTHER WORK TO AVOID CONFLICTS.

B. COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS. MATERIALS AND EQUIPMENT SHALL BE U.L. AND CALIFORNIA STATE FIRE MARSHAL (CSFM) LISTED AND LABELED FOR THE APPLICATION.

C. BEFORE BEGINNING CONSTRUCTION, PROVIDE TO THE ARCHITECT A CONSTRUCTION SCHEDULE OF ELECTRICAL WORK. THE CONSTRUCTION SCHEDULE SHALL IDENTIFY ALL SIGNIFICANT MILESTONES WITH COMPLETION DATES.

D. OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND INSPECTION FEES REQUIRED BY THIS CONTRACT WORK, UNLESS OTHERWISE NOTED.

E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF PERSONS AND PROPERTY AND SHALL PROVIDE INSURANCE COVERAGE AS NECESSARY FOR LIABILITY, PERSONAL, PROPERTY DAMAGE, TO FULLY PROTECT THE OWNER, ARCHITECT AND ENGINEER FROM ANY AND ALL CLAIMS RESULTING FROM THIS WORK.

F. MAINTAIN RECORD DRAWINGS AT THE PROJECT SITE INDICATING ALL MODIFICATIONS TO ELECTRICAL SYSTEMS. AT THE CONCLUSION OF THE PROJECT, PROVIDE ACCURATE "AS-BUILT" DRAWINGS ACCEPTABLE TO THE ARCHITECT.

G. ALL MATERIALS PROVIDED FOR THE PROJECT SHALL BE NEW, UNLESS OTHERWISE NOTED. PROVIDE ALL INCIDENTAL MATERIALS REQUIRED FOR A COMPLETE INSTALLATION.

H. ALL ELECTRICAL EQUIPMENT INSTALLED OUTDOORS SHALL BE WEATHERPROOF. EXTERIOR CONDUIT RUNS INTO BUILDINGS SHALL BE INSTALLED WITH FLASHING, CAULKED AND SEALED. CONDUITS FOR EXTERIOR ELECTRICAL DEVICES SHALL BE RUN INSIDE BUILDING, UNLESS OTHERWISE NOTED. UNDERGROUND AND EXTERIOR CONDUIT SHALL HAVE WATERTIGHT FITTINGS.

I. ALL CONDUITS SHALL BE A MINIMUM 3/4," UNLESS OTHERWISE NOTED. POWER AND LIGHTING BRANCH CIRCUITS SHALL HAVE A MINIMUM TWO (2) #12 AWG AND ONE (1) #12 AWG GROUND TYPE THWN/THHN. ALL POWER AND FIRE ALARM WIRING SHALL BE RUN IN CONDUIT. THE USE OF ROMEX (NMC) OR BX (AC) CABLE IS NOT PERMITTED. PROVIDE ALL WIRES AND WIRE SIZES REQUIRED BY LATEST CODES.

J. ALL WIRE SIZING SHOWN ON THE CONSTRUCTION DOCUMENTS UTILIZES ASSUMED ROUTING AND CIRCUIT LENGTHS TO DETERMINE VOLTAGE DROP. CONTRACTOR SHALL VERIFY ALL CIRCUIT LENGTHS WITH ACTUAL FIELD CONDITIONS AND SHALL PROVIDE INCREASED WIRE AND CONDUIT SIZES AS REQUIRED TO LIMIT FEEDERS TO A MAXIMUM OF 2% VOLTAGE DROP AND BRANCH CIRCUITRY TO A MAXIMUM OF 3% VOLTAGE DROP.

K. ALL POWER CIRCUITS SHALL HAVE A DEDICATED NEUTRAL. SHARED NEUTRALS WITH TIE-BARS AT THE BREAKERS IN THE PANEL SHALL NOT BE ALLOWED.

L. CONDUITS SHALL NOT BE USED AS A GROUND PATH. ALL CONDUITS SHALL CONTAIN A GROUNDING CONDUCTOR, SIZED PER NEC/CEC REQUIREMENTS.

M. THERE SHALL BE NO ROOF PENETRATIONS WITHIN 5'-0" OF FIRE RATED OR AREA SEPARATION WALLS. VERIFY EXACT LOCATIONS OF THESE WALLS WITH ARCHITECTURAL DRAWINGS.

N. NOTE THAT BRANCH CIRCUIT WIRING IS NOT SHOWN. CIRCUIT NUMBERS ARE SHOWN ADJACENT TO ALL OUTLETS/FIXTURES/DEVICES. PROVIDE ALL BRANCH CIRCUIT WIRING BASED ON CIRCUIT NUMBERS SHOWN TO COMPLETE THE WIRING SYSTEM.

O. THE CONTRACTOR SHALL, PRIOR TO BID, FIELD VERIFY ALL REQUIREMENTS FOR MODIFYING THE EXISTING SECURITY, CATV, DATA, TELEPHONE, CLOCK, AND INTERCOM SYSTEMS TO ACCOMMODATE ADDITIONS NOTED. PROVIDE ALL MATERIALS NEEDED TO MAKE A FULLY OPERATIONAL SYSTEM AT THE CONCLUSION OF PROJECT WORK.

P. PROVIDE A PULL CORD IN EVERY EMPTY CONDUIT FOR USE IN FUTURE CONSTRUCTION. LABEL EACH END OF THE CONDUIT WITH TYPED, PERMANENT LABEL, TO IDENTIFY WHERE THE OPPOSING END TERMINATES.

Q. ALL EQUIPMENT VOLTAGES AND AMPACITY IS BASED ON THE INFORMATION PROVIDED BY OTHER DISCIPLINES AS PART OF THE CONTRACT DOCUMENTS. VERIFY ALL VOLTAGES AND AMPACITIES OF EQUIPMENT WITH GENERAL AND OTHER SUB-CONTRACTORS PRIOR TO ROUGH-IN AND PROVIDE PROVISIONS FOR CORRECT BREAKER, WIRING, AND CONDUIT SIZES BASED ON ACTUAL EQUIPMENT TO BE USED FOR THE PROJECT.

R. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE LOCATING ALL EXISTING UNDERGROUND SYSTEMS IN THE AREA OF UNDER GROUND WORK. REPAIR ALL DAMAGED SYSTEMS TO OWNERS SATISFACTION. MAINTAIN EXTREME CARE DURING TRENCHING AS EXISTING SYSTEMS ARE KNOWN TO EXIST IN THE AREA. THE DRAWINGS AND SPECIFICATIONS ARE FOR THE ASSISTANCE AND GUIDANCE OF THE CONTRACTOR. EXACT LOCATIONS, DISTANCES AND ELEVATIONS WILL BE GOVERNED BY ACTUAL CONDITIONS. COORDINATE THE CONTRACT DOCUMENTS AND FIELD CONDITIONS TO DETERMINE EXACT ROUTING AND FINAL TERMINATIONS FOR ALL WORK.

S. CONDUIT AND WIRING ARE SHOWN ON THESE PLANS DIAGRAMMATICALLY. EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD TO SUIT SITE CONDITIONS.

T. PLANS SHALL BE APPROVED BY THE AUTHORITY HAVING JURISDICTION PRIOR TO BEGINNING WORK. SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO PURCHASE.

U. SUFFICIENT ACCESS AND WORKING SPACE SHALL BE PROVIDED AND MAINTAINED ABOUT ALL ELECTRIC EQUIPMENT TO PERMIT READY AND SAFE OPERATION AND MAINTENANCE OF SUCH EQUIPMENT PER CEC ARTICLE 110-26.

V. ALL CONTROLS, SWITCHES, AND ELECTRICAL RECEPTACLE OUTLETS SHALL BE NOT MORE THAN +48" AFF TO TOP OF THE OUTLET BOX, NOR LESS THAN +15" AFF TO BOTTOM OF OUTLET BOX PER CBC 11B-308.1.

W. CONTRACTOR SHALL PERFORM ALL TESTING AND COMPLETE ALL DOCUMENTATION FOR THE LIGHTING AND LIGHTING CONTROLS SYSTEM ACCEPTANCE. TESTING PER REQUIREMENTS OF CEC SECTION 130.4. SUBMIT ALL DOCUMENTATION TO THE AHJ.

X. REACH RANGES FOR THERMISTATS, SWITCHES, CONTROLS, AND OUTLETS SHALL COMPLY WITH CBC 11B-308 EXCEPT THAT LOW REACH SHALL BE MEASURED TO THE BOTTOM OF THE OUTLET BOX AND HIGH REACH SHALL BE MEASURE TO THE TOP OF THE OUTLET BOX.

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AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR W

LUMINAIRE SYMBOLS

	LUMINAIRE - RECESSED.
	LUMINAIRE - SURFACE MOUNT STRIP.
	LUMINAIRE - SURFACE MOUNT.
	LUMINAIRE - PENDANT MOUNT LINEAR FIXTURE.
	LUMINAIRE - WALL MOUNT LINEAR FIXTURE.
	LUMINAIRE - RECESSED DOWNLIGHT.
	LUMINAIRE - SINGLE WALL WASHER.
	LUMINAIRE - DOUBLE WALL WASHER.
	LUMINAIRE - CORNER WALL WASHER.
	LUMINAIRE - PENDANT MOUNT ROUND FIXTURE.
	LUMINAIRE - WALL MOUNT CAN.
	LUMINAIRE - WALL MOUNT BOX.
	LUMINAIRE - POLE MOUNT SINGLE HEAD.
	LUMINAIRE - POLE MOUNT DOUBLE HEAD.
	EXIT LIGHT - WALL MOUNT SINGLE FACE.
	EXIT LIGHT - CEILING MOUNT DOUBLE FACED.
	EXIT LIGHT - WALL MOUNT SINGLE FACE WITH ARROW.
	EXIT LIGHT - CEILING MOUNT DOUBLE FACED WITH DOUBLE ARROWS.
	EXIT LIGHT - EMERGENCY BATTERY PACK.

TYPICAL LUMINAIRE NOMENCLATURE

- UNSHADED SYMBOL DENOTES STANDARD LUMINAIRE.
- SHADED SYMBOL DENOTES EMERGENCY LUMINAIRE.
- A — "A" DENOTES LUMINAIRE TYPE
- L1-3b — "L1" DENOTES PANEL NAME; "3" DENOTES CIRCUIT NUMBER; "b" DENOTES SWITCH LEG

NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING FIXTURE TYPE AND MOUNTING CONDITIONS, REGARDLESS OF SYMBOL SHOWN ON PLANS. COORDINATE WITH EXACT CEILING CONDITIONS TO PROVIDE ALL MOUNTING HARDWARE AND MISC. APPURTENANCES AS REQUIRED FOR A COMPLETE INSTALLATION.
2. REFER TO LUMINAIRE/FIXTURE SCHEDULE FOR FIXTURE DESCRIPTION, MOUNTING, AND LAMPING INFORMATION.
3. SHADED FIXTURES SHALL INDICATE THAT FIXTURE IS CONNECTED TO AN EMERGENCY POWER SOURCE. PROVIDE ALL MISC. APPURTENANCES AS REQUIRED TO ALLOW FIXTURE TO TRANSFER FROM NORMAL TO EMERGENCY POWER. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, TRANSFER MODULES AND/OR UL 924 RELAYS AS REQUIRED TO ALLOW ALL EMERGENCY FIXTURES TO BE CONTROLLED WITH ROOM LIGHTING DURING NORMAL CONDITIONS AND THEN TRANSFER TO EMERGENCY POWER SOURCE UPON LOSS OF NORMAL POWER.
4. PROVIDE ADDITIONAL EXIT SIGNS IN LOCATIONS AS REQUIRED BY INSPECTOR DURING FIELD INSPECTIONS. CONTRACTOR SHALL PROVIDE IN THEIR BID MATERIALS AND INSTALLATION LABOR FOR 5% ADDITIONAL SPARE EXIT SIGNS (MINIMUM OF 1 SIGN) BEYOND THOSE SHOWN ON THE DRAWINGS TO ALLOW FOR FINAL REVIEW, SIGN-OFF, AND APPROVAL BY THE AHJ.

LIGHTING CONTROLS SYMBOLS

	OCCUPANCY SENSOR - CEILING MOUNT WITH BI-DIRECTIONAL VIEW. ARROWS INDICATE AIMING DIRECTION.
	OCCUPANCY SENSOR - CEILING MOUNT WITH 360° VIEW.
	OCCUPANCY SENSOR - WALL MOUNT WITH DIRECTIONAL VIEW. ARROW INDICATES AIMING DIRECTION.
P	PHOTOSENSOR - CEILING MOUNT WITH DIRECTIONAL VIEW. ARROW INDICATES AIMING DIRECTION.
P	PHOTOSENSOR - CEILING MOUNT WITH 360° VIEW.
P	PHOTOSENSOR - WALL MOUNT WITH DIRECTIONAL VIEW. ARROW INDICATES AIMING DIRECTION.
$	SINGLE POLE SWITCH - WALL MTD AT + 48" AFF TO TOP OF BOX UON.
TS	TIME SWITCH
LCP	LIGHTING CONTROL PANEL
RC	SWITCHING ROOM CONTROLLER
DRC	DIMMING ROOM CONTROLLER

TYPICAL SWITCH NOMENCLATURE

- Xy $ — "y" DENOTES SWITCH LEG; "X" DENOTES SWITCH TYPE
  - D = DIMMER SWITCH
  - K = KEY OPERATED SWITCH
  - L = LOW VOLTAGE MULTI-BUTTON SWITCH
  - M = MOMENTARY CONTACT SWITCH
  - T = DIGITAL WALL TIMER
  - S = OCCUPANCY SENSOR SWITCH
  - BLANK = SINGLE POLE SWITCH
  - 3 = 3 WAY SWITCH
  - 4 = 4 WAY SWITCH
- X — "X" DENOTES SENSOR TYPE
  - BLANK = DUAL TECHNOLOGY
  - D = DUAL TECHNOLOGY
  - P = PASSIVE INFRARED
  - U = ULTRASONIC
- Lx $ — LOW VOLTAGE MULTI-BUTTON SWITCH; "x" DENOTES SWITCH UNIQUE SWITCH IDENTIFIER (SEE SCHEDULE FOR SWITCH LEGS/RELAYS CONTROLLED)
- Dxyz $ — DIMMING MULTI-BUTTON SWITCH; "x" "y" "z" (ETC) DENOTE SWITCH LEGS CONTROLLED
- x y z $$$ — MULTIPLE SWITCHES LOCATED WITHIN A SINGLE WALL PLATE; "x" "y" "z" (ETC) DENOTE SWITCH LEGS CONTROLLED

NOTES

1. INSTALL SWITCHING AND DIMMING ROOM CONTROLLERS ABOVE ACCESSIBLE CEILING. FOR ROOMS WITH GYP BD OR OTHER INACCESSIBLE CEILINGS, PROVIDE 2'X2' ACCESS PANEL WITHIN ARMS LENGTH OF WHERE DEVICES ARE MOUNTED. WHERE INSTALLATION OF AN ACCESS PANEL IS NOT POSSIBLE, INSTALL DEVICES IN CONCEALED IN ADJACENT ACCESSIBLE SPACE AND PROVIDE TYPED, SELF ADHESIVE LABEL NOTING WHICH ROOM THE DEVICES CONTROL.
2. PROVIDE SINGLE WALL PLATE FOR MULTIPLE SWITCHES LOCATED TOGETHER. PROVIDE APPROPRIATE QUANTITY, SIZE, AND SHAPE OF CUT OUTS TO ACCOMMODATE ALL DEVICES AT THAT LOCATION (E.G. REGULAR TOGGLE SWITCH VS. DECORATOR STYLE DEVICE). ALL WALLPLATES SHALL BE FACTORY CUT, NO FIELD CUT OPENINGS SHALL BE ALLOWED.
3. DEVICE LOCATIONS ON PLANS ARE APPROXIMATE AND DIAGRAMMATIC. CONTRACTOR SHALL INSTALL DEVICES PER CODE REQUIREMENTS AND MANUFACTURER RECOMMENDATIONS.
4. LIGHT SWITCHES SHALL NOT BE LOCATED BEHIND ROOM DOORS WHEN DOORS ARE FULLY OPENED. LOCATE ALL SWITCHES SUCH THAT THEY ARE VISIBLE AND ACCESSIBLE WHEN THE DOOR IS FULLY OPEN.

AGENCY APPROVAL DSA# 01-121400

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PROJECT OWNER & TITLE

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SHEET TITLE

SCHEDULES

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2E001

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4702347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\2347.50 - MH - 2E000 - General Information.dwg
LAST SAVED ON: 10/18/24 at 5:08pm, PLOTTED ON: 10/22/24 at 9:48am
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LUMINAIRE SCHEDULE

FIXTURE TAG KEY: G = GROUND MOUNT; L = LINEAR FIXTURES THAT HAVE VARIABLE LENGTH ON THE PROJECT; P = PENDANT MOUNTED; R = RECESSED; S = SURFACE MOUNTED;
T = TRACK OR TRACK HEAD; W = WALL MOUNTED; X = EXIT SIGNS; Y = POLE MOUNTED; Z = EXTERIOR - TO PRECEDE OTHER FIXTURE TAGS - E.G. ZW1 WOULD BE AN EXTERIOR WALL MOUNTED FIXTURE

FIXTURE TAG	INPUT WATTS (W)	LIGHT SOURCE	COLOR TEMP (K)	CRI	OUTPUT (LUMENS)	EFFICACY (LPW)	LED DRIVER OR BALLAST	VOLTS (V)	DESCRIPTION	MANUFACTURER	LOCATION	WEIGHT (LBS)	REMARKS
L1	8.1 /FT	LED	4000	80	954 /FT	118 /FT	INTEGRAL 0-10V DIMMING DRIVER	120	4" WIDE LINEAR DIRECT/INDIRECT LED PENDANT. WHITE FINISH. TOP GLOW AND BOTTOM GLOW DIFFUSERS. FLAT ENDCAPS. T6 EXTRUDED ALUMINUM HOUSING. INTEGRAL OCCUPANCY SENSOR AND DAYLIGHT SENSOR.	FINELITE HP4 SERIES HP-4-P-ID-___-S-B-840-TG-BG-96LG-120-SC-FC-10%-FA50-Cx-FE-SW-W6 01 OR APPROVED EQUAL	THROUGHOUT	3.4 /FT	1. MOUNT BOTTOM OF FIXTURE AT 8'-0" AFF. 2. PROVIDE LENGTHS AS SHOWN ON PLANS.
L1E	8.1 /FT	LED	4000	80	954 /FT	118 /FT	INTEGRAL 0-10V DIMMING DRIVER	120	SIMILAR TO TYPE "L1" EXCEPT WITH UL LISTED EMERGENGY BATTERY PACK WITH MINIMUM 90 MINUTE RUNTIME.	FINELITE HP4 SERIES HP-4-P-ID-___-S-B-840-TG-BG-96LG-120-SC-FC-10%-FA50-Cx-FE-SW-LG D16W-W601 OR APPROVED EQUAL	THROUGHOUT	3.4 /FT	1. MOUNT BOTTOM OF FIXTURE AT 8'-0" AFF. 2. PROVIDE LENGTHS AS SHOWN ON PLANS.
L2	7.1 /FT	LED	4000	80	720 /FT	102	INTEGRAL 0-10V DIMMING DRIVER	120	4" WIDE RECESSED LINEAR DIRECT LED. WHITE FINISH. TOP GLOW AND BOTTOM GLOW DIFFUSERS. FLAT ENDCAPS. T6 EXTRUDED ALUMINUM HOUSING. INTEGRAL OCCUPANCY SENSOR AND DAYLIGHT SENSOR.	FINELITE HP4 SERIES HP-4-R-D-___-H-840-BG-96LG-120-SC-FC-10%-FA50-Cx-FE-SW-W601 OR APPROVED EQUAL	THROUGHOUT	3.4 /FT	1. MOUNT BOTTOM OF FIXTURE AT CEILING HEIGHT. 2. PROVIDE LENGTHS AS SHOWN ON PLANS. 3. SEE DETAIL 7 & 8/1E402.
S1	17	LED	4000	90	1500	89	INTEGRAL 0-10V DIMMING DRIVER	120	11" X 11" SQUARE LOW PROFILE LENSED LED SURFACE CEILING MOUNT LUMINAIRE	ELITE RL1195-1500L-120-DIM10-40K-90+-WH OR APPROVED EQUAL	STORAGE	2	
X1	5.0	LED	N/A	N/A	N/A	N/A	ELECTRONIC, INTEGRAL	UNIVERSAL	EDGE-LIT LED EXIT SIGN. MIRRORED ACRYLIC PANEL WITH GREEN LETTERING. BRUSHED ALUMINUM HOUSING. INTEGRAL UL LISTED EMERGENCY BATTERY PACK WITH MINIMUM 90 MIN RUNTIME.	EMERGILITE PRESTIGE X40 SERIES LSNX-_-N-G-M-_-AD OR APPROVED EQUAL	THROUGHOUT	3	1. MOUNT BOTTOM OF FIXTURE AT 8'-0" AFF. 2. PROVIDE MOUNTING HARDWARE, QUANTITY/DIRECTION OF ARROWS, AND QUANTITY OF FACES AS INDICATED ON PLANS.

LIGHTING CONTROL SEQUENCE OF OPERATIONS

SPACE/FUNCTION	LIGHTING CONTROL SYSTEM				
	NETWORKED CONTROLS				
INTERIOR LIGHTING	LOCALIZED MANUAL CONTROL OVERRIDE SWITCH	AUTO-ON & AUTO OFF OCCUPANCY SENSING WITH TIME DELAY:	MANUAL ON & AUTO-OFF VACANCY SENSING WITH TIME DELAY:	DAYLIGHT HARVESTING (FC SET POINT)	DEMAND RESPONSE LIGHTING POWER REDUCTION
UTILITY ROOM	ON/OFF. DIMMING.				DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
JANITOR ROOM, STORAGE	ON/OFF.		15 MIN		DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
AV ROOM	ON/OFF. DIMMING.		30 MIN		DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
AV ROOM (WITH PHOTOCELL)	ON/OFF. DIMMING.		30 MIN	DIM DOWN TO 30 FC	DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
RESTROOM	ON/OFF. DIMMING.		30 MIN		DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
VESTIBULE, CORRIDOR, HALLWAY	ON/OFF. DIMMING.	15 MIN, DIM DOWN TO 50% 30 MIN, OFF			DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
VESTIBULE, CORRIDOR, HALLWAY (WITH PHOTOCELL)	ON/OFF. DIMMING.	15 MIN, DIM DOWN TO 50% 30 MIN, OFF		DIM DOWN TO 15 FC	DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
CLASSROOM	ON/OFF. DIMMING.		30 MIN		DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
CLASSROOM (WITH PHOTOCELL)	ON/OFF. DIMMING.		30 MIN	DIM DOWN TO 30 FC	DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
OFFICE LOBBY	ON/OFF. DIMMING.	30 MIN			DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
OFFICE LOBBY (WITH PHOTOCELL)	ON/OFF. DIMMING.	30 MIN		DIM DOWN TO 30 FC	DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
COPIER	ON/OFF. DIMMING.		30 MIN		DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
COPIER (WITH PHOTOCELL)	ON/OFF. DIMMING.		30 MIN	DIM DOWN TO 30 FC	DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
OFFICE	ON/OFF. DIMMING.		30 MIN		DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL
OFFICE (WITH PHOTOCELL)	ON/OFF. DIMMING.		30 MIN	DIM DOWN TO 30 FC	DIM DOWN TO 75% UPON RECEIVING DEMAND RESPOND SIGNAL

GENERAL NOTES:
1. DEMAND RESPONSE CONTROLS CAPABILITY PROVIDED VIA CENTRALIZED PC CONTROL WITH CAPABILITY TO REDUCE TOTAL BUILDING LIGHTING POWER BY MIN 15%.
2. GENERAL LIGHTING POWER REDUCED BY MIN 65% WHEN DAYLIT ILLUMINANCE REACHES 150% OF DESIGN ILLUMINANCE.
3. COORDINATE WITH MANUFACTURER TO FINALIZE PHOTOSENSOR MOUNTING AND LOCATION SO THAT SENSORS PROPERLY DETECT FOOT-CANDLE LEVELS AT WORK PLANE.
4. PHOTOSENSOR SHALL DIM LIGHTING DOWN AS INDICATED IN DAYLIGHT HARVESTING COLUMN (AT WORK PLANE), UON ABOVE. SEE DAYLIGHT HARVESTING COLUMN FOR TARGET DESIGN FOOT-CANDLE LEVELS IN DAYLIT AREAS.
5. WATTSTOPPER DIGITAL LIGHTING MANAGEMENT (FOR INTERIOR).
6. LIGHTING CONTROL SENSORS AND DIMMING SETTINGS SHALL BE CALIBRATED AFTER FURNITURE AND FINAL FINISHES ARE INSTALLED FOR PROPER OPERATIONAL CONDITIONS.
7. LIGHTING CONTROL SYSTEM SHALL HAVE CAPABILITY TO INTERFACE WITH BAS VIA WATTSTOPPER DLM'S NETWORK BRIDGE.
8. DRIVERS AND CONTROL INTERFACE DEVICES SHALL BE CAPABLE OF DIMMING LIGHTING DOWN VIA PHOTOSENSOR. FOOT-CANDLE SETTINGS AS INDICATED IN SCHEDULE.
9. DURING NIGHT TIME HOURS, LIGHTING SHALL DIM DOWN FROM DAYTIME TARGET LEVELS AS INDICATED ABOVE. MANUAL OVERRIDE WILL ALLOW DIM UP/DOWN.
10. NO OUTDOOR LIGHTING IN PROJECT SCOPE.
11. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT MOUNTING HEIGHTS AND LOCATIONS OF SWITCHES.
12. PROVIDE TYPED OR ENGRAVED LABEL AT FACEPLATE TO IDENTIFY ROOM/LOCATION FOR ALL WALL LIGHT SWITCHES.
13. FINAL SELECTION AND LOCATIONS OF MANUAL CONTROL DEVICES (WALL MOUNT BUTTON CONTROL SWITCHES WITH DIMMER) SHALL BE APPROVED BY ARCHITECT AND ENGINEER. SUBMIT FOR APPROVAL.
14. OCCUPANCY SENSOR SHALL DETECT OCCUPANT. UPON NO DETECTION, TIME DELAY SET TO AUTOMATIC OFF. MANUAL CONTROL OVERRIDE SHALL ALLOW FOR DIM UP/DOWN. MANUAL CONTROL SWITCH SHALL PROVIDE ALL ON/OFF.
15. VACANCY SENSOR SETTING = MANUAL ON/AUTO OFF. OCCUPANCY SENSOR SETTINGS = AUTO ON/AUTO OFF.
16. COORDINATE FINAL SEQUENCE OF OPERATIONS, OVERRIDE SCHEDULES, AND TIME DELAY SETTINGS WITH DISTRICT. PROVIDE MANUFACTURER SEQUENCE OF OPERATION FOR APPROVAL.
17. SEE DEMAND RESPONSE LIGHTING POWER REDUCTION COLUMN FOR TARGET REDUCTION REQUIREMENTS.

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SHEET TITLE
SCHEDULES

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2E002

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

EQUIPMENT SCHEDULE

EQUIPMENT DESIGNATION	EQUIPMENT TYPE	LOCATION	PACKAGE UNITS MCA	PACKAGE UNITS MOCP	AMPS	HORSEPOWER	KVA	VOLTAGE/PHASE, QTY WIRES	CONNECTION TO EMS	INTERLOCK WITH	MOTOR STARTERS TYPE	MOTOR STARTERS STARTER NEMA SIZE	MOTOR STARTERS AUXILIARY DEVICES IN STARTERS	CONTROL DEVICES	CONNECTION TO FA PANEL	CONTROL WIRING AS REQUIRED	FUSED DISCONNECT SWITCH	LOCKOUT TOGGLE SWITCH	PANEL AND CIRCUIT NO	CONDUIT (IN)	POWER WIRING	REMARKS
AC-MU-1	AIR CONDITIONING	MU ROOF	59.0	70				208/3, 3W									E			1-1/2	(3) #3 + (1) #8	
PE-MU-1	POWER EXHAUST	MU ROOF	7.8	20				208/3, 3W									E			3/4	(3) #12 + (1) #12	
AC-MU-2	AIR CONDITIONING	MU ROOF	59.0	70				208/3, 3W									E			1-1/2	(3) #3 + (1) #8	
PE-MU-2	POWER EXHAUST	MU ROOF	7.8	20				208/3, 3W									E			3/4	(3) #12 + (1) #12	
ERV-B-1	ENERGY RECOVERY VENTILATOR	BLDG B.1	5.2	20				208/1, 3W									E			3/4	(3) #12 + (1) #12	COORDINATE EXACT POWER REQTS WITH DIV 23.
AC-C-8	AIR CONDITIONING	BLDG C ROOF	30.0	40				208/3, 3W									E			3/4	(3) #8 + (1) #10	
AC-C-9	AIR CONDITIONING	BLDG C ROOF	30.0	40				208/3, 3W									E			3/4	(3) #8 + (1) #10	
WH-A-1	WATER HATER	BLDG A		30			3.0	120/1, 2W												3/4	(2) #8 + (1) #10	
WH-D-1	WATER HATER	BLDG D.1		30			3.0	120/1, 2W												3/4	(2) #8 + (1) #10	
WH-D-2	WATER HATER	BLDG D.2		30			3.0	120/1, 2W												3/4	(2) #8 + (1) #10	
WH-B.1-A4	WATER HATER	BLDG B.1		20			1.800	120/1, 2W										E		3/4	(2) #12 + (1) #12	CONTROLLED VIA LIGHTING OCCUPANCY SENSOR AND LIGHTING WALL SWITCH.
EF-E-15T	EXHAUST FAN	BLDG E		20			0.019	120/1, 2W										E		3/4	(2) #12 + (1) #12	CONTROLLED VIA LIGHTING OCCUPANCY SENSOR AND LIGHTING WALL SWITCH.
EF-E-16T	EXHAUST FAN	BLDG E		20			0.019	120/1, 2W										E		3/4	(2) #12 + (1) #12	CONTROLLED VIA LIGHTING OCCUPANCY SENSOR AND LIGHTING WALL SWITCH.
EF-E-17T	EXHAUST FAN	BLDG E		20			0.019	120/1, 2W										E		3/4	(2) #12 + (1) #12	CONTROLLED VIA LIGHTING OCCUPANCY SENSOR AND LIGHTING WALL SWITCH.
EF-E-18T	EXHAUST FAN	BLDG E		20			0.019	120/1, 2W										E		3/4	(2) #12 + (1) #12	CONTROLLED VIA LIGHTING OCCUPANCY SENSOR AND LIGHTING WALL SWITCH.
EF-E-19T	EXHAUST FAN	BLDG E		20			0.019	120/1, 2W										E		3/4	(2) #12 + (1) #12	CONTROLLED VIA LIGHTING OCCUPANCY SENSOR AND LIGHTING WALL SWITCH.

EQUIPMENT SCHEDULE ABBREVIATIONS:

AC	AUXILIARY CONTACTS, 1 NC, 1 NO	CNTR	CONTRACTOR	HOA	3 - POSITION SELECTOR SWITCH (HAND/OFF/AUTO)	NC	NORMALLY CLOSED
AC2	AUXILIARY CONTACTS, 2 NC, 2 NO	CR	CONTROL RELAY			NO	NORMALLY OPEN
B	FURNISHED BY OWNER & INSTALLED BY ELECTRICAL CONTRACTOR	CPT	CONTROL POWER TRANSFORMER	M	FURNISHED BY MECHANICAL & INSTALLED BY ELECTRICAL CONTRACTOR	O	FURNISHED & INSTALLED BY OTHER DIVISIONS
		E	FURNISHED & INSTALLED BY ELECTRICAL CONTRACTOR			OL	OVERLOAD RELAY
CMCP	COMBINATION MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR			MCA	MINIMUM CIRCUIT AMPS	PL	LED PILOT LIGHT RED ON, GREEN OFF
CMFS	COMBINATION MOTOR STARTER WITH FUSED SWITCH	EMS	ENERGY MANAGEMENT SYSTEM	MOCP	MAXIMUM OVER CURRENT PROTECTION MANUAL STARTER (<10HP)	PS	START/STOP PUSH BUTTON
		EPO	EMERGENCY POWER OFF BUTTON	MAN		SD	SMOKE DETECTOR
		FA	FIRE ALARM	MS	MAGNETIC STARTER	SM	ON/OFF TOGGLE DISCONNECT @ MOTOR
						SP	SUPERVISORY ALARM PANEL
						SSA	3 - POSITION SELECTOR SWITCH (START/STOP/AUTO) SPRING
							RELEASE TYPE TO AUTO POSITION
						SS	ELECTRONIC SOFT STARTER
						TS	TIME SWITCH
						VFD	VARIABLE FREQUENCY DRIVE
						WP	WEATHERPROOF

NOTES:
1. EQUIPMENT SCHEDULE ABBREVIATIONS DO NOT APPLY TO EQUIPMENT DESIGNATION COLUMN.
2. VERIFY CB/FUSE AND WIRING REQUIREMENTS WITH SUBMITTALS PRIOR TO WIRING UNITS.
3. PROVIDE FUSED DISCONNECTS FOR ALL NEW MECHANICAL UNITS.

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DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2E003

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

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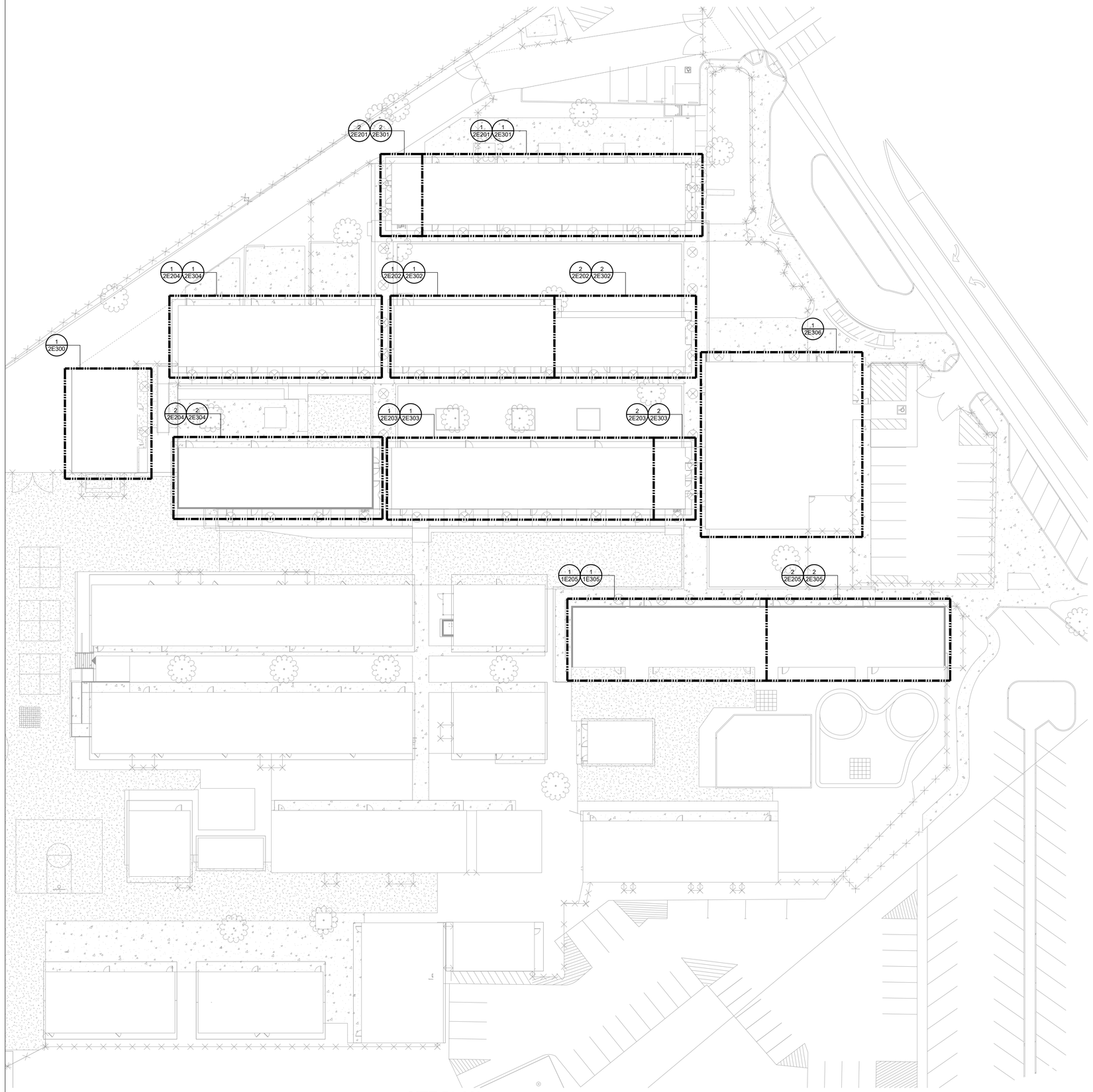

1 SITE PLAN
1" = 20'-0"

GENERAL NOTES

A. AREA MAY CONTAIN UNDERGROUND RACEWAY. SITE LOCATE ALL EXISTING UNDERGROUND RACEWAY IN THIS AREA BEFORE TRENCHING. MAINTAIN EXTREME CARE WHEN TRENCHING.

B. COORDINATE EXACT LOCATIONS OF ALL ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL EQUIPMENT WITH ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL DRAWINGS.

C. SIZE FUSES FOR ALL FUSED SWITCHES PER SUPPLIED EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

D. CERTAIN FEEDER AND BRANCH CIRCUIT WIRE SIZES SHALL BE SIZED TO COMPENSATE FOR VOLTAGE DROP. SPLICE WIRES TO COMPATIBLE SIZES FOR TERMINATION, ADJACENT TO EQUIPMENT CONNECT AS REQUIRED.

E. CONTRACTOR SHALL SIZE ALL IN GRADE PULL BOXES PER CODE OR FOR THEIR CONVENIENCE FOR PULLING WIRE, WHICHEVER IS LARGER.

F. OUTDOOR ELECTRICAL EQUIPMENT AND DEVICES SHALL BE PROVIDED WITH NEMA 3R RATED ENCLOSURES.

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP



REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

SITE PLAN

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2E100

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

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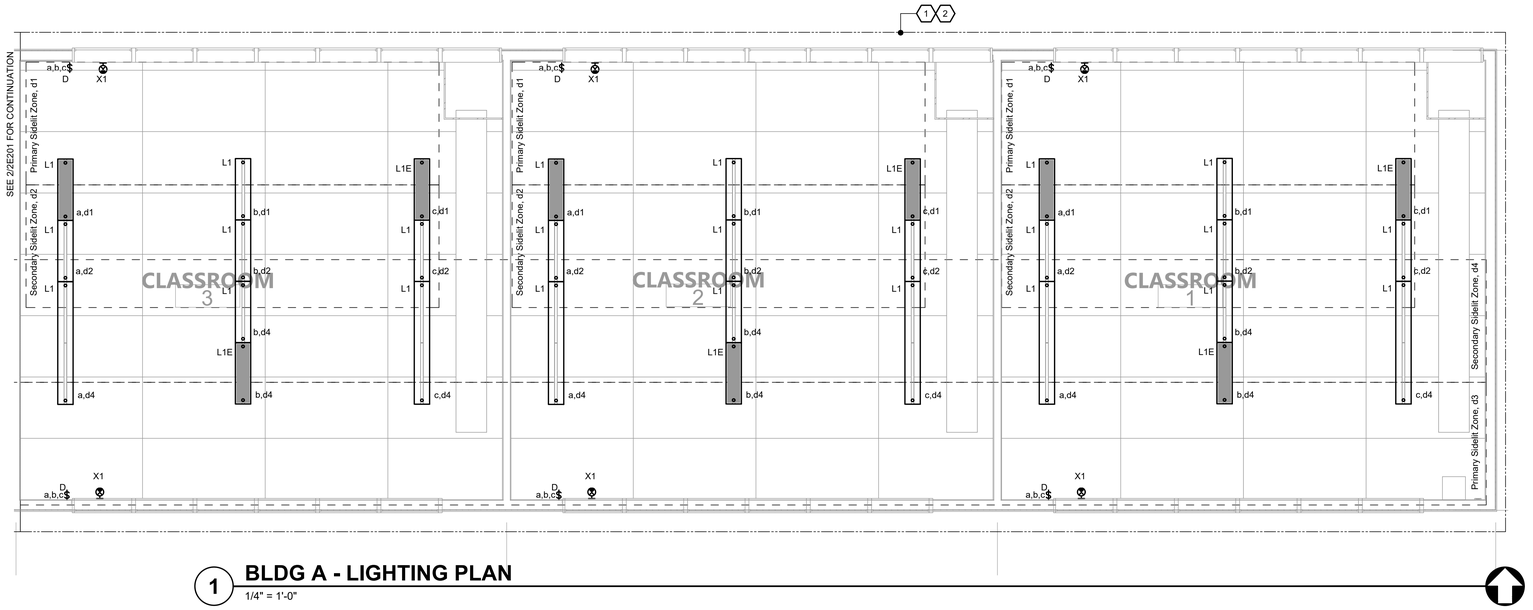
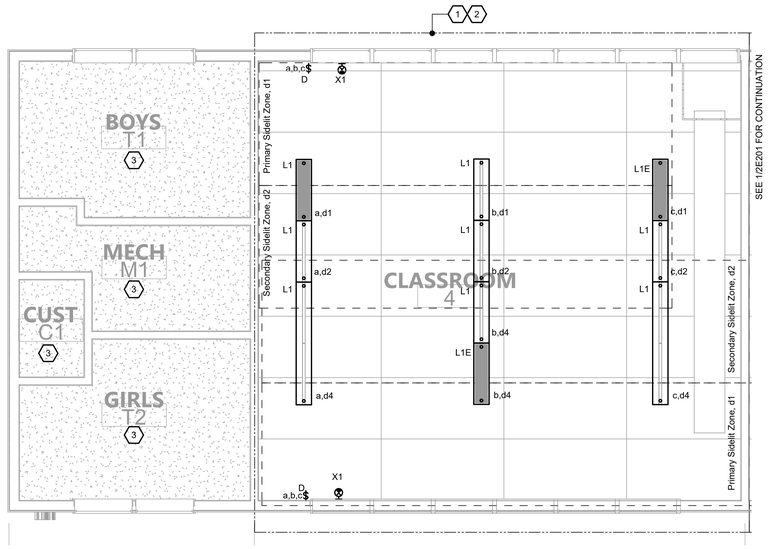
LAST SAVED ON: 8/08/24 at 3:22pm, PLOTTED ON: 10/22/24 at 9:47am
DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\SkimDocuments\23119.01_MTDUSD_MEADOW HOMES ES MODERNIZATION_A23_skim32Q7M.rvt



1 **BLDG A - LIGHTING PLAN**

1/4" = 1'-0"



2 **BLDG A - LIGHTING PLAN**

1/4" = 1'-0"

GENERAL DEMOLITION NOTES

A. IN AREAS INDICATED TO BE RENOVATED, REMOVE THAT PORTION OF THE EXISTING ELECTRICAL INSTALLATION INCLUDING, BUT NOT LIMITED TO, ALL LUMINAIRES, LIGHTING CONTROL DEVICES, WIRING, AND CONDUITS. ALL UNUSED WIRING AND EXPOSED CONDUIT SHALL BE REMOVED BACK TO POINT OF CONCEALMENT, UNLESS OTHERWISE NOTED.

B. WHERE CONDUIT TO BE REMOVED ENTERS CONCRETE (OR SIMILAR) FLOORS AND WALLS, THE CONDUIT MAY BE ABANDONED IN THE CONCRETE. REMOVE CONDUIT FAR ENOUGH INTO THE CONCRETE TO ALLOW FOR THE INSTALLATION OF NORMAL THICKNESS OF FINISH MATERIAL.

C. WHEN THE WORK NECESSITATES RELOCATION OF EXISTING CONDUIT, WIRING, OR ELECTRICAL EQUIPMENT, THE CONTRACTOR SHALL PERFORM ALL WORK AND MAKE ALL NECESSARY CHANGES TO EXISTING WORK AS MAY BE REQUIRED TO LEAVE THE COMPLETED WORK IN A FINISHED AND WORKMANLIKE CONDITION TO THE ENTIRE SATISFACTION OF THE ENGINEER.

D. WHERE ELECTRICAL SYSTEMS PASS THROUGH THE RENOVATED AREAS TO SERVE OTHER PORTIONS OF THE PREMISES, THEY SHALL BE SUITABLY RELOCATED AND THE SYSTEM RESTORED TO NORMAL OPERATION. WHERE DURATION OF PROPOSED OUTAGES CANNOT BE TOLERATED BY THE OWNER, PROVIDE TEMPORARY CONNECTION AS REQUIRED TO MAINTAIN SERVICE WITH THE MINIMUM DISRUPTION POSSIBLE.

E. WHERE REMOVAL WORK IS PERFORMED, THE CONTRACTOR SHALL REPAIR ALL BUILDING SURFACES DAMAGED BY SUCH WORK. PROVIDE FINISHES TO MATCH EXISTING ADJACENT SURFACES.

F. WHILE PERFORMING CONNECTIONS AND/OR ALTERATIONS TO EXISTING ELECTRICAL WORK, TAKE EXTREME CARE TO PROTECT ALL EXISTING EQUIPMENT FROM DIRT, DEBRIS, AND DAMAGE. ALL DAMAGE TO SUCH EQUIPMENT SHALL BE REPAIRED AND/OR EQUIPMENT REPLACED AT THE CONTRACTOR'S EXPENSE.

G. ALL REMOVAL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER AND SHALL BE EXECUTED WITH THE LEAST POSSIBLE DISTURBANCE TO THE BUILDING.

H. ALL EXISTING ELECTRICAL MATERIALS NOT REUSED AND NOT SALVAGED BY THE OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF IN A PROPER MANNER OFF OF THE PROJECT SITE. CARE SHOULD BE TAKEN TO DISPOSE OF HAZARDOUS MATERIALS PER REQUIRED GUIDELINES.

I. ANY ELECTRICAL WORK, WHICH WILL INTERFERE WITH THE NORMAL USE OF THE BUILDING IN ANY MANNER, SHALL BE DONE AT SUCH TIME OR TIMES AS SHALL BE MUTUALLY AGREED UPON BETWEEN THE CONTRACTOR AND THE OWNER'S REPRESENTATIVE.

GENERAL NOTES

A. SEE ARCHITECTURAL DOCUMENTS FOR EXACT PLACEMENT OF ALL LIGHT FIXTURES, EXPOSED CONTROL DEVICES AND LIGHT SWITCHES. VERIFY CEILING TYPE WITH ARCHITECTURAL DOCUMENTS AND COORDINATE TRIMS. PROVIDE ALL REQUIRED FIXTURE MOUNTING HARDWARE. COORDINATE FIXTURE TYPES WITH MOUNTING SURFACE PRIOR TO ORDERING.

B. PENDANT FIXTURES SHALL BE FREE TO SWING A MINIMUM OF 45 DEGREES FROM THE VERTICAL IN ALL DIRECTIONS WITHOUT CONTACTING OBSTRUCTIONS, OTHERWISE PROVIDE SEISMIC RESTRAINT.

C. RUN ALL INTERIOR CONDUIT IN FINISHED INTERIOR AREAS CONCEALED UNLESS OTHERWISE NOTED.

D. PROVIDE U.L. LISTED FIRE STOP ENCLOSURES FOR ALL RECESSED FIXTURES IN FIRE RATED CEILINGS.

E. PROVIDE SINGLE PLATE WALL COVER FOR MULTIPLE SWITCHES. SEE DRAWINGS FOR NUMBER OF SWITCHES IN SPECIFIC LOCATIONS.

F. MOUNT WALL MOUNTED OCCUPANCY SENSORS AT 8'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

G. CIRCUIT ALL LIGHT FIXTURES ON THIS SHEET TO EXISTING LIGHTING CIRCUIT, UNLESS OTHERWISE NOTED.

H. LINEAR FIXTURES WITH INTEGRAL SENSORS. SEE LUMINAIRE SCHEDULE.

I. EXIT SIGNS SHALL BE UNSWITCHED.

J. SEE SHEET 1E402 FOR LIGHT FIXTURE MOUNTING DETAILS.

K. UPDATE PANEL DIRECTORIES IN TYPE-WRITTEN FORMAT UPON COMPLETION OF WORK.

L. ALL FINISHES SHALL BE WHITE. COORDINATE FINAL FINISHES WITH ARCHITECT.

SHEET NOTES

1. REMOVE EXISTING LIGHTING AND EXISTING LIGHTING CONTROLS. MAINTAIN EXISTING CIRCUITRY FOR EXTENSION AND RECONNECTION TO NEW LIGHT FIXTURES.
2. REPLACE DEMOLISHED LIGHTING AND LIGHTING CONTROLS WITH NEW AS SHOWN. CONNECT NEW LIGHTING TO EXISTING LIGHTING CIRCUIT(S) SPARED FROM DEMOLITION WORK. AVOID OVERLOAD CONDITION SO THAT THE TOTAL CAPACITY OF THE EXISTING 20A/1P CIRCUIT BREAKER SHALL NOT EXCEED 80% OF RATING.
3. (E) LIGHTING AND CONTROLS IN THIS ROOM TO REMAIN.

AGENCY APPROVAL DSA# 01-121400

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SHEET TITLE

LIGHTING PLANS BLDG A

DRAWN BY: TL JOB NUMBER: 23119.02

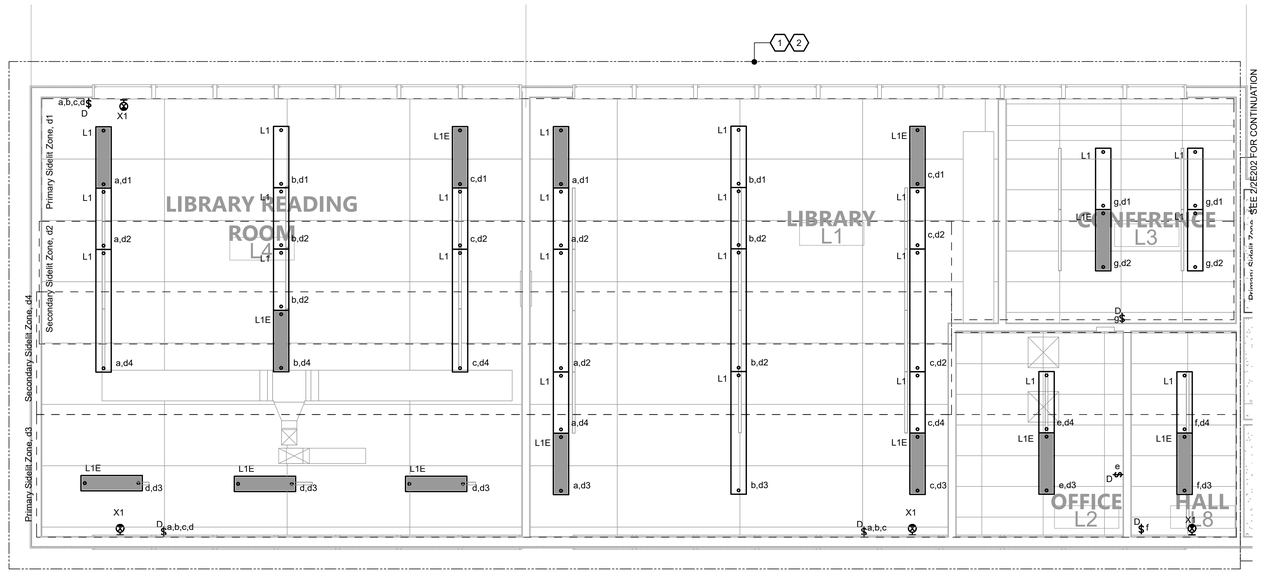
SHEET NO.

2E201

DATE: SEPTEMBER 24TH, 2024

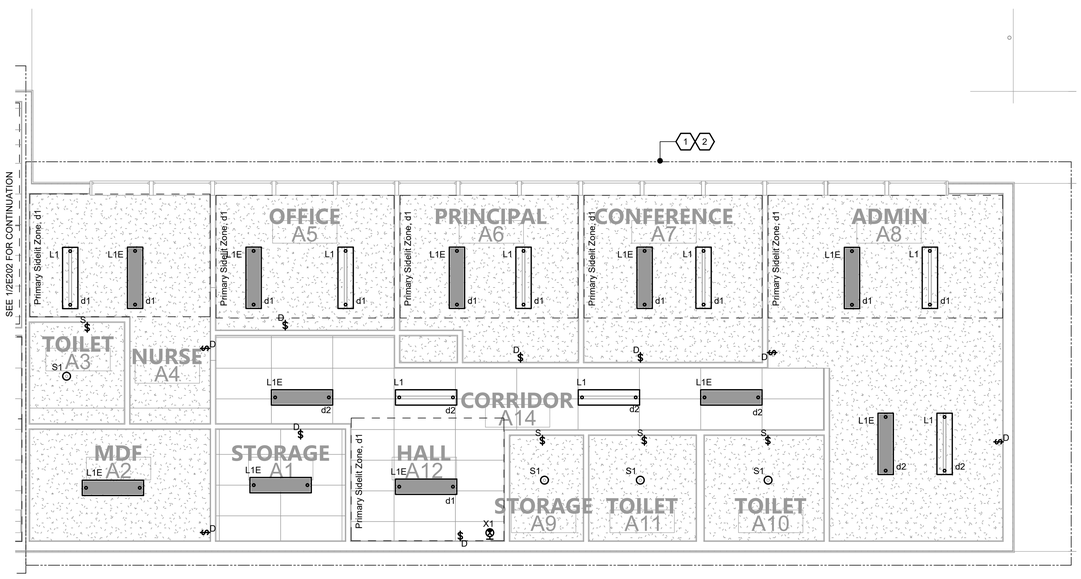
CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4\23347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\23347.50 - MH - 2E200 - Lighting Plan.dwg
LAST SAVED ON: 10/18/24 at 8:58pm, PLOTTED ON: 10/22/24 at 9:46am
DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\Skim\Documents\23119.01_MTDJUSD_MEADOW HOMES ES MODERNIZATION_A23_skim32Q7M.rvt



1 BLDG B.1 - LIGHTING PLAN

1/4" = 1'-0"



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G. CIRCUIT ALL LIGHT FIXTURES ON THIS SHEET TO EXISTING LIGHTING CIRCUIT, UNLESS OTHERWISE NOTED.

H. LINEAR FIXTURES WITH INTEGRAL SENSORS. SEE LUMINAIRE SCHEDULE.

I. EXIT SIGNS SHALL BE UNSWITCHED.

J. SEE SHEET 1E402 FOR LIGHT FIXTURE MOUNTING DETAILS.

K. UPDATE PANEL DIRECTORIES IN TYPE-WRITTEN FORMAT UPON COMPLETION OF WORK.

L. ALL FINISHES SHALL BE WHITE. COORDINATE FINAL FINISHES WITH ARCHITECT.

SHEET NOTES

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3. EXISTING CEILING MOUNT LIGHTING, LIGHTING CONTROLS, AND EXIT SIGNS TO REMAIN.
4. DISCONNECT AND REINSTALL EXISTING WALL MOUNT LIGHT SWITCHES AND EXIT SIGNS AT SAME LOCATION, UNLESS OTHERWISE NOTED. INTERCEPT AND EXTEND WIRING AND CONDUIT AS REQUIRED FOR A COMPLETE INSTALL. EXISTING DEVICES SHOWN ON PLAN FOR REFERENCE ONLY. ANY EXISTING ELECTRICAL DEVICES THAT ARE NO LONGER IN WORKING CONDITION SHALL BE REPLACED-IN-KIND. FIELD VERIFY EXISTING DEVICES PRIOR TO COMMENCEMENT OF WORK.

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SHEET TITLE

LIGHTING PLANS BLDG B.1

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2E202

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_47\2347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 212347.50 - MH - 2E200 - Lighting Plan.dwg
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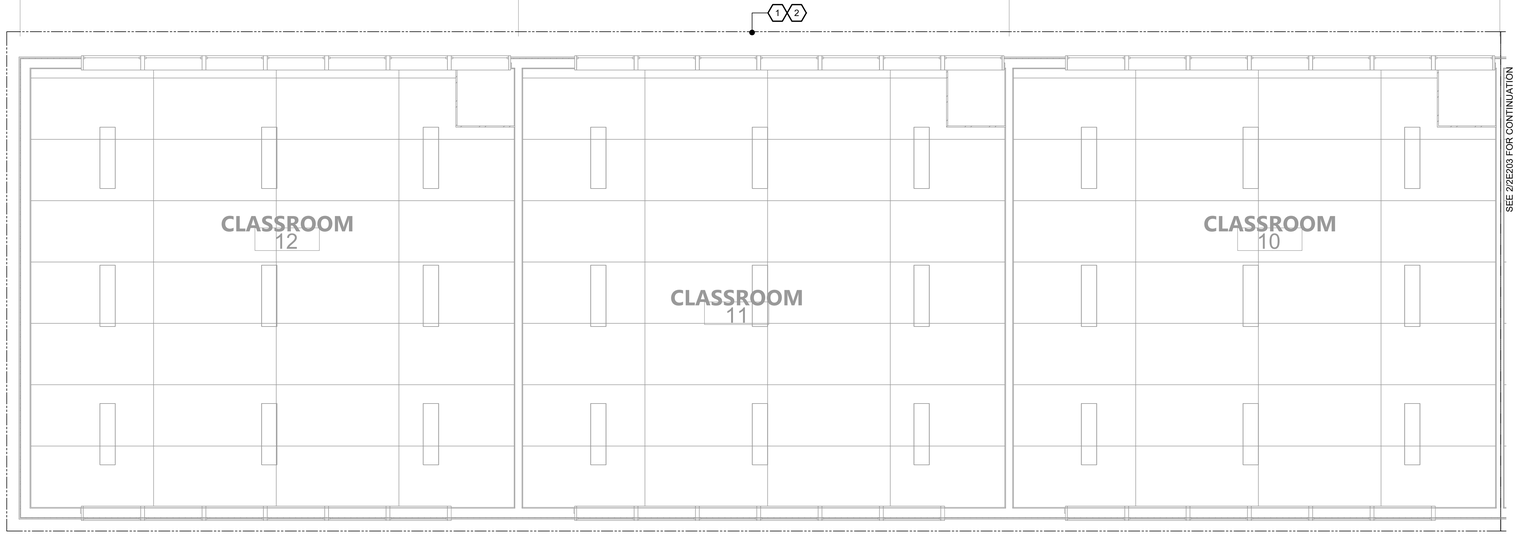
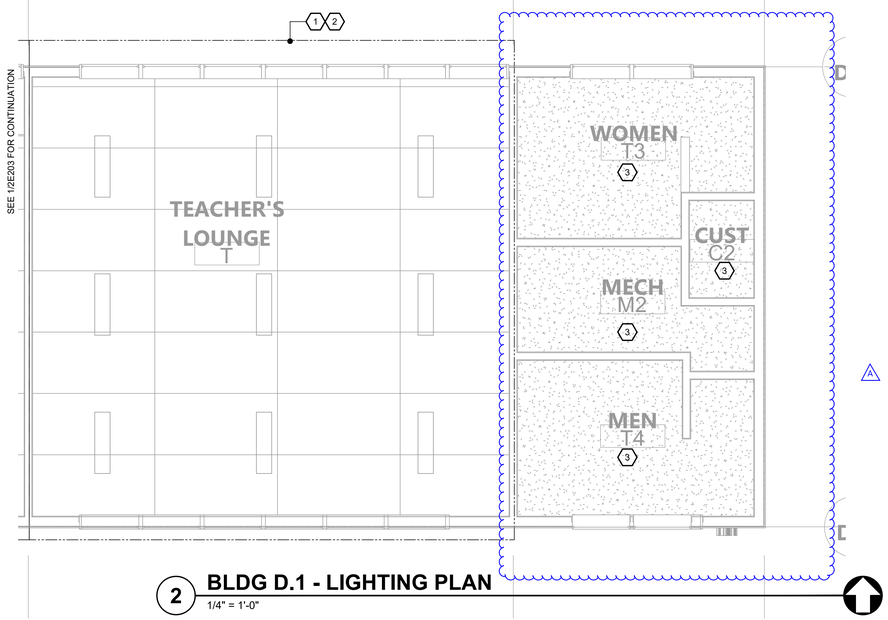


1 BLDG D.1 - LIGHTING PLAN

1/4" = 1'-0"



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ELECTRICAL ENGINEER
ATIUM ENGINEERING
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TECHNOLOGY ENGINEER
KMM Services Inc.
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Carmichael, CA 95608
TEL (916) 359-4000

PROFESSIONAL STAMP



REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

LIGHTING PLANS BLDG D.1

DRAWN BY: TL JOB NUMBER: 23119.02

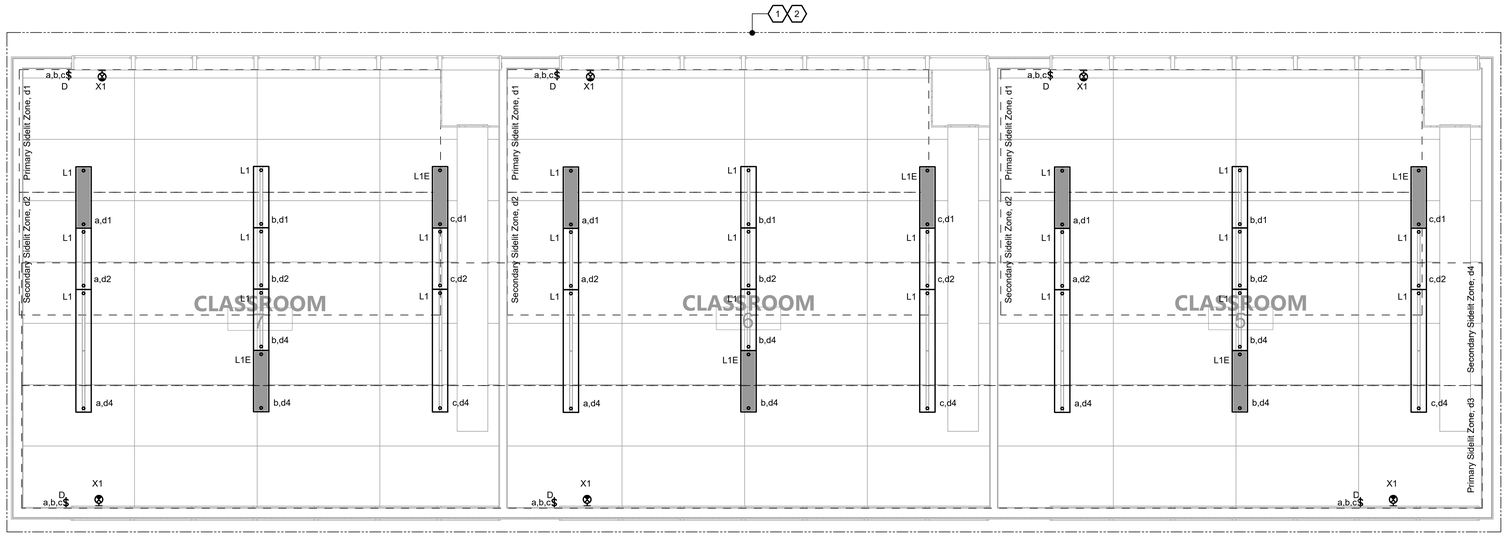
SHEET NO.

2E203

DATE: SEPTEMBER 24TH, 2024

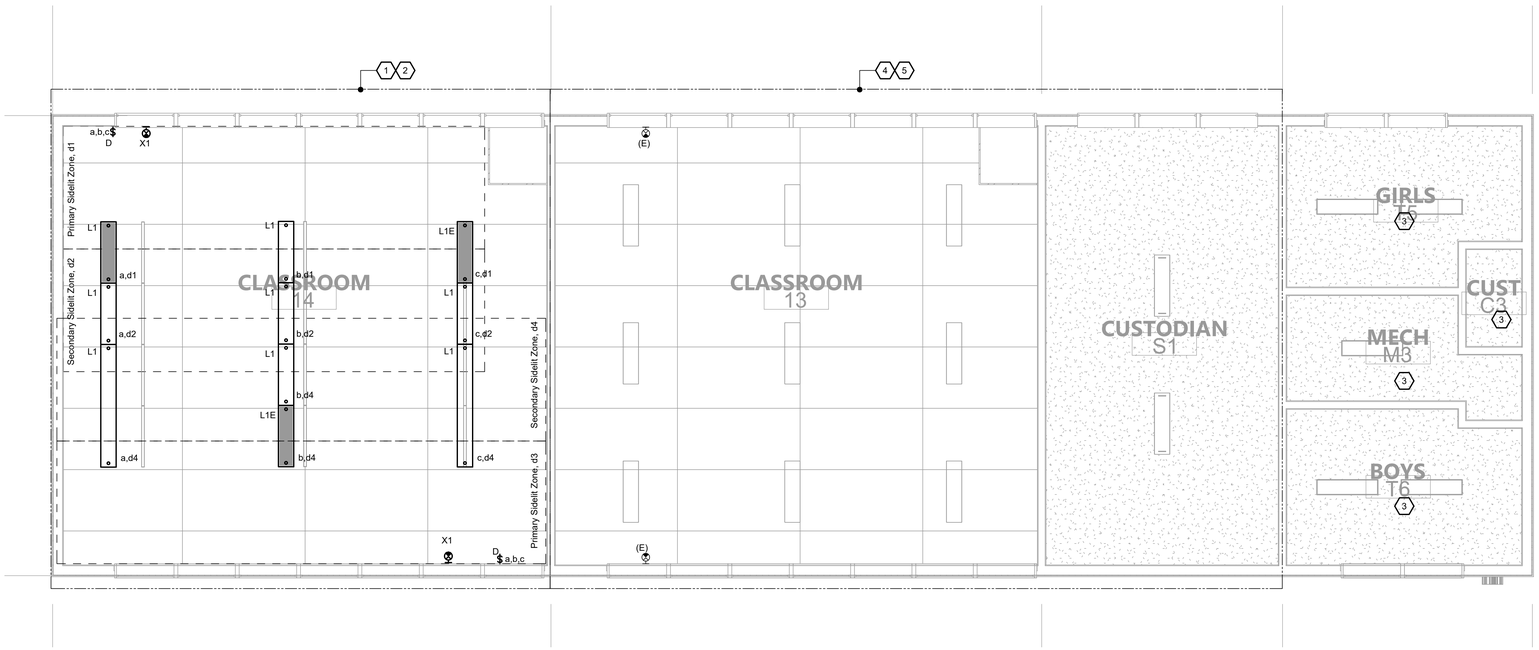
CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4\23347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\23347.50 - MH - 2E200 - Lighting Plan.dwg
LAST SAVED ON: 10/18/24 at 8:59pm, PLOTTED ON: 10/22/24 at 9:46am
DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\Skim\Documents\23119.01_MTDJUSD_MEADOW HOMES ES MODERNIZATION_A23_skim32Q7M.rvt



1 BLDG B.2 - LIGHTING PLAN

1/4" = 1'-0"



2 BLDG D.2 - LIGHTING PLAN

1/4" = 1'-0"

GENERAL DEMOLITION NOTES

A. IN AREAS INDICATED TO BE RENOVATED, REMOVE THAT PORTION OF THE EXISTING ELECTRICAL INSTALLATION INCLUDING, BUT NOT LIMITED TO, ALL LUMINAIRES, LIGHTING CONTROL DEVICES, WIRING, AND CONDUITS. ALL UNUSED WIRING AND EXPOSED CONDUIT SHALL BE REMOVED BACK TO POINT OF CONCEALMENT, UNLESS OTHERWISE NOTED.

B. WHERE CONDUIT TO BE REMOVED ENTERS CONCRETE (OR SIMILAR) FLOORS AND WALLS, THE CONDUIT MAY BE ABANDONED IN THE CONCRETE. REMOVE CONDUIT FAR ENOUGH INTO THE CONCRETE TO ALLOW FOR THE INSTALLATION OF NORMAL THICKNESS OF FINISH MATERIAL.

C. WHEN THE WORK NECESSITATES RELOCATION OF EXISTING CONDUIT, WIRING, OR ELECTRICAL EQUIPMENT, THE CONTRACTOR SHALL PERFORM ALL WORK AND MAKE ALL NECESSARY CHANGES TO EXISTING WORK AS MAY BE REQUIRED TO LEAVE THE COMPLETED WORK IN A FINISHED AND WORKMANLIKE CONDITION TO THE ENTIRE SATISFACTION OF THE ENGINEER.

D. WHERE ELECTRICAL SYSTEMS PASS THROUGH THE RENOVATED AREAS TO SERVE OTHER PORTIONS OF THE PREMISES, THEY SHALL BE SUITABLY RELOCATED AND THE SYSTEM RESTORED TO NORMAL OPERATION. WHERE DURATION OF PROPOSED OUTAGES CANNOT BE TOLERATED BY THE OWNER, PROVIDE TEMPORARY CONNECTION AS REQUIRED TO MAINTAIN SERVICE WITH THE MINIMUM DISRUPTION POSSIBLE.

E. WHERE REMOVAL WORK IS PERFORMED, THE CONTRACTOR SHALL REPAIR ALL BUILDING SURFACES DAMAGED BY SUCH WORK. PROVIDE FINISHES TO MATCH EXISTING ADJACENT SURFACES.

F. WHILE PERFORMING CONNECTIONS AND/OR ALTERATIONS TO EXISTING ELECTRICAL WORK, TAKE EXTREME CARE TO PROTECT ALL EXISTING EQUIPMENT FROM DIRT, DEBRIS, AND DAMAGE. ALL DAMAGE TO SUCH EQUIPMENT SHALL BE REPAIRED AND/OR EQUIPMENT REPLACED AT THE CONTRACTOR'S EXPENSE.

G. ALL REMOVAL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER AND SHALL BE EXECUTED WITH THE LEAST POSSIBLE DISTURBANCE TO THE BUILDING.

H. ALL EXISTING ELECTRICAL MATERIALS NOT REUSED AND NOT SALVAGED BY THE OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF IN A PROPER MANNER OFF OF THE PROJECT SITE. CARE SHOULD BE TAKEN TO DISPOSE OF HAZARDOUS MATERIALS PER REQUIRED GUIDELINES.

I. ANY ELECTRICAL WORK, WHICH WILL INTERFERE WITH THE NORMAL USE OF THE BUILDING IN ANY MANNER, SHALL BE DONE AT SUCH TIME OR TIMES AS SHALL BE MUTUALLY AGREED UPON BETWEEN THE CONTRACTOR AND THE OWNER'S REPRESENTATIVE.

GENERAL NOTES

A. SEE ARCHITECTURAL DOCUMENTS FOR EXACT PLACEMENT OF ALL LIGHT FIXTURES, EXPOSED CONTROL DEVICES AND LIGHT SWITCHES. VERIFY CEILING TYPE WITH ARCHITECTURAL DOCUMENTS AND COORDINATE TRIMS. PROVIDE ALL REQUIRED FIXTURE MOUNTING HARDWARE. COORDINATE FIXTURE TYPES WITH MOUNTING SURFACE PRIOR TO ORDERING.

B. PENDANT FIXTURES SHALL BE FREE TO SWING A MINIMUM OF 45 DEGREES FROM THE VERTICAL IN ALL DIRECTIONS WITHOUT CONTACTING OBSTRUCTIONS, OTHERWISE PROVIDE SEISMIC RESTRAINT.

C. RUN ALL INTERIOR CONDUIT IN FINISHED INTERIOR AREAS CONCEALED UNLESS OTHERWISE NOTED.

D. PROVIDE U.L. LISTED FIRE STOP ENCLOSURES FOR ALL RECESSED FIXTURES IN FIRE RATED CEILINGS.

E. PROVIDE SINGLE PLATE WALL COVER FOR MULTIPLE SWITCHES. SEE DRAWINGS FOR NUMBER OF SWITCHES IN SPECIFIC LOCATIONS.

F. MOUNT WALL MOUNTED OCCUPANCY SENSORS AT 8'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

G. CIRCUIT ALL LIGHT FIXTURES ON THIS SHEET TO EXISTING LIGHTING CIRCUIT, UNLESS OTHERWISE NOTED.

H. LINEAR FIXTURES WITH INTEGRAL SENSORS. SEE LUMINAIRE SCHEDULE.

I. EXIT SIGNS SHALL BE UNSWITCHED.

J. SEE SHEET 1E402 FOR LIGHT FIXTURE MOUNTING DETAILS.

K. UPDATE PANEL DIRECTORIES IN TYPE-WRITTEN FORMAT UPON COMPLETION OF WORK.

L. ALL FINISHES SHALL BE WHITE. COORDINATE FINAL FINISHES WITH ARCHITECT.

SHEET NOTES

1. REMOVE EXISTING LIGHTING AND EXISTING LIGHTING CONTROLS. MAINTAIN EXISTING CIRCUITRY FOR EXTENSION AND RECONNECTION TO NEW LIGHT FIXTURES.
2. REPLACE DEMOLISHED LIGHTING AND LIGHTING CONTROLS WITH NEW AS SHOWN. CONNECT NEW LIGHTING TO EXISTING LIGHTING CIRCUIT(S) SPARED FROM DEMOLITION WORK. AVOID OVERLOAD CONDITION SO THAT THE TOTAL CAPACITY OF THE EXISTING 20A/1P CIRCUIT BREAKER SHALL NOT EXCEED 80% OF RATING.
3. (E) LIGHTING AND CONTROLS IN THIS ROOM TO REMAIN.
4. DISCONNECT AND REINSTALL EXISTING WALL MOUNT LIGHT SWITCHES AND EXIT SIGNS AT SAME LOCATION, UNLESS OTHERWISE NOTED. INTERCEPT AND EXTEND WIRING AND CONDUIT AS REQUIRED FOR A COMPLETE INSTALL. EXISTING DEVICES SHOWN ON PLAN FOR REFERENCE ONLY. ANY EXISTING ELECTRICAL DEVICES THAT ARE NO LONGER IN WORKING CONDITION SHALL BE REPLACED-IN-KIND. FIELD VERIFY EXISTING DEVICES PRIOR TO COMMENCEMENT OF WORK.
5. EXISTING CEILING MOUNT LIGHTING, LIGHTING CONTROLS, AND EXIT SIGNS TO REMAIN.

AGENCY APPROVAL DSA# 01-121400

196
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Concord, CA 94520

SHEET TITLE

LIGHTING PLANS BLDG B.2 & D.2

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2E204

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4702347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\2347.50 - MH - 2E200 - Lighting Plan.dwg
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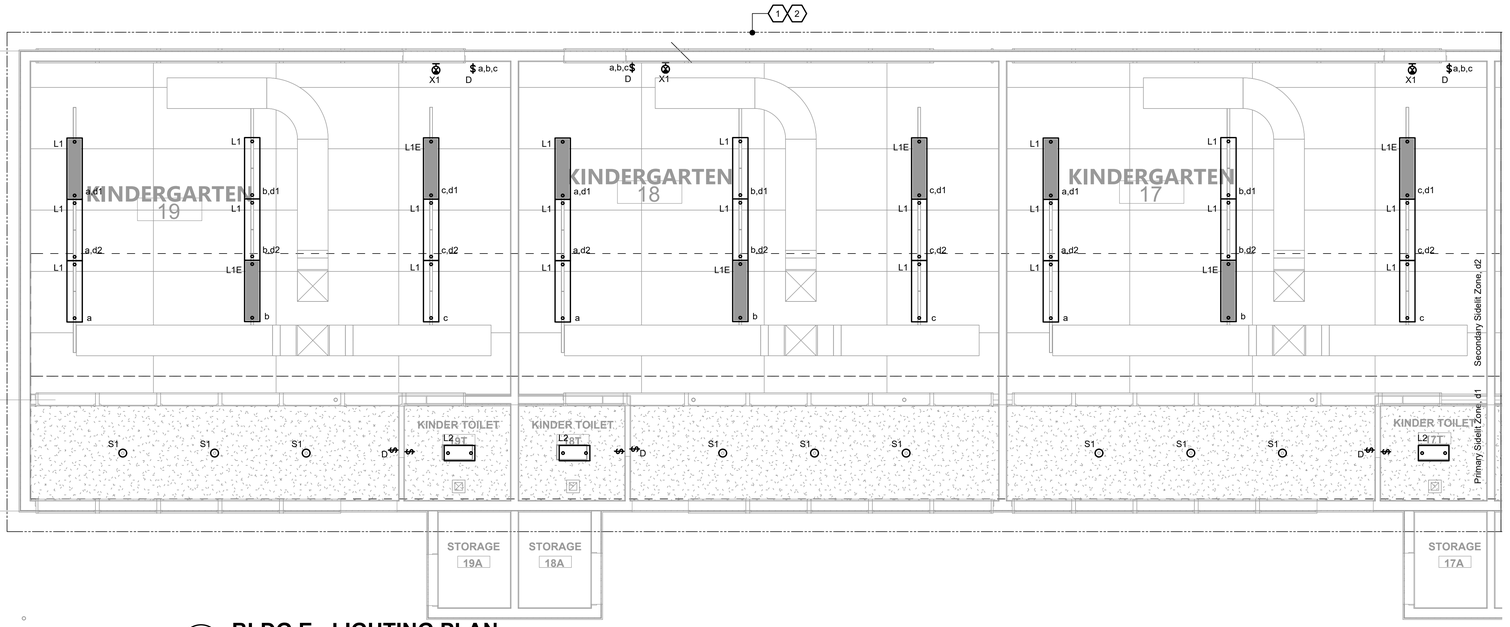
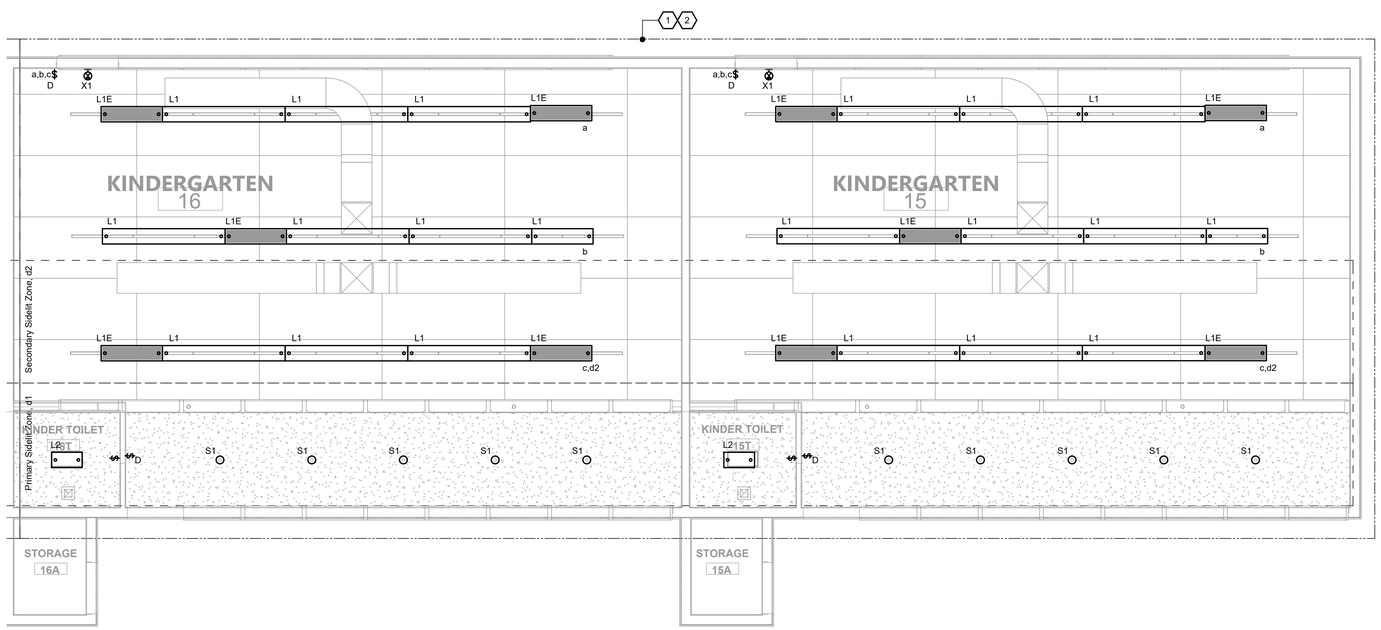


1 BLDG E - LIGHTING PLAN

1/4" = 1'-0"



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E. PROVIDE SINGLE PLATE WALL COVER FOR MULTIPLE SWITCHES. SEE DRAWINGS FOR NUMBER OF SWITCHES IN SPECIFIC LOCATIONS.

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G. CIRCUIT ALL LIGHT FIXTURES ON THIS SHEET TO EXISTING LIGHTING CIRCUIT, UNLESS OTHERWISE NOTED.

H. LINEAR FIXTURES WITH INTEGRAL SENSORS. SEE LUMINAIRE SCHEDULE.

I. EXIT SIGNS SHALL BE UNSWITCHED.

J. SEE SHEET 1E402 FOR LIGHT FIXTURE MOUNTING DETAILS.

K. UPDATE PANEL DIRECTORIES IN TYPE-WRITTEN FORMAT UPON COMPLETION OF WORK.

L. ALL FINISHES SHALL BE WHITE. COORDINATE FINAL FINISHES WITH ARCHITECT.

SHEET NOTES

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AGENCY APPROVAL DSA# 01-121400

196

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PROFESSIONAL STAMP

REVISIONS

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A	10-31-2024	ADDENDUM 01

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MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

LIGHTING PLANS BLDG E

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2E205

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madl architecture_4\12347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 212347.50 - MH - 2E200 - Lighting Plan.dwg
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GENERAL NOTES

A. AREA MAY CONTAIN UNDERGROUND RACEWAY. SITE LOCATE ALL EXISTING UNDERGROUND RACEWAY IN THIS AREA BEFORE TRENCHING. MAINTAIN EXTREME CARE WHEN TRENCHING.

B. COORDINATE EXACT LOCATIONS OF ALL ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL EQUIPMENT WITH ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL DRAWINGS.

C. SIZE FUSES FOR ALL FUSED SWITCHES PER SUPPLIED EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

D. REFER TO EQUIPMENT SCHEDULES FOR EQUIPMENT WIRING, CONDUIT, AND BREAKER SIZES.

E. CERTAIN FEEDER AND BRANCH CIRCUIT WIRE SIZES SHALL BE SIZED TO COMPENSATE FOR VOLTAGE DROP. SPLICE WIRES TO COMPATIBLE SIZES FOR TERMINATION, ADJACENT TO EQUIPMENT CONNECT AS REQUIRED.

F. CONTRACTOR SHALL SIZE ALL IN GRADE PULL BOXES PER CODE OR FOR THEIR CONVENIENCE FOR PULLING WIRE, WHICHEVER IS LARGER.

G. OUTDOOR ELECTRICAL EQUIPMENT AND DEVICES SHALL BE PROVIDED WITH NEMA 3R RATED ENCLOSURES.

H. EXISTING PANELS SHOWN FOR REFERENCE ONLY AND BASED ON AS BUILT DOCUMENTATION AND PARTIAL SITE SURFACE INVESTIGATION. FIELD VERIFY EXACT PANEL LOCATIONS PRIOR TO COMMENCEMENT OF WORK.

I. UPDATE PANEL DIRECTORIES IN TYPE-WRITTEN FORMAT UPON COMPLETION OF WORK.

J. ALL FINISHES SHALL BE WHITE. COORDINATE FINAL FINISHES WITH ARCHITECT.

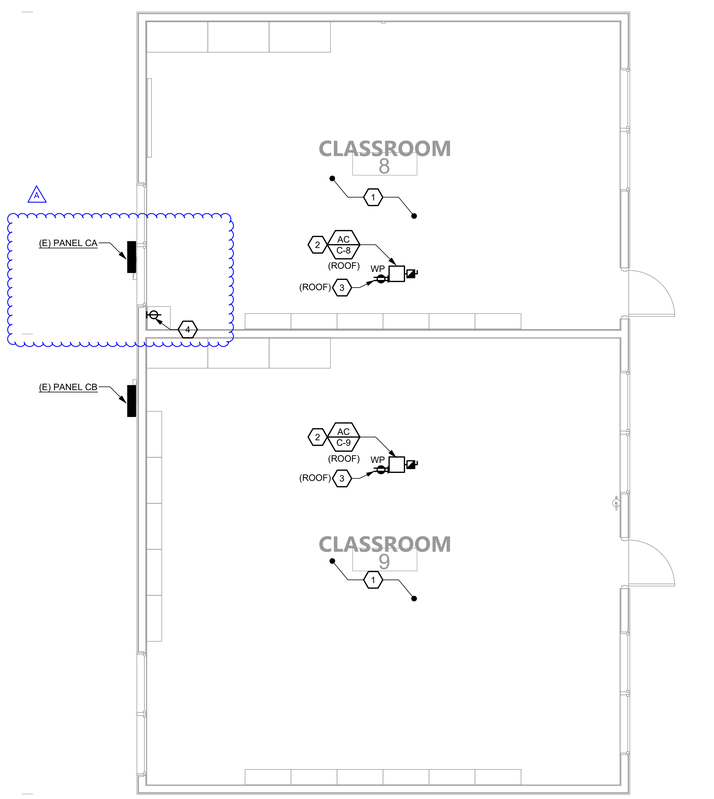
(#) SHEET NOTES

1. DISCONNECT AND REINSTALL EXISTING WALL MOUNT ELECTRICAL DEVICES AT SAME LOCATION, UNLESS OTHERWISE NOTED. INTERCEPT AND EXTEND WIRING AND CONDUIT AS REQUIRED FOR A COMPLETE INSTALL. EXISTING DEVICES SHOWN ON PLAN FOR REFERENCE ONLY. ANY EXISTING ELECTRICAL DEVICES THAT ARE NO LONGER IN WORKING CONDITION SHALL BE REPLACED-IN-KIND. FIELD VERIFY EXISTING DEVICES PRIOR TO COMMENCEMENT OF WORK.

2. NEW HVAC UNIT, THIS LOCATION. PROVIDE DISCONNECT SWITCH AND CU BRANCH FEEDER FOR NEW HVAC EQUIPMENT AND GENERAL PURPOSE RECEPTACLE WITHIN 25FT OF HVAC EQUIPMENT.

3. CONNECT ALL NEW GENERAL PURPOSE RECEPTACLES, THIS BUILDING, TO NEAREST AVAILABLE 120V 20A SPARE CIRCUIT.

4. PROVIDE DEDICATED 208V CIRCUIT FOR RECEPTACLE SERVING IDF. PROVIDE 208V 20A/2P CIRCUIT BREAKER IN NEAREST PANEL AND CIRCUIT WITH (3) #12 + (1) #12 G - 3/4" C..



1 **BLDG C - POWER & SIGNAL PLAN**
1/4" = 1'-0"

AGENCY APPROVAL DSA# 01-121400

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SHEET TITLE
POWER & SIGNAL PLANS BLDG C

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2E300

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

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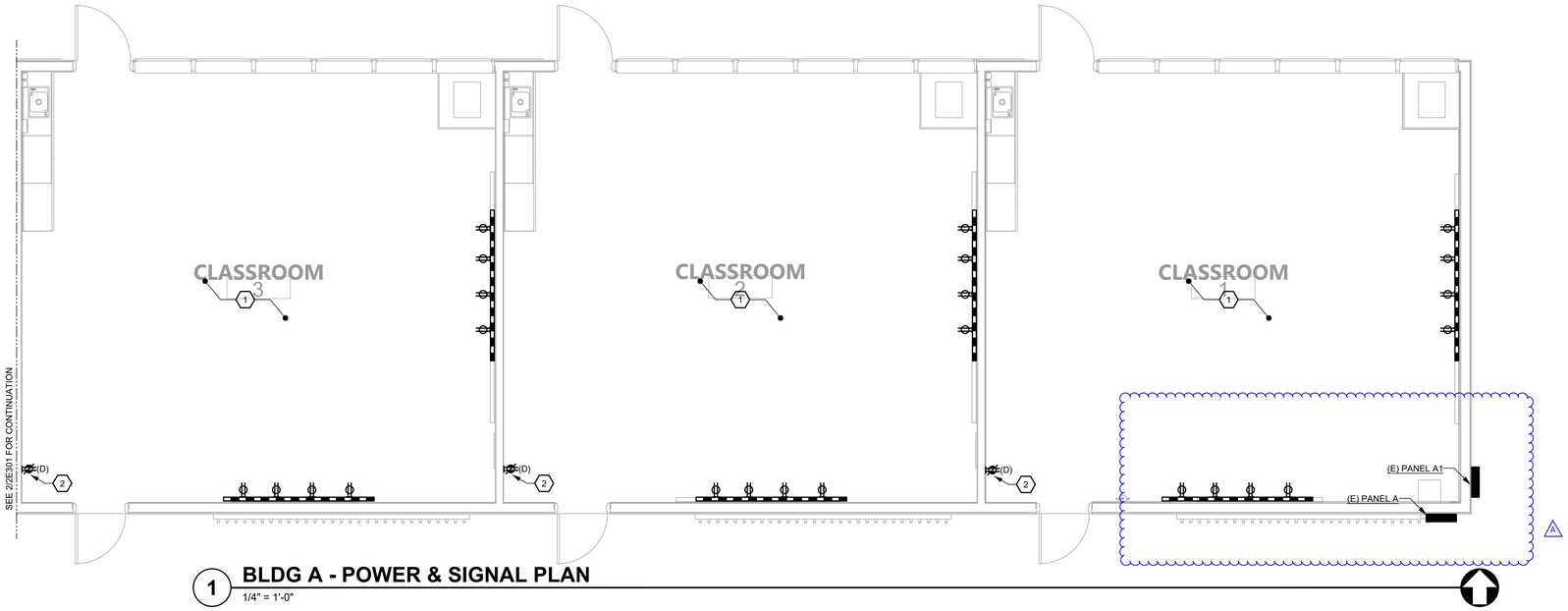
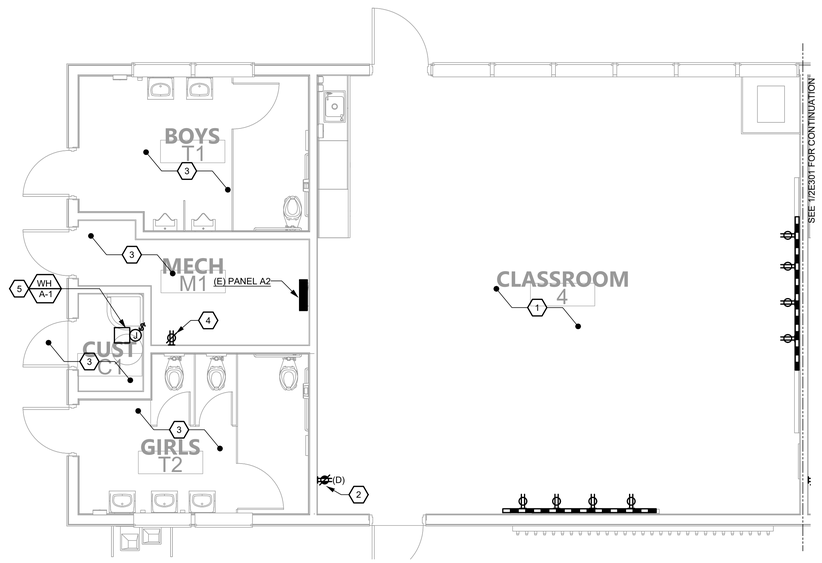


1 **BLDG A - POWER & SIGNAL PLAN**
1/4" = 1'-0"



2 **BLDG A - POWER & SIGNAL PLAN**
1/4" = 1'-0"

GENERAL NOTES

A. AREA MAY CONTAIN UNDERGROUND RACEWAY. SITE LOCATE ALL EXISTING UNDERGROUND RACEWAY IN THIS AREA BEFORE TRENCHING. MAINTAIN EXTREME CARE WHEN TRENCHING.

B. COORDINATE EXACT LOCATIONS OF ALL ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL EQUIPMENT WITH ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL DRAWINGS.

C. SIZE FUSES FOR ALL FUSED SWITCHES PER SUPPLIED EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

D. REFER TO EQUIPMENT SCHEDULES FOR EQUIPMENT WIRING, CONDUIT, AND BREAKER SIZES.

E. CERTAIN FEEDER AND BRANCH CIRCUIT WIRE SIZES SHALL BE SIZED TO COMPENSATE FOR VOLTAGE DROP. SPLICE WIRES TO COMPATIBLE SIZES FOR TERMINATION, ADJACENT TO EQUIPMENT CONNECT AS REQUIRED.

F. CONTRACTOR SHALL SIZE ALL IN GRADE PULL BOXES PER CODE OR FOR THEIR CONVENIENCE FOR PULLING WIRE, WHICHEVER IS LARGER.

G. OUTDOOR ELECTRICAL EQUIPMENT AND DEVICES SHALL BE PROVIDED WITH NEMA 3R RATED ENCLOSURES.

H. EXISTING PANELS SHOWN FOR REFERENCE ONLY AND BASED ON AS BUILT DOCUMENTATION AND PARTIAL SITE SURFACE INVESTIGATION. FIELD VERIFY EXACT PANEL LOCATIONS PRIOR TO COMMENCEMENT OF WORK.

I. UPDATE PANEL DIRECTORIES IN TYPE-WRITTEN FORMAT UPON COMPLETION OF WORK.

J. ALL FINISHES SHALL BE WHITE. COORDINATE FINAL FINISHES WITH ARCHITECT.

SHEET NOTES

1. DISCONNECT AND REINSTALL EXISTING WALL MOUNT ELECTRICAL DEVICES AT SAME LOCATION, UNLESS OTHERWISE NOTED. INTERCEPT AND EXTEND WIRING AND CONDUIT AS REQUIRED FOR A COMPLETE INSTALL. EXISTING DEVICES SHOWN ON PLAN FOR REFERENCE ONLY. ANY EXISTING ELECTRICAL DEVICES THAT ARE NO LONGER IN WORKING CONDITION SHALL BE REPLACED-IN-KIND. FIELD VERIFY EXISTING DEVICES PRIOR TO COMMENCEMENT OF WORK.
2. REMOVE EXISTING ELECTRICAL DEVICES AND REPLACE WITH NEW AS SHOWN. NEW CIRCUITS SHOWN ON PLAN HOMERUN TO NEAREST PANEL, UNLESS OTHERWISE NOTED.
3. EXISTING TO REMAIN, THIS ROOM.
4. PROVIDE DEDICATED 120V CIRCUIT FOR RECEPTACLE SERVING IDF. CONNECT TO NEAREST AVAILABLE 120V 20A SPARE CIRCUIT.
5. PROVIDE DISCONNECT SWITCH AND CU BRANCH FEEDER FOR NEW EQUIPMENT. FLUSH MOUNT DISCONNECT SWITCH ON WALL. COORDINATE EXACT LOCATION WITH ARCHITECT. A

AGENCY APPROVAL DSA# 01-121400

1936

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PROFESSIONAL STAMP



REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
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MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
POWER & SIGNAL PLANS BLDG A

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2E301

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: C:\Users\16503\AppData\Local\Temp\AcPublish_17840\2347.50 - MH - 2E300 - Power Plan.dwg
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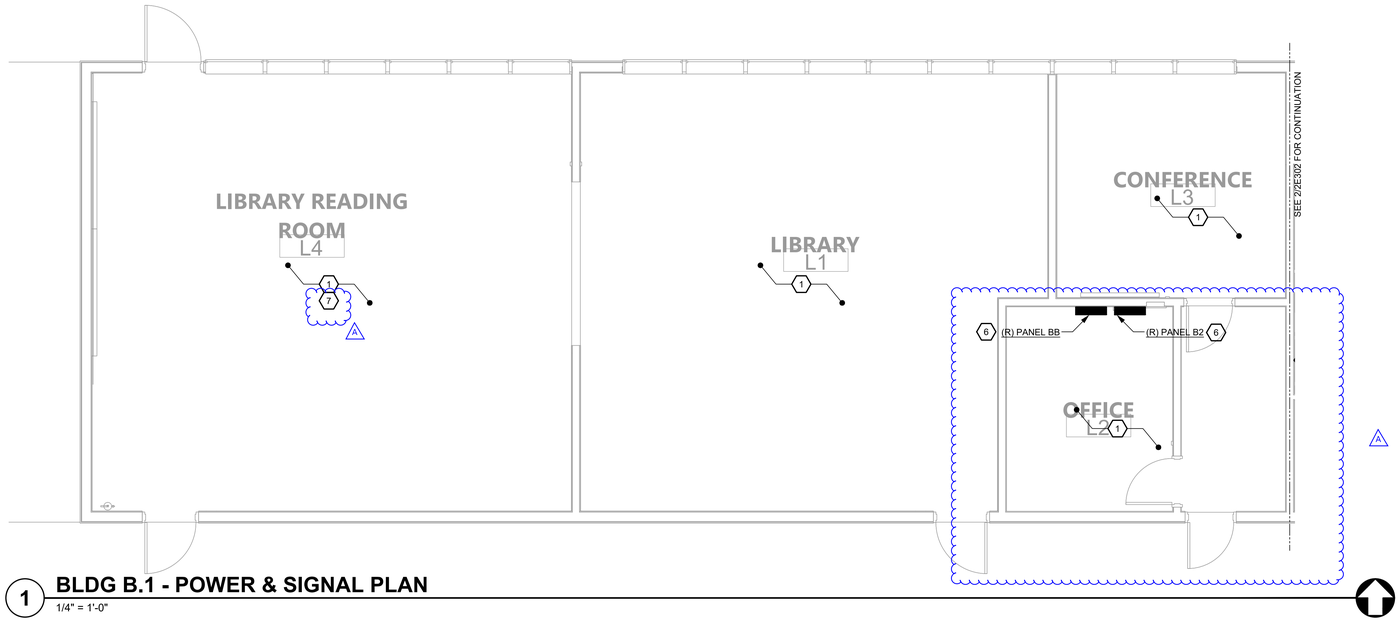
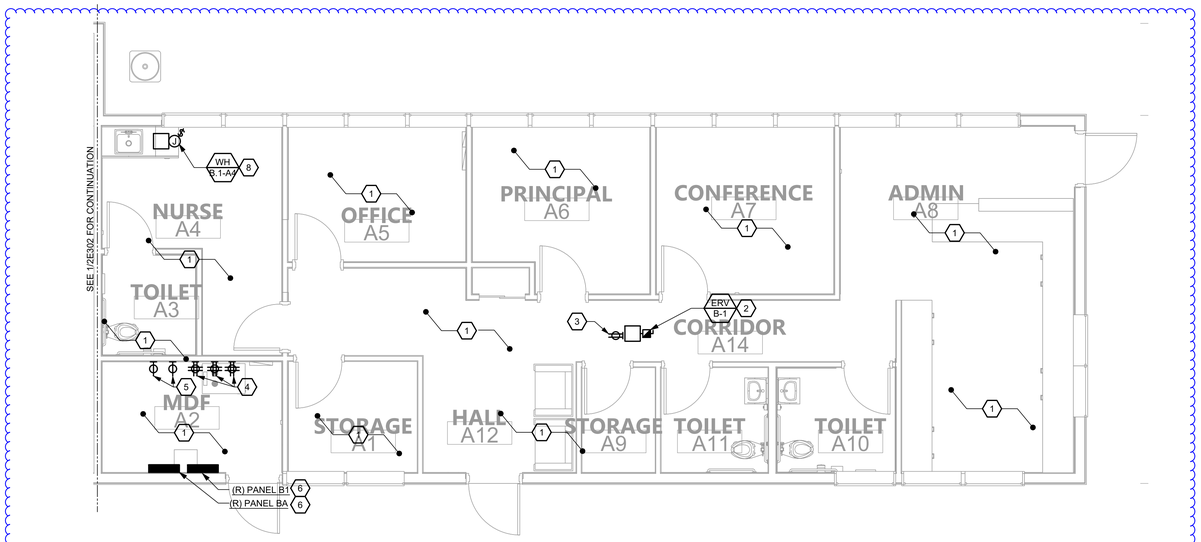


1 BLDG B.1 - POWER & SIGNAL PLAN

1/4" = 1'-0"



2 BLDG B.1 - POWER & SIGNAL PLAN

1/4" = 1'-0"

GENERAL NOTES

A. AREA MAY CONTAIN UNDERGROUND RACEWAY. SITE LOCATE ALL EXISTING UNDERGROUND RACEWAY IN THIS AREA BEFORE TRENCHING. MAINTAIN EXTREME CARE WHEN TRENCHING.

B. COORDINATE EXACT LOCATIONS OF ALL ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL EQUIPMENT WITH ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL DRAWINGS.

C. SIZE FUSES FOR ALL FUSED SWITCHES PER SUPPLIED EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

D. REFER TO EQUIPMENT SCHEDULES FOR EQUIPMENT WIRING, CONDUIT, AND BREAKER SIZES.

E. CERTAIN FEEDER AND BRANCH CIRCUIT WIRE SIZES SHALL BE SIZED TO COMPENSATE FOR VOLTAGE DROP. SPLICE WIRES TO COMPATIBLE SIZES FOR TERMINATION, ADJACENT TO EQUIPMENT CONNECT AS REQUIRED.

F. CONTRACTOR SHALL SIZE ALL IN GRADE PULL BOXES PER CODE OR FOR THEIR CONVENIENCE FOR PULLING WIRE, WHICHEVER IS LARGER.

G. OUTDOOR ELECTRICAL EQUIPMENT AND DEVICES SHALL BE PROVIDED WITH NEMA 3R RATED ENCLOSURES.

H. EXISTING PANELS SHOWN FOR REFERENCE ONLY AND BASED ON AS BUILT DOCUMENTATION AND PARTIAL SITE SURFACE INVESTICATION. FIELD VERIFY EXACT PANEL LOCATIONS PRIOR TO COMMENCEMENT OF WORK.

I. UPDATE PANEL DIRECTORIES IN TYPE-WRITTEN FORMAT UPON COMPLETION OF WORK.

J. ALL FINISHES SHALL BE WHITE. COORDINATE FINAL FINISHES WITH ARCHITECT.

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2. NEW HVAC UNIT, THIS LOCATION. PROVIDE DISCONNECT SWITCH AND CU BRANCH FEEDER FOR NEW HVAC EQUIPMENT AND GENERAL PURPOSE RECEPTACLE WITHIN 25FT OF HVAC EQUIPMENT.
3. CONNECT ALL NEW GENERAL PURPOSE RECEPTACLES, THIS BUILDING, TO NEAREST AVAILABLE 120V 20A SPARE CIRCUIT.
4. PROVIDE DEDICATED CIRCUIT FOR MDF QUADPLEX RECEPTACLE.
5. PROVIDE DEDICATED 208V CIRCUIT FOR RECEPTACLE SERVING IDF. PROVIDE 208V 20A/2P CIRCUIT BREAKER IN NEAREST PANEL AND CIRCUIT WITH (3) #12 + (1) #12 G - 3/4" C.
6. (R) EXISTING PANELS TO NEW LOCATION SHOWN. INTERCEPT (E) FEEDERS AND BRANCH CIRCUITS. PROVIDE NEW CONDUIT AND WIRE, SIZED TO MATCH (E), AS REQUIRED TO EXTEND AND RECONNECT ALL CIRCUITRY.
7. REMOVE ELECTRICAL DEVICES IN WALLS TO BE DEMOLISHED. REFER TO ARCHITECTURAL DOCUMENTS FOR ADDITIONAL INFORMATION. WHERE DEVICES BEING REMOVED FEED OTHER DEVICES TO REMAIN, PROVIDE NEW CONDUIT AND WIRE, SIZED TO MATCH (E), AS REQUIRED TO RESTORE (E) DEVICES TO A FULLY FUNCTIONAL STATE.
8. PROVIDE DISCONNECT SWITCH AND CU BRANCH FEEDER FOR NEW EQUIPMENT. FLUSH MOUNT DISCONNECT SWITCH ON WALL. COORDINATE EXACT LOCATION WITH ARCHITECT.

AGENCY APPROVAL DSA# 01-121400

196

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PROFESSIONAL STAMP

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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SHEET TITLE

POWER & SIGNAL PLANS BLDG B.1

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2E302

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

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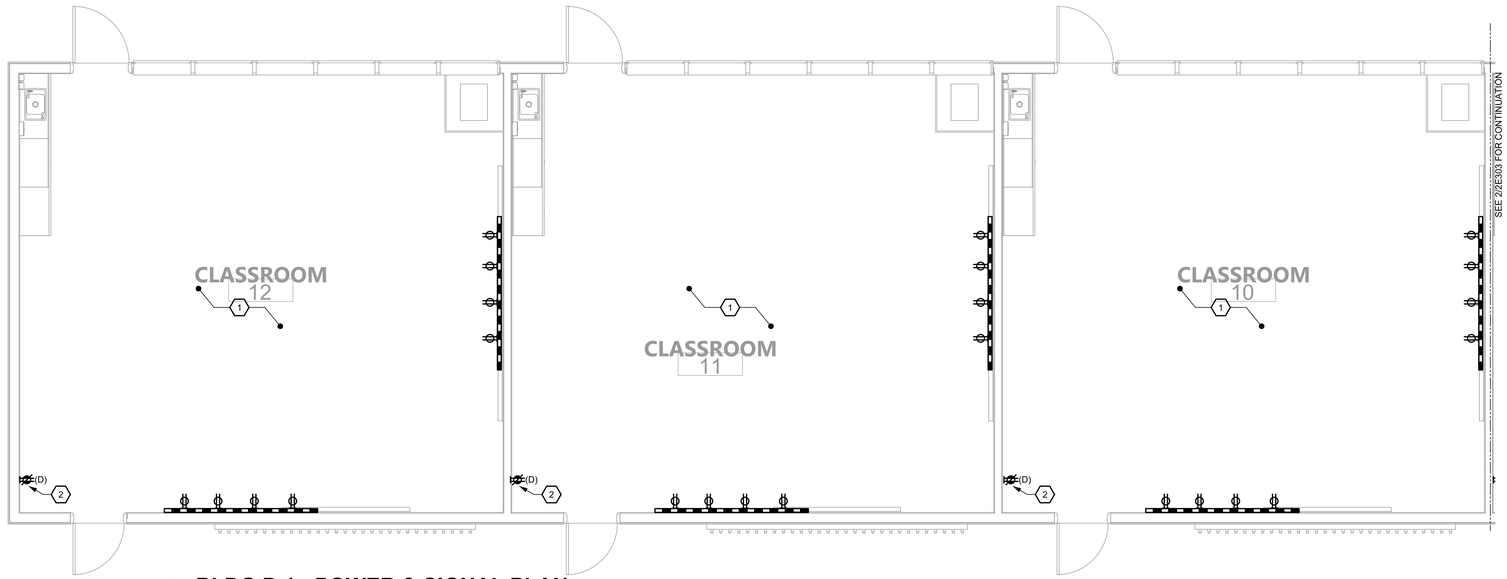
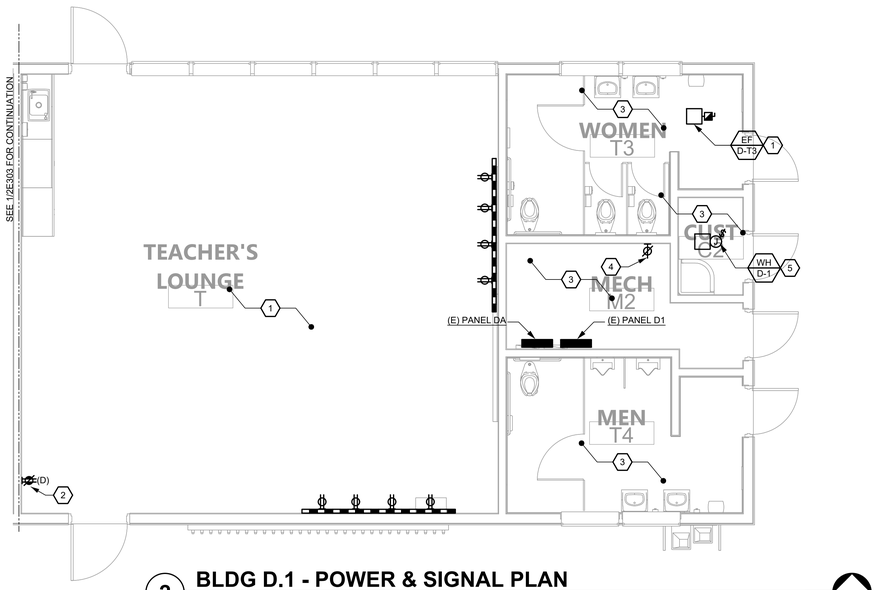


1 BLDG D.1 - POWER & SIGNAL PLAN

1/4" = 1'-0"



2 BLDG D.1 - POWER & SIGNAL PLAN

1/4" = 1'-0"

GENERAL NOTES

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B. COORDINATE EXACT LOCATIONS OF ALL ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL EQUIPMENT WITH ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL DRAWINGS.

C. SIZE FUSES FOR ALL FUSED SWITCHES PER SUPPLIED EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

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I. UPDATE PANEL DIRECTORIES IN TYPE-WRITTEN FORMAT UPON COMPLETION OF WORK.

J. ALL FINISHES SHALL BE WHITE. COORDINATE FINAL FINISHES WITH ARCHITECT.

(#) SHEET NOTES

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2. REMOVE EXISTING ELECTRICAL DEVICES AND REPLACE WITH NEW AS SHOWN. NEW CIRCUITS SHOWN ON PLAN HOMERUN TO NEAREST PANEL, UNLESS OTHERWISE NOTED.
3. EXISTING TO REMAIN, THIS ROOM.
4. L6-20R. PROVIDE DEDICATED 208V 20A CIRCUIT FOR IDF. CONNECT TO NEAREST AVAILABLE SPARE CIRCUIT VIA 20A/2P BREAKER IN PANEL. FOR NEW BREAKERS, MATCH EXISTING MAKE, MODEL, AND AIC RATING.
5. PROVIDE DISCONNECT SWITCH AND CU BRANCH FEEDER FOR NEW EQUIPMENT. FLUSH MOUNT DISCONNECT SWITCH ON WALL. COORDINATE EXACT LOCATION WITH ARCHITECT. (A)

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP



REVISIONS (#)

NO.	DATE	DESCRIPTION
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MOUNT DIABLO UNIFIED SCHOOL DISTRICT
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MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
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SHEET TITLE
POWER & SIGNAL PLANS BLDG D.1

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2E303

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

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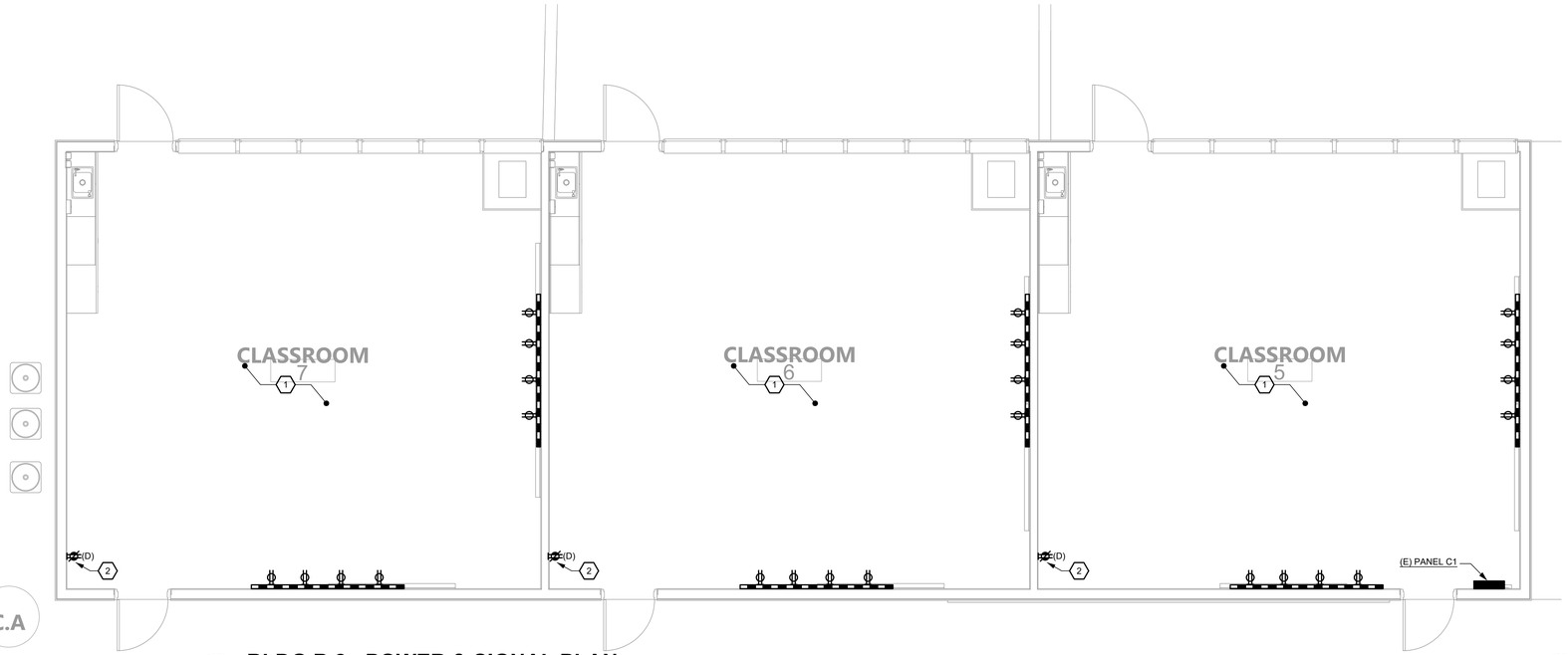
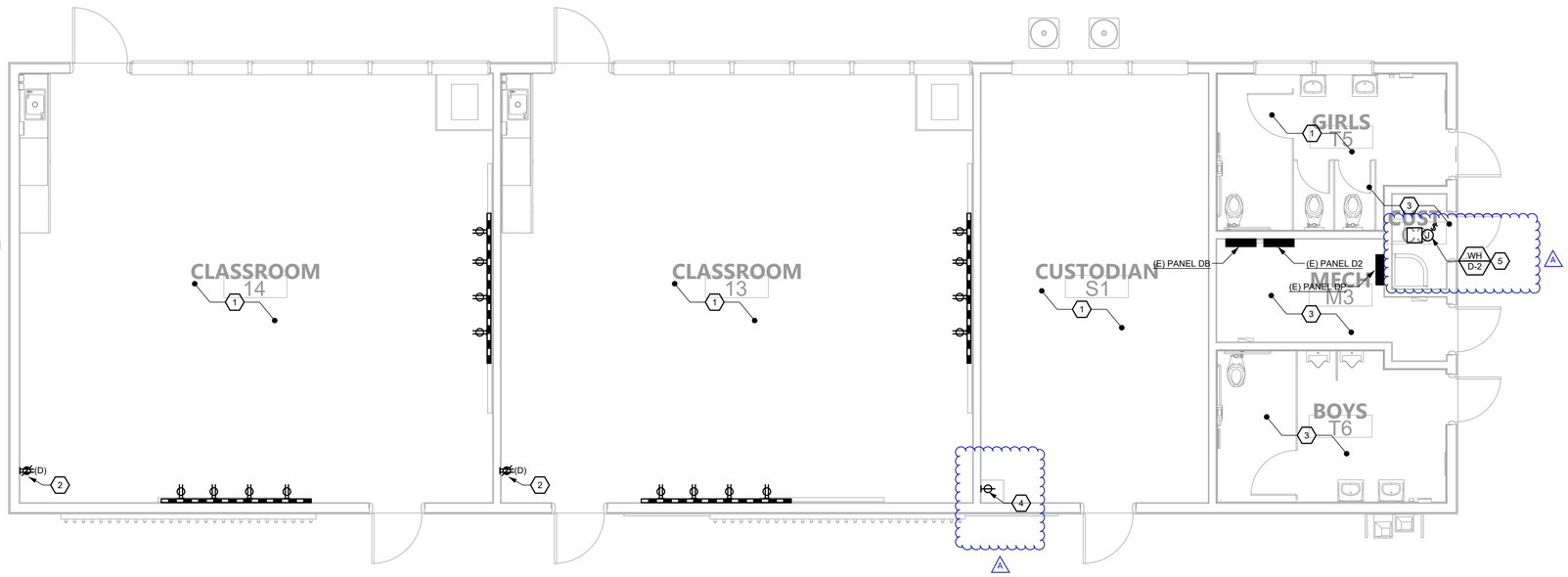


1 BLDG B.2 - POWER & SIGNAL PLAN

1/4" = 1'-0"



2 BLDG D.2 - POWER & SIGNAL PLAN

1/4" = 1'-0"

GENERAL NOTES

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H. EXISTING PANELS SHOWN FOR REFERENCE ONLY AND BASED ON AS BUILT DOCUMENTATION AND PARTIAL SITE SURFACE INVESTIGATION. FIELD VERIFY EXACT PANEL LOCATIONS PRIOR TO COMMENCEMENT OF WORK.

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5. PROVIDE DISCONNECT SWITCH AND CU BRANCH FEEDER FOR NEW EQUIPMENT. FLUSH MOUNT DISCONNECT SWITCH ON WALL. COORDINATE EXACT LOCATION WITH ARCHITECT.

△A

AGENCY APPROVAL DSA# 01-121400

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MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

POWER & SIGNAL PLANS BLDG D.2

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2E304

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

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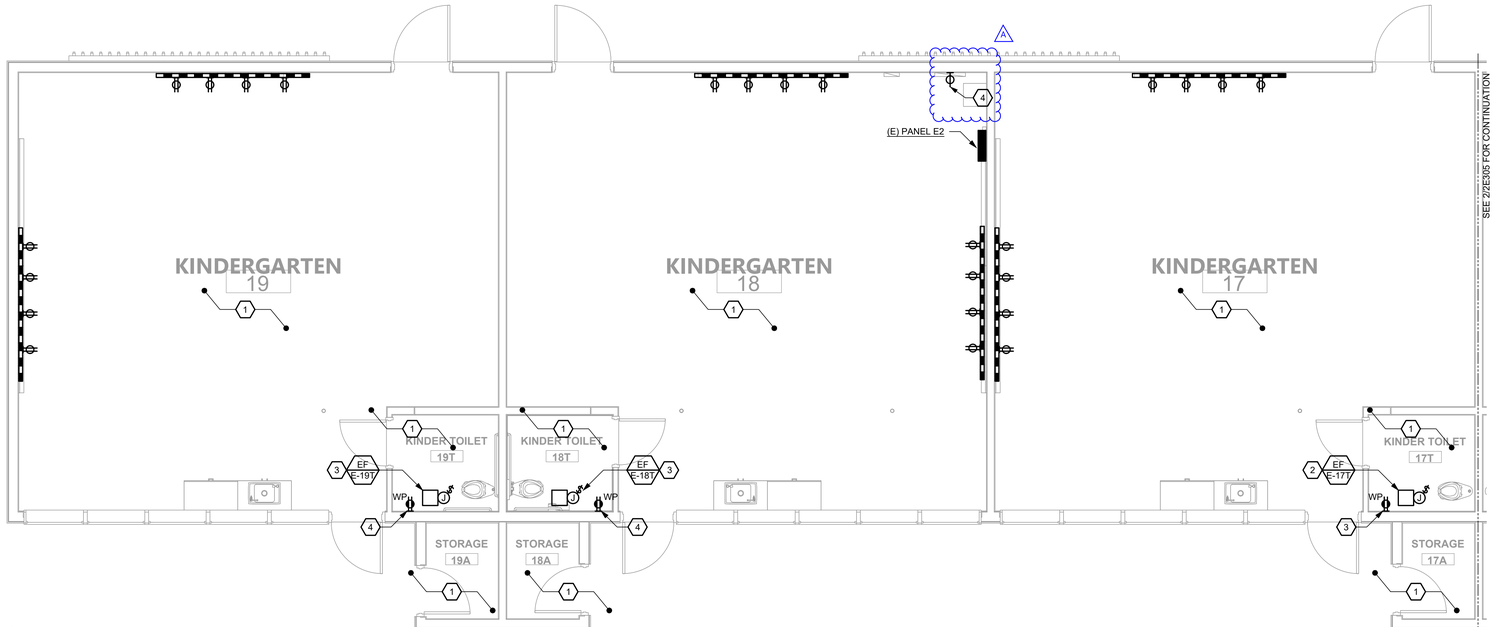
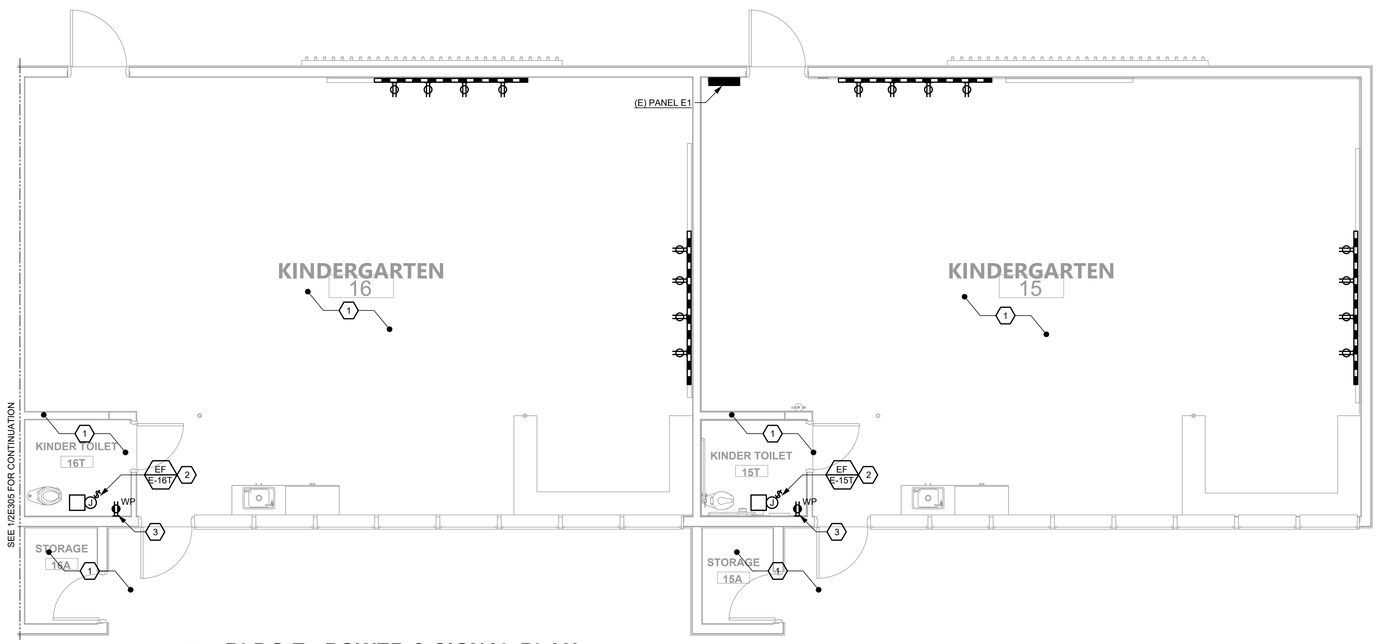


1 BLDG E - POWER & SIGNAL PLAN

1/4" = 1'-0"



2 BLDG E - POWER & SIGNAL PLAN

1/4" = 1'-0"

GENERAL NOTES

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J. ALL FINISHES SHALL BE WHITE. COORDINATE FINAL FINISHES WITH ARCHITECT.

SHEET NOTES

1. DISCONNECT AND REINSTALL EXISTING WALL MOUNT ELECTRICAL DEVICES AT SAME LOCATION, UNLESS OTHERWISE NOTED. INTERCEPT AND EXTEND WIRING AND CONDUIT AS REQUIRED FOR A COMPLETE INSTALL. EXISTING DEVICES SHOWN ON PLAN FOR REFERENCE ONLY. ANY EXISTING ELECTRICAL DEVICES THAT ARE NO LONGER IN WORKING CONDITION SHALL BE REPLACED-IN-KIND. FIELD VERIFY EXISTING DEVICES PRIOR TO COMMENCEMENT OF WORK.

2. NEW HVAC UNIT, THIS LOCATION. PROVIDE DISCONNECT SWITCH AND CU BRANCH FEEDER FOR NEW HVAC EQUIPMENT AND GENERAL PURPOSE RECEPTACLE WITHIN 25FT OF HVAC EQUIPMENT.

3. CONNECT ALL NEW GENERAL PURPOSE RECEPTACLES, THIS BUILDING, TO NEAREST AVAILABLE 120V 20A SPARE CIRCUIT.

4. PROVIDE DEDICATED 208V CIRCUIT FOR RECEPTACLE SERVING IDF. PROVIDE 208V 20A/2P CIRCUIT BREAKER IN NEAREST PANEL AND CIRCUIT WITH (3) #12 + (1) #12 G - 3/4" C. △A

AGENCY APPROVAL DSA# 01-121400

196

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PROFESSIONAL STAMP

REVISIONS △A

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

POWER & SIGNAL PLANS BLDG E

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2E305

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: C:\Users\16503\AppData\Local\Temp\AcPublish_17840\2347.50 - MH - 2E300 - Power Plan.dwg
LAST SAVED ON: 10/25/24 at 3:52pm, PLOTTED ON: 10/25/24 at 3:53pm

DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\Skim\Documents\23119.01_MTDUSD_MEADOW HOMES ES MODERNIZATION_A23_skim32O7M.rvt



1 MPR BLDG - POWER & SIGNAL PLAN

1/4" = 1'-0"

GENERAL NOTES

A. AREA MAY CONTAIN UNDERGROUND RACEWAY. SITE LOCATE ALL EXISTING UNDERGROUND RACEWAY IN THIS AREA BEFORE TRENCHING. MAINTAIN EXTREME CARE WHEN TRENCHING.

B. COORDINATE EXACT LOCATIONS OF ALL ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL EQUIPMENT WITH ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPING AND CIVIL DRAWINGS.

C. SIZE FUSES FOR ALL FUSED SWITCHES PER SUPPLIED EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

D. REFER TO EQUIPMENT SCHEDULES FOR EQUIPMENT WIRING, CONDUIT, AND BREAKER SIZES.

E. CERTAIN FEEDER AND BRANCH CIRCUIT WIRE SIZES SHALL BE SIZED TO COMPENSATE FOR VOLTAGE DROP. SPLICE WIRES TO COMPATIBLE SIZES FOR TERMINATION, ADJACENT TO EQUIPMENT CONNECT AS REQUIRED.

F. CONTRACTOR SHALL SIZE ALL IN GRADE PULL BOXES PER CODE OR FOR THEIR CONVENIENCE FOR PULLING WIRE, WHICHEVER IS LARGER.

G. OUTDOOR ELECTRICAL EQUIPMENT AND DEVICES SHALL BE PROVIDED WITH NEMA 3R RATED ENCLOSURES.

H. EXISTING PANELS SHOWN FOR REFERENCE ONLY AND BASED ON AS BUILT DOCUMENTATION AND PARTIAL SITE SURFACE INVESTIGATION. FIELD VERIFY EXACT PANEL LOCATIONS PRIOR TO COMMENCEMENT OF WORK.

I. UPDATE PANEL DIRECTORIES IN TYPE-WRITTEN FORMAT UPON COMPLETION OF WORK.

J. ALL FINISHES SHALL BE WHITE. COORDINATE FINAL FINISHES WITH ARCHITECT.

(#) SHEET NOTES

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2. CONNECT ALL NEW GENERAL PURPOSE RECEPTACLES, THIS BUILDING, TO NEAREST AVAILABLE 120V 20A SPARE CIRCUIT.
3. L6-20R. PROVIDE DEDICATED 208V 20A CIRCUIT FOR IDF. CONNECT TO NEAREST AVAILABLE SPARE CIRCUIT VIA 20A/2P BREAKER IN PANEL. FOR NEW BREAKERS, MATCH EXISTING MAKE, MODEL, AND AIC RATING.
4. PROVIDE DEDICATED 208V CIRCUIT FOR RECEPTACLE SERVING IDF. PROVIDE 208V 20A/2P CIRCUIT BREAKER IN NEAREST PANEL AND CIRCUIT WITH (3) #12 + (1) #12 G - 3/4" C. (A)

AGENCY APPROVAL DSA# 01-121400

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PROJECT OWNER & TITLE

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1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

POWER & SIGNAL PLANS MPR

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2E306

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: C:\Users\16503\AppData\Local\Temp\AcPublish_17840\2347.50 - MH - 2E300 - Power Plan.dwg
LAST SAVED ON: 10/25/24 at 3:52pm, PLOTTED ON: 10/25/24 at 3:53pm

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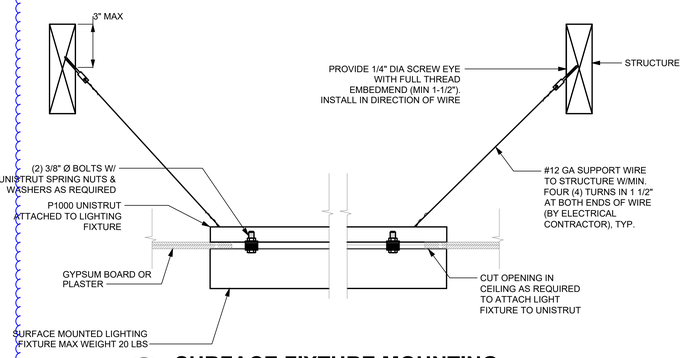
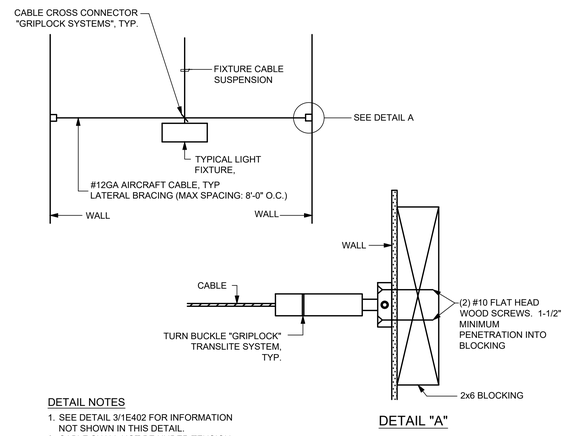


6 SURFACE FIXTURE MOUNTING

NOT TO SCALE

4 NOT USED

NOT TO SCALE



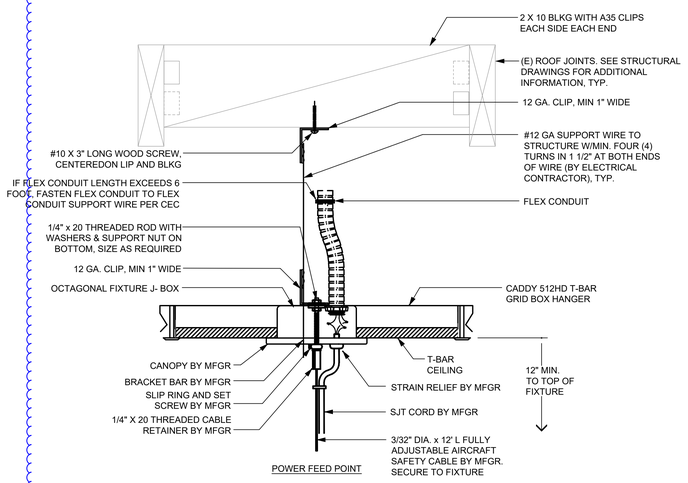
DETAIL NOTES

1. SEE DETAIL 3/1E402 FOR INFORMATION NOT SHOWN IN THIS DETAIL.
2. CABLE SHALL NOT BE UNDER TENSION EXCEPT DURING SEISMIC EVENTS.

DETAIL "A"

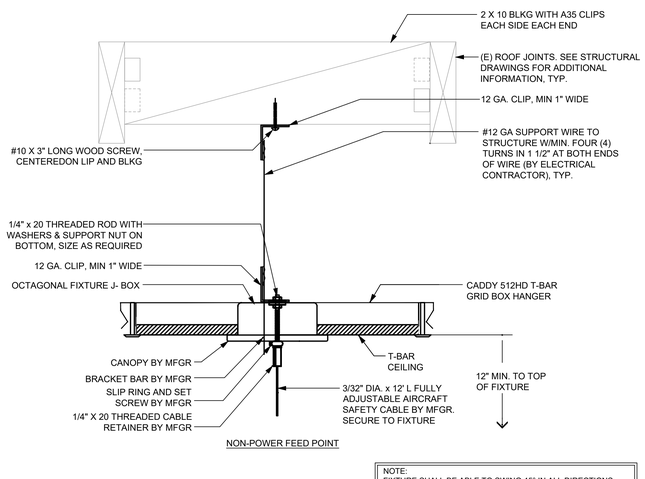
5 LIGHT FIXTURE SEISMIC BRACING

NOT TO SCALE



DETAIL NOTES

1. MAXIMUM FIXTURE WEIGHT: 14 LBS (FIXTURE LENGTH 4FT)



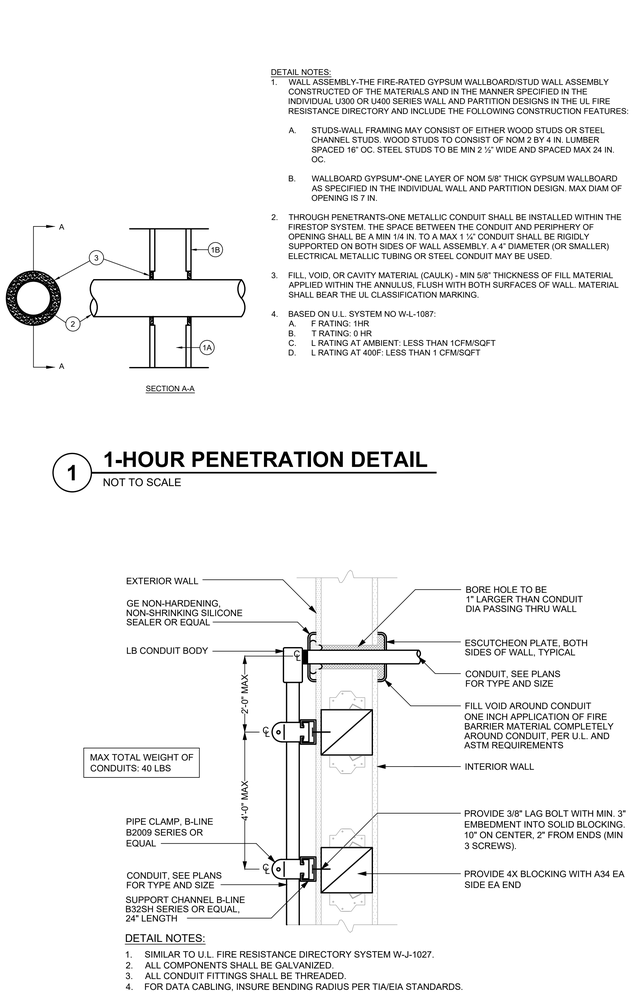
DETAIL NOTES

1. MAXIMUM FIXTURE WEIGHT: 14 LBS (FIXTURE LENGTH 4FT)

NOTE:
FIXTURE SHALL BE ABLE TO SWING 45° IN ALL DIRECTIONS WITHOUT CONTACT WITH ANY FIXTURE OR STRUCTURE. OTHERWISE, THE CONTRACTOR SHALL PROVIDE SEISMIC BRACING PER DETAIL 5/2E401

7 PENDANT @ T-BAR CEILING MTG DETAIL

NOT TO SCALE



SECTION A-A

DETAIL NOTES:

1. WALL ASSEMBLY-THE FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS-WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16" OC. STEEL STUDS TO BE MIN 2 ½" WIDE AND SPACED MAX 24 IN. OC.
   B. WALLBOARD GYPSUM*-ONE LAYER OF NOM 5/8" THICK GYPSUM WALLBOARD AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIAM OF OPENING IS 7 IN.
2. THROUGH PENETRANTS-ONE METALLIC CONDUIT SHALL BE INSTALLED WITHIN THE FIRESTOP SYSTEM. THE SPACE BETWEEN THE CONDUIT AND PERIPHERY OF OPENING SHALL BE A MIN 1/4 IN. TO A MAX 1 ¼" CONDUIT SHALL BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. A 4" DIAMETER (OR SMALLER) ELECTRICAL METALLIC TUBING OR STEEL CONDUIT MAY BE USED.
3. FILL, VOID, OR CAVITY MATERIAL (CAULK) - MIN 5/8" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. MATERIAL SHALL BEAR THE UL CLASSIFICATION MARKING.
4. BASED ON U.L. SYSTEM NO W-L-1087:
   A. F RATING: 1HR
   B. T RATING: 0 HR
   C. L RATING AT AMBIENT: LESS THAN 1CFM/SQFT
   D. L RATING AT 400F: LESS THAN 1 CFM/SQFT

1 1-HOUR PENETRATION DETAIL

NOT TO SCALE

DETAIL NOTES:

1. SIMILAR TO U.L. FIRE RESISTANCE DIRECTORY SYSTEM W-J-1027.
2. ALL COMPONENTS SHALL BE GALVANIZED.
3. ALL CONDUIT FITTINGS SHALL BE THREADED.
4. FOR DATA CABLING, INSURE BENDING RADIUS PER TIA/EIA STANDARDS.

2 LB BODY THROUGH EXTERIOR WALL

NOT TO SCALE

3 NOT USED

NOT TO SCALE

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1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

DETAILS

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2E401

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4723347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\inc 2\23347.50 - MH - 2E400 - Details.dwg
LAST SAVED ON: 10/15/24 at 9:51am, PLOTTED ON: 10/22/24 at 9:46am
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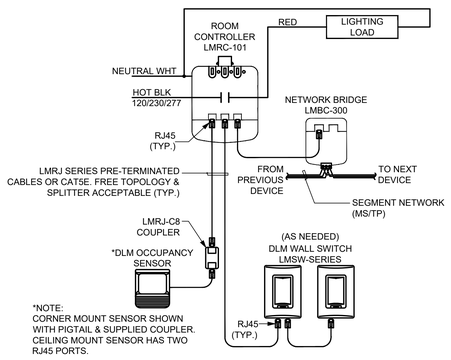


A. BASIS OF DESIGN IS WATTSTOPPER DLM. CONTRACTOR TO PROVIDE ALL PARTS, DEVICES, WIRING, APPURTENANCES, AND ASSOCIATED LABOR FOR A COMPLETE INSTALLATION.

B. ALL SENSOR LOCATIONS ARE APPROXIMATE AND SHOWN FOR DESIGN INTENT ONLY. LOCATE SENSORS PER MANUFACTURER GUIDELINES AND INSTALLATION MANUAL. PROVIDE QUANTITIES AND LOCATIONS AS REQUIRED FOR PROPER SENSING. FINAL DEVICE LAYOUT SHALL BE SUBMITTED AS A SHOP DRAWING AS PART OF SUBMITTAL REVIEW. SHOP DRAWING APPROVAL IS REQUIRED PRIOR TO PROCUREMENT AND ROUGH-IN.

C. LOCATE SENSOR MINIMUM 5 FEET FROM ANY AIR SUPPLY AND/OR RETURN REGISTERS.

D. THE CONTRACTOR SHALL COMMISSION SENSITIVITY AND TIME DELAY SETTINGS AND PROVIDE TITLE 24 COMMISIONING DOCUMENTS.

E. THE CONSTRACTOR SHALL PROVIDE ALL REQUIRED OCCUPANCY SENSOR POWER PACKS. PROVIDE J-BOXES WITH BLANK FACEPLATES AT CEILING.

F. ROOM CONTROLLERS SHALL BE MOUNTED IN AN ACCESSIBLE LOCATION, INSIDE A MULTI-GANG J-BOX WITH BLANK FACEPLATE, CONCEALED IN CABINETRY, ABOVE DROP CEILING/CLOUD, OR AT A NEARBY REMOTE LOCATION. COORDINATE FINAL LOCATION OF DEVICES WITH ARCHITECT.

G. PROVIDE QUANTITIES AS REQUIRED FOR A COMPLETE SYSTEM. ONE ROOM CONTROLLER IS REQUIRED FOR EACH LIGHTING CIRCUIT. PROVIDE ROOM CONTROLLER SERIES WITH THE FOLLOWING THREE SWITCHING ZONES (INCLUDING MULTIPLE DAYLIGHT SWITCHING ZONES) AND CONTINUOUS DIMMING CAPABILITIES.

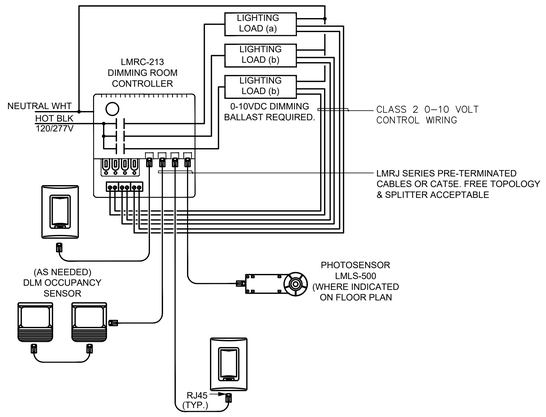
H. LMRJ SERIES PRE-TERMINATED CABLES OR CAT5E IS ACCEPTABLE. MANUFACTURER RECOMMENDS PROVIDING LMRJ SERIES PRE-TERMINATED CABLES FOR EASE OF INSTALLATION.

I. COORDINATE WITH MANUFACTURER SO THAT DEVICES ALLOW FOR OPEN TOPOLOGY, AND DO NOT REQUIRE ADDITIONAL CLASS 2 0-10V CONTROL WIRING. DEVICES SHALL HAVE NETWORK CAPABILITY FOR FUTURE USE.

J. ALL PART NUMBERS SHOWN ARE BY WATTSTOPPER. SEE MANUFACTURER'S WEBSITE FOR SUPPORT DOCUMENTATION AND TECHNICAL SUPPORT.

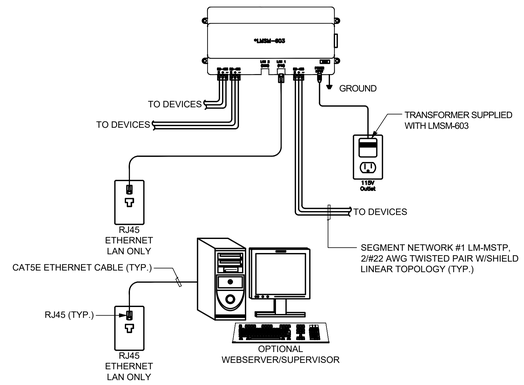
3 ROOM CONTOLLER WITH NETWORK BRIDGE WIRING DIAGRAM

NOT TO SCALE



1 DIGITAL LIGHTING CONTROL DIMMING WIRING DIAGRAM

NOT TO SCALE



*NOTE:
THE LMSM-603 SUPPORTS 3 SEGMENTS WITH UP TO 127 DEVICES PER SEGMENT.

2 SEGMENT MANAGER WIRING DIAGRAM

NOT TO SCALE

AGENCY APPROVAL DSA# 01-121400

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Concord, California 94519

MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
DETAILS

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2E402

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4\72347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\2347.50 - MH - 2E400 - Details.dwg
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STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
This document is used to demonstrate compliance with requirements in 110.9, 110.12(c), 130.0, 130.1, 140.6 and 141.0(b)2 for indoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e) and 180.2(b)4 for indoor lighting scopes using the prescriptive path for multifamily occupancies. Multifamily includes dormitory and senior living facilities.		
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg A	**Report Page:**	**(Page 1 of 8)**
Project Address: 1371 Detroit Ave, Concord, CA 94520	**Date Prepared:**	2024-07-05T18:29:22-04:00

A. GENERAL INFORMATION

01	Project Location (city)	Concord	04 Total Conditioned Floor Area (ft²)	3,617
02	Climate Zone	12	05 Total Unconditioned Floor Area (ft²)	0
03	Occupancy Types Within Project (select all that apply):		06 # of Stories (Habitable Above Grade)	1
▪ Classroom				

B. PROJECT SCOPE

This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.6 / 170.2(e) or 141.0(b)2 / 180.2(b)4 for alterations.

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)
☒ New Lighting System	Area Category Method	3617	Area Category Method	0
☐ New Lighting System - Parking Garage	N/A	0	N/A	0
Total Area of Work (ft²)	3617			

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg A	**Report Page:**	**(Page 2 of 8)**
	Date Prepared:	2024-07-05T18:29:22-04:00

C. COMPLIANCE RESULTS

If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

Lighting in conditioned and unconditioned spaces must not be combined for compliance per 140.6(b)1 / 170.2(e)	Allowed Lighting Power per 140.6(b) / 170.2(e) (Watts)						Adjusted Lighting Power per 140.6(a) / 170.2(e) (Watts)				Compliance Results
	01	02	03	04		05	06	07 Adjustments		08	09
	Complete Building 140.6(c)1	Area Category 140.6(c)2 / 170.2(e)4	Area Category Additional 140.6(c)2G / 170.2(e)4Av (+)	Tailored 140.6(c)3 / 170.2(e)4B (+)	=	**Total Allowed** (Watts)	Total Designed (Watts)	PAF Lighting Control Credits 140.6(a)2 / 170.2(e)1B (-)	=	**Total Adjusted** (Watts) *Includes Adjustments	**05 must be >= 08 140.6 / 170.2(e)**
	(See Table I)	(See Table I)	(See Table J)	(See Table K)			(See Table F)	(See Table P)			
Conditioned		2,170.2			=	2,170.2	1,555.2		=	1555.2	COMPLIES
Unconditioned					=				=		
Controls Compliance (See Table H for Details)											COMPLIES
Rated Power Reduction Compliance (See Table Q for Details)											

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg A	**Report Page:**	**(Page 3 of 8)**
	Date Prepared:	2024-07-05T18:29:22-04:00

F. INDOOR LIGHTING FIXTURE SCHEDULE

This table includes all planned permanent and portable lighting other than dwelling unit/ hotel/ motel room lighting. Multifamily dwelling unit and hotel/motel room lighting is documented in Table T. If using Table T to document lighting in multifamily common use areas providing shared provisions for living, eating, cooking or sanitation, those luminaires are not included here.

Designed Wattage: Conditioned Spaces

01	02	03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description	Modular (Track) Fixture	Small Aperture & Color Change[1]	Watts per luminaire[2]	How is Wattage determined	Total Number of Luminaires	Excluded per 140.6(a)3 / 170.2(e)2C	Design Watts	Field Inspector	
									Pass	Fail
L1/L1E	L1/L1E	No	NA	32.4	Mfr. Spec	48	No	1,555.2	☐	☐
							Total Designed Watts: CONDITIONED SPACES	1,555.2		

[1] *FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per 140.6(a)4B / 170.2(e)2D is adjusted to be 75% /80% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.*

[2] *Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(b). Wattage used must be the maximum rated for the luminaire, not the lamp.*

G. MODULAR LIGHTING SYSTEMS

This section does not apply to this project.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

This table includes lighting controls for conditioned and unconditioned spaces.

Building Level Controls

01	02	03	
		Field Inspector	
Mandatory Demand Response 110.12(c)	Shut-off controls 130.1(c) / 160.5(b)4C	Pass	Fail
NA < 4,000W subject to multilevel	See Area/Space Level Controls	☐	☐

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg A	**Report Page:**	**(Page 4 of 8)**
	Date Prepared:	2024-07-05T18:29:22-04:00

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

Area Level Controls

04	05	06	07	08	09	10	11	12	
Area Description	Complete Building or Area Category Primary Function Area	Manual Area Controls 130.1(a) / 160.5(b)4A	Multi-Level Controls 130.1(b) / 160.5(b)4B	Shut-Off Controls 130.1(c) // 160.5(b)4C	Primary/Sky lit Daylighting 130.1(d) / 160.5(b)4D	Secondary Daylighting 130.1(d) / 160.5(b)4D	Interlocked Systems 140.6(a)1/ 170.2(e)2A	Field Inspector	
								Pass	Fail
Classroom 3	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Classroom 2	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Classroom 1	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Classroom 4	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	Yes	☐	☐
							13		
							Plan Sheet Showing Daylit Zones:		
							2E201		

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Each area complying using the Complete Building or Area Category Methods per 140.6(b) are included in this table. Column 06 indicates if additional lighting power allowances per 140.6(c) or adjustments per 140.6(a) are being used .

Conditioned Spaces

01	02	03	04	05	06	
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft²)	Area (ft²)	Allowed Wattage (Watts)	Additional Allowance / Adjustment	
					Area Category	PAF
Classroom 3	Classroom, Lecture, or Training Vocational	0.6	903	541.8	No	No
Classroom 2	Classroom, Lecture, or Training Vocational	0.6	895	537	No	No

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CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg A	**Report Page:**	**(Page 5 of 8)**
	Date Prepared:	2024-07-05T18:29:22-04:00

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Classroom 1	Classroom, Lecture, or Training Vocational	0.6	919	551.4	No	No
Classroom 4	Classroom, Lecture, or Training Vocational	0.6	900	540	No	No
	TOTALS:	3,617	2,170.2		See Tables J, or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM

This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE

This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY

This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING

This section does not apply to this project.

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED DECORATIVE /SPECIAL EFFECTS

This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This section does not apply to this project.

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))

This section does not apply to this project.

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CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg A	**Report Page:**	**(Page 6 of 8)**
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Q. RATED POWER REDUCTION COMPLIANCE FOR ONE-FOR-ONE ALTERATIONS

This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS

This section does not apply to this project.

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)

This section does not apply to this project.

T. DWELLING UNIT LIGHTING

This section does not apply to this project.

U. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selections have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

Form/Title
NRCI-LTI-E - Must be submitted for all buildings

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg A	**Report Page:**	**(Page 7 of 8)**
	Date Prepared:	2024-07-05T18:29:22-04:00

V. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selections have been changed by the permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and any with "-A" in the form name must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Form/Title	Systems/Spaces To Be Field Verified
NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	Classroom 3; Classroom 2; Classroom 1; Classroom 4
NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	Classroom 3; Classroom 2; Classroom 1; Classroom 4
NRCA-LTI-04-A - Must be submitted for demand responsive lighting controls.	Classroom 4

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CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg A	**Report Page:**	**(Page 8 of 8)**
Project Address: 1371 Detroit Ave, Concord, CA 94520	**Date Prepared:**	2024-07-05T18:29:22-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: J. David Maino	Documentation Author Signature:
Company: Atium Engineering	Signature Date: 7/10/24
Address: 3533 York Ln	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: San Ramon/CA/94582	Phone: (913)-961-1658

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for this building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: J. David Maino	Responsible Designer Signature:
Company: Atium Engineering	Date Signed: 7/10/24
Address: 3533 York Ln	License: E19208
City/State/Zip: San Ramon/CA/94582	Phone: (913)-961-1658

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
This document is used to demonstrate compliance with requirements in 110.9, 110.12(c), 130.0, 130.1, 140.6 and 141.0(b)2 for indoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e) and 180.2(b)4 for indoor lighting scopes using the prescriptive path for multifamily occupancies. Multifamily includes dormitory and senior living facilities.		
Project Name: Meadow Homes ES Modernization Increment 2 - Bldgs B.1 & B.2	**Report Page:**	**(Page 1 of 8)**
Project Address: 1371 Detroit Ave, Concord, CA 94520	**Date Prepared:**	2024-07-05T20:56:42-04:00

A. GENERAL INFORMATION

01	Project Location (city)	Clayton	04 Total Conditioned Floor Area (ft²)	4,875
02	Climate Zone	12	05 Total Unconditioned Floor Area (ft²)	0
03	Occupancy Types Within Project (select all that apply):		06 # of Stories (Habitable Above Grade)	1
▪ Classroom				

B. PROJECT SCOPE

This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.6 / 170.2(e) or 141.0(b)2 / 180.2(b)4 for alterations.

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)
☐ New Lighting System	N/A	0	N/A	0
☐ New Lighting System - Parking Garage	N/A	0	N/A	0
☒ Altered Lighting System	Area Category Method	4875	Area Category Method	0
Total Area of Work (ft²)	4875			

AGENCY APPROVAL DSA# 01-121400

196
991 W HEDDING ST., SUITE 101
SAN JOSE, CA 95126
TEL (408) 715-4470

atium ENGINEERING
ELECTRICAL ENGINEERS
3533 York Lane
San Ramon, CA 94582
tel: 913.961.1658
email: info@atiumeng.com

CONSULTANTS

CIVIL ENGINEER
CARROLL ENGINEERING
1101 South Winchester Blvd., Suite H184
San Jose, CA 95128
TEL (408) 261-9800

STRUCTURAL ENGINEER
BASE Design Inc.
582 Market St. Ste 1402
San Francisco, CA 94104
TEL (415) 466-2997

MECHANICAL ENGINEER
CYPRESS ENGINEERING GROUP
9 Harris Court, Suite A8
Monterey, CA 93940
TEL (831) 218-1802

ELECTRICAL ENGINEER
ATIUM ENGINEERING
3533 York Ln
San Ramon, CA 94582
TEL (913) 961-1658

TECHNOLOGY ENGINEER
KMM Services Inc.
5433 El Camino Ave. Ste 5
Carmichael, CA 95608
TEL (916) 359-4000

PROFESSIONAL STAMP



REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
GENERAL INFORMATION

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2E501

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4702347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\2347.50 - MH - 2E500 - Title 24.dwg
LAST SAVED ON: 7/10/24 at 11:04pm. PLOTTED ON: 10/22/24 at 9:46am
DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\SkimDocuments\23119.01_MTDUSD_MEADOW HOMES ES MODERNIZATION_A23_skim32O7M.rvt

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
This document is used to demonstrate compliance with requirements in 110.9, 110.12(c), 130.0, 130.1, 140.6 and 141.0(b)2 for indoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e) and 180.2(b)4 for indoor lighting scopes using the prescriptive path for multifamily occupancies. Multifamily includes dormitory and senior living facilities.	
Project Name: Meadow Homes ES Modernization Increment 2 - Bldgs B.1 & B.2	**Report Page:** (Page 1 of 8)
Project Address: 1371 Detroit Ave, Concord, CA 94520	**Date Prepared:** 2024-07-05T20:56:42-04:00

A. GENERAL INFORMATION

01	Project Location (city)	Clayton	04	Total Conditioned Floor Area (ft²)	4,875
02	Climate Zone	12	05	Total Unconditioned Floor Area (ft²)	0
03	Occupancy Types Within Project (select all that apply):		06	# of Stories (Habitable Above Grade)	1
● Classroom					

B. PROJECT SCOPE

This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.6 / 170.2(e) or 141.0(b)2 / 180.2(b)4 for alterations.

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)
☐ New Lighting System	N/A	0	N/A	0
☐ New Lighting System - Parking Garage	N/A	0	N/A	0
☒ Altered Lighting System	Area Category Method	4875	Area Category Method	0
Total Area of Work (ft²)	4875			

STATE OF CALIFORNIA
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CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldgs B.1 & B.2	**Report Page:** (Page 2 of 8)
	Date Prepared: 2024-07-05T20:56:42-04:00

C. COMPLIANCE RESULTS

If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

Lighting in conditioned and unconditioned spaces must not be combined for compliance per 140.6(b)1 / 170.2(e)	Allowed Lighting Power per 140.6(b) / 170.2(e) (Watts)						Adjusted Lighting Power per 140.6(a) / 170.2(e) (Watts)				Compliance Results
	01	02	03	04	05		06	07		08	09
	Complete Building 140.6(c)1	Area Category 140.6(c)2 / 170.2(e)4	Area Category Additional 140.6(c)2G / 170.2(e)4Av (+)	Tailored 140.6(c)3 / 170.2(e)4B (+)	**Total Allowed** (Watts)		Total Designed (Watts)	Adjustments PAF Lighting Control Credits 140.6(a)2 / 170.2(e)1B (-)		**Total Adjusted** (Watts) *Includes Adjustments	**05 must be >= 08 140.6 / 170.2(e)**
	(See Table I)	(See Table I)	(See Table J)	(See Table K)			(See Table F)	(See Table P)			
Conditioned		3,290.3			= 3,290.3	≥	2,883.6		=	2883.6	COMPLIES
Unconditioned					=	≥			=		
Controls Compliance (See Table H for Details)											COMPLIES
Rated Power Reduction Compliance (See Table Q for Details)											

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

STATE OF CALIFORNIA
Indoor Lighting
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CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldgs B.1 & B.2	**Report Page:** (Page 3 of 8)
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F. INDOOR LIGHTING FIXTURE SCHEDULE

This table includes all planned permanent and portable lighting other than dwelling unit/ hotel/ motel room lighting. Multifamily dwelling unit and hotel/motel room lighting is documented in Table T. If using Table T to document lighting in multifamily common use areas providing shared provisions for living, eating, cooking or sanitation, those luminaires are not included here.

Designed Wattage: Conditioned Spaces

01	02	03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description	Modular (Track) Fixture	Small Aperture & Color Change[1]	Watts per luminaire[2]	How is Wattage determined	Total Number of Luminaires	Excluded per 140.6(a)3 / 170.2(e)2C	Design Watts	Field Inspector	
									Pass	Fail
L1/L1E	L1/L1E	No	NA	32.4	Mfr. Spec	89	No	2,883.6	☐	☐
Total Designed Watts: CONDITIONED SPACES								2,883.6		

[1]*FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per 140.6(a)4B / 170.2(e)2D is adjusted to be 75% /80% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.*

[2]*Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(b). Wattage used must be the maximum rated for the luminaire, not the lamp.*

G. MODULAR LIGHTING SYSTEMS

This section does not apply to this project.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

This table includes lighting controls for conditioned and unconditioned spaces.

Building Level Controls

01	02	03	
		Field Inspector	
		Pass	Fail
Mandatory Demand Response 110.12(c)	Shut-off controls 130.1(c) / 160.5(b)4C		
NA < 4,000W subject to multilevel	See Area/Space Level Controls	☐	☐

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldgs B.1 & B.2	**Report Page:** (Page 4 of 8)
	Date Prepared: 2024-07-05T20:56:42-04:00

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

Area Level Controls

04	05	06	07	08	09	10	11	12	
Area Description	Complete Building or Area Category Primary Function Area	Manual Area Controls 130.1(a) / 160.5(b)4A	Multi-Level Controls 130.1(b) / 160.5(b)4B	Shut-Off Controls 130.1(c) // 160.5(b)4C	Primary/Sky lit Daylighting 130.1(d) / 160.5(b)4D	Secondary Daylighting 130.1(d) / 160.5(b)4D	Interlocked Systems 140.6(a)1/ 170.2(e)2A	Field Inspector	
								Pass	Fail
Library Reading Room L4	Library - Reading Area	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Library L1	Library - Reading Area	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Conference	Conference, Multipurpose and Meeting Area	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Office	Office (<=250 square feet)	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Hallway	Corridor	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Classroom 5	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Classroom 6	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
Classroom 7	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
					13				
					Plan Sheet Showing Daylit Zones:				
					2E202, 2E204				

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldgs B.1 & B.2	**Report Page:** (Page 5 of 8)
	Date Prepared: 2024-07-05T20:56:42-04:00

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Each area complying using the Complete Building or Area Category Methods per 140.6(b) are included in this table. Column 06 indicates if additional lighting power allowances per 140.6(c) or adjustments per 140.6(a) are being used .

Conditioned Spaces

01	02	03	04	05	06	
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft²)	Area (ft²)	Allowed Wattage (Watts)	Additional Allowance / Adjustment	
					Area Category	PAF
Library Reading Room L4	Library - Reading Area	0.8	902	721.6	No	No
Library L1	Library - Reading Area	0.8	777	621.6	No	No
Conference	Conference, Multipurpose and Meeting Area	0.75	266	199.5	No	No
Office	Office (<=250 square feet)	0.65	148	96.2	No	No
Hallway	Corridor	0.4	92	36.8	No	No
Classroom 5	Classroom, Lecture, or Training Vocational	0.6	909	545.4	No	No
Classroom 6	Classroom, Lecture, or Training Vocational	0.6	894	536.4	No	No
Classroom 7	Classroom, Lecture, or Training Vocational	0.6	888	532.8	No	No
		TOTALS:	4,876	3,290.3	See Tables J, or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM

This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE

This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY

This section does not apply to this project.

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldgs B.1 & B.2	**Report Page:** (Page 6 of 8)
	Date Prepared: 2024-07-05T20:56:42-04:00

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING

This section does not apply to this project.

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED DECORATIVE /SPECIAL EFFECTS

This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This section does not apply to this project.

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))

This section does not apply to this project.

Q. RATED POWER REDUCTION COMPLIANCE FOR ONE-FOR-ONE ALTERATIONS

This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS

This section does not apply to this project.

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)

This section does not apply to this project.

T. DWELLING UNIT LIGHTING

This section does not apply to this project.

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldgs B.1 & B.2	**Report Page:** (Page 7 of 8)
	Date Prepared: 2024-07-05T20:56:42-04:00

U. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

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Form/Title
NRCI-LTI-E - Must be submitted for all buildings

V. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selections have been changed by the permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and any with "-A" in the form name must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Form/Title	Systems/Spaces To Be Field Verified
NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	Library Reading Room L4; Library L1; Conference; Office ; Hallway; Classroom 5; Classroom 6; Classroom 7
NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	Library Reading Room L4; Library L1; Conference; Office ; Hallway; Classroom 5

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldgs B.1 & B.2	**Report Page:** (Page 8 of 8)
Project Address: 1371 Detroit Ave, Concord, CA 94520	**Date Prepared:** 2024-07-05T20:56:42-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: J. David Maino	Documentation Author Signature:
Company: Atium Engineering	Signature Date: 7/10/24
Address: 3533 York Ln	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: San Ramon/CA/94582	Phone: (913)-961-1658

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for this building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the building owner at occupancy.

Responsible Designer Name: J. David Maino	Responsible Designer Signature:
Company: Atium Engineering	Date Signed: 7/10/24
Address: 3533 York Ln	License: E19208
City/State/Zip: San Ramon/CA/94582	Phone: (913)-961-1658

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
This document is used to demonstrate compliance with requirements in 110.9, 110.12(c), 130.0, 130.1, 140.6 and 141.0(b)2 for indoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e) and 180.2(b)4 for indoor lighting scopes using the prescriptive path for multifamily occupancies. Multifamily includes dormitory and senior living facilities.	
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg D.2	**Report Page:** (Page 1 of 7)
Project Address: 1371 Detroit Ave, Concord, CA 94520	**Date Prepared:** 2024-07-05T18:35:18-04:00

A. GENERAL INFORMATION

01	Project Location (city)	Clayton	04	Total Conditioned Floor Area (ft²)	905
02	Climate Zone	12	05	Total Unconditioned Floor Area (ft²)	0
03	Occupancy Types Within Project (select all that apply):		06	# of Stories (Habitable Above Grade)	1
● Classroom					

B. PROJECT SCOPE

This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.6 / 170.2(e) or 141.0(b)2 / 180.2(b)4 for alterations.

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)
☒ New Lighting System	Area Category Method	905	Area Category Method	0
☐ New Lighting System - Parking Garage	N/A	0	N/A	0
Total Area of Work (ft²)	905			

AGENCY APPROVAL DSA# 01-121400

196
991 W HEDDING ST., SUITE 101
SAN JOSE, CA 95126
TEL (408) 715-4470

atium ENGINEERING
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TECHNOLOGY ENGINEER
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5433 El Camino Ave. Ste 5
Carmichael, CA 95608
TEL (916) 359-4000

PROFESSIONAL STAMP



REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
SCHEDULES

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2E502

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\mad architecture_4\72347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\nc 2\2347.50 - MH - 2E500 - Title 24.dwg
LAST SAVED ON: 7/10/24 at 11:04pm, PLOTTED ON: 10/22/24 at 9:47am
DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\SkimJ\Documents\23119.01_MTDUSD_MEADOW HOMES ES MODERNIZATION_A23_skimJ32Q7M.rvt

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg D.2	**Report Page:**	(Page 2 of 7)
	Date Prepared:	2024-07-05T18:35:18-04:00

C. COMPLIANCE RESULTS

If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

Lighting in conditioned and unconditioned spaces must not be combined for compliance per 140.6(b)1 / 170.2(e)	Allowed Lighting Power per 140.6(b) / 170.2(e) (Watts)						Adjusted Lighting Power per 140.6(a) / 170.2(e) (Watts)				Compliance Results
	01	02	03	04		05		06	07	08	09
	Complete Building 140.6(c)1	Area Category 140.6(c)2 / 170.2(e)4	Area Category Additional 140.6(c)2G / 170.2(e)4Av (+)	Tailored 140.6(c)3 / 170.2(e)4B (+)		**Total Allowed** (Watts)		Total Designed (Watts)	Adjustments: PAF Lighting Control Credits 140.6(a)2 / 170.2(e)1B (-)	**Total Adjusted** (Watts) *Includes Adjustments	**05 must be >= 08 140.6 / 170.2(e)**
	(See Table I)	(See Table I)	(See Table J)	(See Table K)				(See Table F)	(See Table P)		
Conditioned		543			=	543	≥	388.8		388.8	COMPLIES
Unconditioned					=		≥				
Controls Compliance (See Table H for Details)											COMPLIES
Rated Power Reduction Compliance (See Table Q for Details)											

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg D.2	**Report Page:**	(Page 3 of 7)
	Date Prepared:	2024-07-05T18:35:18-04:00

F. INDOOR LIGHTING FIXTURE SCHEDULE

This table includes all planned permanent and portable lighting other than dwelling unit/ hotel/ motel room lighting. Multifamily dwelling unit and hotel/motel room lighting is documented in Table T. If using Table T to document lighting in multifamily common use areas providing shared provisions for living, eating, cooking or sanitation, those luminaires are not included here.

Designed Wattage: Conditioned Spaces

01	02	03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description	Modular (Track) Fixture	Small Aperture & Color Change[1]	Watts per luminaire[2]	How is Wattage determined	Total Number of Luminaires	Excluded per 140.6(a)3 / 170.2(e)2C	Design Watts	Field Inspector	
									Pass	Fail
L1/L1E	**L1**/L1E	No	NA	32.4	Mfr. Spec	12	No	388.8	☐	☐
Total Designed Watts: CONDITIONED SPACES								388.8		

[1]FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per 140.6(a)4B / 170.2(e)2D is adjusted to be 75% /80% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.

[2]Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(b). Wattage used must be the maximum rated for the luminaire, not the lamp.

G. MODULAR LIGHTING SYSTEMS

This section does not apply to this project.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

This table includes lighting controls for conditioned and unconditioned spaces.

Building Level Controls

01	02	03	
		Field Inspector	
Mandatory Demand Response 110.12(c)	Shut-off controls 130.1(c) / 160.5(b)4C	Pass	Fail
NA < 4,000W subject to multilevel	See Area/Space Level Controls	☐	☐

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg D.2	**Report Page:**	(Page 4 of 7)
	Date Prepared:	2024-07-05T18:35:18-04:00

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

Area Level Controls

04	05	06	07	08	09	10	11	12	
Area Description	Complete Building or Area Category Primary Function Area	Manual Area Controls 130.1(a) / 160.5(b)4A	Multi-Level Controls 130.1(b) / 160.5(b)4B	Shut-Off Controls 130.1(c) // 160.5(b)4C	Primary/Skylit Daylighting 130.1(d) / 160.5(b)4D	Secondary Daylighting 130.1(d) / 160.5(b)4D	Interlocked Systems 140.6(a)1/ 170.2(e)2A	Field Inspector	
								Pass	Fail
Classroom 14	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
					13				
					Plan Sheet Showing Daylit Zones:				
					2E204				

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Each area complying using the Complete Building or Area Category Methods per 140.6(b) are included in this table. Column 06 indicates if additional lighting power allowances per 140.6(c) or adjustments per 140.6(a) are being used .

Conditioned Spaces

01	02	03	04	05	06	
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft²)	Area (ft²)	Allowed Wattage (Watts)	Additional Allowance / Adjustment	
					Area Category	PAF
Classroom 14	Classroom, Lecture, or Training Vocational	0.6	905	543	No	No
		TOTALS:	905	543	See Tables J, or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM

This section does not apply to this project.

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg D.2	**Report Page:**	(Page 5 of 7)
	Date Prepared:	2024-07-05T18:35:18-04:00

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE

This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY

This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING

This section does not apply to this project.

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED DECORATIVE /SPECIAL EFFECTS

This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This section does not apply to this project.

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))

This section does not apply to this project.

Q. RATED POWER REDUCTION COMPLIANCE FOR ONE-FOR-ONE ALTERATIONS

This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS

This section does not apply to this project.

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg D.2	**Report Page:**	(Page 6 of 7)
	Date Prepared:	2024-07-05T18:35:18-04:00

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)

This section does not apply to this project.

T. DWELLING UNIT LIGHTING

This section does not apply to this project.

U. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selections have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

Form/Title
NRCI-LTI-E - Must be submitted for all buildings

V. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selections have been changed by the permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and any with "-A" in the form name must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Form/Title	Systems/Spaces To Be Field Verified
NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	Classroom 14
NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	Classroom 14

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg D.2	**Report Page:**	(Page 7 of 7)
Project Address: 1371 Detroit Ave, Concord, CA 94520	**Date Prepared:**	2024-07-05T18:35:18-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
J. David Maino	
Company: Atium Engineering	Signature Date: 7/10/24
Address: 3533 York Ln	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: San Ramon/CA/94582	Phone: (913)-961-1658

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: J. David Maino	Responsible Designer Signature:
Company: Atium Engineering	Date Signed: 7/10/24
Address: 3533 York Ln	License: E19208
City/State/Zip: San Ramon/CA/94582	Phone: (913)-961-1658

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg E	**Report Page:**	(Page 1 of 9)
Project Address: 1371 Detroit Ave, Concord, CA 94520	**Date Prepared:**	2024-07-05T20:02:28-04:00

This document is used to demonstrate compliance with requirements in 110.9, 110.12(c), 130.0, 130.1, 140.6 and 141.0(b)2 for indoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e) and 180.2(b)4 for indoor lighting scopes using the prescriptive path for multifamily occupancies. Multifamily includes dormitory and senior living facilities.

A. GENERAL INFORMATION

01	Project Location (city)	04	Total Conditioned Floor Area (ft²)
02	Clayton	05	5,196
03	Climate Zone	06	Total Unconditioned Floor Area (ft²)
04	12	07	0
05	Occupancy Types Within Project (select all that apply):	08	# of Stories (Habitable Above Grade)
		09	1

● Classroom

B. PROJECT SCOPE

This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.6 / 170.2(e) or 141.0(b)2 / 180.2(b)4 for alterations.

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)
☒ New Lighting System	Area Category Method	5196	Area Category Method	0
☐ New Lighting System - Parking Garage	N/A	0	N/A	0
Total Area of Work (ft²)	5196			

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg E	**Report Page:**	(Page 2 of 9)
	Date Prepared:	2024-07-05T20:02:28-04:00

C. COMPLIANCE RESULTS

If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

Lighting in conditioned and unconditioned spaces must not be combined for compliance per 140.6(b)1 / 170.2(e)	Allowed Lighting Power per 140.6(b) / 170.2(e) (Watts)						Adjusted Lighting Power per 140.6(a) / 170.2(e) (Watts)				Compliance Results
	01	02	03	04		05		06	07	08	09
	Complete Building 140.6(c)1	Area Category 140.6(c)2 / 170.2(e)4	Area Category Additional 140.6(c)2G / 170.2(e)4Av (+)	Tailored 140.6(c)3 / 170.2(e)4B (+)		**Total Allowed** (Watts)		Total Designed (Watts)	Adjustments: PAF Lighting Control Credits 140.6(a)2 / 170.2(e)1B (-)	**Total Adjusted** (Watts) *Includes Adjustments	**05 must be >= 08 140.6 / 170.2(e)**
	(See Table I)	(See Table I)	(See Table J)	(See Table K)				(See Table F)	(See Table P)		
Conditioned		2,903.2			=	2,903.2	≥	2,824		2824	COMPLIES
Unconditioned					=		≥				
Controls Compliance (See Table H for Details)											COMPLIES
Rated Power Reduction Compliance (See Table Q for Details)											

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg E	**Report Page:**	(Page 3 of 9)
	Date Prepared:	2024-07-05T20:02:28-04:00

F. INDOOR LIGHTING FIXTURE SCHEDULE

This table includes all planned permanent and portable lighting other than dwelling unit/ hotel/ motel room lighting. Multifamily dwelling unit and hotel/motel room lighting is documented in Table T. If using Table T to document lighting in multifamily common use areas providing shared provisions for living, eating, cooking or sanitation, those luminaires are not included here.

Designed Wattage: Conditioned Spaces

01	02	03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description	Modular (Track) Fixture	Small Aperture & Color Change[1]	Watts per luminaire[2]	How is Wattage determined	Total Number of Luminaires	Excluded per 140.6(a)3 / 170.2(e)2C	Design Watts	Field Inspector	
									Pass	Fail
L1/L1E	L1/L1E	No	NA	32.4	Mfr. Spec	75	No	2,430	☐	☐
S1	S1	No	NA	17	Mfr. Spec	19	No	323	☐	☐
L2	L2	No	NA	14.2	Mfr. Spec	5	No	71	☐	☐
Total Designed Watts: CONDITIONED SPACES								2,824		

[1]FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per 140.6(a)4B / 170.2(e)2D is adjusted to be 75% /80% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.

[2]Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(b). Wattage used must be the maximum rated for the luminaire, not the lamp.

G. MODULAR LIGHTING SYSTEMS

This section does not apply to this project.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

This table includes lighting controls for conditioned and unconditioned spaces.

Building Level Controls

01	02	03	
		Field Inspector	
Mandatory Demand Response 110.12(c)	Shut-off controls 130.1(c) / 160.5(b)4C	Pass	Fail
NA < 4,000W subject to multilevel	See Area/Space Level Controls	☐	☐

AGENCY APPROVAL DSA# 01-121400

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TECHNOLOGY ENGINEER
KMM Services Inc.
5433 El Camino Ave. Ste 5
Carmichael, CA 95608
TEL (916) 359-4000

PROFESSIONAL STAMP



REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
SCHEDULES

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2E503

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\mad architecture_4\72347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\nc 2\2347.50 - MH - 2E500 - Title 24.dwg
LAST SAVED ON: 7/10/24 at 11:04pm, PLOTTED ON: 10/22/24 at 9:47am
DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\SkimJ\Documents\23119.01_MTDUSD_MEADOW HOMES ES MODERNIZATION_A23_skim32Q7M.rvt

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg E	**Report Page:**	**(Page 4 of 9)**
	Date Prepared:	2024-07-05T20:02:28-04:00

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

Area Level Controls

04	05	06	07	08	09	10	11	12	
Area Description	Complete Building or Area Category Primary Function Area	Manual Area Controls 130.1(a) / 160.5(b)4A	Multi-Level Controls 130.1(b) / 160.5(b)4B	Shut-Off Controls 130.1(c) // 160.5(b)4C	Primary/Sky lit Daylighting 130.1(d) / 160.5(b)4D	Secondary Daylighting 130.1(d) / 160.5(b)4D	Interlocked Systems 140.6(a)1/ 170.2(e)2A	Field Inspector	
								Pass	Fail
Classroom 19	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Classroom 18	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Classroom 17	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Kindergarten 16	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Kindergarten 15	Classroom, Lecture, or Training Vocational	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Storage 19	Storage - MF common areas	Readily Accessible	Dimmer	Occupancy Sensor	Included	NA: Not daylit zone	No	☐	☐
Storage 18	Storage - MF common areas	Readily Accessible	Dimmer	Occupancy Sensor	Included	NA: Not daylit zone	No	☐	☐
Storage 17	Storage - MF common areas	Readily Accessible	Dimmer	Occupancy Sensor	Included	NA: Not daylit zone	No	☐	☐
Storage 16	Storage - MF common areas	Readily Accessible	Dimmer	Occupancy Sensor	Included	NA: Not daylit zone	No	☐	☐
Storage 15	Storage - MF common areas	Readily Accessible	Dimmer	Occupancy Sensor	Included	NA: Not daylit zone	No	☐	☐
Toilet 19T	Restroom	Readily Accessible	NA: Restrooms	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg E	**Report Page:**	**(Page 5 of 9)**
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H. INDOOR LIGHTING CONTROLS (Not including PAFs)

Toilet 18T	Restroom	Readily Accessible	NA: Restrooms	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
Toilet 17T	Restroom	Readily Accessible	NA: Restrooms	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
Toilet 16T	Restroom	Readily Accessible	NA: Restrooms	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
Toilet 15T	Restroom	Readily Accessible	NA: Restrooms	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
					13				
					Plan Sheet Showing Daylit Zones:				
					2E205				

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Each area complying using the Complete Building or Area Category Methods per 140.6(b) are included in this table. Column 06 indicates if additional lighting power allowances per 140.6(c) or adjustments per 140.6(a) are being used .

Conditioned Spaces

01	02	03	04	05	06	
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft^2)	Area (ft^2)	Allowed Wattage (Watts)	Additional Allowance / Adjustment	
					Area Category	PAF
Classroom 19	Classroom, Lecture, or Training Vocational	0.6	683	409.8	No	No
Classroom 18	Classroom, Lecture, or Training Vocational	0.6	681	408.6	No	No
Classroom 17	Classroom, Lecture, or Training Vocational	0.6	681	408.6	No	No
Kindergarten 16	Classroom, Lecture, or Training Vocational	0.6	947	568.2	No	No
Kindergarten 15	Classroom, Lecture, or Training Vocational	0.6	933	559.8	No	No
Storage 19	Storage - MF common areas	0.45	150	67.5	No	No
Storage 18	Storage - MF common areas	0.45	151	67.95	No	No
Storage 17	Storage - MF common areas	0.45	150	67.5	No	No
Storage 16	Storage - MF common areas	0.45	226	101.7	No	No

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CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg E	**Report Page:**	**(Page 6 of 9)**
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I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Storage 15	Storage - MF common areas	0.45	222	99.9	No	No
Toilet 19T	Restroom	0.65	45	29.25	No	No
Toilet 18T	Restroom	0.65	45	29.25	No	No
Toilet 17T	Restroom	0.65	44	28.6	No	No
Toilet 16T	Restroom	0.65	44	28.6	No	No
Toilet 15T	Restroom	0.65	43	27.95	No	No
	TOTALS:	5,045		2,903.2	See Tables J, or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM

This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE

This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY

This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING

This section does not apply to this project.

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED DECORATIVE /SPECIAL EFFECTS

This section does not apply to this project.

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
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O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This section does not apply to this project.

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))

This section does not apply to this project.

Q. RATED POWER REDUCTION COMPLIANCE FOR ONE-FOR-ONE ALTERATIONS

This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS

This section does not apply to this project.

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)

This section does not apply to this project.

T. DWELLING UNIT LIGHTING

This section does not apply to this project.

U. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selections have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

Form/Title
NRCI-LTI-E - Must be submitted for all buildings

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
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	Date Prepared:	2024-07-05T20:02:28-04:00

V. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selections have been changed by the permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and any with "-A" in the form name must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Form/Title	Systems/Spaces To Be Field Verified
NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	Classroom 19; Classroom 18; Classroom 17; Kindergarten 16; Kindergarten 15; Storage 19; Storage 18; Storage 17; Storage 16; Storage 15; Toilet 19T; Toilet 18T; Toilet 17T; Toilet 16T; Toilet 15T
NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	Classroom 19; Classroom 18; Classroom 17; Kindergarten 16; Kindergarten 15; Storage 19; Storage 18; Storage 17; Storage 16; Storage 15

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Meadow Homes ES Modernization Increment 2 - Bldg E	**Report Page:**	**(Page 9 of 9)**
Project Address: 1371 Detroit Ave, Concord, CA 94520	**Date Prepared:**	2024-07-05T20:02:28-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: J. David Maino	Documentation Author Signature:
Company: Atium Engineering	Signature Date: 7/10/24
Address: 3533 York Ln	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: San Ramon/CA/94582	Phone: (913)-961-1658

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the building owner at occupancy.

Responsible Designer Name: J. David Maino	Responsible Designer Signature:
Company: Atium Engineering	Date Signed: 7/10/24
Address: 3533 York Ln	License: E19208
City/State/Zip: San Ramon/CA/94582	Phone: (913)-961-1658

Indoor Lighting Mandatory Measures:

110.9 LIGHTING CONTROLS AND COMPONENTS
ALL LIGHTING CONTROL DEVICES AND SYSTEMS, AND ALL LIGHT SOURCES SHALL MEET THE APPLICABLE REQUIREMENTS OF 110.9.

NOTE: THE EXCEPTED SPACES DO NOT COUNT TOWARDS THE 10,000 FT2 THRESHOLD.

130.0 GENERAL LUMINAIRE REQUIREMENTS
ALL LUMINAIRES SHALL BE FACTORY-LABELLED PER 130.0(c).
ENERGY MANAGEMENT CONTROL SYSTEMS (EMCS) SHALL MEET REQUIREMENTS OF 130.0(e).

130.1(a) MANUAL AREA CONTROLS
EACH ROOM OR AREA WITH FLOOR-TO-CEILING WALLS IN THIS BUILDING SHALL HAVE LIGHTING CONTROLS THAT ALLOW LIGHTING TO BE MANUALLY TURNED ON AND OFF MANUAL CONTROLS SHALL:

1. BE READILY ACCESSIBLE

2. BE LOCATED IN THE SAME ENCLOSED AREA WITH THE LIGHTING IT CONTROLS.

3. PROVIDE SEPARATE CONTROL OF GENERAL, FLOOR, WALL, WINDOW CASE DISPLAY, ORNAMENTAL AND SPECIAL EFFECTS LIGHTING SO EACH TYPE CAN BE TURNED ON AND OFF SEPARATELY WITHOUT AFFECTING OTHER LIGHTING OR EQUIPMENT.

130.1(b) MULTILEVEL LIGHTING CONTROLS
GENERAL LIGHTING IN ALL ROOMS AND AREAS 100 FT2 OR GREATER AND WITH MORE THAN 0.5 WATTS PER FT2 OF LIGHTING LOAD SHALL HAVE MULTILEVEL CONTROLS THAT ALLOW LIGHT LEVELS TO BE ADJUSTED UP AND DOWN. CONTROLS SHALL PROVIDE NUMBER OF CONTROL STEPS AND UNIFORM ILLUMINANCE LIGHT LEVELS PER TABLE 130.1-A.

130.1(c): SHUTOFF CONTROLS
ALL INSTALLED INDOOR LIGHTING SHALL BE EQUIPPED WITH CONTROLS TO AUTOMATICALLY REDUCE LIGHTING POWER WHEN SPACE IS TYPICALLY UNOCCUPIED.

130.1(c)1: CONTROL REQUIREMENTS
ALL INSTALLED INDOOR LIGHTING SHALL HAVE ALL OF THE FOLLOWING:
A. CONTROL(S) CAPABLE OF AUTOMATICALLY SHUTTING OFF ALL LIGHTING IN THE SPACE WHEN TYPICALLY UNOCCUPIED (OCCUPANT SENSING CONTROL, AUTOMATIC TIME-SWITCH CONTROL, OR OTHER)
B. SEPARATE CONTROLS FOR LIGHTING ON EACH FLOOR (OTHER THAN STAIRWELLS)

C. SEPARATE CONTROLS FOR A SPACE ENCLOSED BY CEILING HEIGHT PARTITIONS NOT EXCEEDING 5,000 FT2

Indoor Lighting Mandatory Measures:

130.1(c)5 REQUIRED USE OF FULL-OFF OCCUPANT SENSORS
FULL-OFF OCCUPANT SENSING CONTROLS THAT ARE CAPABLE OF AUTOMATICALLY SHUTTING OFF ALL LIGHTING WHEN THE THE CONTROL ZONE IS UNOCCUPIED FOR 20 MINUTES OR LESS ARE REQUIRED FOR:

- OFFICES 250 FT^2 OR SMALLER
- MULTIPURPOSE ROOMS <1000 FT^2
- CLASSROOMS OF ANY SIZE
- CONFERENCE ROOMS OF ANY SIZE
- RESTROOMS OF ANY SIZE

ADDITIONAL FULL-OFF CONTROL FUNCTIONALITY:
WHEN MULTILEVEL CONTROL IS REQUIRED PER 130.1(b) (ENCLOSED AREA >=100 SQUARE FEET AND LIGHTING LOAD <0.5 W/FT2) PROVIDE VACANCY SENSOR OR PARTIAL-ON OCCUPANCY SENSOR. WHEN MULTILEVEL CONTROL IS NOT REQUIRED PER 130.1(b), PROVIDE OCCUPANT SENSOR, PARTIAL-ON OCCUPANT SENSOR, OR VACANCY SENSOR.

130.1(c)6 PARTIAL OR FULL-OFF OCCUPANT SENSORS
PROVIDE PARTIAL OR FULL-OFF OCCUPANT SENSORS, IN ADDITION TO SHUTOFF CONTROLS PER 130.1(c)1 AND 130.1(c)2, IN THE FOLLOWING SPACES:

- AISLE WAYS AND OPEN AREAS IN WAREHOUSES
- LIBRARY BOOK STACK AISLES
- CORRIDORS AND STAIRWELLS
- OFFICES GREATER THAN 250 SQ. FT.

Indoor Lighting Mandatory Measures:

130.1(d) AUTOMATIC DAYLIGHTING CONTROLS
ALL GENERAL LIGHTING IN THE FOLLOWING ZONES SHALL HAVE CONTROLS THAT AUTOMATICALLY ADJUST THE INSTALLED LIGHTING POWER UP AND DOWN TO KEEP TOTAL LIGHT LEVEL STABLE AS INCOMING DAYLIGHT CHANGES:

- PRIMARY SIDELIT DAYLIT ZONES
- SECONDARY SIDELIT DAYLIT ZONES
- COMBINED PRIMARY AND SECONDARY SIDELIT DAYLIT ZONES IN PARKING GARAGES

ALL DAYLIT ZONES MUST BE SHOWN ON PLANS.

NOTE: PARKING AREAS ON THE ROOF OF A PARKING STRUCTURE ARE NOT SKYLIT DAYLIT AREAS.

IN ADDITION, AUTOMATIC DAYLIGHTING CONTROLS SHALL PROVIDE SEPARATE CONTROL FOR LUMINAIRES IN EACH TYPE OF DAYLIT ZONE. LUMINAIRES THAT FALL IN BOTH SKYLIT AND SIDELIT DAYLIT ZONE SHALL BE CONTROLLED AS PART OF THE SKYLIT ZONE.

130.1(d)3 THE AUTOMATIC DAYLIGHTING CONTROLS SHALL ACHIEVE ALL OF THE FOLLOWING:
A. ADJUST LIGHTING VIA CONTINUOUS DIMMING OR THE NUMBER OF CONTROL STEPS PROVIDED BY THE MULTILEVEL CONTROLS (FOR SPACES REQUIRED TO INSTALL MULTILEVEL CONTROLS UNDER SECTION 130.1(b)).

B. FOR EACH SPACE, ENSURE COMBINED ILLUMINANCE FROM CONTROLLED LIGHTING AND DAYLIGHT IS NOT LESS THAN ILLUMINANCE FROM CONTROLLED LIGHTING WHEN NO DAYLIGHT IS AVAILABLE.

C. ENSURE THAT THE GENERAL LIGHTING POWER IN A DAYLIT ZONE SHALL BE REDUCED BY AT LEAST 90% WHEN DAYLIGHT ILLUMINANCE IN THAT ZONE IS GREATER THAN 150% OF DESIGN ILLUMINANCE RECEIVED FROM THE GENERAL LIGHTING SYSTEM AT FULL POWER (NOT APPLICABLE TO PARKING GARAGES).

D. (FOR PARKING GARAGES ONLY) ENSURE THAT WHEN ILLUMINANCE LEVELS MEASURED AT THE FARTHEST EDGE OF THE SECONDARY SIDELIT ZONE AWAY FROM GLAZING OR OPENING ARE GREATER THAN 150% OF THE ILLUMINANCE PROVIDED BY THE CONTROLLED LIGHTING WHEN NO DAYLIGHT IS AVAILABLE, THE CONTROLLED LIGHTING POWER IN THE COMBINED PRIMARY AND SECONDARY SIDELIT DAYLIT ZONES SHALL BE REDUCED BY 100%.

130.1(d)4 WHEN PHOTOSENSORS ARE LOCATED WITHIN THE DAYLIT ZONE, AT LEAST ONE PHOTOSENSOR SHALL BE LOCATED SO THAT IT IS NOT READILY ACCESSIBLE TO UNAUTHORIZED PERSONNEL.

130.1(d)5 THE LOCATION WHERE CALIBRATION ADJUSTMENTS ARE MADE TO AUTOMATIC DAYLIGHTING CONTROLS SHALL BE READILY ACCESSIBLE TO AUTHORIZED PERSONNEL BUT MAY BE INSIDE A LOCKED CASE OR UNDER A COVER THAT REQUIRES A TOOL FOR ACCESS.

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP



REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
SCHEDULES

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2E504

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\mad architecture_4\72347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\72347.50 - MH - 2E500 - Title 24.dwg
LAST SAVED ON: 7/10/24 at 11:04pm, PLOTTED ON: 10/22/24 at 9:47am
DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\Skim\Documents\23119.01_MTDUSD_MEADOW HOMES ES MODERNIZATION_A23_skim32O7M.rvt

Indoor Lighting Mandatory Measures:

130.1(f) CONTROL INTERACTIONS
EACH LIGHTING CONTROL INSTALLED TO MEET 130.1 REQUIREMENTS SHALL INCORPORATE THE FUNCTIONS OF OTHER LIGHTING CONTROLS REQUIRED BY THIS SECTION.

1. FOR GENERAL LIGHTING, MANUAL AREA CONTROL SHALL PERMIT THE LEVEL OF LIGHT PROVIDED WHILE LIGHTING IS ON TO BE SET OR ADJUSTED BY CONTROLS SPECIFIED IN 130.1(b), (c), (d) and (e).

2. MANUAL AREA CONTROL SHALL PERMIT SHUTOFF CONTROL TO TURN THE LIGHTING DOWN OR OFF.

3. MULTILEVEL CONTROL SHALL PERMIT THE AUTOMATIC DAYLIGHTING CONTROL TO ADJUST ELECTRIC LIGHTING IN RESPONSE TO DAYLIGHT.

4. MULTILEVEL CONTROL SHALL PERMIT THE DEMAND RESPONSIVE (DR) CONTROL TO ADJUST LIGHTING DURING A DR EVENT THEN RETURN IT TO THE LEVEL SET BY THE CONTROL AFTER THE EVENT.

5 SHUTOFF CONTROL SHALL PERMIT THE MANUAL AREA CONTROL TO TURN THE LIGHTING ON.

6. AUTOMATIC DAYLIGHTING CONTROL SHALL PERMIT MULTILEVEL LIGHTING CONTROL TO ADJUST THE LIGHTING LEVEL.

7. FOR LIGHTING CONTROLLED BY MULTILEVEL LIGHTING CONTROLS AND OCCUPANT SENSING CONTROLS THAT PROVIDE AUTOMATIC-ON FUNCTION, CONTROLS SHALL PROVIDE A PARTIAL-ON FUNCTION THAT IS CAPABLE OF AUTOMATICALLY ACTIVATING BETWEEN 50-70% OF CONTROLLED LIGHTING POWER.

8. RESERVED

9. FOR SPACE CONDITIONING SYSTEM ZONES SERVING ONLY SPACES THAT ARE REQUIRED TO HAVE OCCUPANT SENSING CONTROLS SHALL BE CONTROLLED BY OCCUPANCY SENSING CONTROLS.

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4\23347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\2347.50 - MH - 2E500 - Title 24.dwg
LAST SAVED ON: 7/10/24 at 11:04pm, PLOTTED ON: 10/22/24 at 9:46am
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SHEET TITLE
SCHEDULES

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2E505

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FIRE ALARM
SEQUENCE OF OPERATIONS MATRIX

● = ACTION

BLANK = NO ACTION

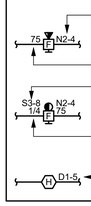
	FIRE ALARM SYSTEM INPUTS	FIRE ALARM SYSTEM OUTPUTS: CONTROL UNIT ANNUNCIATION: A ACTUATE FIRE ALARM SIGNAL INDICATOR @ FACP	B ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR	C ACTUATE AUDIBLE SUPERVISORY SIGNAL @ FACP	D ACTUATE COMMON TROUBLE SIGNAL INDICATOR	E ACTUATE AUDIBLE COMMON TROUBLE SIGNAL @ FACP	NOTIFICATION: F ACTUATE AUDIBLE ALARM SIGNAL THROUGHOUT BLDG	G ACTUATE VISIBLE ALARM SIGNAL THROUGHOUT BLDG	H ACTIVATE LOCAL AUDIBLE SIGNAL/SOUNDER	I TRANSMIT FIRE ALARM SIGNAL TO SUPERVISING STATION	J TRANSMIT SUPERVISORY SIGNAL TO SUPERVISING STATION	K TRANSMIT TROUBLE SIGNAL TO SUPERVISING STATION	L SHUT DOWN HVAC UNITS OVER 2000CFM VIA RELAY MODULE	O	R	S UNLOCK EXIT DOORS VIA CARD ACCESS SYSTEM
1	MANUAL FIRE ALARM PULL STATION	●					●	●		●			●		●	
2	SMOKE DETECTOR AT FACP	●					●	●		●			●		●	
3	SMOKE DETECTOR - GENERAL AREA	●					●	●		●			●		●	
4	DUCT SMOKE DETECTOR ACTIVATION	●					●	●		●						●
15	CELLULAR COMMUNICATOR TROUBLE				●	●							●			
16	DACT COMMUNICATOR TROUBLE				●	●							●			
17	FIRE ALARM AC POWER FAILURE				●	●							●			
18	FIRE ALARM SYSTEM LOW BATTERY				●	●							●			
19	FIRE ALARM OPEN CIRCUIT				●	●							●			
20	FIRE ALARM GROUND FAULT				●	●							●			
21	NAC CIRCUIT SHORT				●	●							●			

A

FIRE ALARM SYMBOLS

- MANUAL PULL STATION
  MODEL: SIGA-278
  CSFM: 7150-1657:0129
- SMOKE DETECTOR
  MODEL: SIGA-PCD
  CSFM: 7275-1657:0334
- HEAT DETECTOR - ABOVE CEILING
  MODEL: SIGA-HFD
  CSFM: 7270-1657:0333
- HEAT DETECTOR
  - SEE DSA APPLICATION# 105340
- HORN/STROBE
  MODEL: G1AVRF
  CSFM: 7135-1657:0502
- STROBE
  MODEL: G1VRF
  CSFM: 7125-1657:0506
- FACP — FIRE ALARM CONTROL PANEL
  - SEE DSA APPLICATION# 105340
- RNPS — REMOTE NOTIFICATION POWER SUPPLY
  - SEE DSA APPLICATION# 105340
- FATC — FIRE ALARM TERMINAL CABINET, SIZE AS REQ'D
- EOL — END OF LINE RESISTOR

TYPICAL ZONE NOMENCLATURE



FIRE ALARM SEQUENCE OF OPERATIONS

1. ACTIVATION OF ANY SYSTEM PULL STATION, SMOKE DETECTOR, HEAT DETECTOR, WATER FLOW SWITCH OR ANSUL UNIT SHALL CAUSE ALL SIGNAL DEVICES CONNECTED TO THE SYSTEM TO ACTIVATE AND SOUND. FACP(S) AND REMOTE ANNUNCIATOR(S) SHALL INDICATE THE SOURCE OF THE ALARM AND ALARM LIGHT(S) ON THE FIRE ALARM PANEL WILL ILLUMINATE. ACTIVATION OF ALARM SHALL CAUSE THE DIGITAL ALARM COMMUNICATIONS TRANSMITTER TO TRANSMIT THE ALARM TO A U.L. LISTED CENTRAL STATION.

IN ADDITION:

   A. ACTIVATION OF AN AHU DUCT SMOKE DETECTOR SHALL SHUT DOWN THE ASSOCIATED AHU VIA A RELAY BASE.

2. ACTIVATION OF A VALVE SUPERVISORY SWITCH OR SHOULD AN OPEN GROUND OR FAULT OCCUR IN THE WIRING, THE FACP(S) AND REMOTE ANNUNCIATOR(S) SHALL INITIATE A TROUBLE SIGNAL AND SHALL INDICATE THE SOURCE OF THE TROUBLE.

3. ONCE THE SYSTEM IS BACK TO NORMAL, THE PANEL WILL RESOUND FOR PROPER RESETTING.

4. WHERE REMOTE MONITORING IS NOT REQUIRED, THE FIRE ALARM PANEL SHALL BE BACKED UP BY STANDY BATTERIES FOR 24 HOURS AND 5 MINUTES OF ALARM. WHERE REMOTE MONITORING IS REQUIRED, THE FIRE ALARM PANEL SHALL BE BACKED UP BY STANDBY BATTERIES FOR 60 HOURS AND 5 MINUTES OF ALARM.

A

PROJECT DESCRIPTION

1. OCCUPANCY TYPE: E (EDUCATIONAL), B, & A2
2. BUILDING CONSTRUCTION TYPE: V-N (BLDGS A-E) & V-1HR (MPR)
3. SYSTEM TYPE: CLASS B, ADDRESSABLE, MANUAL & AUTOMATIC.
4. METHOD OF COMMUNICATION: TELEPHONE
5. SCOPE OF WORK: PROTECT-IN-PLACE EXISTING FIRE ALARM DEVICES FOR ALL BUILDINGS WITH MODERNIZATION WORK & FA REMODEL FOR BLDG B.1.
6. FIRE ALARM SYSTEM MEETS REQUIREMENTS OF CA SB575 GREEN OAKS FAMILY ACADEMY ELEMENTARY SCHOOL FIRE PROTECTION ACT.

FIRE ALARM GENERAL NOTES

A. PLANS SHALL BE APPROVED BY THE "DIVISION OF THE STATE ARCHITECT" (DSA) PRIOR TO BEGINNING WORK. SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO PURCHASE AND INSTALLATION OF THE SYSTEM.

B. ALL FIRE ALARM DEVICES SHALL BE CALIFORNIA STATE FIRE MARSHAL (CSFM) LISTED.

C. FIRE ALARM WIRING AND MATERIALS SHALL BE LISTED FOR USE AS REQUIRED BY TITLE 24/CEC, ARTICLE 760. MINIMUM WIRE SHALL BE TWO (2) #14 AWG FOR INITIATING CIRCUITS AND TWO (2) #14 AWG FOR INDICATING CIRCUITS.

D. FIRE ALARM WIRE USED IN WET LOCATIONS SHALL BE OF AN APPROVED TYPE IN ACCORDANCE WITH 3-310-8, T24/CEC (i.e. THHW OR EQUAL).

E. PER CEC STANDARDS ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE WIRE. THERE MUST BE AT LEAST 6" OF LEAD WIRE FROM BOX TO THE DEVICE. ALL BOXES SIZED PER CEC.

F. PENETRATIONS OF FIRE RATED WALLS SHALL BE PROTECTED IN ACCORDANCE WITH CALIFORNIA BUILDING CODE, CHAPTER 7, TITLE 24. PROVIDE DETAILS OF FIRE- STOP SYSTEMS FOR ALL PIPE/CABLE/CONDUIT PASSING THROUGH FIRE RATED WALLS/FLOORS REQUIRING PROTECTED OPENINGS.

G. VISUAL FIRE ALARM DEVICES SHALL HAVE A PULSING LIGHT SOURCE NOT LESS THAN 15 CANDELAS. NO PLACE IN ANY ROOM SHALL BE MORE THAN 50 FEET FROM A DEVICE. DEVICES WITHIN 55' OF EACH OTHER SHALL BE SYNCHRONIZED.

H. ALL FIRE ALARM DEVICE CONNECTIONS TO THE LIGHT AND POWER SERVICE SHALL BE ON A DEDICATED BRANCH CIRCUIT(S). THE CIRCUIT(S) AND CONNECTIONS SHALL BE MECHANICALLY PROTECTED. CIRCUIT DISCONNECTING MEANS SHALL HAVE A PERMANENT RED MARKING, SHALL BE ACCESSIBLE ONLY TO AUTHORIZED PERSONNEL, AND SHALL BE IDENTIFIED AS "FIRE ALARM CIRCUIT CONTROL." THE LOCATION OF THE CIRCUIT DISCONNECTING MEANS SHALL BE PERMANENTLY IDENTIFIED AT THE FIRE ALARM CONTROL UNIT. (2022 NFPA 72 SECTION 10.6.5.2.1)

I. THE CONTRACTOR SHALL ADJUST ALL DEVICES TO MAXIMUM PERFORMANCE AND TO MINIMIZE FALSE ALARMS.

J. FIRE ALARM EVACUATION SIGNAL SHALL SOUND A THREE-PULSE TEMPORAL PATTERN (2022 CBC 907.5.2.1.3 AND 2022 NFPA 72 18.4.2.1). CARBON MONOXIDE SIGNAL SHALL SOUND A FOUR-PULSE TEMPORAL PATTERN (2022 NFPA 72, 5.8.6.5.1).

K. AUDIBLE FIRE ALARM SOUND LEVEL SHALL BE AT LEAST 15 dBA ABOVE THE AVERAGE AMBIENT SOUND LEVEL IN ALL OCCUPIABLE AREAS. (2022 NFPA 72 SECTION 18.4.3.1) (I.E. CLASSROOM AVERAGE AMBIENT ROOM NOISE IS 45 dBA PLUS 15 dBA EQUALS 60 dBA MINIMUM ALARM TONE REQUIRED). SOUND TO BE MAINTAINED FOR A MINIMUM DURATION OF 60 SECONDS.

L. STROBES SHALL FLASH AT A RATE OF NOT EXCEEDING TWO FLASHES PER SECOND NOR BE LESS THAN ONE FLASH EVERY SECOND. (2022 NFPA 72 SECTION 18.5.3.1)

M. AUDIBLE SIGNALS INTENDED FOR OPERATION IN THE PUBLIC MODE SHOULD HAVE A SOUND LEVEL OF NOT LESS THAN 75 dBA AT 10 FEET OR MORE THAN 110 dBA AT THE MINIMUM HEARING DISTANCE FROM THE AUDIBLE APPLIANCE. (2022 NFPA 72 SECTION18.4)

N. SMOKE DETECTORS SHALL NOT BE ANY CLOSER THAN 1' FROM FIRE SPRINKLERS OR 3' FROM ANY SUPPLY DIFFUSER, IN AREA OF CONSTRUCTION OR POSSIBLE DAMAGE/CONTAMINATION ON NEWLY INSTALLED FIRE ALARM DEVICES SHALL BE COVERED UNTIL THAT AREA IS READY TO BE TURNED OVER TO THE OWNER.

O. THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.6.2.

P. DSA, ARCHITECT AND ENGINEER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND/OR TESTING.

Q. FINAL FIRE ALARM TEST SHALL BE MADE WITH THE DSA INSPECTOR OF RECORD (IOR). LOCAL FIRE AUTHORITY SHALL BE NOTIFIED OF DATE AND TIME OF FINAL FIRE ALARM TESTING AND SHALL ASSIST/WITNESS SUCH TESTING AT THEIR DISCRETION.

R. SUPERVISORY MONITORING SHALL BE TESTED AND VERIFIED AS SENDING CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST.

S. FIRE ALARM CONTRACTOR SHALL PROVIDE A "RECORD OF COMPLETION" TO THE OWNER, ARCHITECT AND INSPECTOR OF RECORD (IOR)/DSA AFTER COMPLETION OF OPERATIONAL ACCEPTANCE TESTS. (2022 NFPA 72 SECTION 7.8.2 AND 14.6 AND FIGURE 7.8.2(a) - 7.8.2(1)).

T. OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE ALARM MONITORING CONTRACT OR PROVISIONS. AUTOMATIC FIRE ALARM SYSTEMS SHALL BE MONITORED AND SHALL TRANSMIT THE ALARM, SUPERVISORY, AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION IN ACCORDANCE WITH NFPA 72, AS AMENDED BY CFC CHAPTER 80. THE SUPERVISING STATION SHALL BE LISTED AS EITHER UUFX (CENTRAL STATION) OR UUJS (REMOTE & PROPRIETARY) BY UNDERWRITERS LABORATORY INC. (UL) OR OTHER APPROVED LISTING AND TESTING LABORATORY OR SHALL COMPLY WITH THE REQUIREMENTS OF STANDARD, FACTORY MUTUAL (FM) 3011. TERMINATION OF MONITORING SERVICES SHALL BE IN ACCORDANCE WITH CBC/CFC SECTION 907.6.6.2.

U. PROVIDE A STANDALONE DOCUMENTATION CABINET ADJACENT TO THE FIRE ALARM CONTROL PANEL. ALL RECORDED DOCUMENTATION PERTAINING TO THE FIRE ALARM SYSTEM INSTALLED SHALL BE STORED IN THE DOCUMENTATION CABINET (2022 NFPA 72 7.7.2). THE DOCUMENTATION CABINET SHALL BE PROMINENTLY LABELED, "SYSTEM RECORD DOCUMENTS" (2022 NFPA 72 7.7.2.5).

ABBREVIATIONS

A	AMPERE	EMT	ELECTRICAL METALLIC TUBING	NIC	NOT IN CONTRACT
ABV	ABOVE	EOL	END OF LINE RESISTOR	NIEC	NOT IN ELECTRICAL CONTRACT
AF	AMPERE FRAME, AMPERE FUSE	EQP	EQUIPMENT	NO	NORMALLY OPEN
AFF	ABOVE FINISHED FLOOR	FA	FIRE ALARM	NTS	NOT TO SCALE
AIC	AMPERE INTERRUPTING CAPACITY	FACP	FIRE ALARM CONTROL PANEL	NUM, #	NUMBER
ARCH	ARCHITECTURAL	(F)	FUTURE	OC	ON CENTER
AS	AMPERE SWITCH	FIN	FINISH	P	POLE
AT	AMPERE TRIP	FLR	FLOOR	PA	PUBLIC ADDRESS
ATS	AUTOMATIC TRANSFER SWITCH	G, GND	GROUND	PB	PULL BOX
BKR	BREAKER	GRC	GALVANIZED RIGID CONDUIT	PF	POWER FACTOR
BLDG	BUILDING	HGT	HEIGHT	PH	PHASE
C	CONDUIT	HP	HORSEPOWER	PNL	PANEL
CATV	CABLE TELEVISION	IC	INTERCOM	PVC	POLYVINYL CHLORIDE
CB	CIRCUIT BREAKER	IDF	INTERMEDIATE DISTRIBUTION FRAME	(R)	EXISTING TO BE RELOCATED
CBC	CALIFORNIA BUILDING CODE	IMC	INTERMEDIATE METAL CONDUIT	REQD	REQUIRED
CD	CANDELA	INFO	INFORMATION	REQT(S)	REQUIREMENT(S)
CEC	CALIFORNIA ELECTRICAL CODE	JB	JUNCTION BOX	RM	ROOM
CFC	CALIFORNIA FIRE CODE	KAIC	KILOAMPERE INTERRUPTING CAPACITY	RSC	RIGID STEEL CONDUIT
CKT	CIRCUIT	KV	KILOVOLT	SAD	SEE ARCHITECTURAL DOCUMENTS
CL	CENTER LINE	KVA	KILOVOLT AMPERE	SHT	SHEET
CLG	CEILING	KW	KILOWATT	SPD	SURGE PROTECTIVE DEVICE
CO	CONDUIT ONLY	LTG	LIGHTING	STC	SIGNAL TERMINAL CABINET
COMM	COMMUNICATIONS	LV	LOW VOLTAGE	SW	SWITCH
CSFM	CALIFORNIA STATE FIRE MARSHALL	MAX	MAXIMUM	SWBD	SWITCHBOARD
CTR	CENTER	KCMIL	THOUSAND CIRCULAR MILS	T24	CALIFORNIA ENERGY CODE
(D)	DEMOLISH	MDF	MAIN DISTRIBUTION FRAME	TC	TERMINAL CABINET
DET	DETAIL	MECH	MECHANICAL	TEL	TELEPHONE
DIM	DIMENSION	MH	MANHOLE	TYP	TYPICAL
DIST	DISTRIBUTION	MIN	MINIMUM	UON	UNLESS OTHERWISE NOTED
DP	DISTRIBUTION PANEL	MTD	MOUNTED	V	VOLT
DWG	DRAWING	MTG	MOUNTING	W	WATT, WIRE
(E)	EXISTING	NC	NORMALLY CLOSED	WP	WEATHERPROOF
ELEC	ELECTRICAL	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	XFMR	TRANSFORMER
EM	EMERGENCY				

DRAWING INDEX

2F000	GENERAL INFORMATION
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2F202	FIRE ALARM PLANS
2F203	FIRE ALARM PLANS
2F204	FIRE ALARM PLANS
2F205	FIRE ALARM PLANS
2F206	FIRE ALARM PLANS

AGENCY APPROVAL DSA# 01-121400

196

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TEL (916) 359-4000

PROFESSIONAL STAMP



REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

GENERAL INFORMATION

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2F000

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\mad architecture_4\72347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 212347.50 - MH - 2F000 - General Information.dwg
LAST SAVED ON: 10/22/24 at 9:46am, PLOTTED ON: 10/22/24 at 9:46am

DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\SkimJDocuments\23119.01_MTDUSD_MEADOW HOMES ES MODERNIZATION_A23_skim32Q7M.rvt

BATTERY SIZE CALCULATION
(REFER TO RISER DIAGRAM)
DEVICE: FS1

ITEM DESCRIPTION	QUANTITY	STAND BY CURRENT (AMP)		ALARM CURRENT (AMP)	
		EACH	TOTAL	EACH	TOTAL
PANEL AND ASSOCIATED MODULES	1	0.075	0.075	0.175	0.175
SYNC MODULE	1			0.038	0.038
WP HORN	3			0.055	0.165
HORN/STROBE 15CD	2			0.088	0.176
HORN/STROBE 30CD	2			0.124	0.248
HORN/STROBE 75CD	6			0.171	1.026
EOL	2	0.019	0.038		
TOTAL			0.113		1.826

① ② BATTERY SIZE = 1.2 X (24 X 0.11 + 0.083 X 1.83) = 3.44 A.H.

NEW BATTERY IS 7.00 AMP-HOUR. TEST SYSTEM BY SHUTTING OFF A.C. POWER AND RUNNING SYSTEM ON BATTERY ONLY (IN THE ALARM MODE).

NOTE: ① BASE ON 24 HOUR OF STANDBY CURRENT AND 5 MINUTES OF ALARM CURRENT PER NFPA
② ADDITIONAL MULTIPLIER TO COMPENSATE FOR THE HIGHER DISCHARGE RATE IN ALARM

BATTERY SIZE CALCULATION
(REFER TO RISER DIAGRAM)
DEVICE: FS2

ITEM DESCRIPTION	QUANTITY	STAND BY CURRENT (AMP)		ALARM CURRENT (AMP)	
		EACH	TOTAL	EACH	TOTAL
PANEL AND ASSOCIATED MODULES	1	0.075	0.075	0.175	0.175
SYNC MODULE	2			0.038	0.076
WP HORN	3			0.055	0.165
STROBE 15CD	14			0.088	1.232
HORN/STROBE 30CD	1			0.124	0.124
HORN/STROBE 75CD	7			0.088	0.616
HORN/STROBE 110CD	2			0.207	0.414
EOL	4	0.019	0.076	0.171	0.684
TOTAL			0.151		3.486

① ② BATTERY SIZE = 1.2 X (24 X 0.15 + 0.083 X 3.49) = 4.70 A.H.

NEW BATTERY IS 7.00 AMP-HOUR. TEST SYSTEM BY SHUTTING OFF A.C. POWER AND RUNNING SYSTEM ON BATTERY ONLY (IN THE ALARM MODE).

NOTE: ① BASE ON 24 HOUR OF STANDBY CURRENT AND 5 MINUTES OF ALARM CURRENT PER NFPA
② ADDITIONAL MULTIPLIER TO COMPENSATE FOR THE HIGHER DISCHARGE RATE IN ALARM

BATTERY SIZE CALCULATION
(REFER TO RISER DIAGRAM)
DEVICE: FS3

ITEM DESCRIPTION	QUANTITY	STAND BY CURRENT (AMP)		ALARM CURRENT (AMP)	
		EACH	TOTAL	EACH	TOTAL
PANEL AND ASSOCIATED MODULES	1	0.075	0.075	0.175	0.175
SYNC MODULE	2			0.038	0.076
WP HORN	5			0.055	0.275
STROBE 15CD	3			0.088	0.264
HORN/STROBE 75CD	9			0.088	0.792
EOL	4	0.019	0.076		
TOTAL			0.151		1.582

① ② BATTERY SIZE = 1.2 X (24 X 0.15 + 0.083 X 1.58) = 4.53 A.H.

NEW BATTERY IS 7.00 AMP-HOUR. TEST SYSTEM BY SHUTTING OFF A.C. POWER AND RUNNING SYSTEM ON BATTERY ONLY (IN THE ALARM MODE).

NOTE: ① BASE ON 24 HOUR OF STANDBY CURRENT AND 5 MINUTES OF ALARM CURRENT PER NFPA
② ADDITIONAL MULTIPLIER TO COMPENSATE FOR THE HIGHER DISCHARGE RATE IN ALARM

BATTERY SIZE CALCULATION
(REFER TO RISER DIAGRAM)
DEVICE: FS4

ITEM DESCRIPTION	QUANTITY	STAND BY CURRENT (AMP)		ALARM CURRENT (AMP)	
		EACH	TOTAL	EACH	TOTAL
PANEL AND ASSOCIATED MODULES	1	0.075	0.075	0.175	0.175
SYNC MODULE	4			0.038	0.076
WP HORN	4			0.055	0.22
HORN/STROBE 75CD	12			0.088	1.056
EOL	4	0.019	0.076		
STROBE 15CD	6			0.05	0.3
TOTAL			0.151		1.827

① ② BATTERY SIZE = 1.2 X (24 X 0.15 + 0.083 X 1.83) = 4.53 A.H.

NEW BATTERY IS 7.00 AMP-HOUR. TEST SYSTEM BY SHUTTING OFF A.C. POWER AND RUNNING SYSTEM ON BATTERY ONLY (IN THE ALARM MODE).

NOTE: ① BASE ON 24 HOUR OF STANDBY CURRENT AND 5 MINUTES OF ALARM CURRENT PER NFPA
② ADDITIONAL MULTIPLIER TO COMPENSATE FOR THE HIGHER DISCHARGE RATE IN ALARM

REFER TO CALCULATION BELOW FOR UPDATED BATTERY CALCULATION

BATTERY SIZE CALCULATION
(REFER TO RISER DIAGRAM)
DEVICE: FS5

ITEM DESCRIPTION	QUANTITY	STAND BY CURRENT (AMP)		ALARM CURRENT (AMP)	
		EACH	TOTAL	EACH	TOTAL
PANEL AND ASSOCIATED MODULES	1	0.075	0.075	0.175	0.175
SYNC MODULE	5			0.038	0.190
WP HORN	5			0.055	0.275
STROBE 15CD	14			0.088	1.232
HORN/STROBE 30CD	1			0.124	0.124
HORN/STROBE 75CD	7			0.088	0.616
HORN/STROBE 110CD	2			0.207	0.414
EOL	4	0.019	0.076	0.171	0.684
TOTAL			0.151		3.910

① ② BATTERY SIZE = 1.2 X (24 X 0.15 + 0.083 X 3.91) = 5.08 A.H.

NEW BATTERY IS 7.00 AMP-HOUR. TEST SYSTEM BY SHUTTING OFF A.C. POWER AND RUNNING SYSTEM ON BATTERY ONLY (IN THE ALARM MODE).

NOTE: ① BASE ON 24 HOUR OF STANDBY CURRENT AND 5 MINUTES OF ALARM CURRENT PER NFPA
② ADDITIONAL MULTIPLIER TO COMPENSATE FOR THE HIGHER DISCHARGE RATE IN ALARM

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. FP-N1
(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE ② OHMS/ 1000'	VOLTAGE ① DROP	TOTAL V. D.	REMARKS
7	0.088	0.088	40	12	1.6	0.01		
6	0.124	0.212	8	12	1.6	0.01		
5	0.171	0.383	48	12	1.6	0.06		
4	0.05	0.433	12	12	1.6	0.02		
3	0.088	0.521	16	12	1.6	0.03		
2	0.055	0.576	29	12	1.6	0.05		
1	0.05	0.626	51	12	1.6	0.10		
TOTAL V.D.							0.27	OR 1.14 % @ 24 VD

① VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
② OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. FP-N2
(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE ② OHMS/ 1000'	VOLTAGE ① DROP	TOTAL V. D.	REMARKS
7	0.171	0.171	48	12	1.6	0.03		
6	0.171	0.342	63	12	1.6	0.07		
5	0.055	0.397	19	13	1.6	0.02		
4	0.171	0.568	68	12	1.6	0.09		
3	0.171	0.739	46	12	1.6	0.11		
2	0.088	0.827	40	12	1.6	0.11		
1	0.088	0.915	254	12	1.6	0.74		
TOTAL V.D.							1.16	OR 4.85 % @ 24 VD

① VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
② OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. FP-N3
(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE ② OHMS/ 1000'	VOLTAGE ① DROP	TOTAL V. D.	REMARKS
7	0.088	0.088	32	12	1.6	0.01		
6	0.088	0.176	16	12	1.6	0.01		
5	0.171	0.347	45	12	1.6	0.05		
4	0.171	0.518	63	12	1.6	0.10		
3	0.055	0.573	18	12	1.6	0.03		
2	0.171	0.744	48	12	1.6	0.11		
1	0.171	0.915	253	12	1.6	0.74		
TOTAL V.D.							1.06	OR 4.41 % @ 24 VD

① VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
② OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. PS2-N1
(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE ② OHMS/ 1000'	VOLTAGE ① DROP	TOTAL V. D.	REMARKS
9	0.05	0.05	20	12	1.6	0.00		
8	0.088	0.138	10	12	1.6	0.00		
7	0.05	0.188	6	12	1.6	0.00		
6	0.088	0.276	20	12	1.6	0.02		
5	0.05	0.326	18	12	1.6	0.02		
4	0.05	0.376	22	12	1.6	0.03		
3	0.05	0.426	22	12	1.6	0.03		
2	0.088	0.514	4	12	1.6	0.01		
1	0.05	0.564	38	12	1.6	0.07		
TOTAL V.D.							0.18	OR 0.75 % @ 24 VD

① VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
② OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. PS1-N1
(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE ② OHMS/ 1000'	VOLTAGE ① DROP	TOTAL V. D.	REMARKS
6	0.171	0.171	47	12	1.6	0.03		
5	0.171	0.342	8	12	1.6	0.01		
4	0.124	0.466	26	12	1.6	0.04		
3	0.055	0.521	54	12	1.6	0.09		
2	0.088	0.609	12	12	1.6	0.02		
1	0.088	0.697	32	12	1.6	0.07		
TOTAL V.D.							0.26	OR 1.02 % @ 24 VD

① VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
② OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. PS1-N2
(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE ② OHMS/ 1000'	VOLTAGE ① DROP	TOTAL V. D.	REMARKS
7	0.055	0.055	23	12	1.6	0.00		
6	0.171	0.226	27	12	1.6	0.02		
5	0.124	0.35	95	12	1.6	0.11		
4	0.171	0.521	61	12	1.6	0.10		
3	0.055	0.576	19	12	1.6	0.04		
2	0.171	0.747	46	12	1.6	0.11		
1	0.171	0.918	58	12	1.6	0.26		
TOTAL V.D.							0.64	OR 2.65 % @ 24 VD

① VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
② OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. PS2-N1
(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE ② OHMS/ 1000'	VOLTAGE ① DROP	TOTAL V. D.	REMARKS
3	0.055	0.055	44	12	1.6	0.01		
2	0.207	0.262	69	12	1.6	0.06		
1	0.207	0.469	21	12	1.6	0.03		

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. PS2-N2

(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE (2) OHMS/ 1000'	VOLTAGE (1) DROP	TOTAL V. D.	REMARKS
7	0.05	0.05	31	12	1.6	0.00		
6	0.05	0.1	54	12	1.6	0.02		
5	0.171	0.271	8	12	1.6	0.01		
4	0.124	0.395	44	12	1.6	0.06		
3	0.05	0.445	33	12	1.6	0.05		
2	0.171	0.616	33	12	1.6	0.07		
1	0.05	0.666	42	12	1.6	0.09		
TOTAL V.D.							0.29	OR 1.19 % @ 24 VD

(1) VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
(2) OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. PS2-N3

(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE (2) OHMS/ 1000'	VOLTAGE (1) DROP	TOTAL V. D.	REMARKS
10	0.05	0.05	7	12	1.6	0.00		
9	0.05	0.1	38	12	1.6	0.01		
8	0.171	0.271	74	12	1.6	0.06		
7	0.05	0.321	7	12	1.6	0.01		
6	0.05	0.371	12	12	1.6	0.01		
5	0.05	0.421	7	12	1.6	0.01		
4	0.05	0.471	18	12	1.6	0.03		
3	0.171	0.642	8	12	1.6	0.02		
2	0.171	0.813	18	12	1.6	0.05		
1	0.055	0.868	81	12	1.6	0.22		
TOTAL V.D.							0.42	OR 1.75 % @ 24 VD

(1) VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
(2) OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. PS2-N4

(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE (2) OHMS/ 1000'	VOLTAGE (1) DROP	TOTAL V. D.	REMARKS
7	0.055	0.055	67	12	1.6	0.01		
6	0.05	0.105	7	12	1.6	0.01		
5	0.05	0.155	19	12	1.6	0.01		
4	0.171	0.326	52	12	1.6	0.05		
3	0.171	0.497	21	12	1.6	0.03		
2	0.05	0.547	7	12	1.6	0.01		
1	0.05	0.597	142	12	1.6	0.27		
TOTAL V.D.							0.39	OR 1.64 % @ 24 VD

(1) VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
(2) OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. PS3-N1

(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE (2) OHMS/ 1000'	VOLTAGE (1) DROP	TOTAL V. D.	REMARKS
6	0.05	0.05	36	12	1.6	0.01		
5	0.055	0.105	14	12	1.6	0.00		
4	0.05	0.155	20	12	1.6	0.01		
3	0.05	0.205	91	12	1.6	0.06		
2	0.055	0.26	42	12	1.6	0.03		
1	0.171	0.431	45	12	1.6	0.06		
TOTAL V.D.							0.18	OR 0.74 % @ 24 VD

(1) VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
(2) OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. PS3-N2

(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE (2) OHMS/ 1000'	VOLTAGE (1) DROP	TOTAL V. D.	REMARKS
4	0.171	0.171	80	12	1.6	0.04		
3	0.055	0.055	16	12	1.6	0.00		
2	0.171	0.226	40	12	1.6	0.03		
1	0.171	0.397	132	12	1.6	0.17		
TOTAL V.D.							0.24	OR 1.01 % @ 24 VD

(1) VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
(2) OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. PS3-N3

(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE (2) OHMS/ 1000'	VOLTAGE (1) DROP	TOTAL V. D.	REMARKS
2	0.055	0.055	29	12	1.6	0.01		
1	0.171	0.226	218	12	1.6	0.36		
TOTAL V.D.							0.36	OR 0.08 % @ 24 VD

(1) VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
(2) OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO. PS3-N4

(REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE (2) OHMS/ 1000'	VOLTAGE (1) DROP	TOTAL V. D.	REMARKS
5	0.055	0.055	22	12	1.6	0.00		
4	0.171	0.226	8	12	1.6	0.01		
3	0.171	0.397	36	12	1.6	0.05		
2	0.171	0.568	8	12	1.6	0.01		
1	0.171	0.739	267	12	1.6	0.63		
TOTAL V.D.							0.70	OR 2.92 % @ 24 VD

(1) VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
(2) OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO.PSP-N1

PROJECT: (REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE (2) OHMS/ 1000'	VOLTAGE (1) DROP	TOTAL V. D.	REMARKS
6	0.171	0.171	110	12	1.6	0.06		
5	0.171	0.342	110	12	1.6	0.12		
4	0.171	0.513	116	12	1.6	0.19		
3	0.055	0.568	4	12	1.6	0.01		
2	0.171	0.739	110	12	1.6	0.26		
1	0.171	0.91	470	12	1.6	1.37		
TOTAL V.D.							2.01	OR 8.36 % @ 24 VD

(1) VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
(2) OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO.PSP-N2

PROJECT: (REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE (2) OHMS/ 1000'	VOLTAGE (1) DROP	TOTAL V. D.	REMARKS
6	0.171	0.171	110	12	1.6	0.05		
5	0.171	0.342	110	12	1.6	0.12		
4	0.171	0.513	116	12	1.6	0.19		
3	0.171	0.684	4	12	1.6	0.01		
2	0.055	0.739	110	12	1.6	0.26		
1	0.171	0.91	110	12	1.6	0.32		
TOTAL V.D.							0.96	OR 4.00 % @ 24 VD

(1) VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
(2) OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO.PSP-N3

PROJECT: (REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE (2) OHMS/ 1000'	VOLTAGE (1) DROP	TOTAL V. D.	REMARKS
5	0.055	0.055	8	12	1.6	0.00		
4	0.171	0.226	30	12	1.6	0.02		
3	0.05	0.276	28	12	1.6	0.02		
2	0.05	0.326	16	12	1.6	0.02		
1	0.05	0.376	164	12	1.6	0.20		
TOTAL V.D.							0.26	OR 1.09 % @ 24 VD

(1) VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
(2) OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

VOLTAGE DROP CALCULATIONS - SIGNAL CIRCUIT NO.PSP-N4

PROJECT: (REFER TO RISER DIAGRAM)

DEVICE #	AMP. @ DEVICE	AMP ADDED	DISTANCE (ft)	WIRE GAUGE	WIRE (2) OHMS/ 1000'	VOLTAGE (1) DROP	TOTAL V. D.	REMARKS
5	0.055	0.055	6	12	1.6	0.00		
4	0.171	0.226	18	12	1.6	0.01		
3	0.05	0.276	30	12	1.6	0.03		
2	0.05	0.326	20	12	1.6	0.02		
1	0.05	0.376	400	12	1.6	0.48		
TOTAL V.D.							0.54	OR 2.26 % @ 24 VD

(1) VOLTAGE DROP = 2 X AMP X DISTANCE (ft) X OHMS/1000 FT.
(2) OHMS (PER 1000') = 1.0 FOR #10, 1.6 FOR #12, 2.6 FOR #14, 4.1 FOR #16, 6.5 FOR #18

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
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MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
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SHEET TITLE

VOLTAGE DROP CALCULATIONS

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2F002

DATE: SEPTEMBER 24TH, 2024

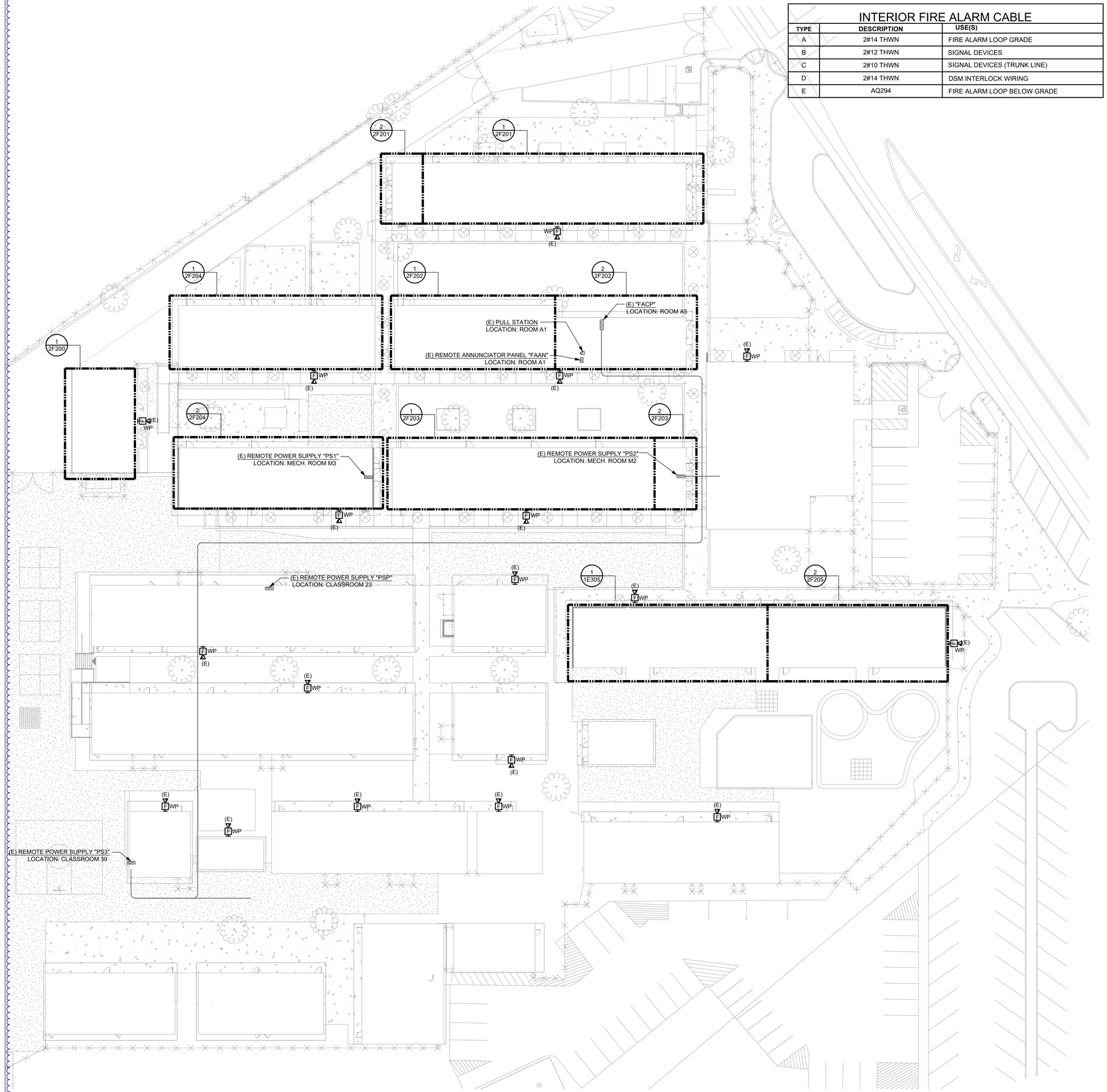
CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\mad architecture_4\72347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\23347.50 - MH - 2F000 - General Information.dwg
LAST SAVED ON: 10/22/24 at 9:46am, PLOTTED ON: 10/22/24 at 9:47am
DATE PLOTTED: 9/26/2023 11:49:13 AM FILE LOCATION: C:\Users\Skim\Documents\23119.01_MDUSD_MEADOW HOMES ES MODERNIZATION_23_skim2zOXNA.rvt

INTERIOR FIRE ALARM CABLE		
TYPE	DESCRIPTION	USE(S)
A	2#14 THWN	FIRE ALARM LOOP GRADE
B	2#12 THWN	SIGNAL DEVICES
C	2#10 THWN	SIGNAL DEVICES (TRUNK LINE)
D	2#14 THWN	DSM INTERLOCK WIRING
E	AQ294	FIRE ALARM LOOP BELOW GRADE

GENERAL NOTES

A. EXISTING NOTIFICATION DEVICES, WIRING, AND CIRCUITS SHOWN BASED ON DSA APPLICATION# 01-105340.



1 SITE PLAN
1" = 20'-0"

AGENCY APPROVAL DSA# 01-121400

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A	10-31-2024	ADDENDUM 01

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SHEET TITLE
SITE PLAN

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2F100

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4\23347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\23347.50 - MH - 2F100 - Site Plan.dwg
LAST SAVED ON: 10/18/24 at 4:02pm, PLOTTED ON: 10/22/24 at 9:47am
DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\Skim\Documents\23119.01_MTDUSD_MEADOW HOMES ES MODERNIZATION_A23_skim32Q7M.rvt

INTERIOR FIRE ALARM CABLE		
TYPE	DESCRIPTION	USE(S)
A	2#14 THWN	FIRE ALARM LOOP GRADE
B	2#12 THWN	SIGNAL DEVICES
C	2#10 THWN	SIGNAL DEVICES (TRUNK LINE)
D	2#14 THWN	DSM INTERLOCK WIRING
E	AQ294	FIRE ALARM LOOP BELOW GRADE

GENERAL NOTES

A. CONNECT REMOTE NOTIFICATION POWER SUPPLIES TO FIRE ALARM CONTROL PANEL WITH TWO (2) #14 AWG, UNLESS OTHERWISE NOTED.

B. ALL DETECTION CIRCUITS SHALL USE TWO (2) #16AWG, UNLESS OTHERWISE NOTED.

C. SEE VOLTAGE DROP CALCULATIONS FOR NOTIFICATION CIRCUIT CABLE QUANTITY AND SIZE.

D. IN FINISHED INTERIOR AREAS, RUN ALL CONDUITS CONCEALED, UNLESS OTHERWISE NOTED. PAINT ALL EXPOSED CONDUITS AND ELECTRICAL EQUIPMENT. REFER TO ARCHITECTS PAINTING SECTION FOR REQUIREMENTS.

E. FOR RACEWAY IN NON-ACCESSIBLE LOCATIONS, USE EXPOSED WIREMOLD V700 SERIES SURFACED MOUNTED RACEWAYS.

F. ALL INTERIOR FIRE ALARM CONDUIT SHALL BE 3/4", UNLESS OTHERWISE NOTED.

G. SEE DETAILS FOR MOUNTING REQUIREMENTS OF FIRE ALARM DEVICES.

H. THERE SHALL BE NO ROOF PENETRATIONS WITHIN 5'-0" OF FIRE RATED OR AREA SEPARATION WALLS. VERIFY EXACT LOCATIONS OF THESE WALLS WITH ARCHITECTURAL DRAWINGS.

I. MAINTAIN ALL SPACING AND PENETRATION REQUIREMENTS THROUGH FIRE RATED OR AREA SEPARATION WALLS. VERIFY EXACT LOCATIONS OF THESE WALLS WITH ARCHITECTURAL DRAWINGS.

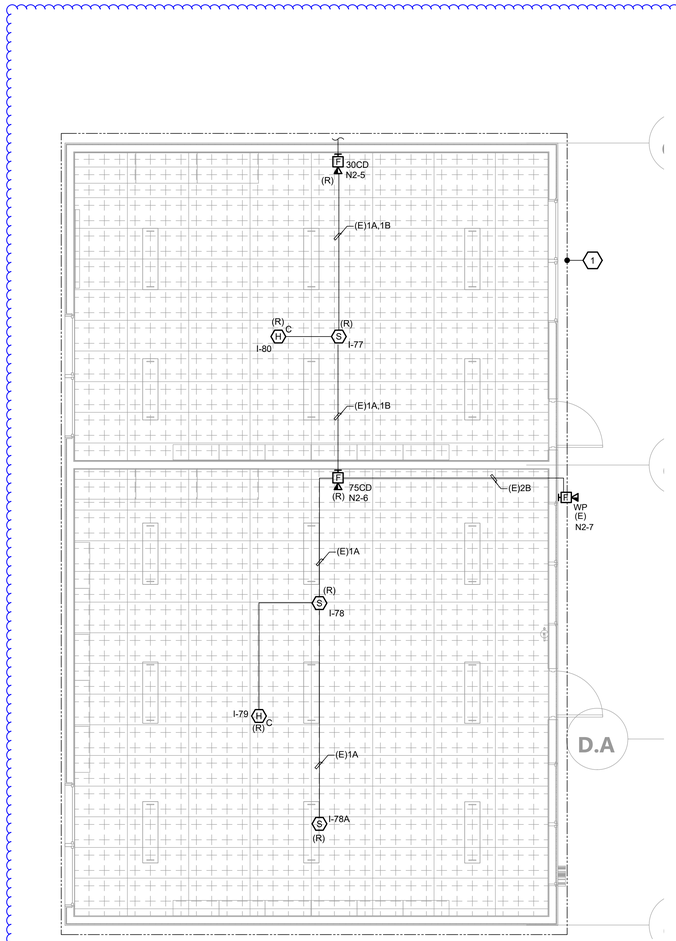
J. PROVIDE FIRE RATED ACCESS PANELS WHERE REQUIRED TO ALLOW ACCESS TO ABOVE CEILING HEAT DETECTORS FOR MAINTENANCE.

K. HEAT DETECTORS MOUNTED BELOW CEILING SHALL BE 135 DEGREE FIXED TEMP/RATE OF RISE. HEAT DETECTORS MOUNTED ABOVE CEILING SHALL BE 190 DEGREE HIGH FIXED TEMPERATURE, UNLESS OTHERWISE NOTED.

L. EXISTING NOTIFICATION DEVICES, WIRING, AND CIRCUITS SHOWN BASED ON DSA APPLICATION# 01-105340. RELOCATE DEVICES TO NEW SURFACES SHOWN AND PROVIDE NEW CONDUIT AND WIRING AS REQUIRED TO EXTEND TO NEW DEVICE LOCATIONS.

SHEET NOTES

1. DISCONNECT AND REINSTALL EXISTING FIRE ALARM DEVICES AT SAME LOCATION, UNLESS OTHERWISE NOTED. INTERCEPT AND EXTEND BRANCH WIRING AND CONDUIT AS REQUIRED FOR A COMPLETE INSTALL. EXISTING DEVICES SHOWN ON PLAN BASED ON DSA APPLICATION# 01-105340. ANY EXISTING DEVICES THAT ARE NO LONGER IN WORKING CONDITION SHALL BE REPLACED-IN-KIND. FIELD VERIFY EXISTING DEVICES PRIOR TO COMMENCEMENT OF WORK. TEST ALL NEW, EXISTING, AND RELOCATED DEVICES AT THE COMPLETION OF CONSTRUCTION AND PROVIDE ALL REQUIRED TIME FOR TROUBLESHOOTING AND MATERIALS AS REQUIRED TO RESTORE SYSTEM TO A FULLY FUNCTIONAL STATE.



1 **BLDG C - FIRE ALARM PLAN**
1/4" = 1'-0"

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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SHEET TITLE
FIRE ALARM PLANS BLDG C

DRAWN BY: TL JOB NUMBER: 23119.02

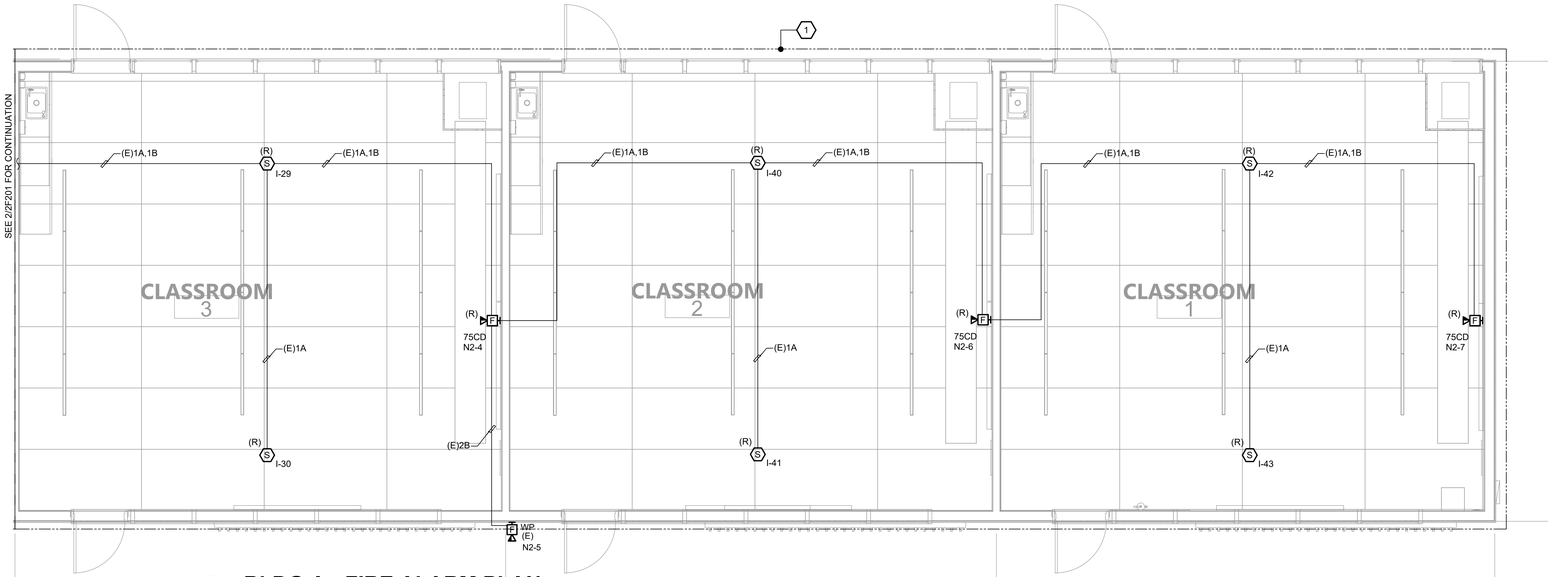
SHEET NO.
2F200

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

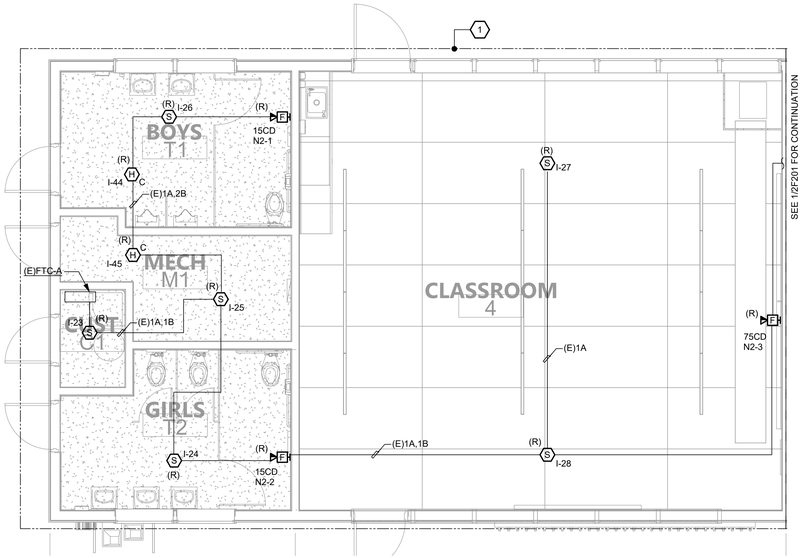
FILE LOCATION: G:\shared drives\01_projects\madi architecture_47\23347.50 - mount diablo usd modernization\05_drawings\01_DWG\Meadow Homes\Inc 23347.50 - MH - 2F200 - Fire Alarm Plan.dwg
LAST SAVED ON: 10/18/24 at 8:58pm. PLOTTED ON: 10/22/24 at 9:48am
DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\Skim\Documents\23119.01_MTDUSD_MEADOW HOMES ES MODERNIZATION_A23_skim32Q7M.rvt

INTERIOR FIRE ALARM CABLE		
TYPE	DESCRIPTION	USE(S)
A	2#14 THWN	FIRE ALARM LOOP GRADE
B	2#12 THWN	SIGNAL DEVICES
C	2#10 THWN	SIGNAL DEVICES (TRUNK LINE)
D	2#14 THWN	DSM INTERLOCK WIRING
E	AQ294	FIRE ALARM LOOP BELOW GRADE



1 BLDG A - FIRE ALARM PLAN

1/4" = 1'-0"



2 BLDG A - FIRE ALARM PLAN

1/4" = 1'-0"

GENERAL NOTES

A. CONNECT REMOTE NOTIFICATION POWER SUPPLIES TO FIRE ALARM CONTROL PANEL WITH TWO (2) #14 AWG, UNLESS OTHERWISE NOTED.

B. ALL DETECTION CIRCUITS SHALL USE TWO (2) #16AWG, UNLESS OTHERWISE NOTED.

C. SEE VOLTAGE DROP CALCULATIONS FOR NOTIFICATION CIRCUIT CABLE QUANTITY AND SIZE.

D. IN FINISHED INTERIOR AREAS, RUN ALL CONDUITS CONCEALED, UNLESS OTHERWISE NOTED. PAINT ALL EXPOSED CONDUITS AND ELECTRICAL EQUIPMENT. REFER TO ARCHITECTS PAINTING SECTION FOR REQUIREMENTS.

E. FOR RACEWAY IN NON-ACCESSIBLE LOCATIONS, USE EXPOSED WIREMOLD V700 SERIES SURFACED MOUNTED RACEWAYS.

F. ALL INTERIOR FIRE ALARM CONDUIT SHALL BE 3/4", UNLESS OTHERWISE NOTED.

G. SEE DETAILS FOR MOUNTING REQUIREMENTS OF FIRE ALARM DEVICES.

H. THERE SHALL BE NO ROOF PENETRATIONS WITHIN 5'-0" OF FIRE RATED OR AREA SEPARATION WALLS. VERIFY EXACT LOCATIONS OF THESE WALLS WITH ARCHITECTURAL DRAWINGS.

I. MAINTAIN ALL SPACING AND PENETRATION REQUIREMENTS THROUGH FIRE RATED OR AREA SEPARATION WALLS. VERIFY EXACT LOCATIONS OF THESE WALLS WITH ARCHITECTURAL DRAWINGS.

J. PROVIDE FIRE RATED ACCESS PANELS WHERE REQUIRED TO ALLOW ACCESS TO ABOVE CEILING HEAT DETECTORS FOR MAINTENANCE.

K. HEAT DETECTORS MOUNTED BELOW CEILING SHALL BE 135 DEGREE FIXED TEMP/RATE OF RISE. HEAT DETECTORS MOUNTED ABOVE CEILING SHALL BE 190 DEGREE HIGH FIXED TEMPURATURE, UNLESS OTHERWISE NOTED.

L. EXISTING NOTIFICATION DEVICES, WIRING, AND CIRCUITS SHOWN BASED ON DSA APPLICATION# 01-105340. RELOCATE DEVICES TO NEW SURFACES SHOWN AND PROVIDE NEW CONDUIT AND WIRING AS REQUIRED TO EXTEND TO NEW DEVICE LOCATIONS.

SHEET NOTES

1. DISCONNECT AND REINSTALL EXISTING FIRE ALARM DEVICES AT SAME LOCATION, UNLESS OTHERWISE NOTED. INTERCEPT AND EXTEND BRANCH WIRING AND CONDUIT AS REQUIRED FOR A COMPLETE INSTALL. EXISTING DEVICES SHOWN ON PLAN BASED ON DSA APPLICATION# 01-105340. ANY EXISTING DEVICES THAT ARE NO LONGER IN WORKING CONDITION SHALL BE REPLACED-IN-KIND. FIELD VERIFY EXISTING DEVICES PRIOR TO COMMENCEMENT OF WORK. TEST ALL NEW, EXISTING, AND RELOCATED DEVICES AT THE COMPLETION OF CONSTRUCTION AND PROVIDE ALL REQUIRED TIME FOR TROUBLESHOOTING AND MATERIALS AS REQUIRED TO RESTORE SYSTEM TO A FULLY FUNCTIONAL STATE.

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Drive
Concord, California 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

FIRE ALARM PLANS BLDG A

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2F201

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4\23347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\23347.50 - MH - 2F200 - Fire Alarm Plan.dwg
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INTERIOR FIRE ALARM CABLE		
TYPE	**DESCRIPTION**	**USE(S)**
A	2#14 THWN	FIRE ALARM LOOP GRADE
B	2#12 THWN	SIGNAL DEVICES
C	2#10 THWN	SIGNAL DEVICES (TRUNK LINE)
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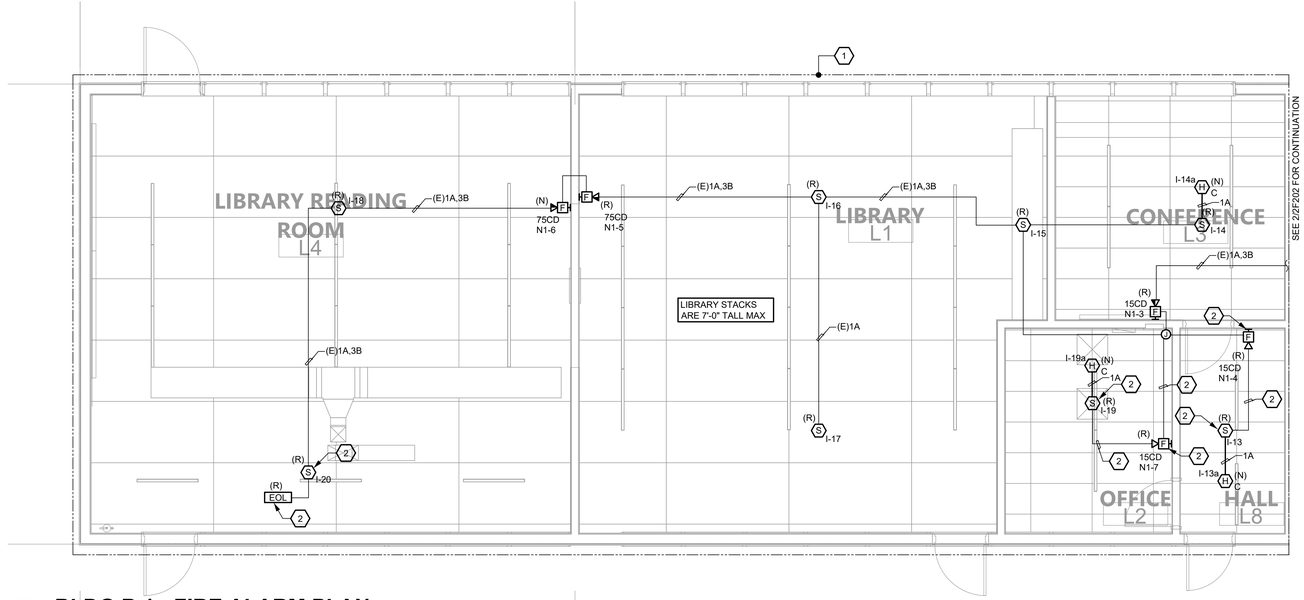
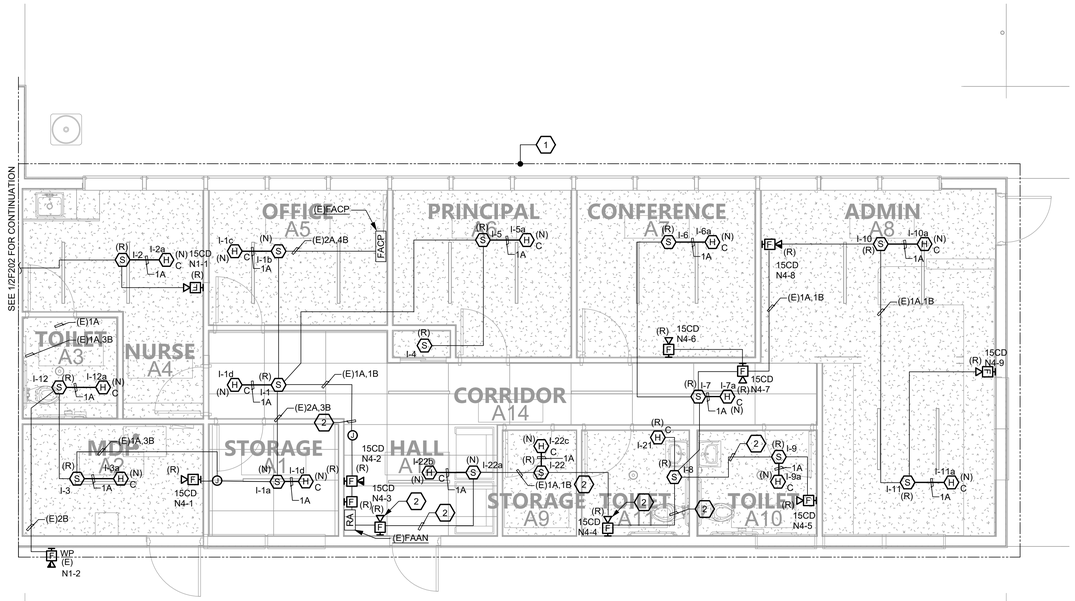


1 BLDG B.1 - FIRE ALARM PLAN

1/4" = 1'-0"



2 BLDG B.1 - FIRE ALARM PLAN

1/4" = 1'-0"

GENERAL NOTES

A. CONNECT REMOTE NOTIFICATION POWER SUPPLIES TO FIRE ALARM CONTROL PANEL WITH TWO (2) #14 AWG, UNLESS OTHERWISE NOTED.

B. ALL DETECTION CIRCUITS SHALL USE TWO (2) #16AWG, UNLESS OTHERWISE NOTED.

C. SEE VOLTAGE DROP CALCULATIONS FOR NOTIFICATION CIRCUIT CABLE QUANTITY AND SIZE.

D. IN FINISHED INTERIOR AREAS, RUN ALL CONDUITS CONCEALED, UNLESS OTHERWISE NOTED. PAINT ALL EXPOSED CONDUITS AND ELECTRICAL EQUIPMENT. REFER TO ARCHITECTS PAINTING SECTION FOR REQUIREMENTS.

E. FOR RACEWAY IN NON-ACCESSIBLE LOCATIONS, USE EXPOSED WIREMOLD V700 SERIES SURFACED MOUNTED RACEWAYS.

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G. SEE DETAILS FOR MOUNTING REQUIREMENTS OF FIRE ALARM DEVICES.

H. THERE SHALL BE NO ROOF PENETRATIONS WITHIN 5'-0" OF FIRE RATED OR AREA SEPARATION WALLS. VERIFY EXACT LOCATIONS OF THESE WALLS WITH ARCHITECTURAL DRAWINGS.

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2. SEE DEMO FIRE ALARM PLANS FOR OLD LOCATION. INTERCEPT AND EXTEND BRANCH WIRING AND CONDUIT AS REQUIRED FOR A COMPLETE INSTALL. EXISTING DEVICES SHOWN ON PLAN BASED ON DSA APPLICATION# 01-105340. ANY EXISTING DEVICES THAT ARE NO LONGER IN WORKING CONDITION SHALL BE REPLACED-IN-KIND. FIELD VERIFY EXISTING DEVICES PRIOR TO COMMENCEMENT OF WORK.

AGENCY APPROVAL DSA# 01-121400

196

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A	10-31-2024	ADDENDUM 01

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1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

FIRE ALARM PLANS BLDG B.1

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2F202

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\mad architecture_4\23347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\23347.50 - MH - 2F200 - Fire Alarm Plan.dwg
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INTERIOR FIRE ALARM CABLE		
TYPE	DESCRIPTION	USE(S)
A	2#14 THWN	FIRE ALARM LOOP GRADE
B	2#12 THWN	SIGNAL DEVICES
C	2#10 THWN	SIGNAL DEVICES (TRUNK LINE)
D	2#14 THWN	DSM INTERLOCK WIRING
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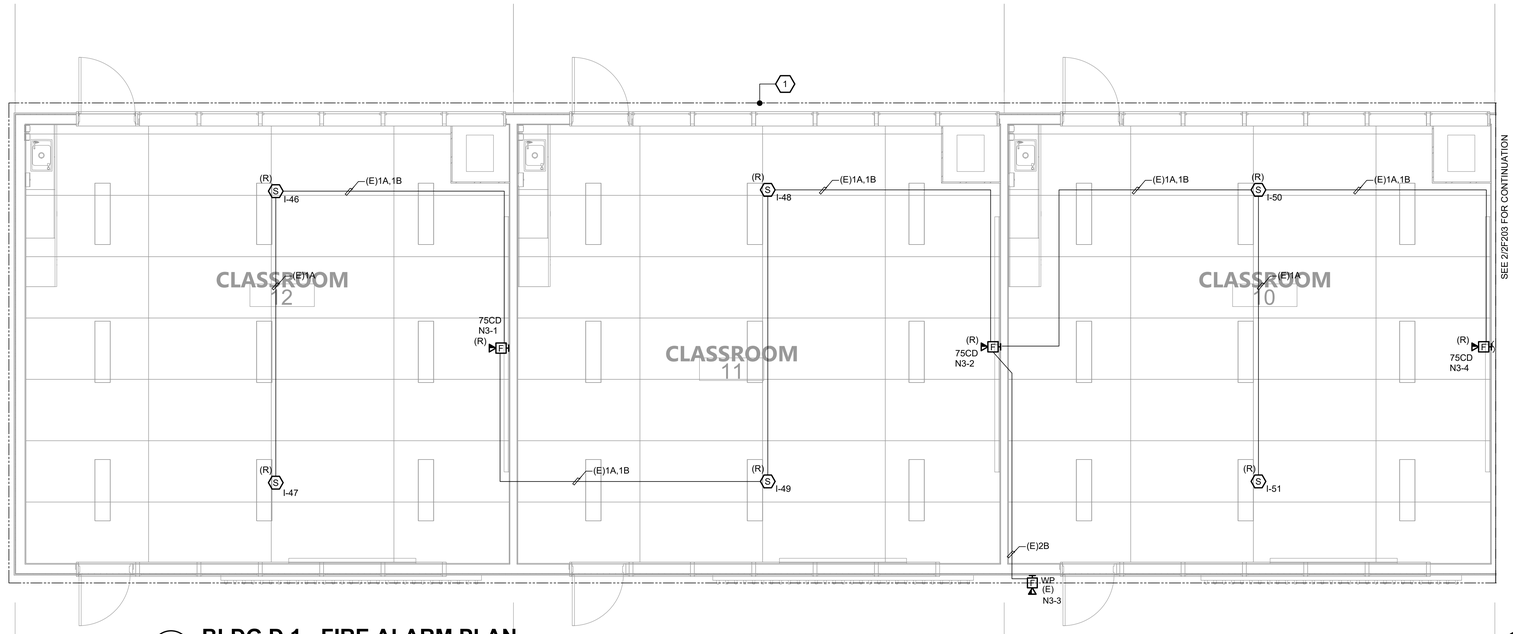
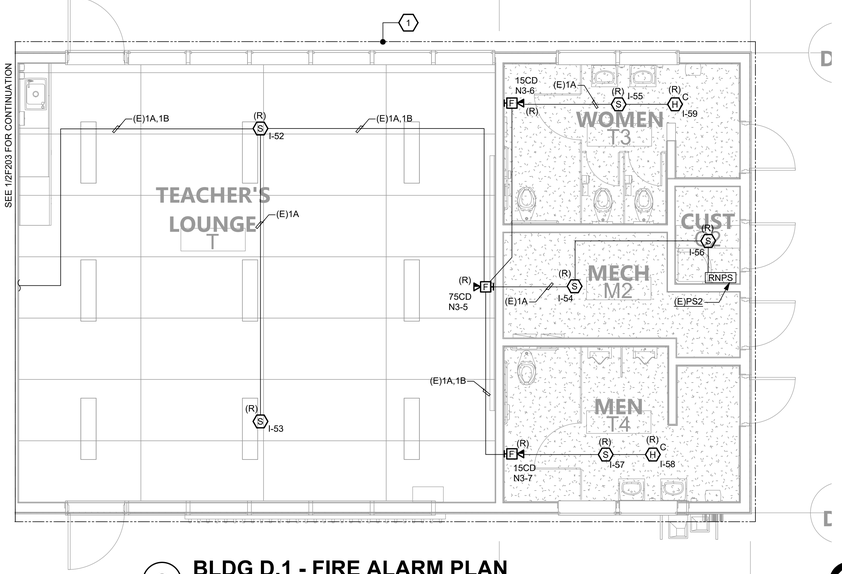


1 BLDG D.1 - FIRE ALARM PLAN

1/4" = 1'-0"



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1/4" = 1'-0"

GENERAL NOTES

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G. SEE DETAILS FOR MOUNTING REQUIREMENTS OF FIRE ALARM DEVICES.

H. THERE SHALL BE NO ROOF PENETRATIONS WITHIN 5'-0" OF FIRE RATED OR AREA SEPARATION WALLS. VERIFY EXACT LOCATIONS OF THESE WALLS WITH ARCHITECTURAL DRAWINGS.

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1906

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MEADOW HOMES ES MODERNIZATION

1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

FIRE ALARM PLANS BLDG D.1

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2F203

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4\23347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\23347.50 - MH - 2F200 - Fire Alarm Plan.dwg
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INTERIOR FIRE ALARM CABLE		
TYPE	DESCRIPTION	USE(S)
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B	2#12 THWN	SIGNAL DEVICES
C	2#10 THWN	SIGNAL DEVICES (TRUNK LINE)
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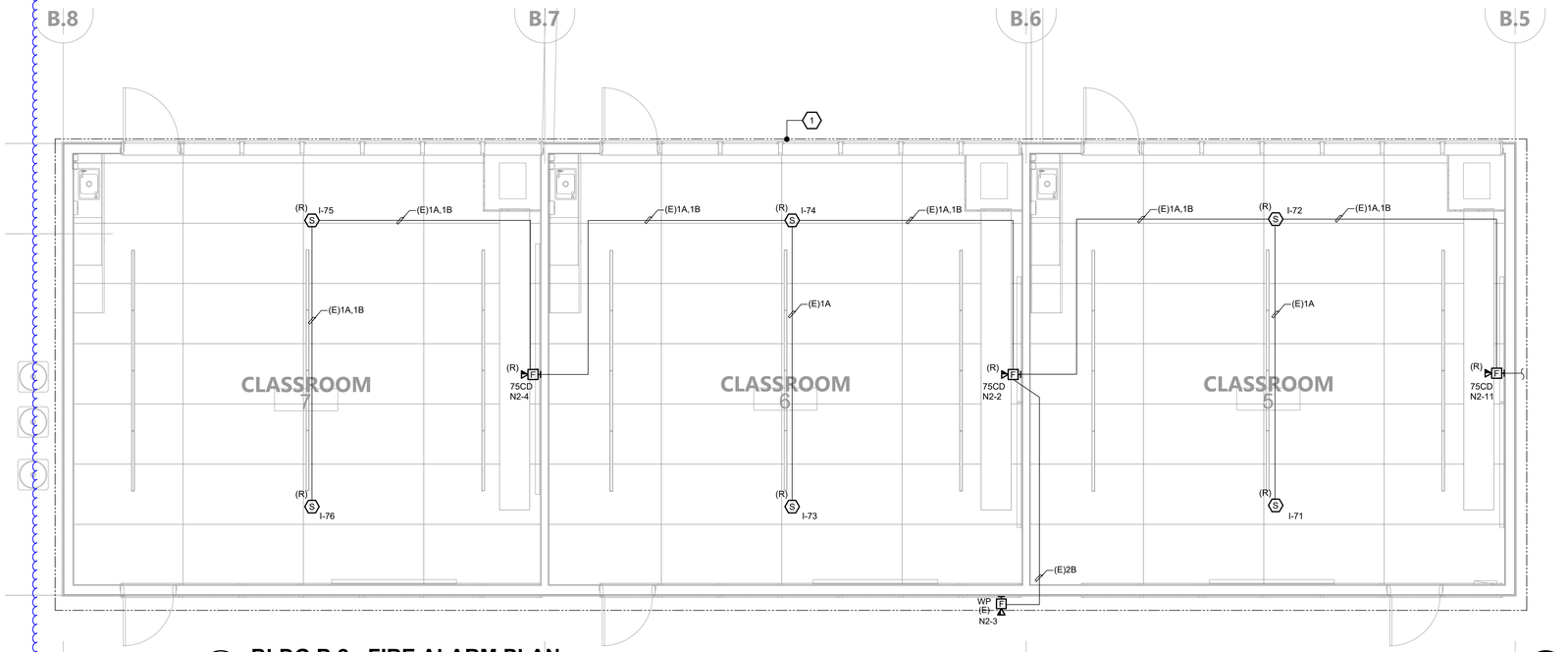
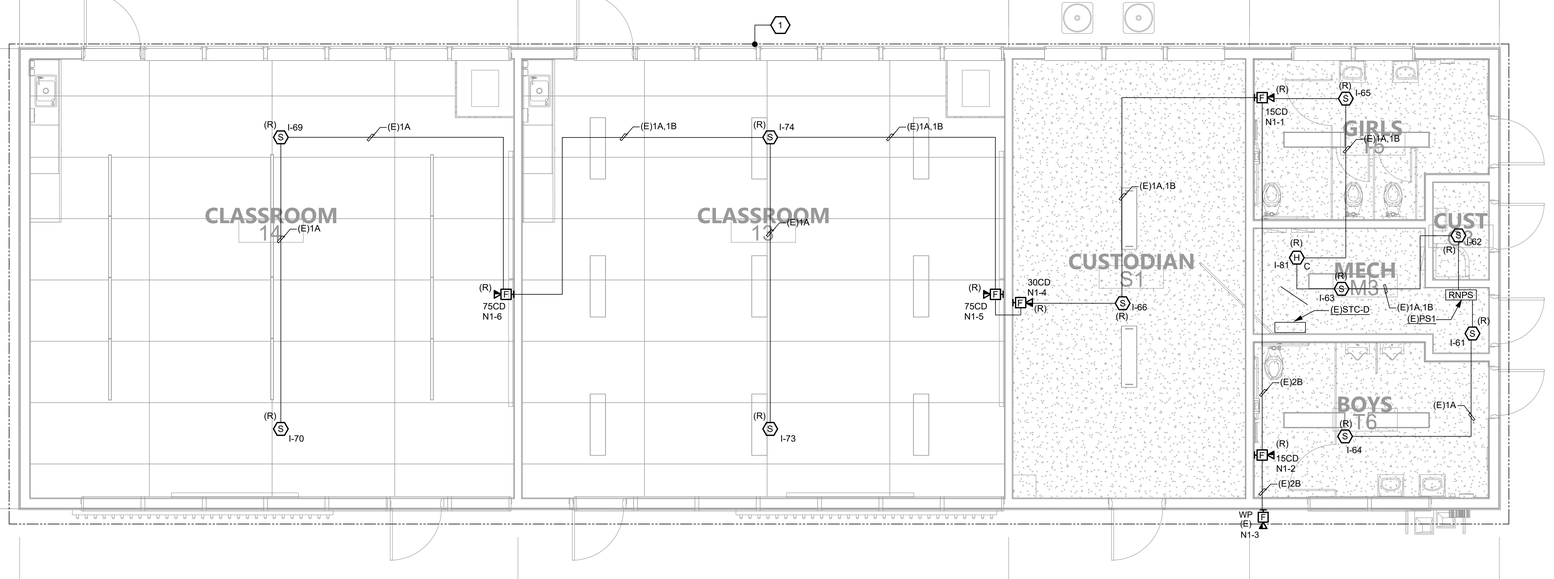


1 BLDG B.2 - FIRE ALARM PLAN

1/4" = 1'-0"



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SHEET TITLE

FIRE ALARM PLANS BLDG D.2

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2F204

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_47\2347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\2347.50 - MH - 2F200 - Fire Alarm Plan.dwg
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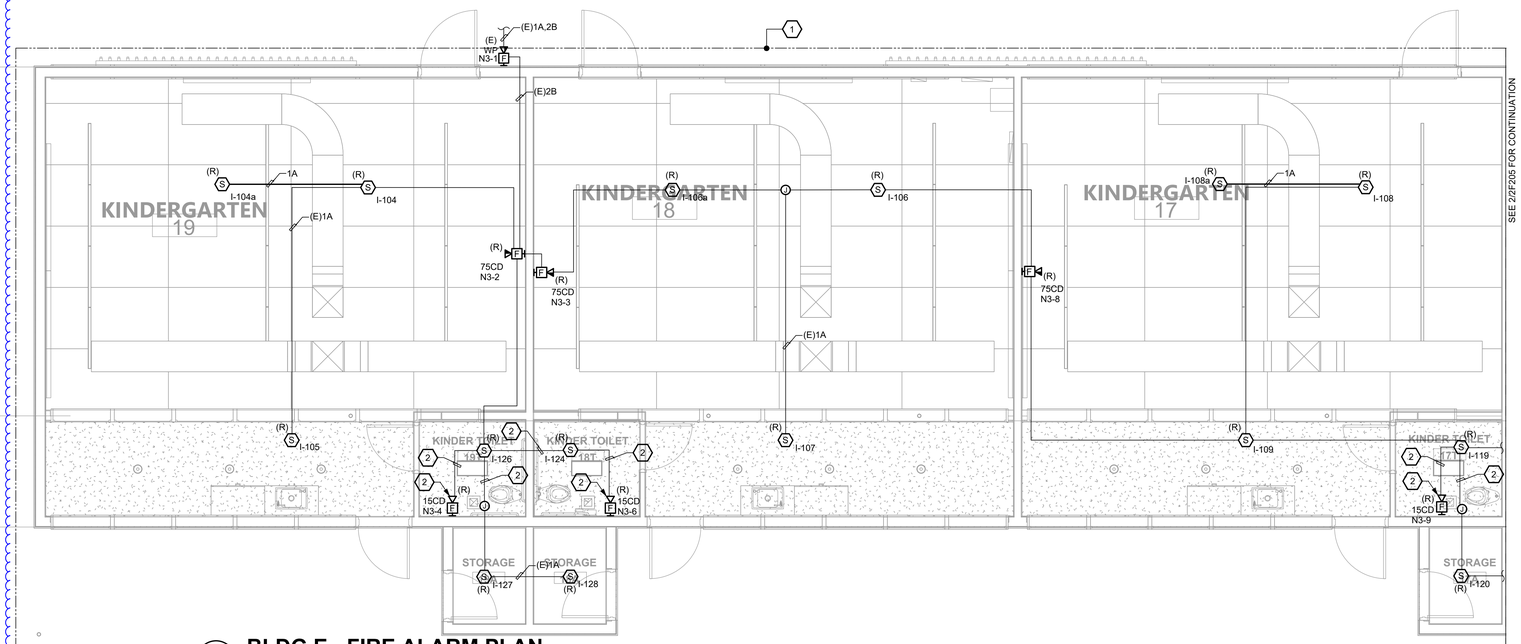
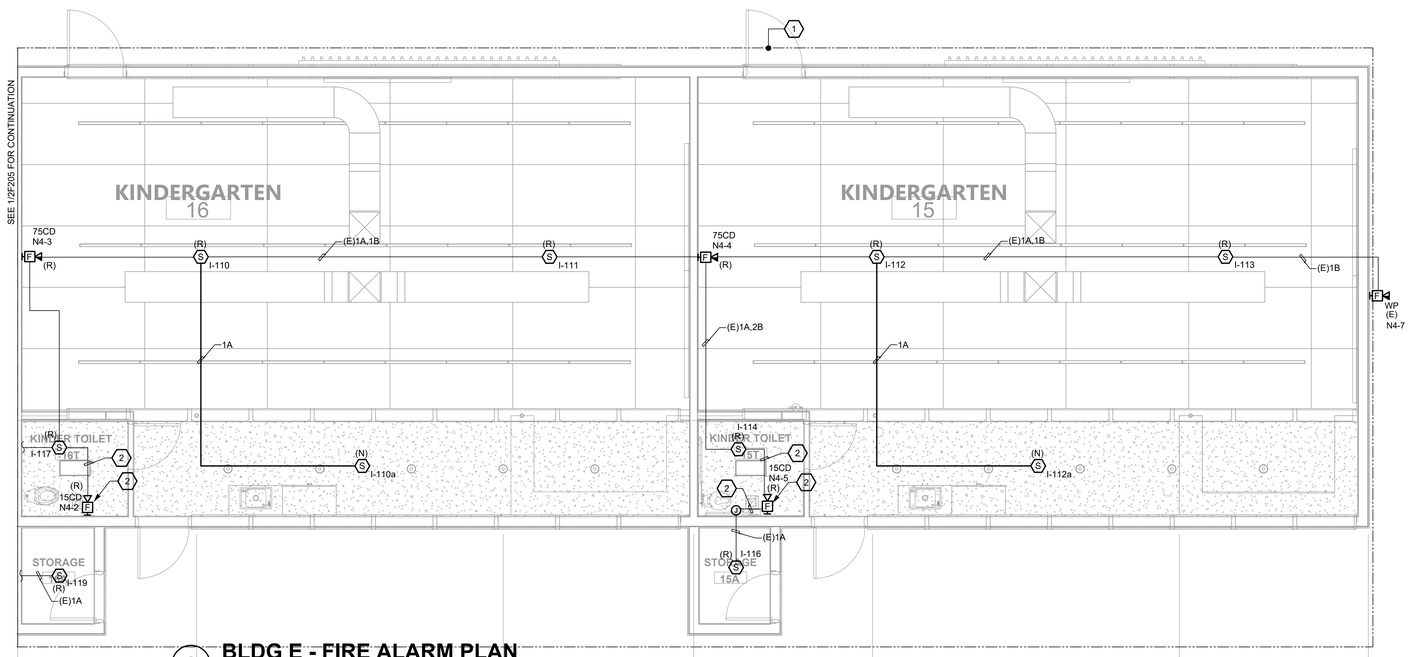
D	2#14 THWN	DSM INTERLOCK WIRING
E	AQ294	FIRE ALARM LOOP BELOW GRADE



1 BLDG E - FIRE ALARM PLAN

1/4" = 1'-0"



2 BLDG E - FIRE ALARM PLAN

1/4" = 1'-0"

GENERAL NOTES

A. CONNECT REMOTE NOTIFICATION POWER SUPPLIES TO FIRE ALARM CONTROL PANEL WITH TWO (2) #14 AWG, UNLESS OTHERWISE NOTED.

B. ALL DETECTION CIRCUITS SHALL USE TWO (2) #16AWG, UNLESS OTHERWISE NOTED.

C. SEE VOLTAGE DROP CALCULATIONS FOR NOTIFICATION CIRCUIT CABLE QUANTITY AND SIZE.

D. IN FINISHED INTERIOR AREAS, RUN ALL CONDUITS CONCEALED, UNLESS OTHERWISE NOTED. PAINT ALL EXPOSED CONDUITS AND ELECTRICAL EQUIPMENT. REFER TO ARCHITECTS PAINTING SECTION FOR REQUIREMENTS.

E. FOR RACEWAY IN NON-ACCESSIBLE LOCATIONS, USE EXPOSED WIREMOLD V700 SERIES SURFACED MOUNTED RACEWAYS.

F. ALL INTERIOR FIRE ALARM CONDUIT SHALL BE 3/4", UNLESS OTHERWISE NOTED.

G. SEE DETAILS FOR MOUNTING REQUIREMENTS OF FIRE ALARM DEVICES.

H. THERE SHALL BE NO ROOF PENETRATIONS WITHIN 5'-0" OF FIRE RATED OR AREA SEPARATION WALLS. VERIFY EXACT LOCATIONS OF THESE WALLS WITH ARCHITECTURAL DRAWINGS.

I. MAINTAIN ALL SPACING AND PENETRATION REQUIREMENTS THROUGH FIRE RATED OR AREA SEPARATION WALLS. VERIFY EXACT LOCATIONS OF THESE WALLS WITH ARCHITECTURAL DRAWINGS.

J. PROVIDE FIRE RATED ACCESS PANELS WHERE REQUIRED TO ALLOW ACCESS TO ABOVE CEILING HEAT DETECTORS FOR MAINTENANCE.

K. HEAT DETECTORS MOUNTED BELOW CEILING SHALL BE 135 DEGREE FIXED TEMP/RATE OF RISE. HEAT DETECTORS MOUNTED ABOVE CEILING SHALL BE 190 DEGREE HIGH FIXED TEMPURATURE, UNLESS OTHERWISE NOTED.

L. EXISTING NOTIFICATION DEVICES, WIRING, AND CIRCUITS SHOWN BASED ON DSA APPLICATION# 01-105340. RELOCATE DEVICES TO NEW SURFACES SHOWN AND PROVIDE NEW CONDUIT AND WIRING AS REQUIRED TO EXTEND TO NEW DEVICE LOCATIONS.

(#) SHEET NOTES

1. DISCONNECT AND REINSTALL EXISTING FIRE ALARM DEVICES AT SAME LOCATION, UNLESS OTHERWISE NOTED. INTERCEPT AND EXTEND BRANCH WIRING AND CONDUIT AS REQUIRED FOR A COMPLETE INSTALL. EXISTING DEVICES SHOWN ON PLAN BASED ON DSA APPLICATION# 01-105340. ANY EXISTING DEVICES THAT ARE NO LONGER IN WORKING CONDITION SHALL BE REPLACED-IN-KIND. FIELD VERIFY EXISTING DEVICES PRIOR TO COMMENCEMENT OF WORK. TEST ALL NEW, EXISTING, AND RELOCATED DEVICES AT THE COMPLETION OF CONSTRUCTION AND PROVIDE ALL REQUIRED TIME FOR TROUBLESHOOTING AND MATERIALS AS REQUIRED TO RESTORE SYSTEM TO A FULLY FUNCTIONAL STATE.

2. SEE DEMO FIRE ALARM PLANS FOR OLD LOCATION. INTERCEPT AND EXTEND BRANCH WIRING AND CONDUIT AS REQUIRED FOR A COMPLETE INSTALL. EXISTING DEVICES SHOWN ON PLAN BASED ON DSA APPLICATION# 01-105340. ANY EXISTING DEVICES THAT ARE NO LONGER IN WORKING CONDITION SHALL BE REPLACED-IN-KIND. FIELD VERIFY EXISTING DEVICES PRIOR TO COMMENCEMENT OF WORK.

AGENCY APPROVAL DSA# 01-121400

196
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PROFESSIONAL STAMP

REVISIONS

NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

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SHEET TITLE

FIRE ALARM PLANS BLDG E

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2F205

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4\23347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\inc 2\23347.50 - MH - 2F200 - Fire Alarm Plan.dwg
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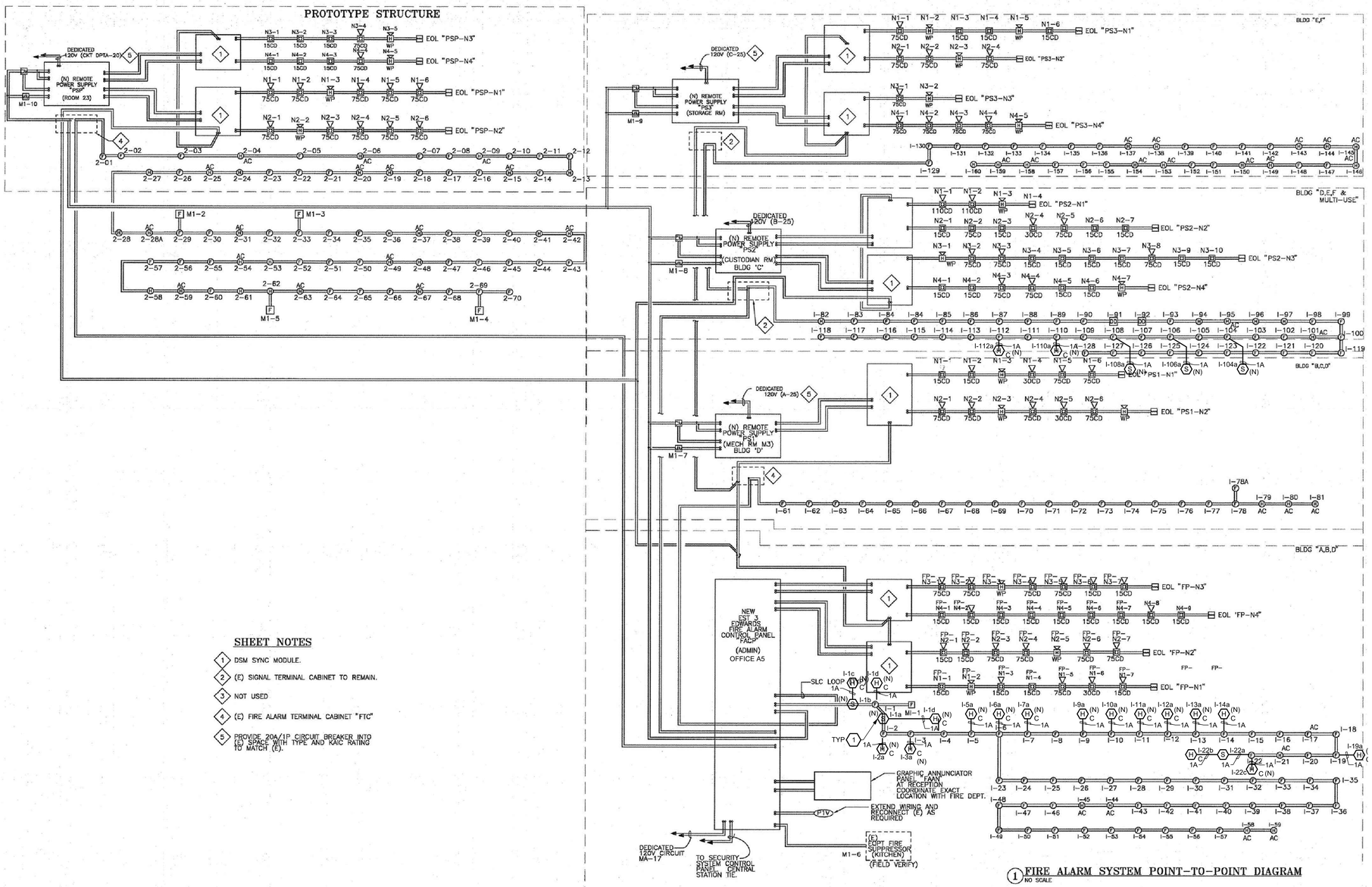
DATE PLOTTED: 8/29/2023 11:49:13 AM FILE LOCATION: C:\Users\Skim\Documents\23119.01_MTDUSD_MEADOW HOMES ES MODERNIZATION_A23_skim32Q7M.rvt



SHEET NOTES

1. DSM SYNC MODULE.
2. (E) SIGNAL TERMINAL CABINET TO REMAIN.
3. NOT USED
4. (E) FIRE ALARM TERMINAL CABINET "FTC"
5. PROVIDE 20A/1P CIRCUIT BREAKER INTO (E) SPACE WITH TYPE AND KAIC RATING TO MATCH (E).

1 FIRE ALARM SYSTEM POINT-TO-POINT DIAGRAM
NO SCALE

GENERAL NOTES

A. REFER TO DSA APPLICATION# 01-105340 FOR ADDITIONAL INFORMATION.

B. EXISTING EQUIPMENT AND DEVICES SHOWN UNLESS OTHERWISE NOTED.

SHEET NOTES

1. INTERCEPT (E) WIRING AND CONNECT TO NEW DEVICE. PROVIDE NEW CONDUIT AND WIRE, SIZE AND TYPE TO MATCH (E), AS REQUIRED TO CONNECT DEVICE. TYP ALL NEW DEVICES SHOWN.

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SHEET TITLE

RISER DIAGRAM

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.

2F301

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_4702347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 2\2347.50 - MH - 2F000 - General Information.dwg
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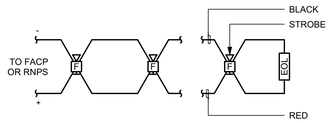
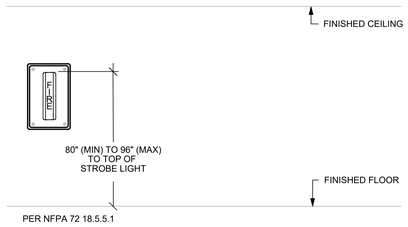
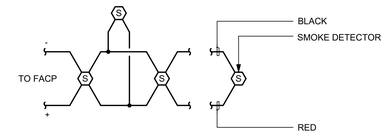


TYPICAL STROBE WIRING DIAGRAM

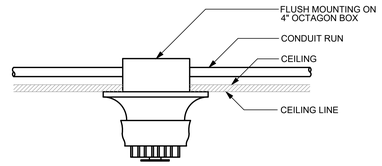


4 STROBE INSTALLATION

NOT TO SCALE

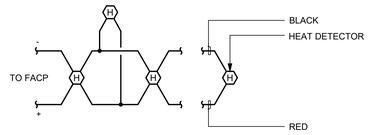


TYPICAL SMOKE DETECTOR WIRING DIAGRAM

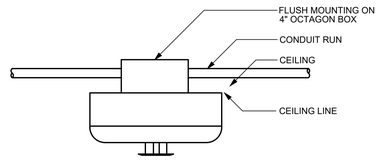


1 ADDRESSABLE SMOKE DETECTOR INSTALLATION

NOT TO SCALE

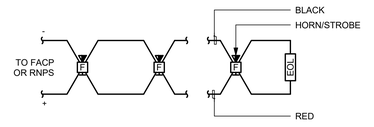


TYPICAL HEAT DETECTOR WIRING DIAGRAM

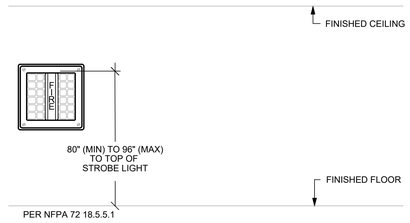


2 ADDRESSABLE HEAT DETECTOR INSTALLATION

NOT TO SCALE



TYPICAL HORN/STROBE WIRING DIAGRAM



3 2 WIRE HORN/STROBE INSTALLATION

NOT TO SCALE

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SHEET TITLE
DETAILS

DRAWN BY: TL JOB NUMBER: 23119.02

SHEET NO.
2F401

DATE: SEPTEMBER 24TH, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: G:\shared drives\01_projects\madi architecture_47\23347.50 - mount diablo usd modernization\05_drawings\01_DWGs\Meadow Homes\Inc 23347.50 - MH - 2F400 - Details.dwg
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ABBREVIATIONS:

REVISED: 09/20/2023

A	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ANN	ANNUNCIATOR
AP	ACCESS POINT
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BICSI	BUILDING INDUSTRY CONSTRUCTION SERVICE INTERNATIONAL
BLDG	BUILDING
C	CONDUIT
CAB	CABINET
CAT	CATEGORY
CATV	CABLE TELEVISION
CD	CANDELA
CFCI	CONTRACTOR FURNISHED/CONTRACTOR INSTALLED
CL	CENTER LINE
CO	CARBON MONOXIDE
DN	DOWN
(E)	EXISTING
EMT	ELECTRICAL METALLIC TUBING
EOL	END OF LINE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FTC	FIRE TERMINAL CABINET
GRC	GALVANIZED RIGID CONDUIT
G OR GB	GROUND BOX
IACP	INTRUSION ALARM CONTROL PANEL
IDF	INTERMEDIATE DISTRIBUTION FRAME
IMC	INTERMEDIATE METAL CONDUIT
J OR JB	JUNCTION BOX
MEP	MECHANICAL / ELECTRICAL / PLUMBING
MDF	MAIN DISTRIBUTION FRAME
MPOE	MINIMUM PONT OF ENTRY
(N)	NEW
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NTS	NOT TO SCALE
N/A	NOT APPLICABLE
OFE	OWNER FURNISHED EQUIPMENT
OFCI	OWNER FURNISHED/CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED/OWNER INSTALLED
OSP	OUTSIDE PLANT
PVC	POLYVINYL CHLORIDE
RCDD	REGISTERED COMMUNICATION DISTRIBUTION DESIGNER
RCWY	RACEWAY
RM	ROOM
SR	SURFACE RACEWAY
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRIGHTERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
W	WATT
WP	WEATHERPROOF

TECHNOLOGY SYMBOL LEGEND:

ALL EQUIPMENT AND MATERIALS ARE CONTRACTOR FURNISHED, INSTALLED AND CONFIGURED (UNO)

SYMBOL	DESCRIPTION	MFG/MODEL	PART NUMBER	NOTES / DETAIL REFERENCES
R	DATA RACK	PANDUIT	SEE 27 10 00	SEE SINGLE LINE (1 2T-602) (2 2T-603) (4 2T-602)
G	GROUND BOX	EXISTING	EXISTING	N/A
J	JUNCTION BOX	COMMERCIAL GENERIC	N/A	GREY = EXISTING (8 2T-601)
– – – –	UNDERGROUND CONDUIT	COMMERCIAL GENERIC	N/A	GREY = EXISTING
———	CONDUIT (EMT & GRC)	COMMERCIAL GENERIC	N/A	GREY = EXISTING (12 2T-600) (13 2T-600)
E	CONDUIT STUB	COMMERCIAL GENERIC	N/A	GREY = EXISTING (11 2T-600)
2300	SURFACE RACEWAY	WIREMOLD	WM2300	N/A (1 2T-601)
J J J	J-HOOK (SINGLE/STACKED)	PANDUIT	SEE 27 05 00	N/A (3 2T-600)
5400	SURFACE RACEWAY	WIREMOLD	WM5400	COORDINATE W/ ELEC. (1 2T-601)
▲ #	CAT6A DATA DROP LOCATION (# = QTY) - DATA PERMANENT LINK	PANDUIT	SEE 27 10 00	N/A (7 2T-601)
▲ B	FUTURE DATA LOCATION. PATHWAY ONLY WITH BLANK COVER	N/A	N/A	N/A
AP	DATA LOCATION, CAT6A JACK/CABLE, CEILING, QTY 2	PANDUIT	SEE 27 10 00	N/A (5 2T-601) (6 2T-601)
	INTERIOR WIRELESS ACCESS POINT	ARUBA	OFCI	OFCI
	MOUNT	ARUBA	SOJ40A	N/A
▲ W	DATA LOCATION, CAT6A JACK / CABLE	PANDUIT	SEE 27 10 00	+48 AFF, PHONE PLATE (9 2T-601)
	PHONE HANDSET EQUIPMENT (WALL MOUNT)	POLY	OFCI	OFCI
CAM-# TYPE	CAT6A DATA DROP LOCATION (QTY = 1) - NETWORK CAMERA	PANDUIT	SEE 27 10 00	N/A (9 2T-800) (2 2T-801) (1 2T-602) (2 2T-802)
	NETWORK CAMERA	AXIS	OFCI	OFCI
	MOUNT	AXIS	SEE 28 20 00	N/A
STC	SIGNAL TERMINAL CABINET	EXISTING	EXISTING	N/A
TGB	GROUND BUS BAR	PANDUIT	SEE 27 10 00	N/A (7 2T-800) (8 2T-800)
SPK IP	CAT6A DATA DROP LOCATION (QTY = 1) - IP CLOCK/SPEAKER/IP MODULE COMBO BOX	ATLAS	SEE SHEET 2T-701	N/A (6 2T-800)
	CAT6A DATA DROP LOCATION - WALL MOUNTED SPEAKER/IP MODULE	ATLAS	SEE SHEET 2T-701	N/A (5 2T-800)
WP	CAT6A DATA DROP LOCATION - EXTERIOR INTERCOM SPEAKER/IP MODULE	ATLAS	SEE SHEET 2T-701	N/A (4 2T-800)
TEL	PHONE HANDSET EQUIPMENT	POLY	SEE 27 21 00	OFCI
FACP	FIRE ALARM CONTROL PANEL	EXISTING	EXISTING	N/A
IACP	INTRUSION ALARM CONTROL PANEL	EXISTING	EXISTING	N/A
IP-CON	INTERCOM CONSOLE	ATLAS	EXISTING	N/A
MPOE	MINIMUM POINT OF ENTRY	EXISTING	EXISTING	N/A
12:00	CAT6A DATA DROP LOCATION (QTY = 1) - IP CLOCK	ATLAS	SEE SHEET 2T-701	N/A
	LADDER RACK	CHATSWORTH PRODUCTS	11275-712	(14 2T-800) (15 2T-800) (16 2T-800) (17 2T-800) (18 2T-800) (19 2T-800)
BMS	BMS SYSTEM	EXISTING	EXISTING	N/A
ES	CAT6A DATA DROP LOCATION (QTY = 1) - ENTRY STATION	EXISTING	EXISTING	N/A

TECHNOLOGY SCOPE OF WORK:

1. THE CONTRACTOR SHALL FULLY RE-CABLE THE DATA NETWORK, INCLUDING COPPER AND FIBER, UTILIZING A COMBINATION OF NEW AND EXISTING PATHWAY.
2. ALL EQUIPMENT SHALL BE NEW AND CONTRACTOR FURNISHED, UNO.
3. THE CONTRACTOR SHALL REMOVE OLD OR ABANDONED DATA NETWORK AND AUDIO/VISUAL COMPONENTS, INCLUDING DEVICES, MOUNTS, ENCLOSURES, WIRE AND PATHWAY.
4. THE CONTRACTOR SHALL COORDINATE CUTOVERS AND ACTIVATION/COMMISSIONING OF NEW SYSTEMS WITH DISTRICT REPRESENTATIVE AND DISTRICT STAFF.

ANCHORAGE AND BRACING NOTES:

APPLICABLE CODE: 2022 CBC REVISED: 03/12/2024

MEP COMPONENT ANCHORAGE NOTE:

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26 THRU 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVEABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVEABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENTS.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTION SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE:

PIPING, DUCTWORK,AND ELECTRICAL SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTIONS 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5,13.6.6, 13.6.7, 13.6.8 AND 2022 CBC SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTIONS SYSTEM ARE A NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPES (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP ☐ MD ☐ PP ☐ E ☐ OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS

MP ☐ MD ☐ PP ☐ E ☒ OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVED (OPM #)

PRE-CON MEETING REQUIREMENTS:

1. PRIOR TO BEGINNING ANY SITE WORK, INCLUDING DEMO, AN ON-SITE PRE-CONSTRUCTION MEETING SHALL BE HELD WITH THE LOW VOLTAGE DESIGNER. ANY SITE WORK COMMENCED PRIOR TO THIS MEETING SHALL BE AT THE CONTRACTOR'S SOLE RISK.

JOB SPECIFIC STANDARDS FOR LOW VOLTAGE:

SEE SPECIFICATIONS DIVISION 27 AND 28 FOR COMPLETE REQUIREMENTS.

1. CONDUIT BODIES, CONDULETS, PULLING ELBOWS, AND/OR "LB" FITTINGS ARE PROHIBITED IN ANY PATHWAY CONTAINING DATA CABLING (COPPER OR FIBER).
2. SINGLE HOLE CONDUIT STRAPS ARE PROHIBITED.
3. ALL WIRE AND CABLE PASSING THROUGH METALWORK SHALL BE SLEEVED WITH AN APPROPRIATE GROMMET OR BUSHING.

PROJECT CODES AND STANDARDS:

PARTIAL LIST OF APPLICABLE CODES AND STANDARDS EFFECTIVE JANUARY 1, 2022:

2022 CALIFORNIA ADMINISTRATIVE CODE (CAC), CCR, TITLE 24, PART 1
2022 CALIFORNIA BUILDING CODE (CBC), CCR, TITLE 24, PART 2 (INTERNATIONAL BUILDING CODE WITH CALIFORNIA AMENDMENTS)
2022 CALIFORNIA ELECTRICAL CODE (CEC), CCR, TITLE 24, PART 3 (NATIONAL ELECTRICAL CODE WITH CALIFORNIA AMENDMENTS)
2022 CALIFORNIA MECHANICAL CODE (CMC), CCR, TITLE 24, PART 4 (UNIFORM MECHANICAL CODE, WITH CALIFORNIA AMENDMENTS)
2022 CALIFORNIA PLUMBING CODE (CPC), CCR, TITLE 24, PART 5 (UNIFORM PLUMBING CODE, WITH CALIFORNIA AMENDMENTS)
2022 CALIFORNIA ENERGY CODE, CCR, TITLE 24, PART 6
2022 CALIFORNIA FIRE CODE (CFC), CCR, TITLE 24, PART 9 (INTERNATIONAL FIRE CODE WITH CALIFORNIA AMENDMENTS)
2022 CALIFORNIA GREEN BUILDING STANDARDS CODE, CCR, TITLE 24, PART 11
2022 CALIFORNIA REFERENCED STANDARDS CODE, CCR, TITLE 24, PART 12
2022 NFPA 72: NATIONAL FIRE ALARM AND SIGNALING CODE, NATIONAL FIRE PROTECTION ASSOCIATION

PROJECT NOTES:

PRODUCT ORDERING
1. ANY PRODUCTS WITH LONG LEAD TIMES SHALL BE BROUGHT TO THE PROJECT MANAGER'S ATTENTION.
2. PRODUCT ORDERING SHALL ONLY OCCUR AFTER APPROVED PRODUCT SUBMITTALS, APPROVED SUBSTITUTION REQUEST (IF ANY) AND APPROVED SHOP DRAWINGS.

INSTALLATION
1. ANY DISCREPANCIES BETWEEN THE DESIGN DOCUMENTS AND GOVERNING CODE / STANDARDS SHALL BE BROUGHT TO THE PROJECT MANAGER'S ATTENTION.
2. A STAMPED SET OF APPROVED DESIGN DOCUMENTS AND SHOP DRAWINGS SHALL BE ONSITE AT ALL TIMES.
3. CONTRACTOR SHALL CONSTANTLY MAINTAIN ONSITE REDLINE DRAWINGS AND BE AVAILABLE FOR INSPECTION BY THE INSPECTOR OF RECORD.
4. ANY PENETRATIONS THROUGH RATED ASSEMBLIES REQUIRE MATERIALS / EQUIPMENT APPROVED TO MAINTAIN THE RATING OF THE ASSEMBLY.
5. ALL WIRING SHALL BE CONNECTED TO DEVICES, NO SPLICING IS ALLOWED.
6. ALL LOW-VOLTAGE CABLING SHALL BE IN CONDUIT, RACEWAY OR OPEN AIR ON J-HOOKS / CABLE TRAY FOR ABOVE CEILINGS.
7. POWER FOR LOW-VOLTAGE SYSTEMS TO BE DEDICATED TO EACH SYSTEM AND WORK TO BE PERFORMED BY A LICENSED ELECTRICIAN.
8. LOW VOLTAGE EQUIPMENT, CABINETS AND ACCESSORIES TO BE MOUNTED PER MANUFACTURER'S INSTRUCTIONS. NO SINGLE DEVICE SHALL EXCEED 20 POUNDS IN WEIGHT WITHOUT SPECIAL MOUNTING DETAILS.
9. CONTRACTOR SHALL REQUEST A PUNCH WALK INSPECTION 10 WORKING DAYS PRIOR TO FINAL INSPECTION.
10. PRIOR TO FINAL INSPECTION CONTRACTOR SHALL PROVIDE PRINTED REDLINES FOR USE BY THE INSPECTORS.
11. AT THE FINAL INSPECTION THE CONTRACTOR SHALL PROVIDE A SATISFACTORY TEST OF THE ENTIRE SYSTEM(S) IN PRESENCE OF THE DESIGNER/ENGINEER, INSPECTOR OF RECORD, THE OWNER OR THE OWNER'S REPRESENTATIVE.
12. THE CONTRACTOR SHALL PROVIDE OWNER WITH SYSTEM OPERATION TRAINING.

CONTRACTOR FURNISHED DOCUMENTS:

SEE SECTION 27 00 00 FOR MORE INFORMATION / REQUIREMENTS

PRODUCT SUBMITTALS
1. SUBMIT PRODUCT MATERIALS SUBMITTALS PER 27 00 00 REQUIREMENTS
2. ANY PROPOSED ALTERNATIVE PRODUCTS REQUIRE A WRITTEN PRODUCT SUBSTITUTION REQUEST.

SHOP DRAWINGS
1. SUBMIT SHOP DRAWINGS PER 27 00 00 REQUIREMENTS
2. SHOP DRAWINGS ARE REQUIRED FOR MDF/IDF DATA RACK LAYOUTS, MDF/IDF WALL ELEVATIONS, AUDIO-VISUAL SYSTEMS AND INTERCOM SYSTEMS.
3. DESIGN DOCUMENTS ARE AS ACCURATE AS POSSIBLE, BUT SHALL BE CONSIDERED AS DIAGRAMMATIC.
4. SHOP DRAWINGS SHALL PRESENT A LEVEL OF DETAIL FOR A COMPLETE, BUILDABLE AND OPERABLE SYSTEM.
5. SHOP DRAWINGS ALLOW THE CONTRACTOR TO MAKE CORRECTIONS FOR ERRORS/OMISSIONS IN DESIGN DOCUMENTS.
6. IN CASE OF DOUBT OF WORK INTENDED, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REQUEST INSTRUCTIONS FROM THE PROJECT MANAGER.
7. APPROVED SHOP DRAWINGS ARE REQUIRED PRIOR TO START OF WORK. ANY WORK STARTED PRIOR TO SHOP DRAWING APPROVAL SHALL BE AT CONTRACTOR'S OWN RISK.
8. CONTRACTOR IS RESPONSIBLE FOR A COMPLETE AND OPERABLE SYSTEM AND ANY COMPONENT(S) NEEDED FOR A COMPLETE AND OPERABLE SYSTEM AFTER SHOP DRAWING APPROVAL SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

CONTRACTOR CERTIFICATION
1. STRUCTURED DATA CABLING AND INTERCOM SYSTEMS REQUIRE CERTIFIED INSTALLERS. CONTRACTOR TO PROVIDE CERTIFICATIONS PRIOR TO START OF WORK.
2. CONTRACTOR SHALL ONLY PROVIDE WORK FOR SYSTEMS THAT THEY POSSESS CURRENT AND VALID CERTIFICATIONS.

CLOSEOUT DOCUMENTS
1. DOCUMENTS PER 27 00 00 REQUIREMENTS
2. UPDATED PRINTED AS-BUILT DRAWINGS
3. TYPED RECORD OF COMPLETION

TECHNOLOGY SHEET INDEX:

SHEET	DESCRIPTION
2T-000	TECHNOLOGY INFRASTRUCTURE COVER SHEET
2T-010	TECHNOLOGY INFRASTRUCTURE SITE PLAN DEMO
2T-020	TECHNOLOGY INFRASTRUCTURE FLOOR PLANS DEMO
2T-021	TECHNOLOGY INFRASTRUCTURE FLOOR PLANS DEMO
2T-100	TECHNOLOGY INFRASTRUCTURE SITE PLAN NEW
2T-200	TECHNOLOGY INFRASTRUCTURE FLOOR PLANS NEW
2T-201	TECHNOLOGY INFRASTRUCTURE FLOOR PLANS NEW
2T-300	TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLAN NEW
2T-301	TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLAN NEW
2T-700	TECHNOLOGY INFRASTRUCTURE RACK ELEVATIONS
2T-701	TECHNOLOGY INFRASTRUCTURE SINGLE LINE DIAGRAMS
2T-800	TECHNOLOGY INFRASTRUCTURE DETAILS
2T-801	TECHNOLOGY INFRASTRUCTURE DETAILS
2T-802	TECHNOLOGY INFRASTRUCTURE DETAILS
2T-803	TECHNOLOGY INFRASTRUCTURE DETAILS

AGENCY APPROVAL DSA# 01-121400

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REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
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JENNY KAGEYAMA
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Regis. No.163629

REVISIONS

# NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr.
Concord, CA 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

TECHNOLOGY INFRASTRUCTURE COVER SHEET

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

SHEET NO.

2T-000

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/1/2024 5:02:54 PM FILE LOCATION: C:\Users\dvargas\Documents\23044_MTUSD_ IT Network Design 13 Sites_A22_dvargasTH8BX.rvt



TECHNOLOGY INFRASTRUCTURE SITE PLAN DEMO

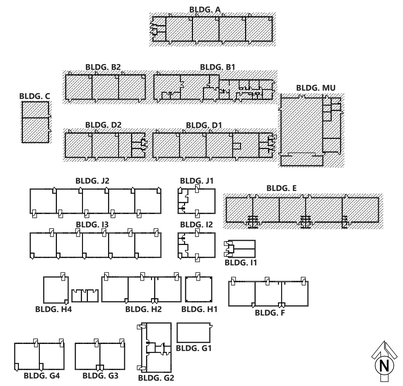
SCALE: 1"=20'

0 20 40

GENERAL NOTES:

1. CONTRACTOR TO REMOVE AND DISPOSE OF ALL (E) DATA NETWORK COPPER AND FIBER CABLING, SERVING BUILDINGS IN THIS INCREMENT, INCLUDING WITHIN CONDUITS AND PULL BOXES. CARE SHALL BE TAKEN NOT TO DISTURB OR DAMAGE ACTIVE SYSTEMS. COORDINATE WITH DISTRICT REPRESENTATIVE PRIOR TO DEMO.
2. CONTRACTOR TO REMOVE AND DISPOSE OF ALL (E) ANALOG TELEPHONE CABLING SERVING BUILDINGS IN THIS INCREMENT, INCLUDING WITHIN CONDUITS AND PULL BOXES. PROVIDE BLANK WALL PLATE AT ALL LOCATIONS. RETURN ANALOG PHONES TO DISTRICT. IMPORTANT: REVIEW COPPER SINGLE LINE DIAGRAM ON 2/2T-701 FOR TEMPORARY SERVICE BUILD OUT PRIOR TO DEMO. COORDINATE WITH DISTRICT REPRESENTATIVE PRIOR TO DEMO.
3. CONTRACTOR TO REMOVE AND RETURN TO DISTRICT ALL (E) VIDEO PROJECTORS, A/V CABLING, CONTROL PANELS, INPUT STATIONS, AND LAPTOP DESKS. PATCH AND PREP FOR PAINT.
4. CONTRACTOR TO REMOVE AND DISPOSE OF ALL UNUSED OR ABANDONED SURFACE RACEWAY. PATCH AND PREP FOR PAINT.
5. CONTRACTOR TO RETURN REMOVED EQUIPMENT IN EXISTING WORKING ORDER. CARE SHALL BE TAKEN NOT TO DAMAGE REMOVED EQUIPMENT. EQUIPMENT SHALL BE LABELED WITH SITE NAME AND BOXED UP PRIOR TO RETURNING TO DISTRICT.
6. ALL EQUIPMENT SHALL BE RETURNED TO MDUSD. CONTACT DISTRICT REPRESENTATIVE COORDINATE RETURN PROCEDURE.
7. CONTRACTOR TO PROVIDE (N) BLANKING PLATES AND/OR (N) CHANNEL COVERS FOR (E) DATA LOCATIONS REMOVED FROM SURFACE RACEWAY AS A RESULT OF DEMO.
8. CONTRACTOR TO REMOVE AND RETURN TO DISTRICT ALL (E) WIRELESS APS AND MOUNTS. PATCH AND PREP FOR PAINT.
9. CONTRACTOR TO REMOVE AND DISPOSE OF ALL (E) ANALOG INTERCOM AND CLOCK CABLING FROM ENDPOINT TO ENDPOINT, INCLUDING WITHIN CONDUITS AND PULL BOXES.
10. CONTRACTOR TO REMOVE AND RETURN TO DISTRICT ALL (E) ANALOG CLOCKS, SPEAKERS, AND SURFACE BACKBOXES. PATCH AND PREP FOR PAINT.
11. ALL IP PHONES (POLY E100) SHALL BE LABELED WITH ROOM NUMBER, REMOVED, AND STORED IN A SUITABLE LOCATION DURING THE CONSTRUCTION PERIOD. PHONES SHALL BE RE-INSTALLED IN THE ROOM FROM WHICH THEY CAME, UTILIZING THE WALL PHONE DATA LOCATION, AS OCCURS.

KEY PLAN



AGENCY APPROVAL DSA# 01-121400

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1936 Carlotta Dr.
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1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

TECHNOLOGY INFRASTRUCTURE SITE PLAN DEMO

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

SHEET NO.

2T-010

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/1/2024 5:02:54 PM FILE LOCATION: C:\Users\dvargas\Documents\23044_MTUSD_ IT Network Design 13 Sites_A22_dvargasTH8BX.rvt

SHEET NOTES CONT'D:

9 NOT USED.

10 DEMO (E) NETWORK SWITCH ON SHELF OR WALL BRACKET, AS OCCURS. DEMO ALL (E) DATA DROPS TERMINATING AT THIS NETWORK SWITCH.

11 DEMO (E) EXTERIOR CAMERA, MOUNT, CABLING, AND SURFACE RACEWAY. PATCH AND PREP FOR PAINT, AND PROVIDE (N) BLANKING PLATES AND/OR END CAPS FOR ALTERED SURFACE RACEWAY.

12 DEMO (E) CONDUIT PENETRATION, J-BOX, AND ABANDONED CONDUIT. PATCH WALL.

13 DISCONNECT (E) BOGEN CABINET. DELIVER TO DISTRICT WAREHOUSE IN GOOD CONDITION. DEMO (E) BACKBOARD, 66 BLOCKS, INTERCOM CABLING, AND ABANDONED CONDUIT.

14 DEMO (E) PBX, DELIVER TO DISTRICT WAREHOUSE IN GOOD CONDITION. DEMO (E) BACKBOARD, 66 BLOCKS, PHONE CABLING, AND ABANDONED CONDUIT.

15 DEMO (E) MDF CABINET. IMPORTANT: PRIOR TO DEMO, SEE NOTES ON SHEET 2T-700 FOR SPECIFIC REQUIREMENTS.

16 DEMO (E) CLOCK POWER SUPPLY AND CABLING. SAFE OFF POWER, AS REQ'D.

17 DEMO (E) ANALOG PHONE 66 BLOCKS AND CABLING, THIS LOCATION. IMPORTANT: PRIOR TO DEMO, SEE NOTES ON SHEET 2T-701 FOR CUTOVER AND TEMPORARY SERVICE REQUIREMENTS.

18 DEMO (E) IR EMITTER, MOUNT, WIRING, AND POWER SUPPLY.

19 DEMO ALL (E) ANALOG PHONE, ANALOG INTERCOM, CLOCK AND COAX TV CABLING TERMINATING AT THIS STC. DEMO FROM ENDPOINT TO ENDPOINT INCLUDING WITHIN CONDUITS AND PULL BOXES.

20 DEMO ALL COAX TV CABLING, HEADEND EQUIPMENT, AND CABINET. SEE PICTURE DETAIL.

SHEET NOTES:

1 DEMO (E) IDF CABINET, BACKBOARD, AND OTHER DATA EQUIP. ON WALL, AS OCCURS. DEMO ALL (E) DATA DROPS AND FIBER TERMINATING AT THIS IDF.

2 DEMO (E) VIDEO PROJECTOR, MOUNT, LOW VOLTAGE CABLING, INPUT PLATE, AND SCREEN, AS OCCURS. REMOVE SURFACE RACEWAY SERVING PROJECTOR LOCATION.

3 DEMO (E) LCD TV, INCLUDING MOUNT, WALL CONTROLLER, INPUT PLATE, AND LOW VOLATE CABLING.

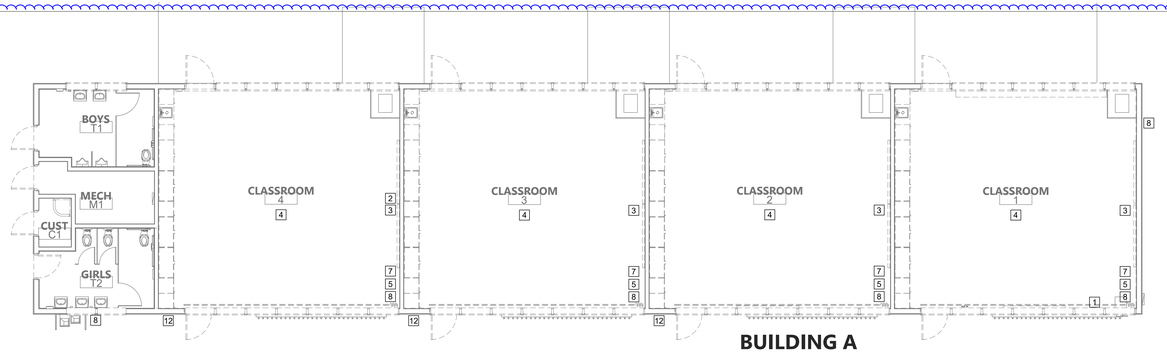
4 DEMO (E) WIRELESS AP, MOUNT, CABLING, AND SURFACE RACEWAY.

5 DEMO (E) ANALOG TELEPHONE, WALL PLATE, AND WIRING TO SOURCE. PROVIDE (N) BLANK WALL PLATE. IMPORTANT: IP PHONES (POLY E100) ARE TO BE PRESERVED AND REINSTALLED. SEE DEMO GENERAL NOTE 12.

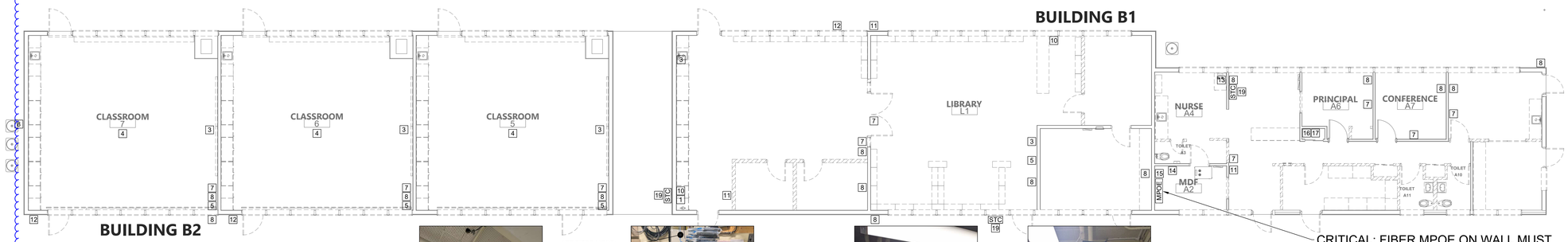
6 DEMO (E) LAPTOP DESK WALL UNIT.

7 DEMO (E) CLOCK, BACKBOX, CONDUIT, AND CABLE TO HEADEND. PATCH AND PREP FOR PAINT.

8 DEMO (E) SPEAKER, DEMO INTERCOM CABLE TO HEADEND. REMOVE BACKBOX FROM WALL. PATCH AND PREP FOR PAINT.



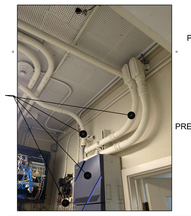
BUILDING A



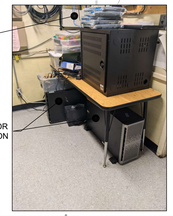
BUILDING B1

BUILDING B2

CRITICAL: FIBER MPOE ON WALL MUST BE PROTECTED IN PLACE DURING ALL CONSTRUCTION ACTIVITIES.

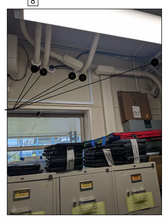


DEMO PBX, 66 BLOCKS, AND CONDUITS

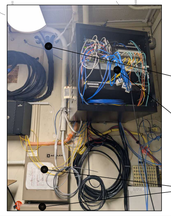


ATT FIBER MPOE: PROTECT IN PLACE

PRESERVE SERVERS FOR REINSTALLATION



FOR CONDUITS EMPTIED AS A RESULT OF CABLE DEMO, CUT OFF JUST INSIDE ROOM AND PROVIDE INSULATED BUSHING.



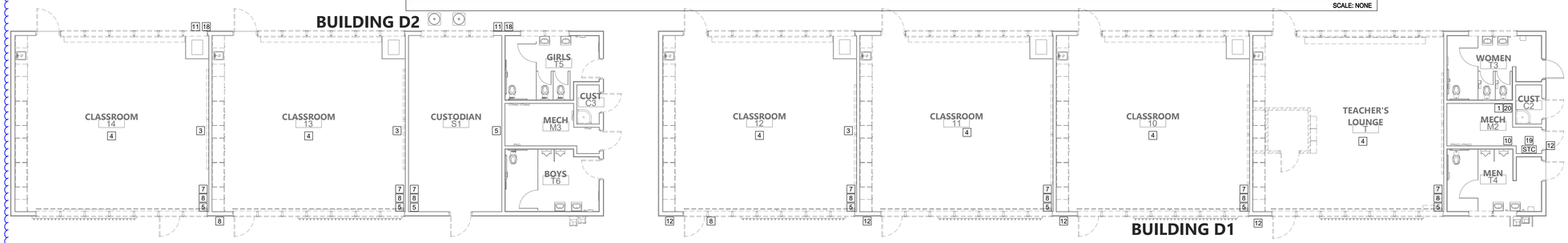
FIBER TO BE REWORKED TO (N) MDF RACK. PRESERVE IN PLACE DURING CONSTRUCTION. SEE SINGLE LINE FOR DETAILS.

(E) MDF TO REMAIN OPERATIONAL UNTIL CUTOVER APPROVED BY DISTRICT REPRESENTATIVE. SEE NOTES ON 2T-700 FOR SPECIFIC REQUIREMENTS.

DEMO IF ABANDONED. VERIFY WITH DISTRICT REPRESENTATIVE.

PICTURE DETAILS - MDF

SCALE: NONE



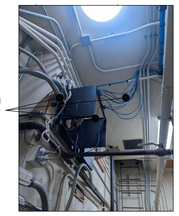
BUILDING D2

BUILDING D1

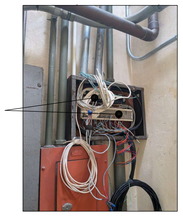
DEMO ALL COAX CABLING AND EQUIPMENT AND CABINET



DEMO BRACKET, PATCH PANEL, CABLING, AND ABANDONED CONDUITS.



DEMO ABANDONED DATA, ANALOG INTERCOM, ANALOG PHONE, AND PATCH BLOCKS.



PICTURE DETAILS - ROOM M2

SCALE: NONE

GENERAL NOTES CONT'D:

5. CONTRACTOR TO RETURN REMOVED EQUIPMENT IN EXISTING WORKING ORDER. CARE SHALL BE TAKEN NOT TO DAMAGE REMOVED EQUIPMENT. EQUIPMENT SHALL BE LABELED WITH SITE NAME AND BOXED UP PRIOR TO RETURNING TO DISTRICT.
6. ALL EQUIPMENT SHALL BE RETURNED TO MDUSD. CONTACT DISTRICT REPRESENTATIVE COORDINATE RETURN PROCEDURE.
7. CONTRACTOR TO PROVIDE (N) BLANKING PLATES AND/OR (N) CHANNEL COVERS FOR (E) DATA LOCATIONS REMOVED FROM SURFACE RACEWAY AS A RESULT OF DEMO.
8. CONTRACTOR TO REMOVE AND RETURN TO DISTRICT ALL (E) WIRELESS APS AND MOUNTS. PATCH AND PREP FOR PAINT.
9. CONTRACTOR TO REMOVE AND DISPOSE OF ALL (E) ANALOG INTERCOM AND CLOCK CABLING FROM ENDPOINT TO ENDPOINT, INCLUDING WITHIN CONDUITS AND PULL BOXES.
10. CONTRACTOR TO REMOVE AND RETURN TO DISTRICT ALL (E) ANALOG CLOCKS, SPEAKERS, AND SURFACE BACKBOXES. PATCH AND PREP FOR PAINT.
11. ALL ATOMIC BATTERY CLOCKS (AMERICAN TIME) REMOVED SHALL BE BOXED AND DELIVERED TO THE DISTRICT WAREHOUSE IN GOOD CONDITION.
12. ALL IP PHONES (POLY E100) SHALL BE LABELED WITH ROOM NUMBER, REMOVED, AND STORED IN A SUITABLE LOCATION DURING THE CONSTRUCTION PERIOD. PHONES SHALL BE RE-INSTALLED IN THE ROOM FROM WHICH THEY CAME, UTILIZING THE WALL PHONE DATA LOCATION, AS OCCURS.

GENERAL NOTES:

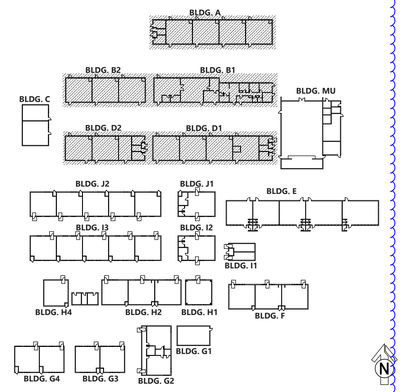
1. CONTRACTOR TO REMOVE AND DISPOSE OF ALL (E) DATA NETWORK COPPER AND FIBER CABLING, SERVING BUILDINGS IN THIS INCREMENT, INCLUDING WITHIN CONDUITS AND PULL BOXES. CARE SHALL BE TAKEN NOT TO DISTURB OR DAMAGE ACTIVE SYSTEMS. COORDINATE WITH DISTRICT REPRESENTATIVE PRIOR TO DEMO.
2. CONTRACTOR TO REMOVE AND DISPOSE OF ALL (E) ANALOG TELEPHONE CABLING SERVING BUILDINGS IN THIS INCREMENT, INCLUDING WITHIN CONDUITS AND PULL BOXES. PROVIDE BLANK WALL PLATE AT ALL LOCATIONS, RETURN ANALOG PHONES TO DISTRICT.
3. CONTRACTOR TO REMOVE AND RETURN TO DISTRICT ALL (E) VIDEO PROJECTORS, A/V CABLING, CONTROL PANELS, INPUT STATIONS, AND LAPTOP DESKS. PATCH AND PREP FOR PAINT.
4. CONTRACTOR TO REMOVE AND DISPOSE OF ALL UNUSED OR ABANDONED SURFACE RACEWAY. PATCH AND PREP FOR PAINT.

TECHNOLOGY INFRA. FLOOR PLAN DEMO - BUILDINGS A, B1, B2, D1 AND D2

SCALE: 1/8"=1'

0 4 8 12 16

KEY PLAN



AGENCY APPROVAL DSA# 01-121400

196 ARCHITECTS

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A

PROFESSIONAL STAMP

REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER BICSI
ANTHONY MASCIOPINTO
Signature
EXPIRES: 12/31/24
Regis. No.163629

REVISIONS

# NO.	DATE	DESCRIPTION
A	10-31-2024	ADDENDUM 01

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr.
Concord, CA 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE
TECHNOLOGY INFRASTRUCTURE FLOOR PLANS DEMO

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

SHEET NO.
2T-020

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: C:\Users\dvargas\Documents\23044_MTUSD_ IT Network Design 13 Sites_A22_dvargasTH8BX.rvt

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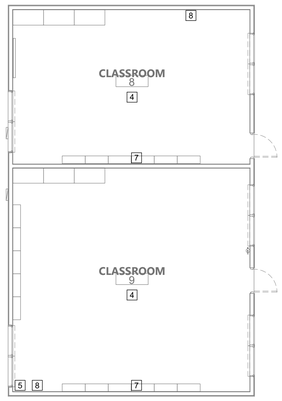
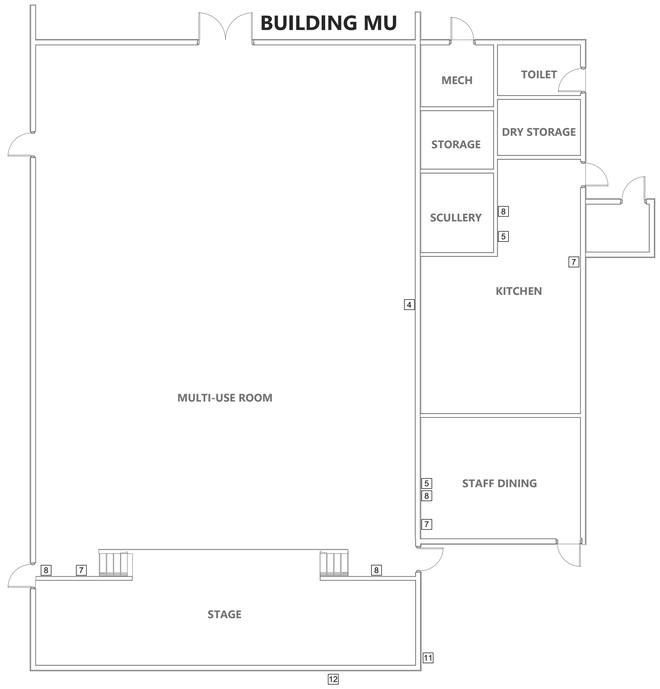


BUILDING C



TECHNOLOGY INFRA. FLOOR PLAN DEMO - BUILDING C

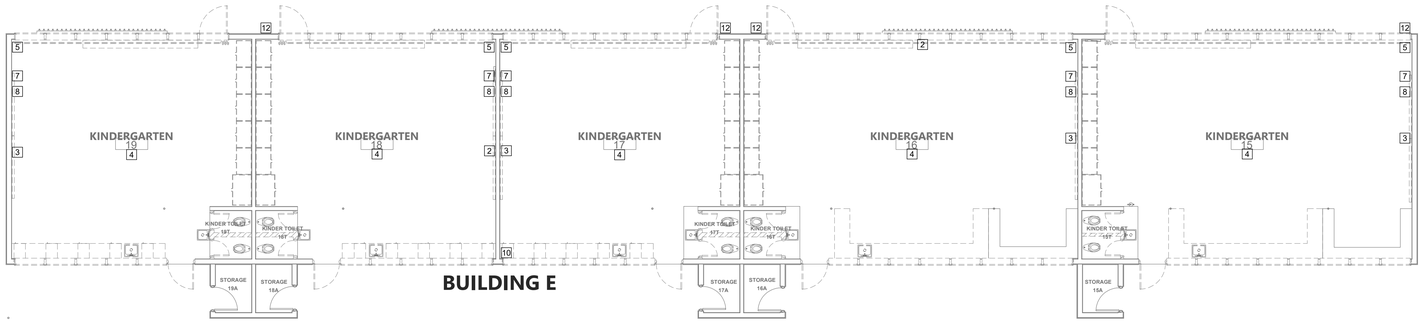
SCALE: 1/8"=1'

0 4 8 12 16

TECHNOLOGY INFRA. FLOOR PLAN DEMO - BUILDING MU

SCALE: 1/8"=1'

0 4 8 12 16



BUILDING E

TECHNOLOGY INFRA. FLOOR PLAN DEMO - BUILDING E

SCALE: 1/8"=1'

0 4 8 12 16

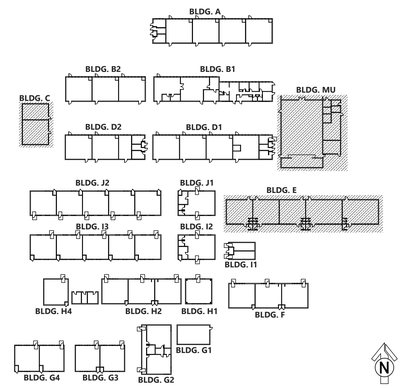
GENERAL NOTES:

1. CONTRACTOR TO REMOVE AND DISPOSE OF ALL (E) DATA NETWORK COPPER AND FIBER CABLING, SERVING BUILDINGS IN THIS INCREMENT, INCLUDING WITHIN CONDUITS AND PULL BOXES. CARE SHALL BE TAKEN NOT TO DISTURB OR DAMAGE ACTIVE SYSTEMS. COORDINATE WITH DISTRICT REPRESENTATIVE PRIOR TO DEMO.
2. CONTRACTOR TO REMOVE AND DISPOSE OF ALL (E) ANALOG TELEPHONE CABLING SERVING BUILDINGS IN THIS INCREMENT, INCLUDING WITHIN CONDUITS AND PULL BOXES. PROVIDE BLANK WALL PLATE AT ALL LOCATIONS, RETURN ANALOG PHONES TO DISTRICT.
3. CONTRACTOR TO REMOVE AND RETURN TO DISTRICT ALL (E) VIDEO PROJECTORS, A/V CABLING, CONTROL PANELS, INPUT STATIONS, AND LAPTOP DESKS. PATCH AND PREP FOR PAINT.
4. CONTRACTOR TO REMOVE AND DISPOSE OF ALL UNUSED OR ABANDONED SURFACE RACEWAY. PATCH AND PREP FOR PAINT.
5. CONTRACTOR TO RETURN REMOVED EQUIPMENT IN EXISTING WORKING ORDER. CARE SHALL BE TAKEN NOT TO DAMAGE REMOVED EQUIPMENT. EQUIPMENT SHALL BE LABELED WITH SITE NAME AND BOXED UP PRIOR TO RETURNING TO DISTRICT.
6. ALL EQUIPMENT SHALL BE RETURNED TO MDUSD. CONTACT DISTRICT REPRESENTATIVE COORDINATE RETURN PROCEDURE.
7. CONTRACTOR TO PROVIDE (N) BLANKING PLATES AND/OR (N) CHANNEL COVERS FOR (E) DATA LOCATIONS REMOVED FROM SURFACE RACEWAY AS A RESULT OF DEMO.
8. CONTRACTOR TO REMOVE AND RETURN TO DISTRICT ALL (E) WIRELESS APS AND MOUNTS. PATCH AND PREP FOR PAINT.
9. CONTRACTOR TO REMOVE AND DISPOSE OF ALL (E) ANALOG INTERCOM AND CLOCK CABLING FROM ENDPOINT TO ENDPOINT, INCLUDING WITHIN CONDUITS AND PULL BOXES.
10. CONTRACTOR TO REMOVE AND RETURN TO DISTRICT ALL (E) ANALOG CLOCKS, SPEAKERS, AND SURFACE BACKBOXES. PATCH AND PREP FOR PAINT.
11. ALL ATOMIC BATTERY CLOCKS (AMERICAN TIME) REMOVED SHALL BE BOXED AND DELIVERED TO THE DISTRICT WAREHOUSE IN GOOD CONDITION.
12. ALL IP PHONES (POLY E100) SHALL BE LABELED WITH ROOM NUMBER, REMOVED, AND STORED IN A SUITABLE LOCATION DURING THE CONSTRUCTION PERIOD. PHONES SHALL BE RE-INSTALLED IN THE ROOM FROM WHICH THEY CAME, UTILIZING THE WALL PHONE DATA LOCATION, AS OCCURS.

SHEET NOTES:

1. DEMO (E) IDF CABINET, BACKBOARD, AND OTHER DATA EQUIP. ON WALL, AS OCCURS. DEMO ALL (E) DATA DROPS AND FIBER TERMINATING AT THIS IDF.
2. DEMO (E) VIDEO PROJECTOR, MOUNT, LOW VOLTAGE CABLING, INPUT PLATE, AND SCREEN, AS OCCURS. REMOVE SURFACE RACEWAY SERVING PROJECTOR LOCATION.
3. DEMO (E) LCD TV, INCLUDING MOUNT, WALL CONTROLLER, INPUT PLATE, AND LOW VOLATE CABLING.
4. DEMO (E) WIRELESS AP, MOUNT, CABLING, AND SURFACE RACEWAY.
5. DEMO (E) ANALOG TELEPHONE, WALL PLATE, AND WIRING TO SOURCE. PROVIDE (N) BLANK WALL PLATE. IMPORTANT: IP PHONES (POLY E100) ARE TO BE PRESERVED AND REINSTALLED. SEE DEMO GENERAL NOTE 12.
6. DEMO (E) LAPTOP DESK WALL UNIT.
7. DEMO (E) CLOCK, BACKBOX, CONDUIT, AND CABLE TO HEADEND. PATCH AND PREP FOR PAINT.
8. DEMO (E) SPEAKER, DEMO INTERCOM CABLE TO HEADEND. REMOVE BACKBOX FROM WALL. PATCH AND PREP FOR PAINT.
9. NOT USED.
10. DEMO (E) NETWORK SWITCH ON SHELF OR WALL BRACKET, AS OCCURS. DEMO ALL (E) DATA DROPS TERMINATING AT THIS NETWORK SWITCH.
11. DEMO (E) EXTERIOR CAMERA, MOUNT, CABLING, AND SURFACE RACEWAY. PATCH AND PREP FOR PAINT, AND PROVIDE (N) BLANKING PLATES AND/OR END CAPS FOR ALTERED SURFACE RACEWAY.
12. DEMO (E) CONDUIT PENETRATION, J-BOX, AND ABANDONED CONDUIT. PATCH WALL.
13. DISCONNECT (E) BOGEN CABINET, DELIVER TO DISTRICT WAREHOUSE IN GOOD CONDITION. DEMO (E) BACKBOARD, 66 BLOCKS, INTERCOM CABLING, AND ABANDONED CONDUIT.
14. DEMO (E) PBX, DELIVER TO DISTRICT WAREHOUSE IN GOOD CONDITION. DEMO (E) BACKBOARD, 66 BLOCKS, PHONE CABLING, AND ABANDONED CONDUIT.
15. DEMO (E) MDF CABINET. IMPORTANT: PRIOR TO DEMO, SEE NOTES ON SHEET 2T-700 FOR SPECIFIC REQUIREMENTS.
16. DEMO (E) CLOCK POWER SUPPLY AND CABLING. SAFE OFF POWER, AS REQ'D.
17. DEMO (E) ANALOG PHONE 66 BLOCKS AND CABLING, THIS LOCATION. IMPORTANT: PRIOR TO DEMO, SEE NOTES ON SHEET 2T-701 FOR CUTOVER AND TEMPORARY SERVICE REQUIREMENTS.
18. DEMO (E) IR EMITTER, MOUNT, WIRING, AND POWER SUPPLY.
19. DEMO ALL (E) ANALOG PHONE, ANALOG INTERCOM, CLOCK AND COAX TV CABLING TERMINATING AT THIS STC. DEMO FROM ENDPOINT TO ENDPOINT INCLUDING WITHIN CONDUITS AND PULL BOXES.
20. DEMO ALL COAX TV CABLING, HEADEND EQUIPMENT, AND CABINET. SEE PICTURE DETAIL.

KEY PLAN



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REVISIONS

NO.	DATE	DESCRIPTION
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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr.
Concord, CA 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

TECHNOLOGY INFRASTRUCTURE FLOOR PLANS DEMO

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

SHEET NO.

2T-021

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

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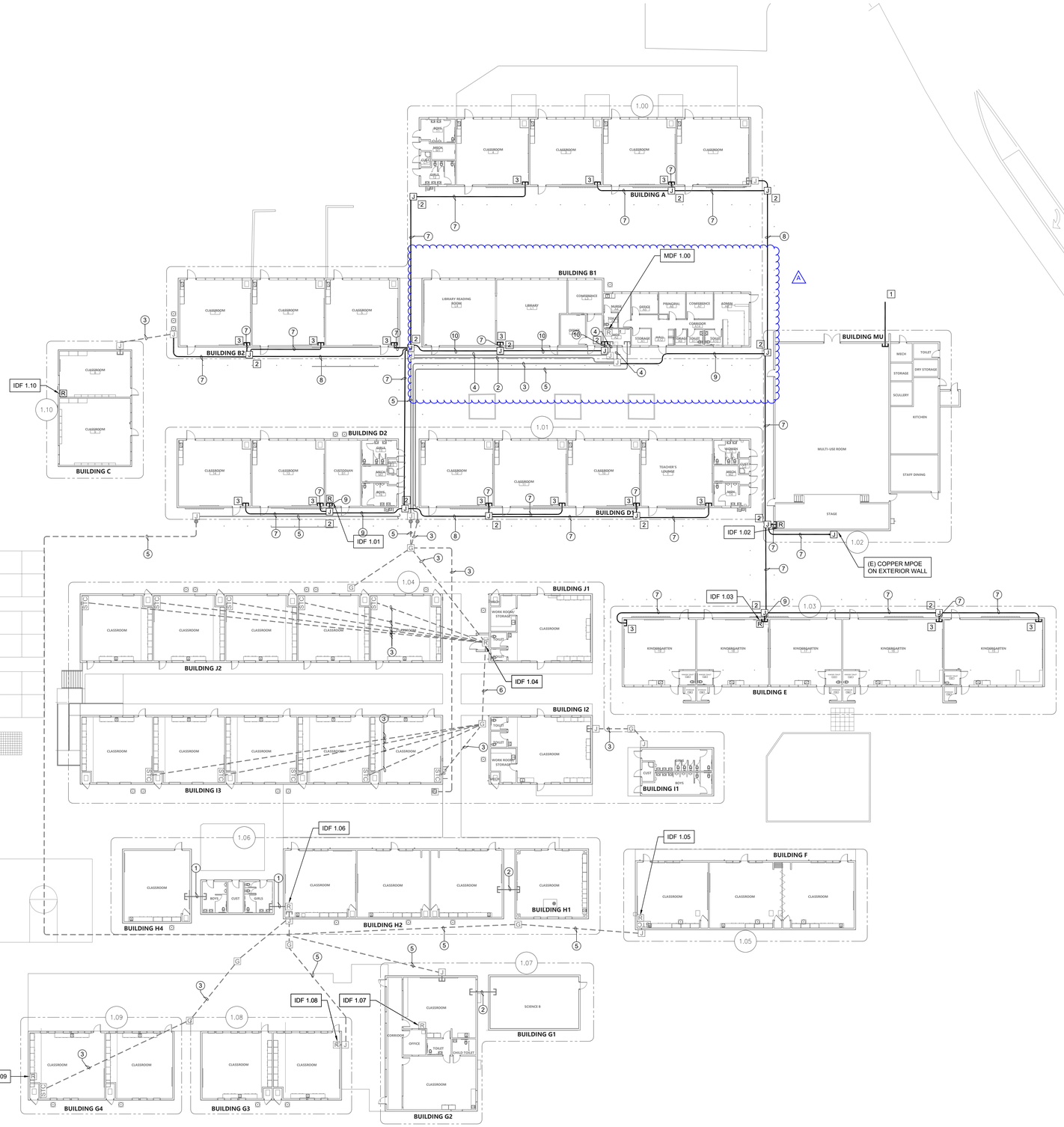

CONDUIT QTY. AND SIZE:

1. (E) 1 EA. 1-1/4" CONDUITS.
2. (E) 1 EA. 2" CONDUITS.
3. (E) 2 EA. 2" CONDUITS.
4. (E) 3 EA. 2" CONDUITS.
5. (E) 4 EA. 2" CONDUITS.
6. (E) 2 EA. 4" CONDUITS.
7. (N) 1 EA. 2" CONDUITS.
8. (N) 2 EA. 2" CONDUITS.
9. (N) 3 EA. 2" CONDUITS.
10. (N) 4 EA. 2" CONDUITS.

GENERAL NOTES:

1. CONTRACTOR TO FURNISH AND INSTALL ALL PATHWAY, CABLING, ENCLOSURES, MOUNTS, TERMINATIONS, AND ACCESSORIES REQUIRED FOR COMPLETE AND FULLY OPERATIONAL TECHNOLOGY SYSTEMS.
2. CONTRACTOR TO INSTALL AND MAKE OPERATIONAL ALL OWNER-FURNISHED ACTIVE EQUIPMENT AS NOTED IN THE PLANS AND SPECIFICATIONS.
3. ALL ACTIVE EQUIPMENT FURNISHED BY THE OWNER WILL BE PROGRAMMED BY THE OWNER.

SHEET NOTES:

1. PROVIDE 1 EA. (N) CAT6A DATA DROP AT (E) VIDEO INTERCOM ON GATE. INTERCEPT (E) CONDUIT AND REWORK TO (N) PENETRATION ON NORTH WALL OF MU. DEMO REMAINDER OF ABANDONED CONDUIT ACROSS WALL.
2. PROVIDE 1 EA. (N) NEMA 4 J-BOX WITH CONTINUOUS HINGE LID AND CLAMP STYLE CLOSURE MOUNTED ON DURA-BLOCKS. SEE DETAIL 8/2T-801.
3. PROVIDE (N) NEW 2" PENETRATION TO INTERIOR WITH (N) J-BOXES INTERIOR AND EXTERIOR. SEE DETAIL 8/2T-800.

TECHNOLOGY INFRASTRUCTURE SITE PLAN NEW

SCALE: 1"=20'

0 20 40

AGENCY APPROVAL DSA# 01-121400

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BICSI REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
TIFFANY KAGEYAMA
EXPIRES: 12/31/24
Regis. No.163629

REVISIONS

NO.	DATE	DESCRIPTION
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PROJECT OWNER & TITLE

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1936 Carlotta Dr.
Concord, CA 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

TECHNOLOGY INFRASTRUCTURE SITE PLAN NEW

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

SHEET NO.

2T-100

DATE: OCTOBER 25, 2024

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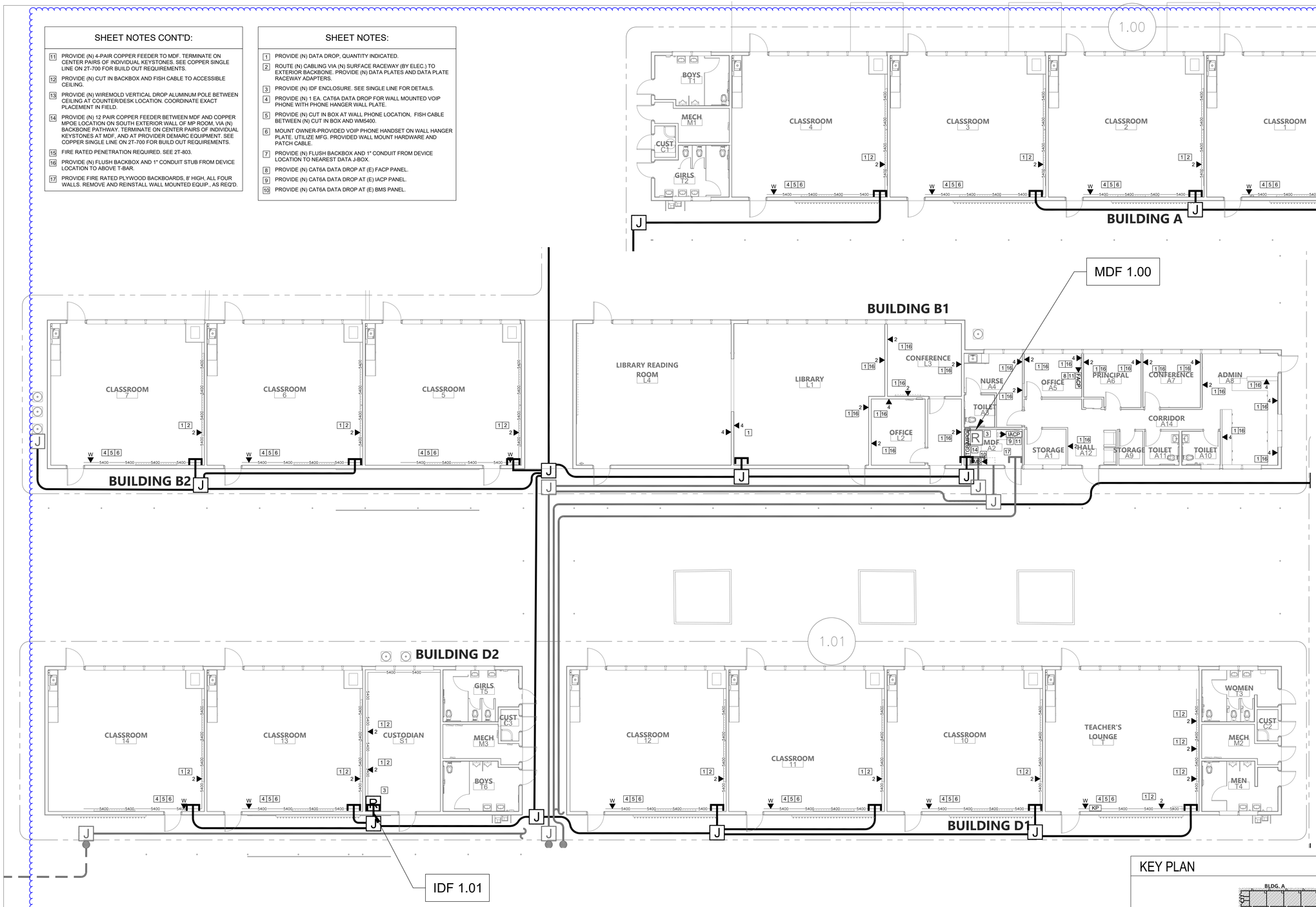
SHEET NOTES CONT'D:

11. PROVIDE (N) 4-PAIR COPPER FEEDER TO MDF. TERMINATE ON CENTER PAIRS OF INDIVIDUAL KEYSTONES. SEE COPPER SINGLE LINE ON 2T-700 FOR BUILD OUT REQUIREMENTS.
12. PROVIDE (N) CUT IN BACKBOX AND FISH CABLE TO ACCESSIBLE CEILING.
13. PROVIDE (N) WIREMOLD VERTICAL DROP ALUMINUM POLE BETWEEN CEILING AT COUNTER/DESK LOCATION. COORDINATE EXACT PLACEMENT IN FIELD.
14. PROVIDE (N) 12 PAIR COPPER FEEDER BETWEEN MDF AND COPPER MPOE LOCATION ON SOUTH EXTERIOR WALL OF MP ROOM, VIA (N) BACKBONE PATHWAY. TERMINATE ON CENTER PAIRS OF INDIVIDUAL KEYSTONES AT MDF, AND AT PROVIDER DEMARC EQUIPMENT. SEE COPPER SINGLE LINE ON 2T-700 FOR BUILD OUT REQUIREMENTS.
15. FIRE RATED PENETRATION REQUIRED. SEE 2T-803.
16. PROVIDE (N) FLUSH BACKBOX AND 1" CONDUIT STUB FROM DEVICE LOCATION TO ABOVE T-BAR.
17. PROVIDE FIRE RATED PLYWOOD BACKBOARDS, 8' HIGH, ALL FOUR WALLS. REMOVE AND REINSTALL WALL MOUNTED EQUIP., AS REQ'D.

SHEET NOTES:

1. PROVIDE (N) DATA DROP, QUANTITY INDICATED.
2. ROUTE (N) CABLING VIA (N) SURFACE RACEWAY (BY ELEC.) TO EXTERIOR BACKBONE. PROVIDE (N) DATA PLATES AND DATA PLATE RACEWAY ADAPTERS.
3. PROVIDE (N) IDF ENCLOSURE. SEE SINGLE LINE FOR DETAILS.
4. PROVIDE (N) 1 EA. CAT6A DATA DROP FOR WALL MOUNTED VOIP PHONE WITH PHONE HANGER WALL PLATE.
5. PROVIDE (N) CUT IN BOX AT WALL PHONE LOCATION. FISH CABLE BETWEEN (N) CUT IN BOX AND WM5400.
6. MOUNT OWNER-PROVIDED VOIP PHONE HANDSET ON WALL HANGER PLATE. UTILIZE MFG. PROVIDED WALL MOUNT HARDWARE AND PATCH CABLE.
7. PROVIDE (N) FLUSH BACKBOX AND 1" CONDUIT FROM DEVICE LOCATION TO NEAREST DATA J-BOX.
8. PROVIDE (N) CAT6A DATA DROP AT (E) FACP PANEL.
9. PROVIDE (N) CAT6A DATA DROP AT (E) IACP PANEL.
10. PROVIDE (N) CAT6A DATA DROP AT (E) BMS PANEL.



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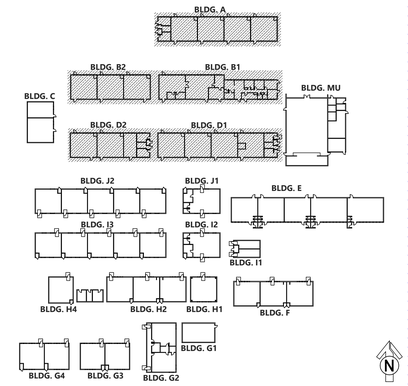
3. ALL ACTIVE EQUIPMENT FURNISHED BY THE OWNER WILL BE PROGRAMMED BY THE OWNER.

TECHNOLOGY INFRA. FLOOR PLAN NEW - BUILDINGS A, B1, B2, D1 AND D2

SCALE: 1/8"=1'

0 4 8 12 16

KEY PLAN



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REVISIONS

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SHEET TITLE

TECHNOLOGY INFRASTRUCTURE FLOOR PLANS NEW

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

SHEET NO.

2T-200

DATE: OCTOBER 25, 2024

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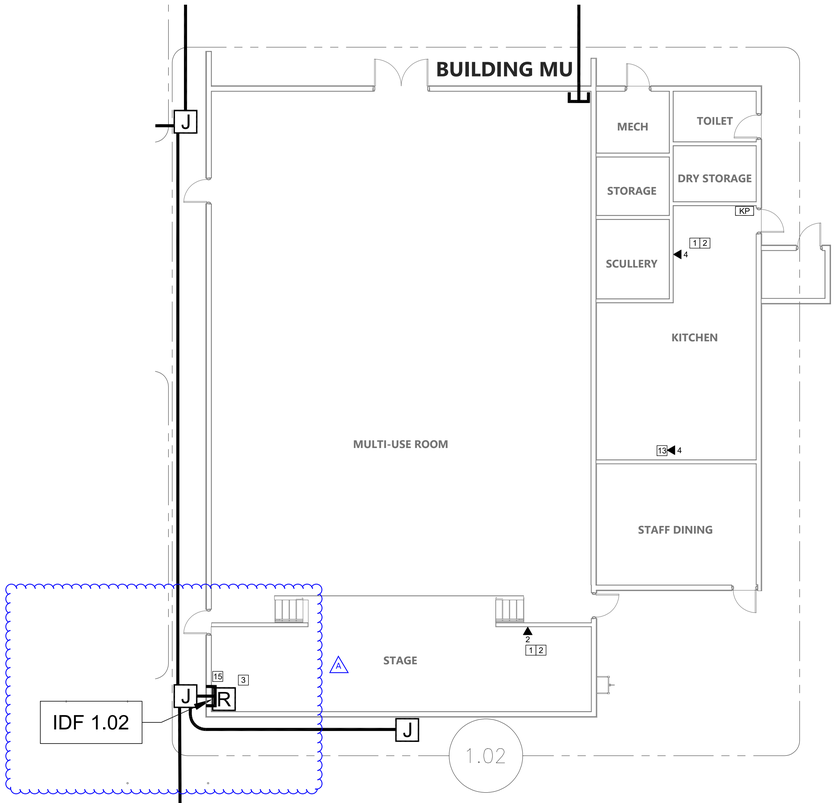
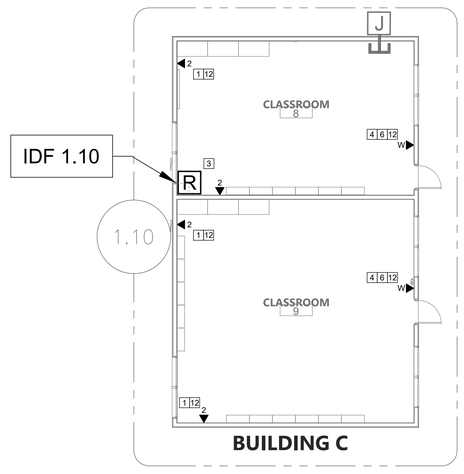


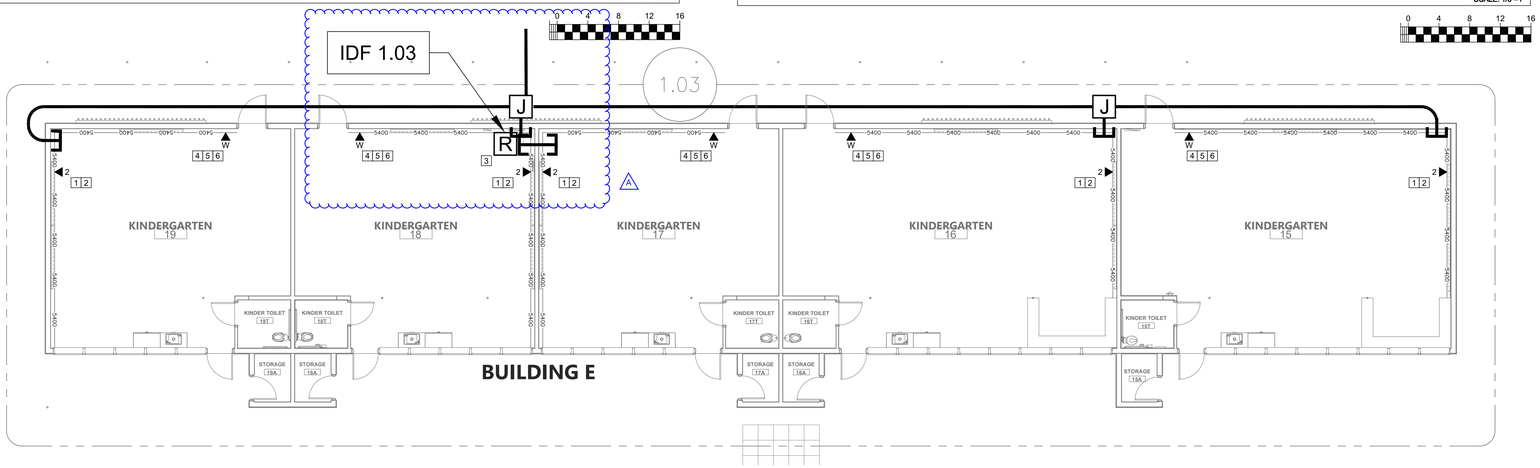
TECHNOLOGY INFRA. FLOOR PLAN NEW - BUILDING MU

SCALE: 1/8"=1'



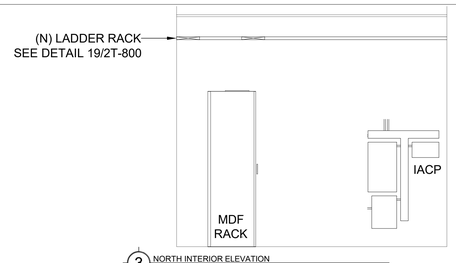
TECHNOLOGY INFRA. FLOOR PLAN NEW - BUILDING C

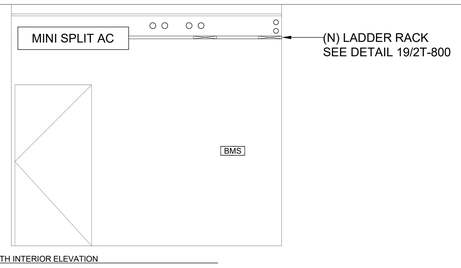
SCALE: 1/8"=1'

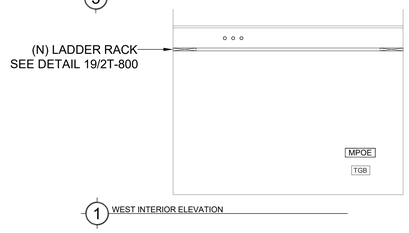


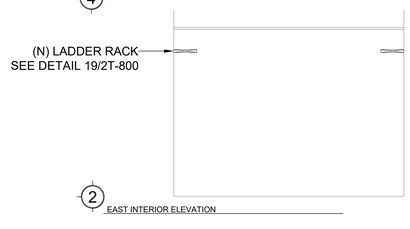
TECHNOLOGY INFRA. FLOOR PLAN NEW - BUILDING E

SCALE: 1/8"=1'









MDF 1.00 INTERIOR ELEVATIONS

SCALE: 3/8"=1'

0 2 4

GENERAL NOTES:

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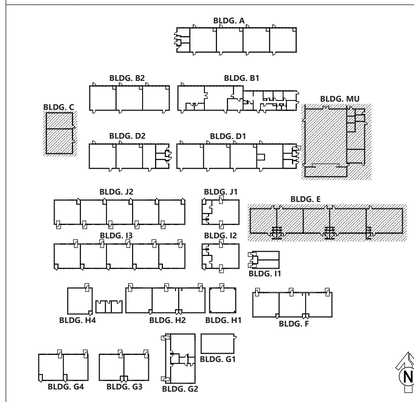
2. CONTRACTOR TO INSTALL AND MAKE OPERATIONAL ALL OWNER-FURNISHED ACTIVE EQUIPMENT AS NOTED IN THE PLANS AND SPECIFICATIONS.
3. ALL ACTIVE EQUIPMENT FURNISHED BY THE OWNER WILL BE PROGRAMMED BY THE OWNER.

SHEET NOTES:

1. PROVIDE (N) DATA DROP, QUANTITY INDICATED.
2. ROUTE (N) CABLING VIA (N) SURFACE RACEWAY (BY ELEC.) TO EXTERIOR BACKBONE. PROVIDE (N) DATA PLATES AND DATA PLATE RACEWAY ADAPTERS.
3. PROVIDE (N) IDF ENCLOSURE. SEE SINGLE LINE FOR DETAILS.
4. PROVIDE (N) 1 EA. CAT6A DATA DROP FOR WALL MOUNTED VOIP PHONE WITH PHONE HANGER WALL PLATE.
5. PROVIDE (N) CUT IN BOX AT WALL PHONE LOCATION, FISH CABLE BETWEEN (N) CUT IN BOX AND WM5400.
6. MOUNT OWNER-PROVIDED VOIP PHONE HANDSET ON WALL HANGER PLATE. UTILIZE MFG. PROVIDED WALL MOUNT HARDWARE AND PATCH CABLE.
7. PROVIDE (N) FLUSH BACKBOX AND 1" CONDUIT FROM DEVICE LOCATION TO NEAREST DATA J-BOX.
8. PROVIDE (N) CAT6A DATA DROP AT (E) FACP PANEL.
9. PROVIDE (N) CAT6A DATA DROP AT (E) IACP PANEL.
10. PROVIDE (N) CAT6A DATA DROP AT (E) BMS PANEL.
11. PROVIDE (N) 4-PAIR COPPER FEEDER TO MDF. TERMINATE ON CENTER PAIRS OF INDIVIDUAL KEYSTONES. SEE COPPER SINGLE LINE ON 2T-700 FOR BUILD OUT REQUIREMENTS.
12. PROVIDE (N) CUT IN BACKBOX AND FISH CABLE TO ACCESSIBLE CEILING.
13. PROVIDE (N) WIREMOLD VERTICAL DROP ALUMINUM POLE BETWEEN CEILING AT COUNTER/DESK LOCATION. COORDINATE EXACT PLACEMENT IN FIELD.
14. PROVIDE (N) 12 PAIR COPPER FEEDER BETWEEN MDF AND COPPER MPOE LOCATION ON SOUTH EXTERIOR WALL OF MP ROOM, VIA (N) BACKBONE PATHWAY. TERMINATE ON CENTER PAIRS OF INDIVIDUAL KEYSTONES AT MDF, AND AT PROVIDER DEMARC EQUIPMENT. SEE COPPER SINGLE LINE ON 2T-700 FOR BUILD OUT REQUIREMENTS.
15. FIRE RATED PENETRATION REQUIRED. SEE 2T-803.
16. PROVIDE (N) FLUSH BACKBOX AND 1" CONDUIT STUB FROM DEVICE LOCATION TO ABOVE T-BAR.
17. PROVIDE FIRE RATED PLYWOOD BACKBOARDS, 8' HIGH, ALL FOUR WALLS. REMOVE AND REINSTALL WALL MOUNTED EQUIP., AS REQ'D.

KEY PLAN



AGENCY APPROVAL DSA# 01-121400

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ANTHONY KAGEYAMA
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Regis. No.163629

REVISIONS

# NO.	DATE	DESCRIPTION
1	10/1/2024	ADDENDUM

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr.
Concord, CA 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

TECHNOLOGY INFRASTRUCTURE FLOOR PLANS NEW

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

SHEET NO.

2T-201

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/1/2024 5:02:54 PM FILE LOCATION: C:\Users\dvargas\Documents\23044_MTUSD_ IT Network Design 13 Sites_A22_dvargasTH8BX.rvt

SHEET NOTES CONT'D:

7 PROVIDE (N) 1 EA. CAT6A DATA DROP FOR IP SPEAKER. PROVIDE (N) SURFACE BACKBOX. TERMINATE DATA DROP IN BISCUIT BLOCK MOUNTED IN SURFACE BACKBOX. MOUNT OWNER-PROVIDED IP SPEAKER UNIT. PROVIDE (N) 1 EA. CAT6A PATCH CABLE.

8 PROVIDE (N) 1 EA. CAT6A DATA DROP FOR IP CLOCK. PROVIDE (N) SURFACE BACKBOX. TERMINATE DATA DROP IN BISCUIT BLOCK MOUNTED IN SURFACE BACKBOX. MOUNT OWNER-PROVIDED IP CLOCK UNIT. PROVIDE (N) 1 EA. CAT6A PATCH CABLE.

9 PROVIDE (N) CUT IN BOX BEHIND DEVICE LOCATION, AND FISH CABLE TO ACCESSIBLE CEILING.

10 PROVIDE (N) LADDER RACKING INCLUDING ALL MOUNTING, FITTINGS, AND TRANSITIONS FOR A COMPLETE CABLE MANAGEMENT SYSTEM BETWEEN THE CONDUIT PENETRATIONS AND THE MDF RACK.

11 PROVIDE (N) 3/4" CONDUIT.

12 REMOVE (E) CAMERA PRIOR TO EXTERIOR PAINTING. PROVIDE (N) CAT6A DATA DROP VIA (N) PATHWAY, (N) 2-GANG SURFACE BOX, AND (N) FLEX CONDUIT. SEE DETAIL 9/2T-800. RE-MOUNT CAMERA AND MAKE WATERPROOF. RE-AIM CAMERA IN PRESENCE OF DISTRICT REPRESENTATIVE.

13 PROVIDE (N) CAT6A DATA DROP AND (N) ARTICULATING MOUNT WITH PENDANT KIT FOR OWNER-PROVIDED PANORAMIC NETWORK CAMERA. CONTRACTOR TO CONFIRM WITH DISTRICT REPRESENTATIVE THAT CAMERA VIEWS ARE NOT OBSTRUCTED PRIOR TO INSTALLATION.

14 PROVIDE (N) 1 EA. 2" CONDUITS.

15 PROVIDE (N) 4 EA. 2" CONDUITS.

16 PROVIDE (N) CAT6A DATA DROP FOR OWNER-PROVIDED PANORAMIC NETWORK CAMERA. AIM CAMERA IN PRESENCE OF DISTRICT REPRESENTATIVE.

SHEET NOTES:

1 PROVIDE (N) 2 EA. CAT6A DATA DROP FOR WIRELESS AP AT ACCESSIBLE CEILING. INSTALL OWNER-PROVIDED AP. SEE DETAIL 5/2T801.

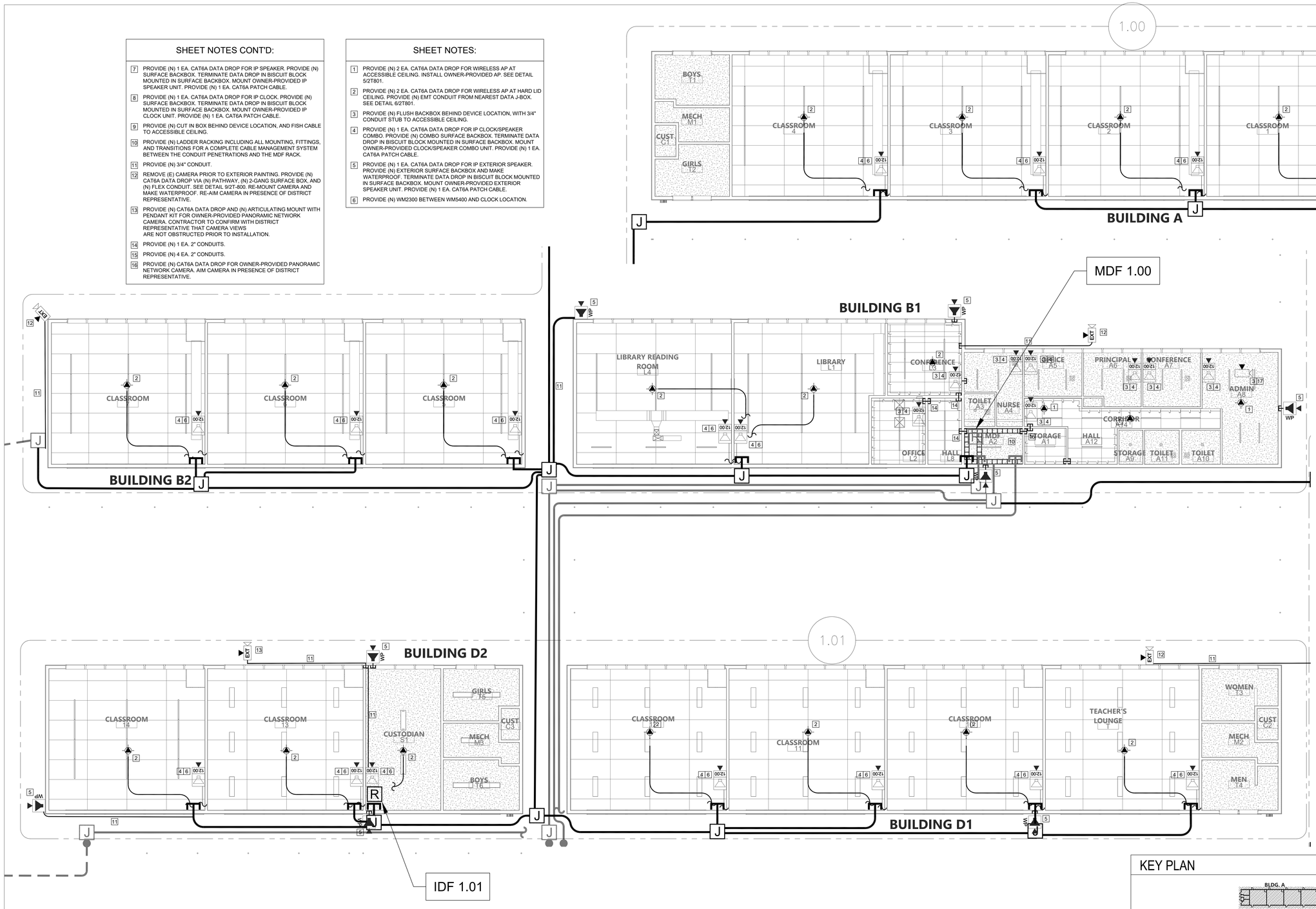
2 PROVIDE (N) 2 EA. CAT6A DATA DROP FOR WIRELESS AP AT HARD LID CEILING. PROVIDE (N) EMT CONDUIT FROM NEAREST DATA J-BOX. SEE DETAIL 6/2T801.

3 PROVIDE (N) FLUSH BACKBOX BEHIND DEVICE LOCATION, WITH 3/4" CONDUIT STUB TO ACCESSIBLE CEILING.

4 PROVIDE (N) 1 EA. CAT6A DATA DROP FOR IP CLOCK/SPEAKER COMBO. PROVIDE (N) COMBO SURFACE BACKBOX. TERMINATE DATA DROP IN BISCUIT BLOCK MOUNTED IN SURFACE BACKBOX. MOUNT OWNER-PROVIDED CLOCK/SPEAKER COMBO UNIT. PROVIDE (N) 1 EA. CAT6A PATCH CABLE.

5 PROVIDE (N) 1 EA. CAT6A DATA DROP FOR IP EXTERIOR SPEAKER. PROVIDE (N) EXTERIOR SURFACE BACKBOX AND MAKE WATERPROOF. TERMINATE DATA DROP IN BISCUIT BLOCK MOUNTED IN SURFACE BACKBOX. MOUNT OWNER-PROVIDED EXTERIOR SPEAKER UNIT. PROVIDE (N) 1 EA. CAT6A PATCH CABLE.

6 PROVIDE (N) WM2300 BETWEEN WM5400 AND CLOCK LOCATION.



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TECHNOLOGY INFRA. RCP NEW - BUILDINGS A, B1, B2, D1 AND D2

SCALE: 1/8"=1'

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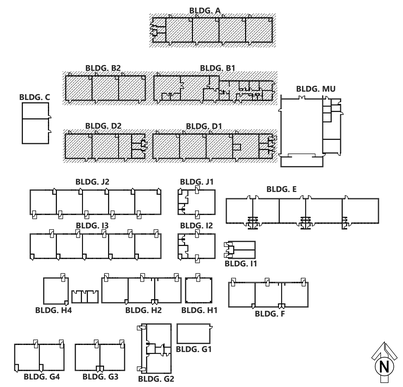
KEY PLAN



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BICSI REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
TIFFANY KAGEYAMA
Signature
EXPIRES: 12/31/24
Regis. No.163629

REVISIONS

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr.
Concord, CA 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLANS NEW

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

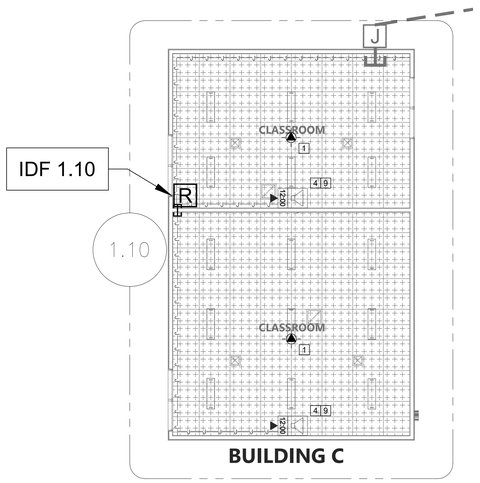
SHEET NO.

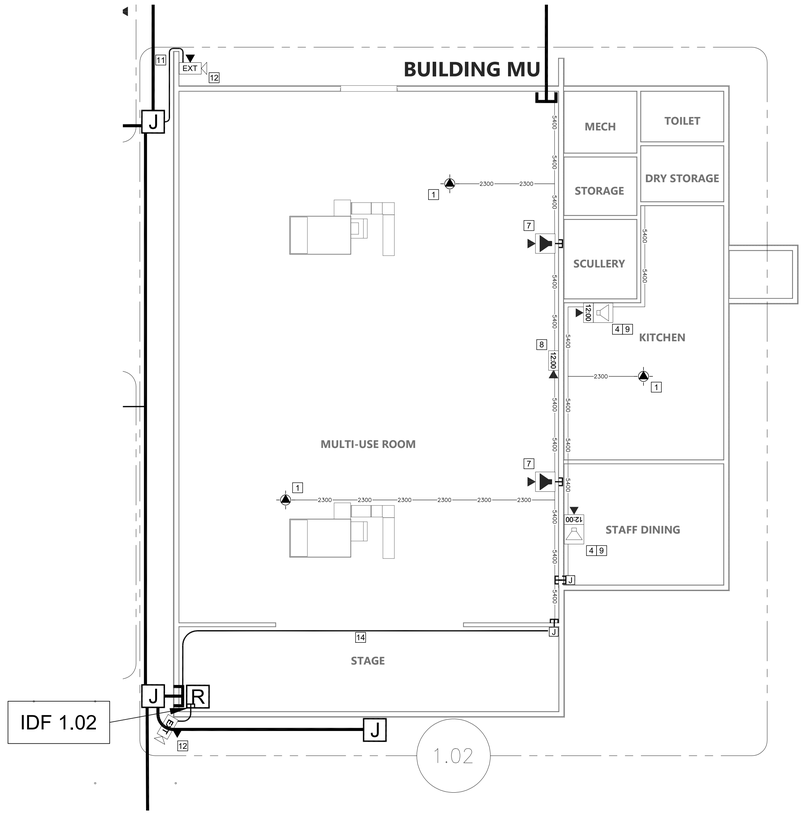
2T-300

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/1/2024 5:02:54 PM FILE LOCATION: C:\Users\dvargas\Documents\23044_MTUSD_IT Network Design 13 Sites_A22_dvargasTH8BX.rvt





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SHEET NOTES:

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2. PROVIDE (N) 2 EA. CAT6A DATA DROP FOR WIRELESS AP AT HARD LID CEILING. PROVIDE (N) EMT CONDUIT FROM NEAREST DATA J-BOX. SEE DETAIL 6/2T801.
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6. PROVIDE (N) WM2300 BETWEEN WM5400 AND CLOCK LOCATION.
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11. PROVIDE (N) 3/4" CONDUIT.
12. REMOVE (E) CAMERA PRIOR TO EXTERIOR PAINTING. PROVIDE (N) CAT6A DATA DROP VIA (N) PATHWAY, (N) 2-GANG SURFACE BOX, AND (N) FLEX CONDUIT. SEE DETAIL 9/2T-800. RE-MOUNT CAMERA AND MAKE WATERPROOF. RE-AIM CAMERA IN PRESENCE OF DISTRICT REPRESENTATIVE.
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14. PROVIDE (N) 1 EA. 2" CONDUITS.
15. PROVIDE (N) 4 EA. 2" CONDUITS.
16. PROVIDE (N) CAT6A DATA DROP FOR OWNER-PROVIDED PANORAMIC NETWORK CAMERA. AIM CAMERA IN PRESENCE OF DISTRICT REPRESENTATIVE.

TECHNOLOGY INFRA. RCP NEW - BUILDING C

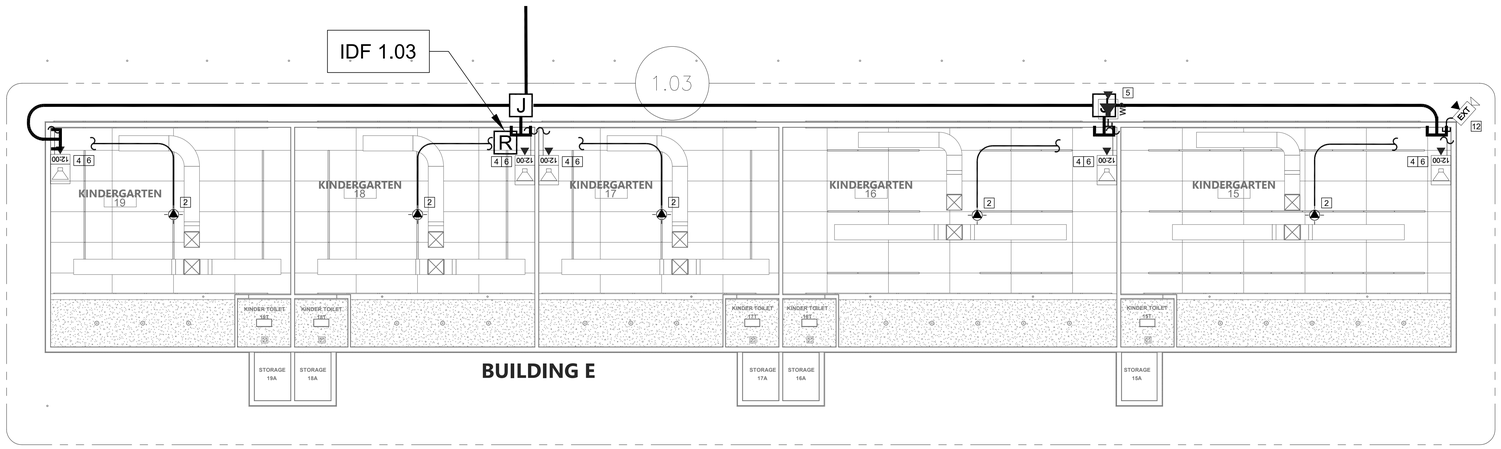
SCALE: 1/8"=1'

0 4 8 12 16

TECHNOLOGY INFRA. RCP NEW - BUILDING MU

SCALE: 1/8"=1'

0 4 8 12 16



TECHNOLOGY INFRA. RCP NEW - BUILDING E

SCALE: 1/8"=1'

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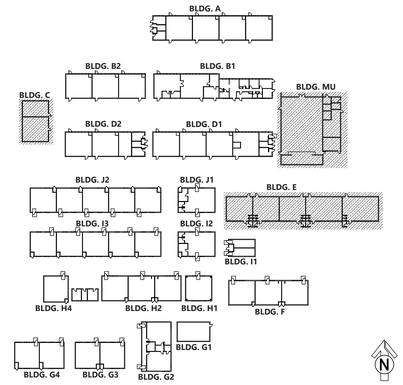
KEY PLAN



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REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER BICSI JOHNNY KAZEROUNI
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Regis. No.163629

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Concord, CA 94519

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1371 Detroit Ave
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SHEET TITLE

TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLANS NEW

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

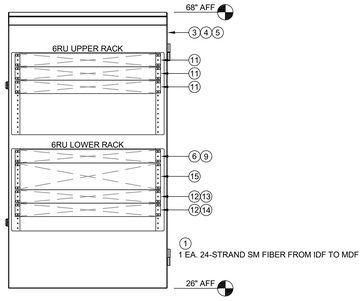
SHEET NO.

2T-301

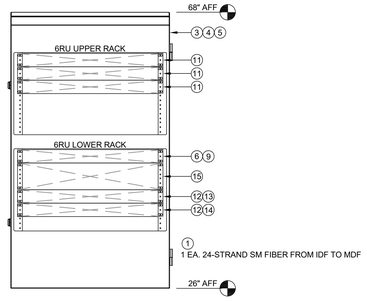
DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

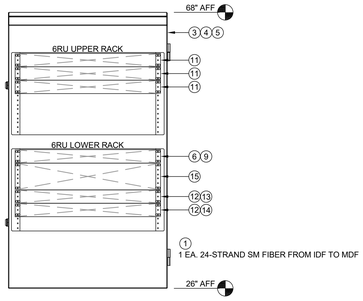
DATE PLOTTED: 10/1/2024 5:02:54 PM FILE LOCATION: C:\Users\dvargas\Documents\23044 _MTUSD_ IT Network Design 13 Sites_A22_dvargasTH8BX.rvt



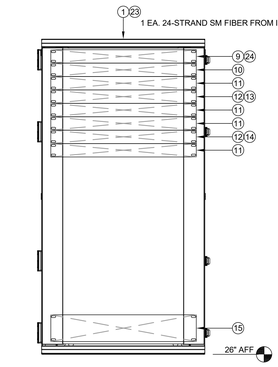
5 IDF 1.10 - BUILDING C CLASSROOM



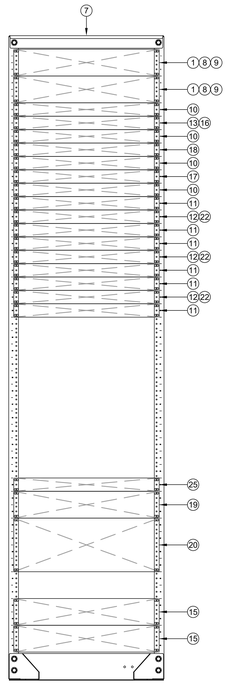
4 IDF 1.03 - BUILDING E CLASSROOM



3 IDF 1.02 - BUILDING MU STAGE



2 IDF 1.01 - BUILDING D2 CUSTODIAN



1 MDF 1.00 - BUILDING B1 ROOM MDF

ALL IDF GENERAL NOTES:

1. PROVIDE 1 EA. (N) 208V/20A (L6-20R) DEDICATED CIRCUIT IN QUAD BOX ON REAR PAN OF RACK. (BY ELEC.)
2. SET RACK RAIL DEPTH SO THAT THE FRONT DOOR WILL BE ABLE TO CLOSE AND LATCH AFTER EQUIPMENT AND PATCH CABLES ARE INSTALLED.
3. PROVIDE ALL (N) EQUIPMENT CALLED FOR IN THE ELEVATION.
4. INSTALL ALL OWNER-FURNISHED EQUIPMENT CALLED FOR IN THE ELEVATION.
5. ROUTE POWER FOR ALL EQUIPMENT SO THAT IT IS PROTECTED BY THE UNINTERRUPTIBLE POWER SUPPLY.
6. REMOVE ALL (E) EQUIPMENT NOT NOTED FOR REUSE AND DELIVER TO DISTRICT WAREHOUSE IN GOOD CONDITION.
7. PROVIDE (N) 6" SLIMLINE CAT6A PATCH CABLES FOR ALL (N) DATA DROPS.
8. PROVIDE (N) LC/LC FIBER PATCH CABLES AS REQUIRED.

MDF GENERAL NOTES:

1. THE PROJECT INVOLVES A COMPLETE REWORK AND REPLACEMENT OF THE (E) MDF IN MULTIPLE PHASES.
2. THE (E) MDF MUST BE PROTECTED AND KEPT OPERATIONAL UNTIL THE (N) MDF CAN BE BROUGHT ONLINE.
3. ANY DOWNTIME OR CUTOVERS MUST BE SCHEDULED IN ADVANCE AND APPROVED BY THE DISTRICT REPRESENTATIVE. CAREFUL COORDINATION WILL BE REQUIRED TO MINIMIZE DOWNTIME AND SO THAT NORMAL CAMPUS OPERATIONS WILL NOT BE AFFECTED.
4. THE (E) MDF SERVES FIBER TO PARTS OF THE SITE NOT INCLUDED IN THIS INCREMENT. THESE DATA CIRCUITS WILL BE REWORKED AND RETERMINATED AT THE (N) MDF RACK. THE FIBER SHALL BE RECERTIFIED AFTER RETERMINATION. ANY FIBER THAT DOES NOT PASS CERTIFICATION SHALL BE REPLACED AT NO ADDITONAL COST TO DISTRICT.
5. PROVIDE 2 EA. (N) 120V/20A DEDICATED CIRCUITS IN QUAD BOX AT TOP OF RACK, AND 2 EA. (N) 208V/20A DEDICATED CIRCUIT (L6-20R RECEPTACLE) AT TOP OF RACK (BY ELEC.)
6. PROVIDE ALL (N) EQUIPMENT CALLED FOR IN THE ELEVATION.
7. INSTALL ALL OWNER-FURNISHED EQUIPMENT CALLED FOR IN THE ELEVATION.
8. RELOCATE AND REINSTALL ALL (E) EQUIPMENT NOTED FOR REUSE IN THE ELEVATION.
9. ROUTE POWER FOR ALL EQUIPMENT SO THAT IT IS EVENLY DISTRIBUTED BETWEEN AND FULLY PROTECTED BY THE UNINTERRUPTIBLE POWER SUPPLIES.
10. REMOVE ALL (E) EQUIPMENT NOT NOTED FOR REUSE AND DELIVER TO DISTRICT WAREHOUSE IN GOOD CONDITION.
11. PROVIDE (N) 6" SLIMLINE CAT6A PATCH CABLES FOR ALL (N) DATA DROPS.
12. PROVIDE (N) LC/LC FIBER PATCH CABLES AS REQUIRED.

EQUIPMENT SCHEDULE:

ALL EQUIPMENT AND MATERIALS ARE CONTRACTOR FURNISHED, INSTALLED AND CONFIGURED (UNO)

SYMBOL	DESCRIPTION	MFG/MODEL	PART NUMBER	NOTES / DETAIL REFERENCES
1	24-STRAND SINGLE MODE FIBER, ARMORED	PANDUIT	FSLP924	N/A
2	TELECOMMUNICATIONS RACK, WALL VERTICAL 3U/3U	PANDUIT	WME3BL	N/A
3	TELECOMMUNICATIONS RACK, WALL VERTICAL 6U/6U	PANDUIT	WME6BL	N/A
4	FAN KIT FOR WALL VERTICAL RACK	PANDUIT	PZAEFAN	N/A
5	GROUND KIT FOR WALL VERTICAL RACK	PANDUIT	WMEGK	N/A
6	FIBER ENCLOSURE BRACKET FOR VERTICAL RACK	PANDUIT	FWME1BL	N/A
7	TELECOMMUNICATIONS RACK, 4 POST 45RU	PANDUIT	AR4PCN	N/A
	CONCRETE FLOOR ANCHOR KIT		RFAKIT	N/A
	VERTICAL CABLE MANAGER		PR2VFD06	N/A
8	FIBER TRAY LIU, 2U	PANDUIT	FRME2U	N/A
	FIBER ADAPTER BLANK PANEL		FAPB	PROVIDE AT ALL UNUSED BULKHEAD LOCATIONS
9	FIBER ADAPTER PANEL 12 PAIR	PANDUIT	FAP12WBUDLCZ	N/A
10	1U HORIZONTAL CABLE MANAGER	PANDUIT	NCMHF1	N/A
11	1U 24 PORT PATCH PANEL	PANDUIT	CPPL24M6BLY	N/A
	STRAIN RELIEF BAR FOR PATCH PANEL		SRB19BLY	N/A
12	48 PORT SWITCH	ARUBA	R8S90A	OFCI
	POWER SUPPLY		JL670A	OFCI
13	SFP+ MODULE	ARUBA	J9151E	OFCI
14	STACK CABLE	ARUBA	R0M46A	OFCI
15	UNINTERRUPTIBLE POWER SUPPLY	N1C	N1C.L3000G	OFCI
16	CORE SWITCH	ARUBA	JL479A	OFCI
17	AP CONTROLLER	ARUBA	EXISTING	RELOCATE FROM (E) MDF RACK
18	SERVICE PROVIDER EQUIPMENT	CIENA	EXISTING	RELOCATE FROM (E) MDF RACK
19	2U NVR SERVER	EXISTING	EXISTING	RELOCATE FROM (E) MDF ROOM FLOOR
20	4U NVR SERVER	EXISTING	EXISTING	RELOCATE FROM (E) MDF ROOM FLOOR
21	1U RACK MOUNT MONITOR	TRIPP LITE	B021-000-19-HD2	N/A
22	DAC CABLE	ARUBA	J9281D	OFCI
23	TELECOMMUNICATIONS RACK, WALL, 26U	PANDUIT	PZWMC2630P	N/A
	FAN KIT FOR WALL RACK		PZCFK	N/A
	GROUND KIT FOR WALL RACK		PZWMCGK	N/A
24	FIBER TRAY LIU, 1U	PANDUIT	FRME1U	N/A
	FIBER ADAPTER BLANK PANEL		FAPB	PROVIDE AT ALL UNUSED BULKHEAD LOCATIONS
25	INTERCOM HEADEND	INFORMACAST	EXISTING	RELOCATE FROM (E) MDF RACK

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER BICSI
JOHNNY KADEMOM
EXPIRES: 12/31/24
Regis. No.163629

REVISIONS

NO.	DATE	DESCRIPTION
1	10/1/2024	ADDENDUM 1

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr.
Concord, CA 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

TECHNOLOGY INFRASTRUCTURE RACK ELEVATIONS

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

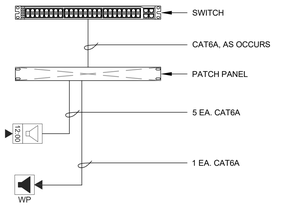
SHEET NO.

2T-700

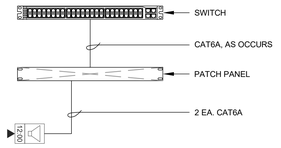
DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/1/2024 5:02:54 PM FILE LOCATION: C:\Users\dvargas\Documents\23044 _MTUSD_ IT Network Design 13 Sites_A22_dvargasTH8BX.rvt

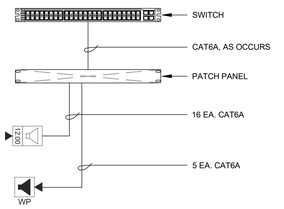


4 IDF 1.03 - BUILDING E CLASSROOM
SCALE: NONE

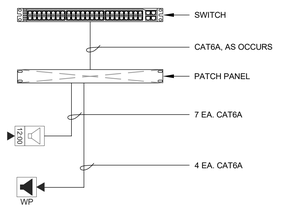


5 IDF 1.10 - BUILDING C CLASSROOM
SCALE: NONE

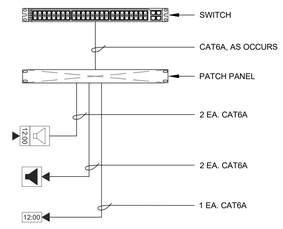
EQUIPMENT INTERCOM SCHEDULE: ALL EQUIPMENT AND MATERIALS ARE CONTRACTOR FURNISHED, INSTALLED AND CONFIGURED (UNO)				
SYMBOL	DESCRIPTION	MODEL	PART NUMBER	NOTES / DETAIL REFERENCES
12:00	IP CLOCK/SPEAKER COMBO	ATLAS	IP-SDMF	OFCI
	SURFACE BACKBOX		IP-SEST-SD	N/A
WP	IP SPEAKER (EXTERIOR)	ATLAS	IP-HVP	OFCI
	SURFACE BACKBOX		IP-SEST-HVP	N/A
	IP SPEAKER	ATLAS	IP-SM	OFCI
	SURFACE BACKBOX		IP-SEST-SD	N/A
12:00	IP LARGE MESSAGE BOARD W/ BACKBOX	ATLAS	IP-DM	OFCI
	SURFACE BACKBOX		IP-SEC-DM	N/A



1 MDF 1.00 - BUILDING B1
SCALE: NONE

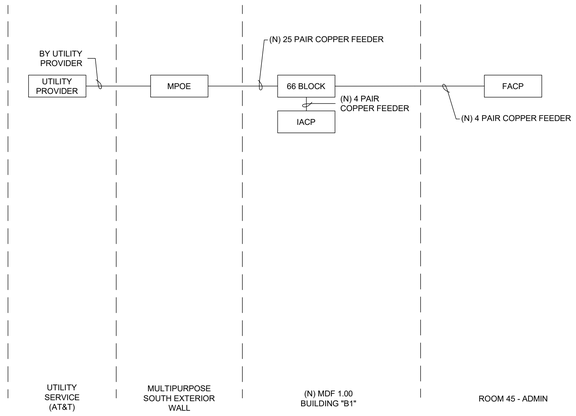


2 IDF 1.01 - BUILDING D2 CUSTODIAN
SCALE: NONE



3 IDF 1.02 - BUILDING MU STAGE
SCALE: NONE

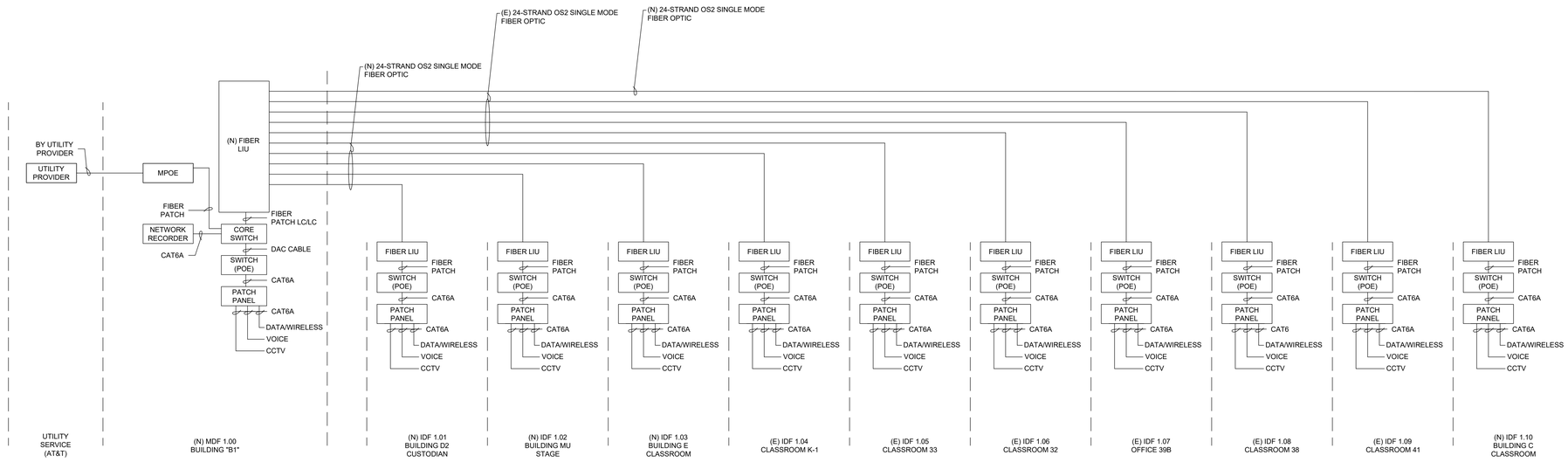
3 INTERCOM NETWORK SINGLE LINE DIAGRAM
SCALE: NONE



NOTE: ANALOG DIALTONE MUST BE MAINTAINED TO THE FACP AND IACP THROUGHOUT THE CONSTRUCTION PERIOD. ANY DOWNTIME MUST BE COORDINATED WITH AND APPROVED BY THE DISTRICT REPRESENTATIVE. PROVIDE A TEMPORARY COPPER FEEDER TO EACH DEVICE, AS REQ'D, UNTIL PERMANENT CABLING CAN BE INSTALLED.

PRIOR TO DEMO, TRACE AND RECORD WHICH MPOE COPPER PAIRS ARE BEING UTILIZED FOR EACH DEVICE. ANY TEMPORARY FEEDERS AND THE FINAL PERMANENT CABLING SHALL BE RECONNECTED TO THESE SAME EXISTING IN-USE COPPER PAIRS TO ENSURE CONTINUITY OF SERVICE.

2 COPPER VOICE SINGLE LINE DIAGRAM
SCALE: NONE



1 DATA/VOICE/CCTV NETWORK SINGLE LINE DIAGRAM
SCALE: NONE

AGENCY APPROVAL DSA# 01-121400

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BICSI REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
JOHNNY KAGEYAMA
Signature
EXPIRES: 12/31/24
Regis. No.163629

REVISIONS

# NO.	DATE	DESCRIPTION
1	10/1/2024	ADDENDUM

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1936 Carlotta Dr.
Concord, CA 94519

MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
Concord, CA 94520

SHEET TITLE

TECHNOLOGY INFRASTRUCTURE SINGLE LINE DIAGRAMS

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

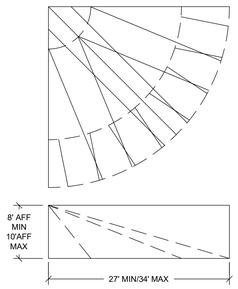
SHEET NO.

2T-701

DATE: OCTOBER 25, 2024

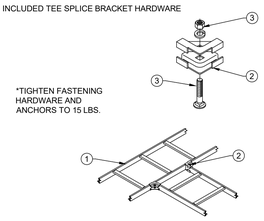
CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/1/2024 5:02:54 PM FILE LOCATION: C:\Users\dvargas\Documents\23044_MTUSD_IT Network Design 13 Sites_A22_dvargasTH8BX.rvt



20 INTRUSION DETECTOR COVERAGE DETAIL
SCALE: NONE

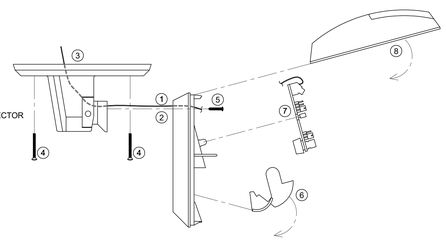
1. (N) 18" LADDER RACK ASSEMBLY
2. MOUNTING BRACKET FOR 90 DEGREE ATTACHMENT
3. MFR. INCLUDED TEE SPLICE BRACKET HARDWARE



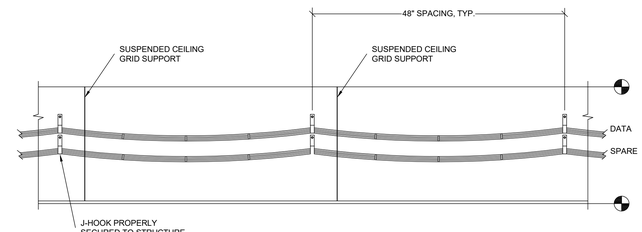
15 HORIZONTAL TEE SPLICE KIT DETAIL
SCALE: NONE

1. REMOVE KNOCKOUT FROM MOUNTING PLATE
2. DRILL 2 EA. 1/8" HOLES THROUGH MOUNTING PLATE, CENTER OVER MOUNTING HOLES ON ADJUSTABLE FACEPLATE
3. INSERT WIRE THOUGH ADJUSTABLE FACEPLATE AND KNOCKOUT, ATTACH TO CIRCUIT BOARD
4. ATTACH ADJUSTABLE FACEPLATE TO BACKBOX WITH FACTORY SCREWS
5. ATTACH MOUNTING BRACKET TO ADJUSTABLE FACEPLATE WITH 2 EA. 1/8" SCREWS
6. INSERT PLASTIC REFLECTOR
7. INSERT CIRCUIT BOARD, ADJUST PLASTIC REFLECTOR
8. ATTACH COVER TO MOUNTING BRACKET AND SNAP INTO PLACE

NOTE: ASSEMBLY WEIGHT LESS THAN 5LBS

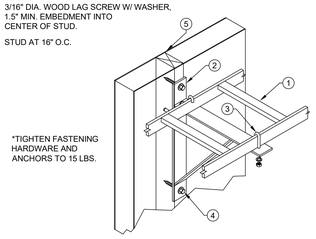


10 INTRUSION DETECTION SENSOR INSTALLATION ADJUSTABLE CEILING MOUNTING DETAIL
SCALE: NONE



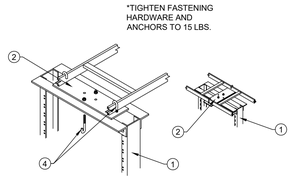
3 J-HOOK PATHWAY ABOVE CEILING DETAIL
SCALE: NONE

1. CHATSWORTH 11275-712 LADDER RACK ASSEMBLY, PER DRAWINGS.
2. MOUNTING BRACKET. 60" OC MAXIMUM SPACING BETWEEN BRACKETS.
3. MFR. INCLUDED MOUNTING BRACKET J-HOOK HARDWARE
4. 3/16" DIA. WOOD LAG SCREW W/ WASHER, 1.5" MIN. EMBEDMENT INTO CENTER OF STUD.
5. STUD AT 16" O.C.

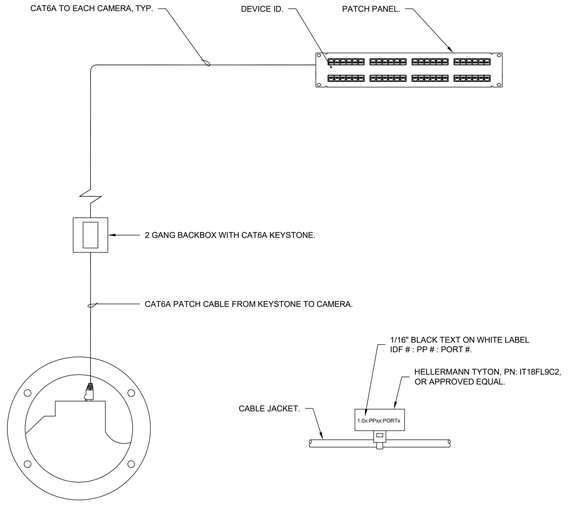


19 RUNWAY SIDE WALL SUPPORT DETAIL
SCALE: NONE

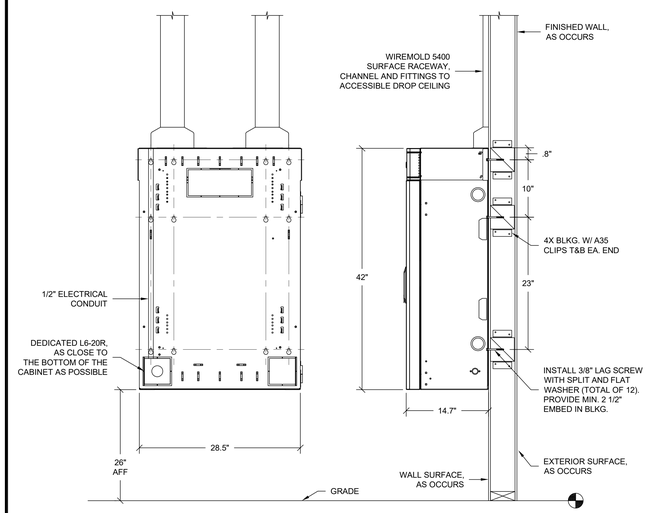
1. DATA RACK ASSEMBLIES
2. TOP PLATE MOUNTING BRACKET
3. MFR. INCLUDED TOP PLATE MOUNTING BRACKET, J-HOOK HARDWARE.



14 RUNWAY SUPPORT KIT FOR RACK DETAIL
SCALE: NONE

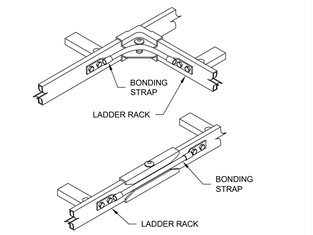


9 CCTV NETWORK SEGMENT DETAIL
SCALE: NONE

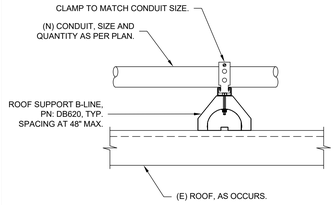


NOTES:
1. 3RU TOTAL LOAD CAPACITY = 200 LBS.

2 TEL ECOMMUNICATIONS WALL CABINET, 3RU
SCALE: NONE



18 LADDER RACK BONDING DETAIL
SCALE: NONE

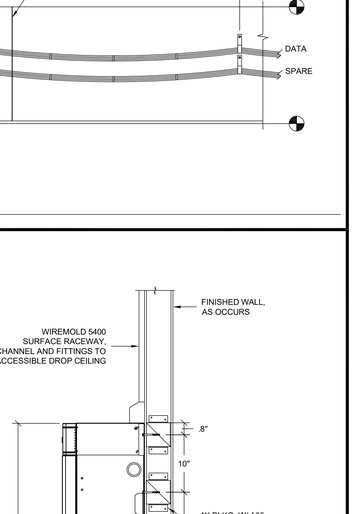


13 CONDUIT ON ROOF DETAIL
SCALE: NONE

8 MAIN GROUND BAR DETAIL
SCALE: NONE

6 SURFACE MOUNTED CLOCK/SPEAKER COMBO DETAIL
SCALE: NONE

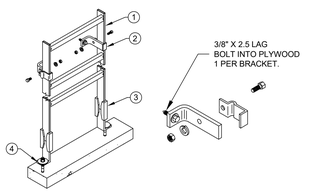
5 SURFACE MOUNTED INTERIOR INTERCOM SPEAKER DETAIL
SCALE: NONE



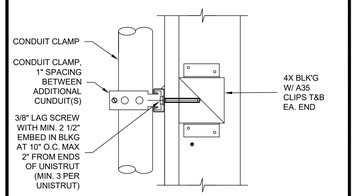
MAX LOADING: 1500LBS

1 FLOOR MOUNTED 4-POST RACK DETAIL
SCALE: NONE

1. CABLE LADDER PER DRAWINGS.
2. VERTICAL WALL BRACKETS, CHATSWORTH PN 10608-001 OR EQUAL
3. VERT. LADDER FLOOR BRACKET, CHATSWORTH PN 11309-000 OR EQUAL
4. 3/8" DIA. HILTI KB-TZ2 316 WEDGE ANCHOR, 2" EMBED (2-TOTAL)



17 VERTICAL LADDER SUPPORT DETAIL
SCALE: NONE

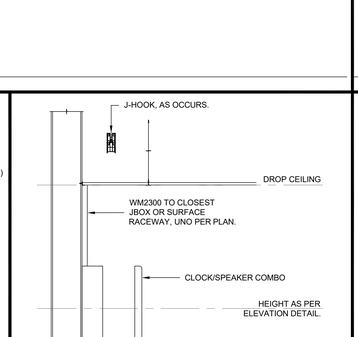


SCHEDULE 1.1

WALL TYPE	ANCHOR/FASTENER	MIN. EMBED
WOOD	3/8" HEX LAG SCREW	2"
LIGHT GAUGE	3/8"X3" STS	N/A
CMU/MASONRY *	3/8"	2-1/2"

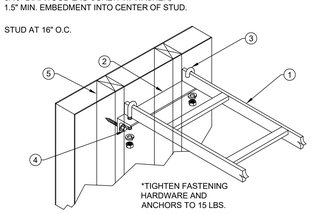
*HILTI KB TZ EXPANSION ANCHOR, LENGTH AS REQUIRED FOR MINIMUM EMBEDMENT

12 CONDUIT SUPPORT DETAIL - VERTICAL
SCALE: NONE



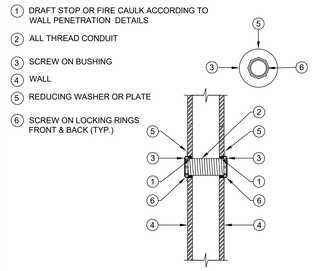
4 EXTERIOR INTERCOM SPEAKER MOUNTING DETAIL
SCALE: NONE

1. LADDER RACK ASSEMBLY PER DRAWINGS.
2. MOUNTING BRACKET FOR WALL
3. MFR. INCLUDED MOUNTING BRACKET J-HOOK HARDWARE
4. 3/16" DIA. WOOD LAG SCREW W/ WASHER, 1.5" MIN. EMBEDMENT INTO CENTER OF STUD.
5. STUD AT 16" O.C.



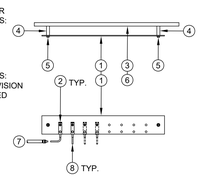
16 RUNWAY END WALL SUPPORT DETAIL
SCALE: NONE

1. DRAFT STOP OR FIRE CAULK ACCORDING TO WALL PENETRATION DETAILS
2. ALL THREAD CONDUIT
3. SCREW ON BUSHING
4. WALL
5. REDUCING WASHER OR PLATE
6. SCREW ON LOCKING RINGS FRONT & BACK (TYP.)



11 CONDUIT SLEEVE PENETRATION DETAIL
SCALE: NONE

1. BARE COPPER GROUND BUS BAR
2. TYPICAL 2 HOLE LUGS, SECURE TO BAR WITH 2-5/6" BOLTS,WITH NAMEPLATES MOUNTED ABOVE. PROVIDE NUMBER OF LUGS AS REQUIRED
3. 1" FIRE RATED PLYWOOD BACKBOARD
4. PROVIDE ISOLATION SUPPORT SPACERS AS REQUIRED
5. 3/8" WOOD LAG SCREW, 1" MIN. EMBED
6. MOUNTING LOCATION PER PLAN
7. MAIN BONDING CONDUCTOR FOR TELECOMMUNICATIONS: #4 AWG TO GROUNDING ELECTRODE SYSTEM (PER ELECTRICAL)
8. BONDING CONDUCTOR(S) FOR TELECOMMUNICATIONS: #6 AWG TO DIVISION 27, DIVISION 28 EQUIPMENT AS REQUIRED



7 GROUND BUS BAR DETAIL
SCALE: NONE

AGENCY APPROVAL DSA# 01-121400

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PROFESSIONAL STAMP

REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER BICSI
TIFFANY KAGEYAMA
EXPIRES: 12/31/24
Regis. No.163629

REVISIONS

# NO.	DATE	DESCRIPTION
1	10/1/2024	ADDENDUM 1

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
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MEADOW HOMES ES MODERNIZATION
1371 Detroit Ave
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SHEET TITLE
TECHNOLOGY INFRASTRUCTURE DETAILS

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

SHEET NO.
2T-800
DATE: OCTOBER 25, 2024

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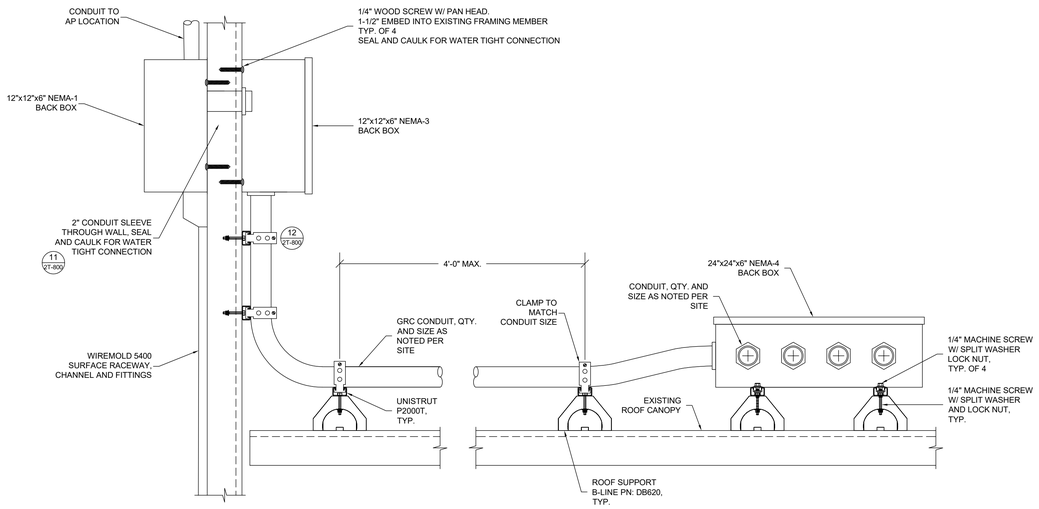
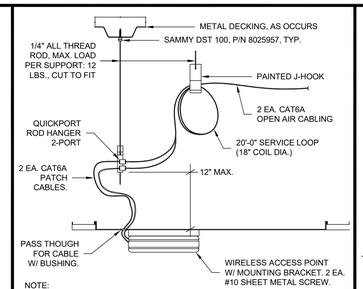
DATE PLOTTED: 10/1/2024 5:02:54 PM FILE LOCATION: C:\Users\dvargas\Documents\23044_MTUSD_ IT Network Design 13 Sites_A22_dvargasTH8BX.rvt

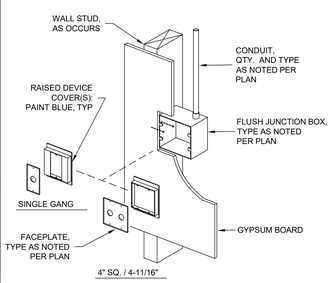


8 EXTERIOR CANOPY CONDUIT AND BACK BOX MOUNTING DETAIL

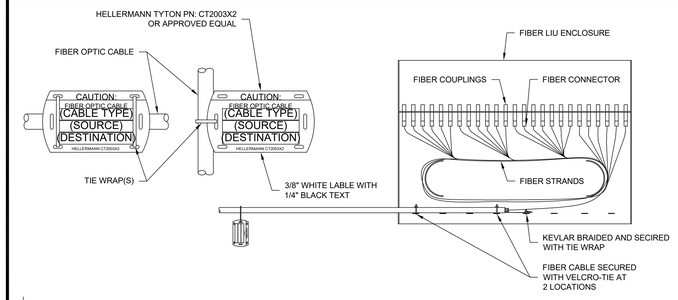


NOTE:
1) TOTAL ASSEMBLY WEIGHT UNDER 20 LBS.

5 WIRELESS ACCESS POINT ON METAL T-BAR CEILING MOUNTING DETAIL
SCALE: NONE



4 JUNCTION BOX, WALL MOUNT DETAIL
SCALE: NONE

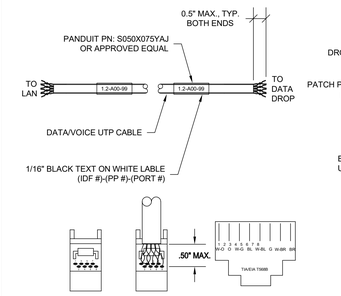


3 FIBER LIU DETAIL W/ FIBER OPTIC CABLE LABELING (ABV./BELOW GROUND)
SCALE: NONE

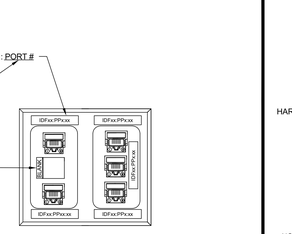
NOT USED

NOT USED

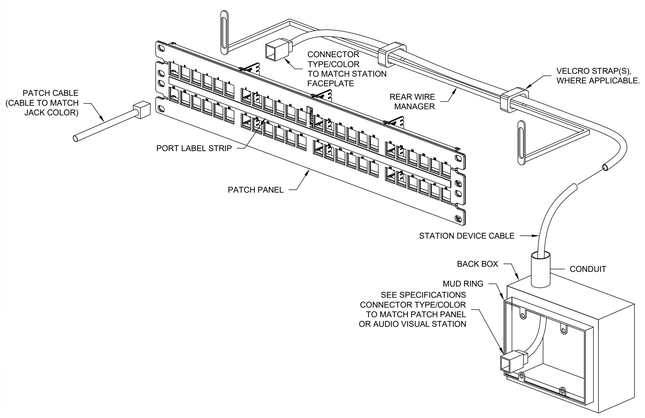
9 TELEPHONE WALL PLATE DETAIL
SCALE: NONE



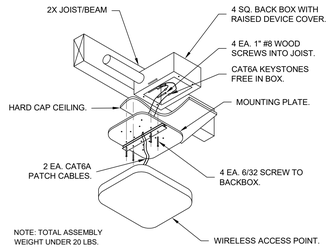
DATA CABLE LABELING DETAIL - AT PATCH PANEL / END POINT



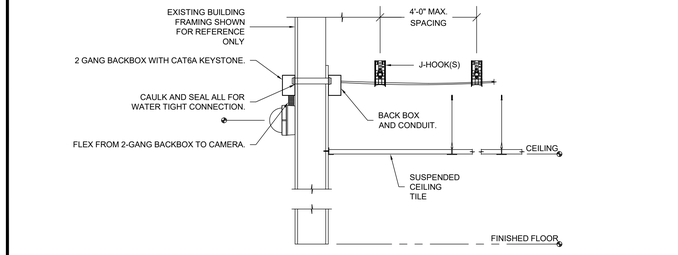
DATA/ VOICE BACKBOX AND FACE PLATE DETAIL



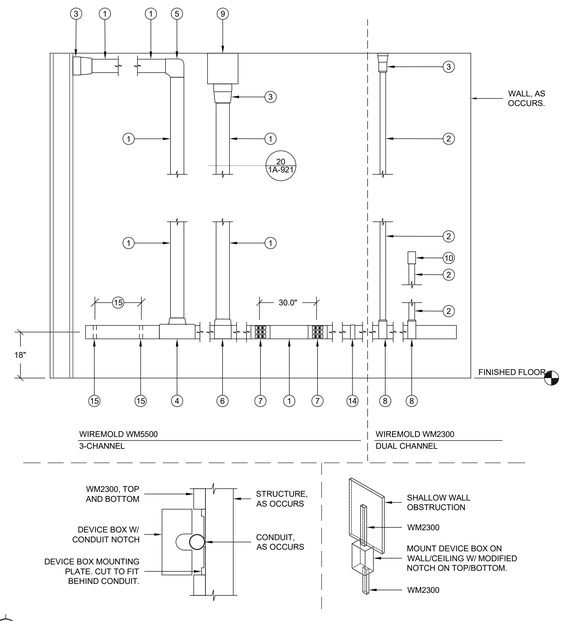
7 PATCH PANEL CONNECTION DETAIL - 2RU
SCALE: NONE



6 WAP MOUNTING AT HARD CAP CEILING DETAIL - CONDUIT
SCALE: NONE



2 CCTV EXTERIOR WALL MOUNTING DETAIL
SCALE: NONE



1 TYPICAL SURFACE MOUNTED RACEWAY W/ ASSEMBLY COMPONENTS DETAIL
SCALE: NONE

WIREMOLD SURFACE RACEWAY

SYMBOL	DESCRIPTION	WM5500 PART NUMBER	WM2300 PART NUMBER
1	WIREMOLD WM5500	5500	N/A
2	WIREMOLD WM2300	N/A	2300
3	ENTRANCE END FITTING	5510D	2310A
4	FULL CAPACITY TEE (FIBER READY)	N/A	N/A
5	FULL CAPACITY FLAT ELBOW 90°	5511F0	2311DFO
6	TEE	5515	2315
7	DEVICE BRACKET W/ DUAL RJ FACEPLATE, DUPLEX FACEPLATE OR BLACK FACEPLATE AS NEEDED	5550 / 5507FRJ / 5507D / 5507B	5474 / 5574
8	TRANSITION FITTING FOR WM2300	5574	2348
9	WALL MOUNTED PULL BOX SIZE AS NOTED PER PLAN	N/A	2300
10	DEVICE BOX	N/A	2348
11	END CAP	5510	2310B
12	INTERNAL ELBOW	5517FO	2317DFO
13	EXTERNAL ELBOW	5518FO	2318DFO
14	BASE SEAM COVER	5506	2306
15	WIRE CLIP (FOR INTERNAL RETENTION OF WIRES WITHIN THE RACEWAY)	5500WC (INSTALL CLIPS AT 48" O.C. ENTIRE LENGTH OF WIREMOLD)	2300WC (INSTALL CLIPS AT 48" O.C. ENTIRE LENGTH OF WIREMOLD)
16	TRANSITION FITTING FOR WM5500 TO WM5400	5574A	N/A

NOTE:
1) DEVICE BOX (10) TO BE USED TO TRANSITION OVER CONDUIT AND SHALLOW WALL OBSTRUCTIONS (I.E. BULLETIN BOARD, TRIM, CASEWORK, ETC.) WHERE REQUIRED. UNDER NO CIRCUMSTANCES SHOULD SURFACE RACEWAY BE BENT OVER OBSTRUCTIONS.

2) INSTALL SURFACE RACEWAY AND FITTINGS PER MFG. DIRECTIONS WITH #8 PAN HEAD SCREWS MAX 18" O.C. IN EACH CHANNEL, AS OCCURS. PROVIDE WALL ANCHORS, AS REQ'D. DO NOT UTILIZE ADHESIVE STRIPS.

AGENCY APPROVAL DSA# 01-121400

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SHEET TITLE
TECHNOLOGY INFRASTRUCTURE DETAILS

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

SHEET NO.
2T-801

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

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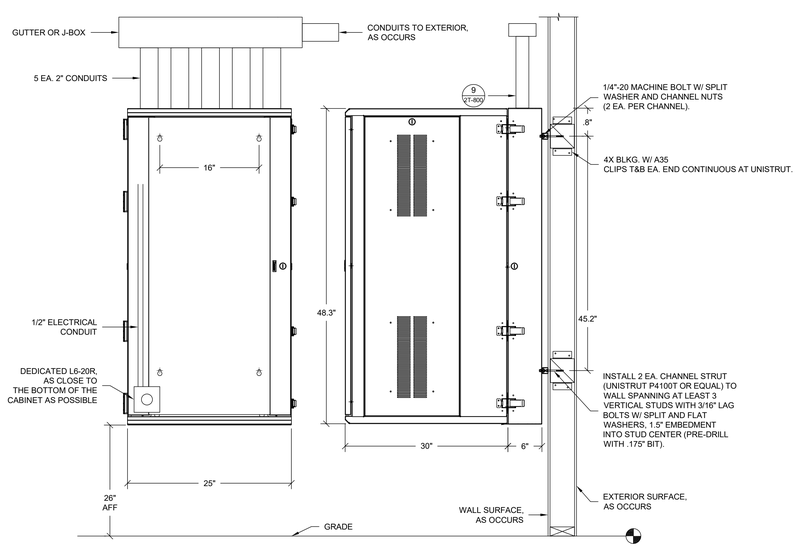
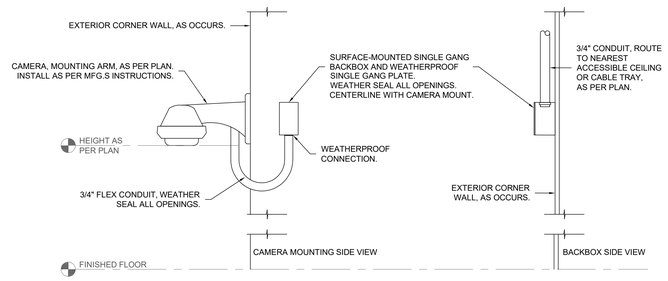


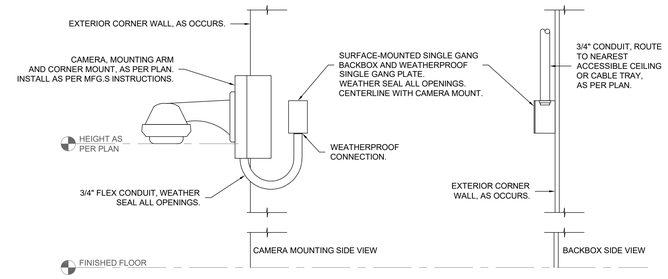
NOTES:
1. TOTAL LOAD CAPACITY = 350.09 LBS.

4 TELECOMMUNICATIONS WALL CABINET, 26RU
SCALE: NONE



NOTE: TOTAL ASSEMBLY WEIGHT = 18.8 LBS.

2 MULTI-VIEW CCTV EXTERIOR WALL MOUNTING DETAIL
SCALE: NONE



NOTE: TOTAL ASSEMBLY WEIGHT = 18.8 LBS.

1 MULTI-VIEW CCTV EXTERIOR CORNER MOUNTING DETAIL
SCALE: NONE

AGENCY APPROVAL DSA# 01-121400

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REGISTERED COMMUNICATIONS CONSTRUCTION DESIGNER
BICSI
JOSHUA KAGEYAMA
EXPIRES: 12/31/24
Regis. No.163629

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SHEET TITLE

TECHNOLOGY INFRASTRUCTURE DETAILS

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

SHEET NO.

2T-802

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

DATE PLOTTED: 10/1/2024 5:02:54 PM FILE LOCATION: C:\Users\dvargas\Documents\23044 _MTUSD_ IT Network Design 13 Sites_A22_dvargasTH8BX.rvt

Classified by
Underwriters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814)
and ANSI/ULC263 (ASTM E119)

CLIV.R14288

Wall-opening Protective Materials

SpecSeal Power Shield Box Inserts, for use with flush device UL Listed Metallic Outlet Boxes without internal clamps installed with steel mud rings in framed wall assemblies. When protective material is used in outlet boxes on both sides of the wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in. (610 mm) provided that the boxes are not installed back-to-back. Installation shall comply with the National Electrical Code (NFPA 70). The max outlet box dimensions, hourly rating, type of stud, use of stud cavity insulation and type of faceplate are tabulated below. Additional general construction features shall comply as follows:

A. Studs - Unless otherwise specified, the minimum stud width is 3-1/2 in. (89 mm).

B. Stud Cavity Insulation - Where indicated in the table below, stud cavity insulation to consist of min 3-1/2 in. (89 mm) thick fiberglass (min 0.5 pcf or 8 kg/m3) or mineral fiber (min 4 pcf or 64 kg/m3). Unless indicated as required, stud cavity insulation is optional.

C. Wall Design - Stud composition is indicated in the table below. Wall construction shall comply with the individual U300, U400 or V400 Series Wall and Partition Design in the Fire Resistance Directory.

D. Pad Dimensions - The minimum dimensions of the insert pad are shown in the table below. Pads may be cut to achieve dimensions shown in table and partial insert pads may be utilized.

Product	Max Outlet Box Size, in. (mm)	Outlet Box Type	Outlet Box Mfr	Pad Size, in. (mm)	Rating, hr	Stud	Cavity Insulation	Face Plate Type	Putty Ball
EP 23	2 x 3 x 2-1/8 (51 x 76 x 57) deep	-	-	1-7/8 x 2-3/4 (48 x 70)	2	Steel	No	Steel	-
EP 23	2 x 3 x 2-1/4 (51 x 76 x 57) deep	-	-	1-7/8 x 2-3/4 (48 x 70)	2	Steel	Yes	Plastic	-
EP 23	2 x 3 x 2-1/4 (51 x 76 x 57) deep	-	-	1-7/8 x 2-3/4 (48 x 70)	1	Steel or Wood	Yes	Plastic or Steel	-
EP 24	2-1/8 x 4 x 2-1/8 (54 x 102 x 54) deep	-	-	1-7/8 x 3-3/4 (48 x 95)	2	Steel	No	Steel	-
EP 24	2-1/8 x 4 x 2-1/8 (54 x 102 x 54) deep	-	-	1-7/8 x 3-3/4 (48 x 95)	2	Steel	Yes	Steel	-
EP 24	2-1/8 x 4 x 2-1/8 (54 x 102 x 54) deep	-	-	1-7/8 x 3-3/4 (48 x 95)	1	Steel or Wood	Yes	Plastic or Steel	-
EP 44	4 x 4 x 2-1/8 (102 x 102 x 54) deep	-	-	3-3/4 x 3-3/4 (95 x 95)	2	Steel	No	Steel	-
EP 44	4 x 4 x 2-1/8 (102 x 102 x 54) deep	-	-	3-3/4 x 3-3/4 (95 x 95)	2	Steel	Yes	Plastic	-
EP 44	4 x 4 x 2-1/8 (102 x 102 x 54) deep	-	-	3-3/4 x 3-3/4 (95 x 95)	1	Steel or Wood	Yes	Plastic or Steel	-
EP 45	4-11/16 x 4-11/16 x 2-1/8 (119 x 119 x 54) deep	-	-	4-1/2 x 4-1/2 (114 x 114)	1 or 2	Steel or Wood	Yes	Plastic or Steel	-
EP 45	4-1/2 x 5 x 2-3/8 (114 x 127 x 60) deep	-	-	4-1/2 x 4-1/2 (114 x 114)	1 or 2	Steel or Wood	Yes	Plastic or Steel	-
EP 45	4-1/2 x 14 x 2-1/2 (114 x 356 x 64) deep	-	-	4-1/2 x 13-3/4 (114 x 349)	1 or 2	Steel or Wood	Yes	Plastic or Steel	-

SpecSeal Putty Pads, for use with flush device UL Listed Metallic Outlet Boxes installed with steel mud rings or UL Listed Nonmetallic Outlet Boxes in framed wall assemblies. When protective material is used on outlet boxes on both sides of the wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in. (610 mm) provided that the boxes are not installed back-to-back. Installation shall comply with the National Electrical Code (NFPA 70). Min 3/16 in. (5 mm) thick moldable putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud) and to completely seal against the stud within the stud cavity. Adjoining pieces of moldable putty pads to be overlapped approx 1/2 in. (13 mm) at the seam. An additional 3/16 in. (5 mm) thickness of putty to be formed around the connector securing the end of each Type MC cable, electrical metallic tube (EMT) or conduit to the box. When nonmetallic box is used with Type NM cable, a 3/16 in. (5 mm) thickness of putty shall be formed around the cable at its connection to the box and extending a min 1 in. (25 mm). The box composition, max device dimensions, hourly rating, type of stud and type of faceplate are tabulated below. Additional general construction features shall comply as follows:

A. Studs - Unless otherwise specified, the minimum stud width is 3-1/2 in. (89 mm).

B. Stud Cavity Insulation - Unless indicated as required, stud cavity insulation is optional and may consist of min 3-1/2 in. (89 mm) thick fiberglass (min 0.5 pcf or 8 kg/m3) or mineral fiber (min 4 pcf or 64 kg/m3).

C. Wall Design - Stud composition is indicated in the table below. Wall construction shall comply with the individual U300, U400 or V400 Series Wall and Partition Design in the Fire Resistance Directory.

D. Metallic Outlet Boxes - Except as indicated in the table below, when steel outlet boxes are used and the boxes are interconnected by means of electrical metallic tube or conduit, a ball of putty is to be installed to plug the open end of each electrical metallic tube (EMT) or conduit within the outlet box. When MC cable is used and/or when the outlet boxes are not interconnected, the ball of putty is not required.

E. Nonmetallic Outlet Boxes - The box manufacturer is indicated in the table below. Boxes shall bear a 2 hr rating under the "Outlet Boxes and Fittings Classified for Fire Resistance" category in the Fire Resistance Directory.

Model	Max Outlet Box in. (mm)	Outlet Box Type	Outlet Box Mfr	Pad Size in. (mm)	Rating, hr	Stud	Cavity Insulation	Face Plate Type	Putty Ball
-	4 x 4 x 2-1/8 (102 x 102 x 54) deep	Steel	N.A.	-	1	Steel or Wood	-	Steel	No
-	4 x 4 x 2-1/8 (102 x 102 x 54) deep	Steel	N.A.	-	1	Steel or Wood	-	Plastic	Yes
-	4-11/16 x 4-11/16 x 2-1/8 (119 x 119 x 54) deep	Steel	N.A.	-	1 or 2	Steel or Wood	-	Steel	Yes
-	4-1/2 x 5 x 2-3/8 (114 x 127 x 60) deep	Steel	N.A.	-	1 or 2	Steel or Wood	-	Steel	Yes
-	4-1/2 x 14 x 2-1/2 (114 x 127 x 60) deep	Steel	N.A.	-	1 or 2	Steel or Wood	-	Steel	Yes
-	3-3/4 x 4 x 3 (95 x 102 x 76) deep	Polyvinyl Chloride	Lamson & Sessions or Carlon	-	1 or 2	Wood	-	Plastic or Steel	N.A.
-	3-3/4 x 4 x 3 (95 x 102 x 76) deep	Phenolic	Allied Moulded Prods	-	1 or 2	Wood	-	Plastic or Steel	N.A.
-	3-3/4 x 4 x 3 (95 x 102 x 76) deep	Polycarbonate	Thomas & Betts	-	1 or 2	Wood	-	Plastic or Steel	N.A.
-	3-3/4 x 4 x 3 (95 x 102 x 76) deep	Phenolic	Thomas & Betts	-	1 or 2	Wood	-	Plastic or Steel	N.A.
-	2-1/4 x 3-3/4 x 2-3/8 (57 x 95 x 70) deep	Polyvinyl Chloride	Pass & Seymour	-	1 or 2	Wood	-	Plastic or Steel	N.A.

SpecSeal Putty Pads , for use with maximum 4 by 4 by 2-1/8 in. (102 by 102 by 54 mm) deep flush device UL Listed Metallic Outlet Boxes installed with steel mud rings and with steel faceplates in 1 hr or 2 hr fire rated gypsum board wall assemblies constructed with min 5-1/2 in. (140 mm) wide wood or steel studs and with stud cavities filled with fiberglass (nom 0.5 pcf or 8 kg/m3) or mineral fiber (nom 4 pcf or 64 kg/m3) insulation. When protective material is used on outlet boxes on both sides of the wall as directed, the boxes may be installed back-to-back provided that the boxes on opposite sides of the wall are not interconnected with conduit or, when interconnected, the open end of the conduit within the outlet box is filled with a ball of putty. Installation shall comply with the National Electrical Code (NFPA 70). Min 3/16 in. (5 mm) thick moldable putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud) and to completely seal against the stud within the stud cavity. Adjoining pieces of moldable putty pads to be overlapped approx 1/2 in. (13 mm) at the seam. An additional 3/16 in. (5 mm) thickness of putty to be formed around the connector securing the end of each Type MC cable, electrical metallic tube (EMT) or conduit to the box.

SpecSeal EP23, EP24 and EP44 Power Shield Box Inserts and SpecSeal Putty Pads, for use with maximum 4 by 4 by 1-1/2 or 2-1/8 in. (102 by 102 by 38 or 54 mm) deep flush device UL Listed Metallic Outlet Boxes installed with steel mud rings and with steel or plastic faceplates in 1 hr or 2 hr fire rated gypsum board wall assemblies constructed with min 3-1/2 in. (89 mm) wide wood or steel studs. When both protective materials are used with outlet boxes on both sides of the wall as directed, the boxes may be installed back-to-back provided that the backs of the boxes are minimum 1/2 in. (13 mm) apart and provided that the boxes are not interconnected. Installation shall comply with the National Electrical Code (NFPA 70). Min 3/16 in. (5 mm) thick moldable putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud) and to completely seal against the stud within the stud cavity. Adjoining pieces of moldable putty pads to be overlapped approx 1/2 in. (13 mm) at the seam. An additional 3/16 in. (5 mm) thickness of putty to be formed around the connector securing the end of each Type MC cable, electrical metallic tube (EMT) or conduit to the box. An insert pad shall be installed to completely cover the back inside surface of each outlet box.

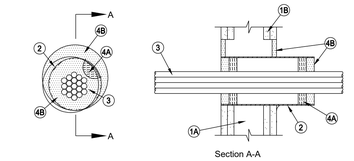
SpecSeal Putty Pads, for use with max 5 by 5 by 2 7/8 in. (127 by 127 by 73 mm) deep flush device UL Listed Metallic Outlet Boxes or UL Listed Communications-Circuit Accessories manufactured by Randl Industries Inc for use in 1 hr or 2 hr fire rated gypsum board wall assemblies framed with min 3-5/8 in. (92 mm) wide wood or steel studs and constructed as specified in the individual U300, U400, or V400 or W400 Series Wall and Partition Designs in the Fire Resistance Directory. Metallic outlet boxes to be provided with UL Listed Signal Appliance with steel cover plate manufactured by Cooper Wheelock Inc. Moldable putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud unless otherwise noted) including nailing tabs and to completely seal against the stud within the stud cavity. Multiple moldable putty pads may be installed on an outlet box to attain the required minimum thickness of putty material. Additional putty material used to seal around each conduit and/or cable fitting on the exterior of each box. A min 3/16 in. (4.8 mm) thickness of putty material is required on the exterior surfaces of flush device boxes in 1 and 2 hr fire rated Wall and Partition Designs. When the moldable putty pad outlet box protective material is used on boxes on both sides of wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in. (610 mm) provided that the outlet boxes are not installed back to back, except as noted.

SpecSeal EP55 Power Shield Box Inserts, for use with max 5 by 5 by 2 7/8 in. (127 by 127 by 73 mm) deep flush device UL Listed Metallic Outlet Boxes or UL Listed Communications-Circuit Accessories manufactured by Randl Industries Inc for use in 1 hr or 2 hr fire rated gypsum board wall assemblies framed with min 3-5/8 in. (92 mm) wide wood or steel studs and constructed as specified in the individual U300, U400, or V400 or W400 Series Wall and Partition Designs in the Fire Resistance Directory. Metallic outlet boxes to be provided with UL Listed Signal Appliance with steel cover plate manufactured by Cooper Wheelock Inc. Power Shield Box Insert is to be applied to the back surface of the box and may be slit to accommodate communications-circuit accessories. When the Power Shield Box Insert is used on boxes on both sides of wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in. (610 mm) provided that the outlet boxes are not installed back to back, except as noted.

Classified by
Underwriters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115

System No. W-L-3210

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 3/4 Hr	FT Rating - 3/4 Hr
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Rating - 3/4 Hr



Section A-A

1. Wall Assembly - The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* - Thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, V300, U400 , V400 or W400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 6-1/2 in. (165 mm) when sleeve (Item 2) is installed. Max diam of opening is 4 in. (102 mm) when sleeve is not used.
   The hourly F rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Steel Sleeve - (Optional) - Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT), steel conduit, Schedule 5 (or heavier) steel pipe sleeve or min 0.016 in. thick (0.41 mm, No. 28 ga) galv steel sleeve installed flush with wall surfaces. The annular space between the steel sleeve and periphery of opening shall be min 0 in. (continuous point contact) to max 2 in. (51 mm). When Schedule 5 steel pipe or EMT is used, sleeve may be installed flush with or extend up to 18 in. (46 cm) beyond one or both wall surfaces. Steel sleeve may be installed at an angle not greater than 45 degrees from perpendicular. Schedule 5 steel pipe or EMT sleeves may extend continuously beyond one wall surface. Sleeve to be rigidly supported when extending from the wall surfaces.

3. Cables - Aggregate cross-sectional area of cables in steel sleeve to be max 48 percent of the aggregate cross-sectional area of the opening or sleeve. Cables to be bundled and rigidly supported on both sides of wall assembly. When the sleeve (Item 2) is installed, the annular space between the cables and the sleeve shall be min 0 in. (point contact) to max 1-1/2 in. (38 mm). When the sleeve (Item 2) is not used, the annular space between the cables and the opening shall be a min 0 in. (point contact) to a max 1/2 in. (13 mm). Cable bundle, using cables described below, may penetrate the wall at an angle not greater than 45 degrees. Any combination of the following types and sizes of copper conductor cable may be used:
   A. Max 200 pair No. AWG (or smaller) copper conductor cable with polyvinyl chloride (PVC) or plenum-rated jacketing and insulation.
   B. Max 3/C No. 2/0 AWG (or smaller) aluminum or copper conductor service entrance cable with PVC insulation and jacket.
   C. Max 3/C No. 8 AWG (or smaller) nonmetallic sheathed (Romex) cable with copper conductors, PVC insulation and jacket.
   D. Max 7/C No. 2/0 AWG (or smaller) multiconductor power and control cables with XLPE or PVC insulation and XLPE or PVC jacket.
   E. Max RG/U (or smaller) coaxial cable with fluorinated ethylene or plenum-rated insulation and jacketing.
   F. Max 62.5/48 fiber optic cable with PVC or plenum-rated insulation and jacketing.
   G. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with PVC or plenum-rated insulation and jacket.
   H. Max 4/C No. 2/0 aluminum or copper conductor aluminum or steel Metal-Cladit or Armored-Cladit cable.
   I. Max ¼-in. (19 mm) copper ground cable with or without a PVC jacket.
4. Firestop System - The firestop system shall consist of the following:
   A. Packing Material - When required (See table in Item 4B), min 1 in. (25 mm) thickness of min 4.0 pcf (64 kg/m3) mineral wool batt insulation firmly packed into each end of sleeve as a permanent form. Packing material to be recessed from each end of sleeve as required to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* - Sealant or Putty - Fill material applied to appropriate thickness within steel sleeve, flush with edges of steel sleeve on both surfaces of wall. Min 1/2 in. (13 mm) thickness of fill material installed into annular space between sleeve and wall flush with both surfaces of the wall. Min 1/2 in. (13 mm) diam bead of sealant or "rope" of putty shall be applied around the perimeter of the sleeve on each side of the wall when sleeve extends beyond surface of wall and is installed at continuous point contact. See table below for fill material thickness requirements around cables.

Sealant or Putty Type	Thickness, In. (mm)	Packing Material Required
SpecSeal Series SSS Sealant or LCI Sealant	1/2 in. (13)	Yes
SpecSeal Series SSS Sealant or LCI Sealant	1 in. (25)	No
SpecSeal Putty	1 in. (25)	No

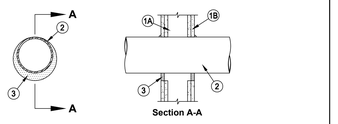
SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant or SpecSeal Putty

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Classified by
Underwriters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115

System No. W-L-1049

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Rating - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft



Section A-A

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* - 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
   1A. Metallic Sleeve - (Optional, Not Shown) - Cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) to max 0.105 in. (2.7 mm) thick sheet steel. Length of steel sleeve to be equal to the thickness of wall. Longitudinal seam of sleeve welded or overlapped min 1 in. (25 mm). The ends of the steel sleeve shall be flush or recessed max 1/4 in. (6 mm) from wall surfaces.

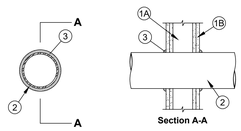
2. Through Penetrant - One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. The annular space between pipe, conduit or tubing and periphery of opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). For maximum 16 in. (406 mm) diam (or smaller) pipes, annular space shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe - Nom 36 in. (914 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe - Nom 36 in. (914 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit - Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing, nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.
   D. Copper Tubing - Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe - Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* - Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrant and gypsum board, a min 3/8 in. (10 mm) bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall.
   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

***** Indicates products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115

System No. W-L-1602

ANSI/UL1479 (ASTM E814	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/ft2	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating At 400°F - Less Than 1 CFM/ft2	FTH Rating - 0 Hr
	L Rating At Ambient - Less Than 5.1 L/S/m2
	L Rating At 204°C - Less Than 5.1 L/S/m2



Section A-A

1. **Wall Assembly -** The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, V300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. **Gypsum Board* -** Thickness, type, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, V300, U400, V400 or W400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32 in. (813 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.
   The F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrant - One metallic pipe, conduit or tube to be installed either concentrically or eccentrically within the firestop system. The annular space between the penetrant and the periphery of opening shall be min 0 in. (point contact) to max 2 in. (51 mm). Penetrant may be installed with continuous point contact. Penetrant to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe - Nom 30 in. (762 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Iron Pipe - Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit - Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or nom 6 in. (152 mm) diam (or smaller) steel conduit.
   D. Copper Tubing - Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe - Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* - Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact or continuous point contact locations, apply min 1/2 in. (13 mm) diam bead of sealant at the gypsum board/through penetrant interface on both surfaces of wall.
   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

*Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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PROFESSIONAL STAMP

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REVISIONS

# NO.	DATE	DESCRIPTION
1	10/1/2024	ADDENDUM 1

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PROJECT OWNER & TITLE

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SHEET TITLE

TECHNOLOGY INFRASTRUCTURE DETAILS

INCREMENT: INC.2

DRAWN BY: CS/SD JOB NUMBER: 23119.01

SHEET NO.

2T-803

DATE: OCTOBER 25, 2024

CONSTRUCTION DOCUMENTS

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