ADDENDUM # 02

Project: Mt Diablo USD
Rio Vista Elementary School
Modernization of Three Elementary School Campuses - Increment 2
19six #: 23118.01
DSA #: 01-121440 INC 02
Bid #: 1945

Date: November 18, 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.

Bid due date: 1:00 PM Friday, November 22, 2024
At: Mt. Diablo Unified School District
Purchasing and Warehouse
2336 Bisso Lane, Concord, California 94520

A. NEW SPECIFICATIONS

Item #1: 03 10 00 - Concrete Formwork
Item #2: 03 20 00 Concrete Reinforcement
Item #3: 26 05 53 Identification for Electrical Systems
Item #4: 26 05 73-Power System Studies
Item #5: 01 23 00 – Alternates and Unit Pricing

B. NEW DRAWINGS

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Item #2: S-1 COVER SHEET
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C. REMOVED DRAWINGS

Item #1: 2S-201 – BUILDING 3 FOUNDATION PLAN

D. CHANGES TO SPECIFICATIONS (Replace SPEC division in kind)

Item #1: Revise 00 00 03 - Table of Contents

Item #2: **Revise 01 10 00 – Summary**
Item #3: **Revise 01 33 00 - Submittal Procedures**
Item #4: **Revise 06 10 00 - Rough Carpentry**
Item #5: **Revise 08 14 16 - Flush Wood Doors**
Item #6: **Revise 22 00 00 - Plumbing General Requirements**
Item #7: **Revise 22 05 00 - Plumbing**
Item #8: **Revise 23 00 00 - Mechanical General Requirements**
Item #9: **Revise 23 05 00 - Heating Ventilating Air Conditioning**
Item #10: **Revise 26 05 19 - Low-Voltage Electrical Power Conductors and Cables**
Item #11: **Revise 26 05 26 - Grounding and Bonding for Electrical Systems**
Item #12: **Revise 26 05 29 - Hangers and Supports for Electrical Systems**
Item #13: **Revise 26 05 33.13 - Conduit for Electrical Systems**
Item #14: **Revise 26 05 33.16 - Boxes for Electrical Systems**
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Item #16: **Revise 26 05 48 - Vibration and Seismic Controls for Electrical Systems**
Item #17: **Revise 26 05 83 - Wiring Connections**
Item #18: **Revise 26 09 43 - Digital Lighting Controls**
Item #19: **Revise 26 24 16 - Panelboards**
Item #20: **Revise 26 27 26 - Wiring Devices**
Item #21: **Revise 26 28 13 - Fuses**
Item #22: **Revise 26 28 16.16 - Enclosed Switches**
Item #23: **Revise 26 51 00 - Interior Lighting**
Item #24: **Revise 26 56 00 - Exterior Lighting**
Item #25: **Revise 27 05 00 - Common Work Results for Communications**
Item #26: **Revise 32 13 13 - Concrete Paving**
Item #27: **Revise 32 12 14 SUBGRADE AND ROADBED**

E. CHANGES TO DRAWINGS

Item #1: **2C-0.1 NOTES, LEGEND & INDEX**

- Add "UNDERGROUND DETAILS 2-C4.3" to sheet index table

Item #2: **2C-1.1 DEMOLITION PLAN**

- Add extension of concrete walkway demolition work in between buildings 3 and 4
- Add keynote 15
- Add a new fire lane route

Item #3: **2C-2.1 GRADING AND DRAINAGE PLAN**

- New Shade Structure (Add Alternate #1).
- Add a new fire lane route.
- Location for salvaged benches.
- Extension of concrete walkway new work in between buildings 3 and 4.

Item #4: **2C-3.1 UNDERGROUND UTILITIES PLAN**

- New Shade Structure (Add Alternate #1).
- Add a new fire lane route.

- Location for salvaged benches.
- Extension of concrete walkway new work in between buildings 3 and 4.

Item #5: **2C-4.2 DETAILS**

- Detail 11: Add ornamental fence on the concrete curb for clarification.

Item #6: **2C-4.3 UNDERGROUND DETAILS**

- Add new detail 3 Trench Drain.

Item #7: **2C-5.1 HORIZONTAL CONTROL PLAN**

- New Shade Structure (Add Alternate #1).
- Add a new fire lane route.
- Location for salvaged benches.
- Extension of concrete walkway new work in between buildings 3 and 4.

Item #8: **2C-6.1 EROSION CONTROL PLAN**

- New Shade Structure (Add Alternate #1).
- Add a new fire lane route.
- Location for salvaged benches.
- Extension of concrete walkway new work in between buildings 3 and 4.

Item #9: **2G-101 CODE SITE PLAN**

- **Keynotes:** Add 13.34.A, revise 01.41.U, 01.41.L
- **Legend:** Revise "(N) PROPOSED FIRE ENGINE ACCESS PART OF THIS APPLICATION"
- **Site Plan:** Revise the new location of callout 12/2A-111, Add callout 10/2A-112 with the extension of site work, adjust 05.52.D Keynote leaders, add dimension to the overall drop-off length, add callout 1/2A-101 and dimensions for a new PC shade structure, add new layout for fire lane route, add new numbering striping and revise track striping on the asphalt playground.

Item #10: **2A-021 BLDG 3 & 4- DEMOLITION PLAN**

- **Keynotes:** Revise 02.22.E, Add 02.10.D, remove 02.10.G, 22.00.A
- **Building 3 Demolition Floor Plan – Staff RR:** Remove keynotes 02.10.G, 22.00.A, 02.22.D, 02.10.F. Add keynote 02.10.D.

Item #11: **2A-023 BLDG 10, 11 & 12 - DEMOLITION PLAN**

- **Keynotes:** Add 02.08.F
- **Building 10 Demolition floor plan:** Replace exterior door keynotes with 02.08.F.

Item #12: **2A-033 BLDG 9, 10, 11 & 12 - DEMOLITION EXTERIOR ELEVATIONS**

- **Keynotes:** Add 02.08.F and 02.23.G
- **Building 10 Exterior Elevations:** Replace exterior door keynotes with 02.08.F
- **Building 11 Exterior Elevations:** Add 02.23.G keynote, add existing building parapet
- **Building 12 Exterior Elevations:** Add 02.23.G keynote, add existing building parapet

Item #13: **2A-102 ENLARGED SITE PLAN**

- **Keynotes:** Add 10.14.B, 12.67.A, 32.17.L, 32.17.M, 32.17.N, 32.17.O, 32.17.P, 32.17.Q, 32.17.R, 32.17.S, 32.17.T. Revise 32.17.J.
- **Drop-Off – Enlarged Plan:** Add keynote 10.14.B and 32.17.L
- **Playground & Asphalt Play Area:** Add keynotes 12.67.A, 32.17.L, 32.17.M, 32.17.N, 32.17.O, 32.17.P, 32.17.Q, 32.17.R, 32.17.S, 32.17.T. Revise play striping on the asphalt. Add keynote 32.00.I for existing service gates.
- **(E) Accessible Ramp:** Add existing extension of handrail and ramp dimension for clarification.

Item #14: **2A-103 FENCE & STAIR PLANS**

- **Fencing Elevations 2A:** Add 4'-0" MAX. OPENING
- **Fencing Elevations 2C:** Revise the gate's dimension and opening, and revise fence dimensions.
- **Fence and Gate – Enlarged Plan:** Revise the graphic previously covering the accessible route signage.

Item #15: **2A-111 SITE DETAILS**

- **Detail 10 Electronic Marquee Sign:** Revise the concrete reinforcement, revise the detail notes pertinent to the concrete reinforcement, and add a steel angle between the sign legs.
- **Detail 20 Marquee Anchor Rod Detail:** Add dimensions
- **Detail 12 Wall Mounted Drinking Fountain:** Remove 2'-0" dimension, add 3'-0" MAX dimension, revise water stream note, and add "MAX" to 15 ° angle dimension.

Item #16: **2A-112 SITE DETAILS**

- **Add detail 10**
- **Detail 20:** Rename detail

Item #17: **2A-201 BLDG 3 & 4 - FLOOR PLAN**

- **Floor Plan – Building 3:** Rename room 306.A to "STORAGE," and remove all new plumbing and accessories fixtures from the room.

Item #18: **2A-202 BLDG 6, 8 & 9 - FLOOR PLAN**

- **Floor Plan – Building 8:** Remove sink, soap, and paper towel dispensers, and related keynotes.
- **Floor Plan – Building 9:** Relocate 12.50.A, add keynote 22.43.A and revise the sink ADA CLR. Approach.

Item #19: **2A-251 BLDG 3 & 4 - FINISH & SIGNAGE PLAN**

- **BLDG. 4 - FINISH KEY PLAN:** Revise flooring type for Custodian 408.

Item #20: **2A-252 BLDG 6, 8 & 9 - FINISH & SIGNAGE PLAN**

- **Legend – Signage General Notes:** Revise note 2.D.

Item #21: **2A-253 BLDG 10, 11 & 12 - FINISH & SIGNAGE PLAN**

- **Legend – Signage General Notes:** Revise note 2.D.

Item #22: **2A-306 BLDG 11 & 12 - EXTERIOR ELEVATIONS**

- **Keynotes:** Add 23.31.A
- **Building 11 Exterior Elevations:** Add existing parapets for all elevations, add 23.31.A keynote.
- **Building 12 Exterior Elevations:** Add existing parapets for all elevations, add 23.31.A keynote.

Item #23: **2A-501 RESTROOM PLAN ENLARGEMENTS**

- **Bldg. 4 – 404 Boys RR – Interior Elevations – 2B:** Revise tile wall graphics.
- **Bldg. 4 – 404 Boys RR – Interior Elevations – 2C:** Revise toilet seat height dimension.
- **Bldg. 4 –Enlarged Floor Plan – Boys RR 404:** Revise clearance plan note.
- **Bldg. 4 - Enlarged Floor Plan - Girls RR 401:** Revise clearance plan note.
- **Bldg. 3 - Interior Elevations - RR 306.A:** Revise room name to "STORAGE". Elevation 7A: Remove ceramic tile, dimension, 09.30.A keynote, toilet paper tissue dispenser, add 09.03.C keynote. Elevation 7B: Remove ceramic tile, plumbing fixtures and RR accessories, and all related dimensions, remove 10.28.C, 09.30.A, 10.28.F, 22.43.B and 10.28.M keynotes. Add 09.03.C keynote. Elevation 7C: Remove ceramic tile, 09.30.A keynote and dimension. Elevation 7D: Remove ceramic tile, 09.30.A keynote and dimension. Add 09.03.C keynote.
- **Non-compliant Adult Unisex RR 306.A C:** Rename the enlarged floor plan to read "STORAGE 306.A - ENLARGED FLOOR PLAN" and remove all plumbing fixtures and RR accessories. Rename room tag.
- **Toilet fixture heights - children ages 9-12 Legend:** Remove duplicated W.C. reference elevation.
- **Clearance to Finish Surface:** Revise max. dimension of the height of the top of the grab bar.

Item #24: **2A-502 RESTROOM PLAN ENLARGEMENTS**

- **Bldg. 8 - 804 Boys RR - Interior Elevations – 1B:** Revise tile wall graphics.
- **Bldg. 8 - Enlarged Floor Plan - Boys RR 804 Crl:** Revise clearance plan note.
- **Bldg. 8 - Enlarged Floor Plan - Girls RR 801 Crl:** Revise clearance plan note.
- **Toilet fixture heights - children ages 9-12 Legend:** Remove duplicated W.C. reference elevation.
- **Clearance to Finish Surface:** Revise max. dimension of the height of the top of the grab bar.

Item #25: **2A-503 RESTROOM PLAN ENLARGEMENTS**

- **Bldg. 3 - Girls RR 301 - Interior Elevations 1A:** Revise elevation, add dimensions and keynotes.
- **Bldg. 3 - Enlarged Floor Plan - Girls RR 301 Clr:** Revise clearance plan note.
- **Bldg. 3 - Boys RR 304 - Interior Elevations 8:** Revise elevation, add dimensions and keynotes.
- **Bldg. 3 - Boys RR 304 - Interior Elevations 6:** Revise tile wall graphics.
- **Bldg. 3 - Enlarged Floor Plan - Boys RR 304 Clr:** Revise clearance plan note.
- **Toilet fixture heights - children ages 9-12 Legend:** Remove duplicated W.C. reference elevation.
- **Clearance to Finish Surface:** Revise max. dimension of the height of the top of the grab bar.

Item #26: **2A-604 BLDG 8 & 9 - INTERIOR ELEVATIONS**

- **Building 8 - Classroom B1:** Revise note "Age 5 Only". Elevation 1W: Remove sink, soap, and paper towel dispensers, related keynotes, and section detail. Add 09.03.C Keynote. Elevation 1N: Relocate soap and paper towel dispensers and related keynotes.
- **Building 9 - Classroom A1:** Revise casework under the sink, tag, and detail section.

Item #27: **2A-701 EXTERIOR DETAILS**

- Add detail 5.

Item #28: **2A-801 DOOR SCHEDULE**

- **Door Schedule – INC. 02:** Revise sill detail reference for all doors, revise jamb and head details reference for doors in buildings 10, 11, and 12. Revise existing door frame material for doors in buildings 10, 11, and 12.
- **Door Schedule - Existing Receiving Modifications:** Rename room 306.A.

Item #29: **2A-821 DOOR AND WINDOW DETAILS**

- Revise details 5, 8 and 10.
- Add details 9, 11, and 12.

Item #30: **2A-911 WALL TYPES & DETAILS**

- Add notes to details 1, 2, and 3.

Item #31: **2A-921 INTERIOR DETAILS**

- Rename details 1, 2 and 3.
- Revise detail 5.

Item #32: **2A-922 INTERIOR DETAILS**

- Rename details 2, 3, and 4.
- Revise details 2, 3, and 10.

Item #33: **2A-924 CEILING DETAILS**

- Revise note 2 for detail 3.
- Add section detail in detail 9.

Item #34: **2A-926 CASEWORK DETAILS**

- **Detail 2 Notes:** Revise notes 7. A and D., add detail callout.
- Revise details 4 and 5.

Item #35: **2S-100 GENERAL NOTES**

- Revise VI. Wood note D.

Item #36: **2S-203 BUILDINGS 11 & 12 ROOF FRAMING PLANS**

- Revise sheet notes.
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Item #37: **2S-801 FRAMING DETAILS**

- Revise detail 6.

Item #38: **2MP-002 SCHEDULES - MECHANICAL & PLUMBING**

- Remove "*owner furnished contractor installed*" from packaged air conditioning units, gas-fired furnaces, cooling coils, and condensing unit schedules. Revise Fans Schedule.

Item #39: **2MP-402 BLDGS 3 - DEMO & NEW RESTROOM PLANS**

- Revise 1, 2, 3, and 4 enlarged plans

Item #40: **2MP-601 DETAILS - MECHANICAL & PLUMBING**

- Revise details 4, 5, 8, 9, 10 and 13.
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Item #41: **2E301 POWER AND SIGNAL PLANS**

- **BLDG 3 - POWER & SIGNAL PLAN – Classroom B1:** Remove lavatory, paper towel and hand soap dispensers.

Item #42: **2E304 POWER AND SIGNAL PLANS**

- **BLDG 8 - POWER & SIGNAL PLAN – Storage 306.A:** Remove plumbing fixtures, paper towels, and hand soap dispensers.

Item #43: **2E306 POWER AND SIGNAL PLANS**

- **Bldgs. 11 and 12 – Power & Signal Plan:** Relocate surface-mounted raceway.

Item #44: **2E401 DETAILS**

- Revise details 7 and 6.

Item #45: **2F201 FIRE ALARM PLANS**

- **BLDG 3 - FIRE ALARM:** Remove plumbing fixtures, paper towels, and hand soap dispensers.

Item #46: **2F204 FIRE ALARM PLANS**

- **BLDG 8 - FIRE ALARM:** Remove lavatory, paper towel, and hand soap dispensers.

Item #47: **2T-000 TECHNOLOGY INFRASTRUCTURE COVER SHEET**

- Revise contractor furnished documents – Shop Drawings note 2.
- Add reference details on Intrusion Symbol Legend and Technology Symbol Legend.

Item #48: **2T-010 - TECHNOLOGY INFRASTRUCTURE SITE PLAN DEMO**

- **General Notes:** Revise note 12.

Item #49: **2T-020 - TECHNOLOGY INFRASTRUCTURE FLOOR PLANS DEMO**

- **Sheet Notes:** Add note 15 on
- **General Notes:** Revise note 12.
- **Technology Infra. Floor Plan Demo – Building 10:** Add STC and notes 14 and 15, add note "IMPORTANT: NO INTRUSION DEMO IN BUILDING 10. PROTECT INTRUSION COMPONENTS IN PLACE." Add STC and note 15.

Item #50: **2T-021 - TECHNOLOGY INFRASTRUCTURE FLOOR PLANS DEMO**

- **Sheet Notes:** Add note 15 on
- **General Notes:** Revise note 12.
- **Technology Infra. Floor Plan Demo – Buildings 11 and 12:** Add note "IMPORTANT: NO INTRUSION DEMO IN BUILDINGS 11 AND 12. PROTECT INTRUSION COMPONENTS IN PLACE."
- **Technology Infra. Floor Plan Demo – Buildings 6 and 9:** Add STC and note 15.

Item #51: **2T-100 - TECHNOLOGY INFRASTRUCTURE SITE PLAN NEW**

- **Conduit qty. and size:** Revise note 12
- **General Notes:** Add notes 5, 6, 7, 8 and 9
- **Technology Infrastructure Site Plan:** Revise conduits and add notes 5, 6, 7, 8, and 9.

Item #52: **2T-200 - TECHNOLOGY INFRASTRUCTURE FLOOR PLAN NEW**

- **Technology Infra. Floor Plan New – Building 3:** Add conduit. Room 306.A: Remove plumbing fixtures, paper towels, and hand soap dispensers.

Item #53: **2T-201 - TECHNOLOGY INFRASTRUCTURE FLOOR PLAN NEW**

- **Technology Infra. Floor Plan New – Building 8 – Classroom B8:** Remove lavatory, paper towel, and hand soap dispensers.

Item #54: **2T-300 - TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLANS NEW**

- **Sheet Notes:** Revise notes 1, 2, 3, and 13

- **Technology Infra. RCP New – Building 3:** Revise conduits and revise room name for room 306.A.

Item #55: **2T-301 - TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLANS NEW**

- **Sheet Notes:** Revise notes 1, 2, 3, and 13.
- **Technology Infra. RCP New – Buildings 11 and 12:** Add CCTV .
- **Technology Infra. RCP New – Building 8:** Revise motion detector location
- **Technology Infra. RCP New – Buildings 6 and 9:** Revise motion detector location**.**

Item #56: **2T-700 - TECHNOLOGY INFRASTRUCTURE SINGLE LINES**

- Revise equipment schedule 8.

Item #57: **2T-800 - TECHNOLOGY INFRASTRUCTURE DETAILS**

- Revise detail 9.

Item #58: **2T-802 - TECHNOLOGY INFRASTRUCTURE DETAILS**

- Add details 5, 4, 3, 6 and 7.

Attachments:

SPECIFICATIONS

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03 20 00 - Concrete Reinforcement
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Presley Obenshain, Projector Manager

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SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 00 & 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Work covered by the Contract Documents.
   2. Type of the Contract.
   3. Work phases.
   4. Use of premises.
   5. Owner's occupancy requirements.
   6. Work restrictions.
   7. Specification formats and conventions.
   8. Deferred Approvals.
   9. Pollution Control.
   10. Storm Water Pollution Prevention Plan.
   11. Lead-Containing materials.
   12. Additional DSA requirements.

1.3 SUBMITTALS

A. Contractor shall submit written statement of responsibility per CBC 1704A.4

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Rio Vista Elementary School Campus Modernization

B. Project Location: Rio Vista Elementary School

C. Owner/ District: Mt Diablo Unified School District

D. Architect:19/six.

E. The Work consists of the following:

1. GENERAL ALTERATION OF CLASSROOM BUILDINGS 3, 4, 6, 8, 9 AND 10 CONSISTING OF:
   a. RECONFIGURATION/ACCESSIBILITY UPGRADES AT RESTROOMS IN BUILDINGS 8 & 9.
   b. FLOORING IN-KIND REPLACEMENT
   c. FLOORING REPLACEMENT WITH NEW MATERIAL
   d. NEW CASEWORK WITH NEW ACCESSIBLE SINKS
   e. NEW LIGHTING
   f. NEW INTERIOR AND EXTERIOR PAINTING
   g. REPLACEMENT OF GLUE-UP TILES WITH NEW CEILING
   h. REPLACEMENT OF TACKABLE BOARDS
   i. REPLACEMENT OF ALL EXTERIOR DOORS WITH NEW FRP DOORS
   j. HARDWARE REPLACEMENT AT ALL EXTERIOR DOORS
   k. WINDOWS AND CLERESTORY REPLACEMENT WITH NEW
   l. REPLACEMENT IN-KIND OF HVAC EQUIPMENT IN SOME BUILDINGS, EQUIPMENT TUNE-UP IN OTHERS.
2. ACCESSIBILITY UPGRADES
   a. NEW OUTDOOR DRINKING FOUNTAINS WITH WATER BOTTLE FILLER
   b. ACCESSIBILITY UPGRADES AT KINDERGARTEN CLASSROOMS
   c. ACCESSIBILITY UPGRADES AT PARKING LOT, DROP-OFF AREA, AND CONCRETE WALKWAYS.

3. The intent of these drawings and specifications is that the new construction in this contract is to be in accordance with Title 24, California Code of Regulations.

1.5 TYPE OF CONTRACT

A. Project will be constructed under a single prime contract.

1.6 WORK PHASES

A. The Work shall be conducted in three phases.

1.7 USE OF PREMISES

A. General: Contractor shall have limited use of premises for construction operations as indicated on Drawings by the Contract limits.

B. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Owner Occupancy: Allow for Owner occupancy of areas immediately adjacent to the Project site and use by the public.
2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
   a. Schedule deliveries to minimize use of driveways and entrances.
   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.8 OWNER'S OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: Owner will occupy areas adjacent to the site and existing buildings adjacent to the project during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits, unless otherwise indicated.
   1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
   2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
   1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
   2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
   3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.
   4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

1.9 WORK RESTRICTIONS

A. On-Site Work Hours:

1. Comply with General Conditions.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Architect not less than two days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without Architect's written permission.

1.10 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI's Master Format 2004 numbering system.
   1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
   2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
   2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
      a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.11 DEFERRED APPROVALS

A. Deferred approval items are listed on Drawings.

B. Deferred Approval Submittals, General:
   1. Submit initial deferred approval submittal to Architect within 35 calendar days from the date of issuance of Notice to Proceed, and before any materials are delivered to the job site. Contractor is solely responsible for obtaining all necessary approvals. Do not commence installation of any deferred approval item until all approvals have been obtained.
   2. Product Data: Product data: Submit manufacturer's specifications and certified test reports made by an independent testing organization for each type and class of material to show compliance with code requirements and gain approval of DSA.
   3. Shop Drawings: Submit complete shop drawings including dimensioned plans, elevations, and all details of typical sections and connections. Shop drawings shall show design loads and all details of the installation. Title sheet of shop drawings shall list testing requirements and shall state that licensed engineer shall review and certify the completed installation is in accordance with the approved shop drawings. Shop drawings shall be stamped, dated and signed by professional engineer licensed in the State of California as evidence of his or her responsibility for the work.
   4. Shop drawings (When hard copies are required):
      a. Format: 30" x 42" sheet format with border and title block identifying, at a minimum, the project name, project number, project location, date, contractor and structural engineer of record.
      b. 1 set of reproducible shop drawings each submittal review.
      c. 1 set of reproducible shop drawings for each plan check review.
      d. 1 set of reproducible shop drawings approved by DSA.
   5. Contractor shall not copy or make use of the Architect's sealed (stamped/signed) border for any purpose.
   6. Calculations: Submit calculations prepared by a professional engineer licensed in the State of California. Engineer shall sign, date and stamp calculations as evidence of his or her responsibility for the work.
   7. Submittals shall be approved first by the Architect, then by the DSA.
   8. See additional requirements in Division 1 Section "Submittal Procedures".

1.12 POLLUTION CONTROL

A. Provide positive methods, means and facilities required to prevent contamination of the soil, water or atmosphere by the discharge of noxious substances from the construction operations.

1.13 MISCELLANEOUS PROVISIONS

A. Noise and Dust Control: As specified in General Conditions.

1.14 LEAD-CONTAINING MATERIALS.

A. The Contractor shall assume that all ceramic tile and painted or varnished surfaces in the school district contain detectable levels of lead which trigger compliance with California Code of Regulation, Title 8, Section 1532.1. In addition, waste products from these materials could contain lead at levels which are subject to the hazardous waste requirements in the California Code of Regulations, Title 22, Sections 666260.1 - 66263.12 and 66268.1 - 66268.124 and the health and Safety Code Section 25157.8 and 25163, subdivision (c).

B. It is the Contractor's responsibility to handle and dispose of these materials in accordance with the regulations. If failure to comply with these regulations results in a site or worker contamination, the Contractor will be held solely responsible for all costs involved in any required corrective action.

C. Lead-based paint should be removed only by professionals trained in hazardous material removal. A trained professional must follow very detailed procedures to minimize, control and contain lead dust generated by the removal process.
   1. The room should be sealed from the rest of the building. All furniture, carpets and drapes should be removed.
   2. Workers should wear respirators designed to avoid inhaling lead.
   3. No eating or drinking should be allowed in the work area. All food and eating utensils should be removed from the room. All cabinets as well as food contact surfaces should be covered and sealed.
   4. Occupants should be kept out of the room until the job is completed.
   5. Clothing worn in the room should be disposed of after working. The work clothing should not be worn in other areas of the building.
   6. Debris should be cleaned up using special vacuum cleaners with HEPA (high efficiency particle absorption) filters. A wet mop should be used after vacuuming.

1.15 ADDITIONAL DSA REQUIREMENTS

A. Comply with the following:
   1. Compliance with Title 24, for Parts 1-6 and 9.
   2. Title 24, All applicable parts referred to by the plans and specifications shall be kept on site during construction.
   3. All addenda must be signed by Architect and approved by DSA. (Section 4-338, Part 1)
   4. All substitutions affecting DSA regulated items shall be considered as a Construction Change Document or Addenda, and shall be approved by DSA prior to fabrication and installation. (IR-A6) (Section 4-338(c), Part 1)
   5. Should any existing conditions such as deterioration or noncomplying construction be discovered that is not covered by the DSA approved 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 repair work shall be submitted to and approved by DSA before proceeding with the repair work.

6. Construction Change Document (Section 4-338 (c), Part 1) must be signed by all the following:
   a. A/E of Record.
   b. Owner (change order only).
   c. SEOR (when applicable).
   d. Delegated Professional Engineer (when applicable).
   e. DSA.
7. Project Inspector and testing lab must be employed by the Owner and approved by all of the following:
   a. A/E of Record.
   b. SEOR (when applicable).
   c. DSA.

B. Tests and Inspections - Chapter 17A:
   1. All tests shall be performed by a testing facility acceptable to the architect and DSA. The testing facility shall be directly employed by the school district and no other entity or individual. Section Title 24, Part 1, Section 4-335(b).
   2. Test reports shall be addressed to, and sent to, the school district by the testing facility. Copies of all test reports shall be sent to DSA, the architect, the structural engineer, and the project inspector by the testing facility. All reports shall be sent within 14 days of the date of the test. See Title 24, Part 1, Section 4-335(d).
   3. A Verified Report, sighed by the California licensed civil engineer in charge of the testing facility which conducted the tests, shall be submitted to DSA upon completion of the project. The verified report shall state that all tests and inspections were made as required by the DSA approved documents. If the tests or inspections indicate that materials or workmanship did not meet the requirements of the DSA approved documents, the Verified Report shall list all noncompliant work. A copy of all test reports involving unresolved noncompliant work shall be attached to the Verified Report. In the event that not all required tests or inspections were made by the testing facility making this verified report, those tests and inspections not made shall be listed on the Verified Report. See Title 24, Part 1, Section 4-335(e).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Consult individual sections of specifications for specific submittals required under those sections and for further details and descriptions of requirements.

C. Related Sections include the following:
1. Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
4. Division 1 Section "Closeout Procedures" for submitting warranties.
5. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
6. Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
7. Division 1 Section "Closeout Procedures" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
8. Other Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. Processing: All costs for printing, preparing, packaging, submitting, mailing, or delivering submittals for initial submittals and all costs for re-printing, re-drawing, re-drafting, re-packaging, re-submitting, and re-mailing or re-delivering as required for all re-submittals shall be included in Contract Sum.

B. Sequence: Transmit each submittal in sequence which will not result in Architect's review having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination. Resubmitted submittals must have the original number with an R numerical sequence.
   1. Identify Project and Architect's project number, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate;
   2. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. **Submittals without Contractor's stamp and signature will be returned without review.**

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
      a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

D. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

E. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing

F. Multiple Reviews: The Contractor shall also be responsible for all costs to Architect or Architect consultants for reviews requiring more than two (2) reviews for same specification section.
   1. Contractor shall reimburse the District through deduction from amounts due the Contractor upon receipt of the Architect's billing and that of the Architect's consultants at standard billing rates for all time and expenses incurred in unanticipated reviews.
   2. Submittals will be reviewed and stamped by the Architect as:
      a. "No exceptions taken" (NET),
      b. "Furnish as Noted" (FAN),
      c. "Revise and Resubmit" (R&R),
      d. "Rejected" (REJ),
      e. " Other"

Terms are defined as follows:

f. No Exceptions Taken (NET): Accepted subject to its compatibility with future submittals and additional partial submittals for portions of the work not covered in this submittal. Does not constitute approval or deletion of specified or required items not shown in the partial submittal.

g. Furnish as Noted (FAN) - The submitted item is found to be in conformance with the contract documents with the exceptions of a few minor clarifications, those clarifications maybe noted and the submittal returned with no further actions. No resubmittal required.

h. Revise and resubmit (R&R): The Submitted item is NOT found to conform with the construction documents, the submitted item will be returned with comments stating how the submitted item does not conform. Rejected because of major inconsistencies or errors which shall be resolved or corrected by the Contractor prior to subsequent review by the Architect. A further re-submittal is required by the contractor in order to construct this portion of the project.

i. Rejected (REJ): Submitted material does not conform to plans and specifications in major respect. For example, wrong size, model, capacity or material. Resubmit.

j. Other: May indicate the following:

1) Submit specified item (SSI): Submit to the Architect the items indicated for review. The submittal review requires additional information that does not need to be submitted alongside the original submittal.

2) Not reviewed (NR) – Returned without Architect's review if item is not applicable or has been reviewed previously.

G. File naming Submittals reviewed by the Architect which have been stamped shall be deemed to have the following language affixed and made a part thereof, regardless of the initial or subsequent readability of the actual stamp

1. Corrections or comments made on submittals during this review do not relieve the contractor from compliance with the requirements of the drawings and specifications. This check is for review of general conformance with the design concept of the project and general compliance with information given in the Contract Documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selection of fabrication processes and techniques of construction, coordinating the work of the trades; and performing the work in a safe and satisfactory manner.

H. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Review: Allow 21 days for review of each submittal. Architect will request for more time if needed.

I. Submittal Review

1. The General Contractor is solely responsible for coordination of submittals among all related crafts performing the Work. The General Contractor shall verify that their Sub-Contractors' submittals are complete in every way and meet the requirements of the Contract.

2. Architect's review of submittals is, as a primary objective, to assist in the completion of the project on time and in conformance with the Contract requirements by permitting review of material and fabricated items prior to ordering. Architect's review of submittals is based only on the data presented and extends only to conformance with general design intent and information contained in the Contract Documents.
3. The Architect's and/or design team's review of submittals does not constitute final acceptance or unqualified approval of items or work proposed or put in place, nor does it constitute acceptance of responsibility for the accuracy, coordination or completeness of submittals. ***The Architect's and/or design team's review of submittals, stamped as No Exceptions Taken (NET) or Furnish as Corrected (FAC) does not relieve the Contractor from the responsibility for errors, omissions, or compliance with all the requirements of the Contract Documents.***
4. In the event a submittal presented for review by the design team includes any deviations, changes, or substitutions from the contract documents, such change shall be clearly identified and graphically indicated by clouding. If deviations are not highlighted by the contractor and not noted by the design team upon return of submittal, the General Contractor is still responsible for correcting the deviation, once identified, to comply with the contract documents.
5. If a deviation/change/substitution presented requires additional engineering and/or submittal and review by DSA, the General Contractor is responsible for any professional fees/costs that the owner may incur with.

J. Identification: Place a permanent label or title block on each submittal for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings, and action taken by Architect.
3. Include the following information on label for processing and recording action taken:
   a. Project name.
   b. Date.
   c. Name and address of Architect.
   d. Name and address of Contractor.
   e. Name and address of subcontractor.
   f. Name and address of supplier.
   g. Name of manufacturer.
   h. Each submittal number shall be unique as follows:
      1) Format shall be as follows:
         a) Project Specification Section Number Sequential Number - Revision Number - (e.g., 09 91 00 -001.1). Do not use letters.
      2) Sample submittal log would look like the following in the submittal number column:

Submittal Number
09 91 00-001
09 91 00-001R1(revised submittal: shown for clarity)
05 51 00-002
07 70 00-003

   i. Number and title of appropriate Specification Section.
   j. Drawing number and detail references, as appropriate.

k. Location(s) where product is to be installed, as appropriate.
l. Other necessary identification.

K. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

L. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.
2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.

M. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.
1. Transmittal Form: Use AIA Document G810.

N. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
a. Identify all changes made since previous submittal.
3. Make all corrections or revisions required by reviewer's comments at Contractor’s expense and resubmit as initially specified above. No additional costs will be authorized for corrections or revisions
4. Resubmit submittals until they are marked “Approved” or “Furnish as Noted”.

O. Distribution: Furnish copies of final submittals with Architects / Engineer (and DSA as applicable) stamps of review to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms. Instruct parties to promptly report any inability to comply with provisions. Contractor is responsible for coordination of submittals and comments following review. Contractor to provide all additional reproduction costs for copies required by the Contractor at its expense. No additional costs will be authorized for Contractor costs pertaining to submittals.

P. Use for Construction: Use only final submittals with mark indicating stamped by Architect.

Q. Submittals not requested will not be recognized or processed. Submittals not requested will be returned without review.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy of each submittal to show which products and options are applicable.
      a. Circle items applicable.
      b. Cross-out items not applicable.
      c. Select item number if required.
   3. Submittal data must include complete documentation relating to all the specified features
   4. Include the following information, as applicable:
      a. Manufacturer's Submittal Form with all the options selected when available.
      b. Manufacturer's written recommendations.
      c. Manufacturer's product specifications.
      d. Manufacturer's installation instructions.
      e. Standard color charts.
      f. Manufacturer's catalog cuts.
      g. Wiring diagrams showing factory-installed wiring.
      h. Printed performance curves.
      i. Operational range diagrams.
      j. Mill reports.
      k. Standard product operation and maintenance manuals.
      l. Compliance with specified referenced standards.
      m. Testing by recognized testing agency.
      n. Application of testing agency labels and seals.
      o. Notation of coordination requirements.
   5. Submit Product Data before or concurrent with Samples.
   6. Number of Copies: Submit 6 copies of Product Data, unless otherwise indicated. Architect will return 2 copies. Mark up and retain one returned copy as a Project Record Document.

C. Shop Drawings Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
   1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
      a. Dimensions.
      b. Do not use words "by others." Use words which depict exactly who is responsible for the work.
      c. Identification of products.
      d. Fabrication and installation drawings.
      e. Roughing-in and setting diagrams.

f. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
g. Shopwork manufacturing instructions.
h. Templates and patterns.
i. Schedules.
j. Design calculations.
k. Compliance with specified standards.
l. Notation of coordination requirements.
m. Notation of dimensions established by field measurement.
n. Relationship to adjoining construction clearly indicated.
o. Seal and signature of professional engineer if specified.
p. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
3. Contractor shall upload / post (1) electronic copy of the product literature,

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of appropriate Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
a. Number of Samples: Submit 1 full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing

color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
   1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
   2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
   1. Type of product. Include unique identifier for each product.
   2. Number and name of room or space.
   3. Location within room or space.
   4. Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. Architect will return two copies.
      a. Mark up and retain one returned copy as a Project Record Document.

F. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

G. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."

H. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.
   1. Number of Copies: Submit 2 copies of each submittal, unless otherwise indicated. Architect will not return copies.
   2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
   3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
   1. Name of evaluation organization.
   2. Date of evaluation.
   3. Time period when report is in effect.
   4. Product and manufacturers' names.
   5. Description of product.
   6. Test procedures and results.
   7. Limitations of use.

L. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment.

Q. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

R. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
   1. Preparation of substrates.
   2. Required substrate tolerances.
   3. Sequence of installation or erection.
   4. Required installation tolerances.
   5. Required adjustments.
   6. Recommendations for cleaning and protection.

S. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
   1. Name, address, and telephone number of factory-authorized service representative making report.
   2. Statement on condition of substrates and their acceptability for installation of product.
   3. Statement that products at Project site comply with requirements.
   4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
   5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
   6. Statement whether conditions, products, and installation will affect warranty.
   7. Other required items indicated in individual Specification Sections.

T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

2.3 DEFERRED APPROVALS AND DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit 3 copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

C. Installation of deferred approval items shall not be started until detailed plans, specifications, and engineering calculations have been accepted and signed by the Architect or Engineer in general responsible charge of design and signed by a California registered Architect or professional engineer who has been delegated responsibility covering the work shown on a particular plan or specification and approved by the agency having authority (e.g., State Fire Marshall, Division of the State Architect, gas company, electrical utility company, water district, etc.). Deferred approval items for this Project are as indicated in the Summary of Work.

D. Unless otherwise indicated in the Contract Documents or if District provides written approval of a longer time period, Contractor shall submit all deferred approval items for approval within thirty (30) days of the notice to proceed with the Construction Phase.

E. Deferred approval drawings and specifications become part of the approved documents for the Project when they are submitted to and approved by the DSA.

F. Submit material using electronic submittal process as defined above.

G. Identify and specify all supports, fasteners, spacing, penetrations, etc., for each of the deferred approval items, including calculations for each and all fasteners.

H. Submit documents to Architect for review prior to forwarding to DSA.

I. Documents shall bear the stamp and signature of the Structural, Mechanical, or Electrical Engineer licensed in the State of California who is responsible for the work shown on the documents.

J. Architect and its subconsultants will review the documents only for conformance with design concept shown on the documents. The Architect will then forward the Submittal to DSA.

K. Contractor shall respond to review comments made by DSA and revise and resubmit submittal to the Architect for re-submittal to DSA.

L. Contractor is notified that significant lead time is required for deferred approval review by DSA and shall schedule work accordingly. No extension of Contract Time will be allowed for delays incurred by deferred approval review. The Architect is not responsible for DSA delays in deferred approval review

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. **Contractor shall mark with approval stamp before submitting to Architect.**
   1. Coordinate the work; do not delegate responsibility for coordination to any subcontractor.
   2. Anticipate the interrelationship of all subcontractors and their relationship with the total work.
   3. Resolve differences or disputes between subcontractors and materials suppliers concerning coordination, interference, or extent of work between sections.
   4. Trade submittals with "By Others", "By General Contractor", or similar coordination and work scope are not allowed. Identify, acknowledge, and resolve scope of work prior to submittal by Contractor. No extras will be allowed. Provide complete and coordinated submittals.

B. Approval Stamp: **Stamp each submittal with a uniform, approval stamp by the General Contractor**. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action. Submittals without the Contractors review stamp will be returned without action, no additional time will be allowed for incomplete/ returned submittals.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

F. Architect's and Consultant's review shall neither be construed as complete check nor relieve the Contractor, Subcontractor, manufacturer, fabricator, or supplier from responsibility for any deficiency that may exist or from any departures or deviations from the requirements of the Contract unless the Contractor has, in writing, called the Architect's attention to the deviations at the time of submission as specified.

END OF SECTION

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.

2. ALTERNATES

2.1. DESCRIPTION

An amount proposed by Contractor and stated in its Bid Form for certain work defined in the Instruction to Bidders, Bid Form or Contract Documents that may be added to or deducted from the Base Bid amount. The acceptance or rejection of any of the alternates is strictly at the option of the District and subject to District's acceptance of Contractor's stated prices contained in this Proposal.

The cost or credit for each alternate is the net addition to or deduction from the Contract Price to incorporate the alternate into the Work. No other adjustments are made to the Contract Price.

2.2. GENERAL:

2.2.1. Coordination: Contractor shall modify or adjust adjacent work as necessary to completely integrate work of the alternate into the Project.

2.2.1.1. Include as part of each alternate, miscellaneous devices, accessories and similar items incidental to or required for a complete installation whether or not indicated as part of the alternate.

2.2.1.2. Include as part of each alternate, the costs of related coordination, modification, or adjustments.

2.2.2. If District accepts an alternate, Contractor shall perform the work of the alternate under the same conditions as other Work required by Contract Documents.

2.2.3. Notification: Immediately following award of the Contract, Contractor shall notify all of its Subcontractor(s) in writing of the status of each alternate. Indicate if

alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

2.2.4. Schedule of Alternates: A Schedule of Alternates is included at the end of this Document. Specifications referenced in the Schedule of Alternates contain requirements for materials necessary to achieve the Work described under each alternate.

3. UNIT PRICING

3.1. DESCRIPTION

An amount proposed by Contractor and stated in its Bid Form for certain work defined in the Instruction to Bidders and Bid Form that may be priced by unit. The acceptance or rejection of any of the unit prices is strictly at the option of the District and subject to District's acceptance of Contractor's stated prices contained in the Bid Form and may be subsequently negotiated prior to incorporation on Change Order(s).

3.2. GENERAL

Contractor shall completely state all required figures based on Unit Prices required in the Bid Form. Where scope of Work is decreased, all Work pertaining to the item, whether specifically stated or not, shall be omitted and where scope of Work is increased, all work pertaining to that item required to render same ready for use on the Project in accordance with intention of Drawings and Specifications shall be included in an agreed upon price amount.

3.3. UNIT PRICES

Furnish unit prices for each of the named items on a square foot, lineal foot, or per each basis, as requested and applicable. Unit prices shall include all labor, materials, services, profit, overhead, insurance, bonds, taxes, and all other incidental costs of Contractor, subcontractors, and supplier(s).

4. EXECUTION

4.1. SCHEDULE OF ALTERNATES

Add Alternate #1: Rio Vista Elementary Shade as outlined in addendum #2, sheets;	
S-1	**Cover Sheet**
S-2	**General Data**
S-3	**General Notes**
S-5	**Properties & Rebar Details**
S-6	**VC14, VC18, VC20, VC24, VC28 & VC30**
S-7	**VC14, FV18, VC20, VC24, VC28 & VC30**
S-10	**Pier Foundation & Spread Footing Schedule**
S-11	**Standard Details 1**
S-13	**Standard Details 3**

4.2 SCHEDULE OF UNIT PRICES

Unit Price #1: Cost per square foot for full depth saw cut asphalt patching for asphalt up to 4" in depth.

END OF DOCUMENT

SECTION 03 10 00 - CONCRETE FORMWORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Formwork for cast-in-place concrete.

B. Form openings for mechanical and electrical work.

C. Coordinate installation of items supplies under other specification sections.

1.2 RELATED SECTIONS

A. Section 03 30 00: Cast-in-Place Concrete

B. Section 03 20 00: Concrete Reinforcing

C. Mechanical and electrical items to be embedded in concrete.

1.3 QUALITY ASSURANCE

A. Design Requirements:

1. All work shall California Code of Regulations. Title 24, 2022 edition, also known as California Building Code (CBC) and DSA Amendments.
2. Responsibility: Design of formwork is the Subcontractor's responsibility. Comply with the following, except as modified by the Building Code or these specifications.
    a. ACI 301 - "Specifications for Structural Concrete for Buildings."
    b. ACI 347 - "Recommended Practice for Concrete Formwork."
    c. ACI 303R - "Guide to Cast-in-Place Architectural Concrete Practice."
3. Allowable Tolerances:
    a. Construct formwork to provide completed cast-in-place concrete surfaces complying with the tolerances specified in ACI 347.
    b. Note special tolerance requirements for locations of drains where indicated on drawings.

1.4 SUBMITTALS

A. Product Data: Submit Manufacturer's data and installation instructions for proprietary materials such as form coatings, manufactured form systems, ties and accessories.

B. Submit manufacturer's certification that form release agent will provide clean, stain free surfaces of concrete and not interfere with bond of applied finishes.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver form release agents in manufacturer's sealed and trademarked containers.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. General: Form material shall be as required to produce continuous, straight, smooth exposed surfaces. Materials selected shall be satisfactory to Architect for effect on finished appearance of concrete. Architectural concrete formwork shall be of one material throughout the work, for all similar types of concrete surfaces.

B. Exposed Non-Architectural Concrete:

1. Metal or APA graded Plyform, Grade BB, Class I or II, or HDO plywood exterior type, each piece graded, no mill oiling. Use one form face material throughout the project for similar types of concrete surfaces.
2. Provide material and bracing with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.

C. Concealed Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber that is dressed on at least 2 edges and 1 side. "Concealed" means not visible in the completed structure. (Painted concrete is not to be considered "concealed".)

D. Form Ties:

1. Provide snap ties with plastic cones of same size and shape and of same manufacturer as cement cone hole plugs provided under Concrete Section.
2. Wire ties and site fabricated ties and wood separators are not acceptable.

E. Form Coatings: Commercial formulation resin-based form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatment of concrete surfaces requiring bond, or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds. Oils and petroleum distillates are not acceptable. Verify compatibility of form coating with proposed surface finish.

F. Metal Inserts: Provide metal inserts for anchorage of materials or equipment to concrete construction, where not supplied by other trades and required for the work.

G. Earth forms permitted for footings.

2.2 FORMWORK SYSTEMS

A. Design, erect, support, brace and maintain formwork so that it will safely support vertical and lateral loads that might be applied, until such loads can be supported by the concrete structure. Construct formwork so that concrete members and structures are of correct size, shape, alignment, elevation and position.

B. Design forms to include assumed values of live load, dead load, weight of moving equipment operated on formwork, concrete mix, height of concrete drop, vibrator frequency, ambient temperature, foundation pressures, stresses, lateral stability, and other factors pertinent to safety of structuring during construction.

C. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.

D. Provide formwork sufficiently tight to prevent leakage of cement past during concrete placement. Solidly butt and gasket joints and provide backup material at joints to prevent leakage and fins.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine surfaces and conditions receiving or affecting the work. Do not proceed until unsuitable conditions have been corrected.

3.2 FORM CONSTRUCTION

A. General: Construct forms complying with ACI 347 and ACI 303R, as applicable to the sizes, shapes, lines and dimensions shown, and to accurate alignment, location, grades, levels, and plumbness. Provide for openings, sleeves, offsets, recesses, reglets, chamfers, inserts, and other features required. Use selected materials to obtain required finishes. Before placing concrete, check the lines and levels of erected formwork. Make corrections and adjustments to ensure proper size and location of concrete members and stability of forming system.

B. Ties:

1. Spacing: Space ties in a uniform pattern satisfactory to the Architect. Rest cones firmly against forms and seal to prevent leakage.

C. Corner Treatment:

1. Make all corners chamfered.

2. Form chamfers with 3/4" x 3/4" strips, unless otherwise shown, accurately formed and surfaced to produce uniformly straight lines and tight edge joints. Extent terminal edges to required limit and miter chamfer strips at changes in direction.
3. Concealed corners may be formed either square or chamfered.

D. Provision for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Size and location of openings, recesses and chases are the responsibility of the trade requiring such items. Accurately place and securely support items built into forms. Openings for doors and windows shall be formed with a tolerance of minus 0" and plus 1/2" from indicated dimensions.

E. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is to be placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

F. Earth Forms:

1. Construct wood edge strips at top sides of excavations.
2. Provide forms for footings wherever concrete cannot be placed against solid earth excavation.
3. Remove loose dirt and debris prior to concrete pours.
4. Foundation concrete may be placed directly into neat excavations provided the foundation trench walls are stable as determined by the Geotecthnical Engineer.
    a. The horizontal dimensions of unformed concrete footings shall be increased 1 inch at every surface at which concrete is placed directly against the soil.
    b. The minimum formwork shown on the drawings is mandatory to ensure clean excavations immediately prior to and during the placing of concrete.

G. Footings and Grade Beams:

1. Provide forms for footings and grade beams if soil or other conditions are such that earth trench forms are unsuitable.

H. For slabs-on-grade, secure edge forms in such a manner as to not move under weight of construction loads, construction and finishing equipment, or workers

3.3 INSTALLATION OF EMBEDDED ITEMS

A. General: Set and build into the work anchorage devices and other embedded items required for other work that is attached to, or supported by, concrete. Use top and bottom templates, setting drawings, diagrams, instructions and directions provided by suppliers of the items to be attached thereto.

B. Coordinate and schedule the work of this Section with the work of other Sections required to be set in, on, or contiguous with forms.

C. Anchor bolts out of position or plumb by more than 1/4" shall be reinstalled in correct position and plumb at no increase in Contract Price.

3.4 REMOVAL OF FORMS

A. Remove forms completely. Exposed surfaces of concrete shall be clean, smooth and free of irregularities.

B. Form Ties:

1. Do not remove ties until concrete has hardened sufficiently to permit removal without damaging concrete. Do not spall concrete on exposed surfaces. Pull ties of type that are wholly withdrawn from the wall toward the inside face. Cutting ties back from face of wall will not be permitted. Plug tie rod holes as specified in Concrete Section.

C. Do not pry against face of concrete. Use wooden wedges only.

D. Forms:

1. Remove forms in manner to ensure safety of members. Do not disturb supporting forms until concrete has hardened sufficiently to permit removal with safety and without damage to concrete surface. Construct forms to permit their removal without disturbing the original shoring.
2. Time of Removal: Time of removal will depend on weather conditions, the results of cylinder tests and effectiveness of curing. The following periods between depositing of concrete and removal of forms shall be considered a minimum, which may be extended if deemed necessary by the Architect.

Subject to the requirements of paragraph A above, forms for walls may be removed after 8 hours of completing concrete placement.

END OF SECTION 03 10 00

SECTION 03 20 00 - CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Reinforcing steel bars for cast-in-place concrete, complete with tie wire.

B. Support chairs, bolsters, bars supports, spacers, and other accessories for reinforcing.

1.2 RELATED SECTIONS

A. Section 03 10 00: Concrete Formwork.

B. Section 03 30 00: Cast-in-Place Concrete.

1.3 QUALITY ASSURANCE

A. Perform concrete reinforcing work in accordance with CRSI 63 and 65 and ACI 301, 315 and 318, unless specified otherwise in this Section.

B. The Owner's Testing Agency will:

1. Provide tests in accordance with the California Building Code (CBC) Section 1903A.2.
2. Collect mill test reports for reinforcement.
3. Take samples from bundles at fabricators:
   a. When bundles are indentified by the heat number and accompanied by mill analysis, two specimens shall be taken from each ten (10) tons, or fraction thereof, of each size and grade.
   b. When reinforcement is not positively identified by the heat numbers or when random sampling is intended, two specimens shall be taken from each 2-1/2 tons, or thereof, of each size and grade.
   c. All costs associated with the test of reinforcing that not have mill test reports will be at the contractor's expense.
4. Test for tensile and bending strengths.

1.4 REFERENCES

A. California Code of Regulations. Title 24, 2022 edition, also known as California Building Code (CBC) with DSA Amendments.

B. ACI 301 - American Concrete Institute - Specification for Structural Concrete for Buildings

C. ACI 315 - American Concrete Institute - Details and Detailing of Concrete Reinforcement.

D. ACI 318 - Building Code Requirements for Reinforced Concrete.

E. CRSI 63 - Recommended Practice for Placing Reinforcing Bars.

F. CRSI 65 - Recommended Practice for Placing Bar Supports, Specifications and Nomenclature.

1.5 SUBMITTALS

A. Submit shop drawings including appropriate plans and details. Indicate bar sizes, spacings, locations, and quantities of reinforcing steel, bending and cutting schedules, and supporting and spacing device.

PART 2 - PRODUCTS

2.1 REINFORCING

A. Reinforcing Steel: 60 ksi yield grade; deformed type as indicated on drawings.

1. Bars: Billet steel, ASTM 615; as indicated.
2. Finish: Plain unless indicated galvanized on drawings or so specified.

2.2 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16-gage annealed type, or patented system accepted by Architect.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcing during construction conditions.

2.3 FABRICATION

A. Fabricate concrete reinforcing in accordance with ACI 315.

B. Locate reinforcing splices, not indicated on drawings, at points of minimum stress. Location of splices shall be reviewed by Architect.

PART 3 - EXECUTION

3.1 PLACEMENT

A. Place reinforcing supported and secured against displacement. Do not deviate from true alignment.

B. Place reinforcing to obtain at least minimum coverages for concrete protection. Arrange, space and securely tie bars and bar supports to hold reinforcing in position during concrete placement operations.

C. Before placing concrete, ensure reinforcing is clean, free of loose scale, dirt, or other foreign coatings, which would reduce bond to concrete.

3.2 FIELD QUALITY CONTROL

A. General: The Owner's Testing Laboratory shall test and inspect concrete reinforcement and embedded assemblies as Work progresses. Failure to detect any defective work or material shall not in any way prevent later rejection when such defect is discovered nor shall it obligate the Design Professionals for final acceptance.

B. Owner's Testing Laboratory shall provide qualified personnel at site to inspect reinforcement and embeds using the latest Drawings and reviewed shop drawings, as follows:

1. Prior to placement, inspect reinforcement and embeds for grade, quality of material, absence of foreign matter, and for suitable storage.
2. Provide continuous inspection of reinforcement and embedded assemblies during placement and immediately prior to concreting operations for: size, quantity, vertical and horizontal spacing and location, correctness of bends and splices, mechanical splices, clearances, compliance with specified tolerances, security of supports and ties, concrete cover, and absence of foreign matter.
3. Inspect epoxy-coated reinforcement for coating damage and required applied coatings.

C. Owner's Testing Laboratory shall submit inspection, observation, and/or test reports to the Design Professionals as required herein and shall provide an evaluation statement in each report stating whether or not concrete reinforcement and embedded assemblies conforms to requirements of Specifications and Drawings and shall specifically note deviations there from.

D. Immediately report deficiencies to the Contractor. Contractor shall prepare proposed remedy for deficiency. Contractor shall present proposal to the Design Professionals for approval. After an approved proposal is accepted by the Design Professionals, the Contractor shall correct the deficiency at no cost to the Owner.

END OF SECTION 03 20 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. (AWC) American Wood Council, "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 60 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 and/or Inspector of Record shall:

1. Inspect erected timber framing as required to establish conformity of work with Drawings.

2. Inspect and retighten all bolted connections and holdowns bolts prior to wall cover installation.

3. Inspect elements of the seismic lateral force resisting system per CBC section 1705A.13.2.

a. Inspect floor and roof diaphragm nailing for nail size, spacing and penetration at plywood panel edges, and special nailing at collector and drag members.

b. Inspect shear wall nailing for nail size, spacing, edge distance and penetration at plywood panel edges, and nailing at holdown posts.

c. Inpscet all bolted connections of elements that are part of the seismic lateral force resisting system.

d. Inspect holdown bolts into wood and concrete.

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 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Wood doors, fire-rated and non-rated.

B. Glass lite frames.

C. Door louvers.

1.2 REFERENCES

A. WDMA I.S.1 - Industry Standard For Wood Flush Doors (Includes Standards I.S.1.1 through I.S.1.7).

B. NFPA 80 - Fire Doors and Windows.

C. CBC - California Building Code.

D. UL 10C - Fire Tests of Door Assemblies.

E. WI - Woodwork Institute: Manual of Millwork.

F. 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 6 - 2022 California Energy Code
5 Title 24 CCR, Part 9 - 2022 California Fire Code (CFC) (2018 IFC, as Amended by CA
6 Title 24 CCR, Part 10 - 2022 California Existing Building Code
7 Title 24 CCR, Part 11 - 2022 California Green Building Standards Code (Calgreen Code)
12. Title 24 CCR, Part 12 - 2022 California Reference Standards
13. Americans with Disabilities Act (ADA), Title II or Title III

1.3 QUALITY ASSURANCE

A. Conform to requirements of WI Manual of Millwork, Section 12 and 13, Premium (P) Grade except where otherwise indicated.

B. Issue a WI Certified Compliance Certificate prior to delivery of doors certifying that doors meet all requirements of WI Grade specified.

C. After completion issue a WI Certified Compliance Certificate for Installation.

1.4 REGULATORY REQUIREMENTS

A. Conform to CBC for fire-rated doors.

B. Fire Door Construction: Conform to UL 10C.

C. Installed Doors: Conform to NFPA 80 for fire-rated class indicated on Drawings.

1.5 SUBMITTALS

A. Submit under provisions of Division #1.

B. Shop Drawings shall bear the WI Certified Compliance Label on the first page of each set. Indicate door elevations, stile and rail reinforcement, internal blocking for hardware attachment, and cutouts for glazing and louvers.

C. Submit two Samples 12 inches x 12 inches in size illustrating each species and finish specified.

1.6 DELIVERY, STORAGE, AND PROTECTION

A. Protect products under provisions of Section 01 87 00.

B. Package, deliver, and store doors in accordance with WI requirements as set forth in Technical Bulletin 419-R.

1.7 WARRANTY

A. Provide manufacturer's standard lifetime warranty under provisions of Section 01 70 00 for solid core doors.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS, FLUSH FACED DOORS

A. Eggers Industries, Inc.

B. Marshfield Door Systems, Inc.

C. Algoma Hardwoods, Inc.

D. Substitutions: Under provisions of Section 01 60 00

2.2 DOOR and FRAME CONSTRUCTION

A. Solid Non-rated Core: Solid wood block, framed block glued, or solid particleboard.

B. Solid, Special Function Core: Labeled fire performance type.

C. Construction: 5-ply, with face veneer applied vertically over wood veneer cross banding.

D. Flush Interior Door Veneer: Birch for paint grade and species to match adjacent wood or simulated wood finishes; Satin sheen. Color as selected by Architect to match other doors on site.

E. Rated Wood Frames: Manufacturer's standard 20 minute labeled frames, species to match door, U.O.N. installed in accordance with manufacturer's installation instructions. Fire rated frames shall be machined for hardware at factory.

2.3 GLASS LITE FRAMES

A. 20 Ga. Cold rolled steel

2.4 ADHESIVES

A. Exterior and Interior Doors: WI Type I.

2.5 FABRICATION

A. Fabricate non-rated wood doors to requirements of WI Manual of Millwork, Section 12 and 13, in the WI Grade specified.

B. Fabricate fire rated doors per manufacturer's standard construction, and labeling agency requirements.

C. Premachine doors for finish hardware.

D. For fire rated doors with mineral cores, provide solid wood blocks for hardware reinforcement at lock edge, mid-height push bar, and at top of door for closer.

E. For fire-rated doors with mineral cores, provide solid wood blocking for thru-bolted hardware.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install doors in accordance with WI Manual of Millwork Sections 12 and 13 and WI Technical Bulletin 420-R.

B. Conform to WI requirements for fit tolerances.

C. Coordinate installation of glass and glazing.

D. Install door louvers.

E. Adjust doors for smooth and balanced movements.

F. Install fire doors in accordance with NFPA 80.

3.2 INSTALLATION TOLERANCES

A. Edge clearance for swinging doors shall not exceed the following:
   1. Between door and frame at head and jamb
      a. 1/8 inch
   2. Between edge of pair of doors
      a. 1/8 inch
   3. At door sill with threshold
      a. 3/8 inch

4. At door bottom and surface of nominal floor covering per NFPA 80 and at doors requiring an undercut as indicated on Drawings.
   a. 5/8 inch

B. Frame installation tolerance shall not exceed the following:

1.	Squareness	±1/16 inch
2.	Alignment	±1/16 inch
3.	Plumbness	±1/16 inch
4.	Diagonal Distortion	±1/32 inch

END OF SECTION 08 14 16

SECTION 22 00 00 - PLUMBING 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 2022 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. Paint all exposed piping and supports.

B. 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. Pipes which pitch have right-of-way over those which do not pitch. For example, condensate drains and waste normally have right-of-way.

H. 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 be installed due to a lack of coordination prior to, or during, construction.

PART 2 – PRODUCTS

2.1 EQUIPMENT AND MATERIALS

A. Provide products and materials that are new, clean, free of defects, damage and corrosion. Inspect all materials and remove defective materials from the site.

B. 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.

C. Furnish all materials and equipment of the same type by the same manufacturer.

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 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 piping. Field verify all dimensions.

B. The exact locations of equipment and piping 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 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. 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.

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.

F. Do not operate water systems until piping has been cleaned, disinfected and start-up strainers are in place.

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 FURRING AND PIPE SPACES

A. Spaces provided in the design of the building shall be utilized and the work shall be kept within the furring lines established on the Drawings.

B. Ensure necessary clearances on trim plates at exposed penetrations of walls and floors. If sufficient room is not available above suspended ceiling or vertical shafts obtain clarification from Architect before work is started.

3.9 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 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 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 piping. When piping is insulated, insulation shall pass continuously through sleeve with 1" clearance between insulation and sleeve or hole in existing construction.

3.10 ACCESS

A. 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 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.

3.11 SEISMIC RESTRAINTS

A. All equipment, piping, and materials shall be fastened and securely anchored to building structure as required by the Drawings, Specifications, and the California Building Code.

B. Piping shall be braced as follows:

1. Brace all gas piping that is 1" nominal diameter and larger.
2. Brace all piping located in mechanical equipment rooms that is 1 1/4" nominal diameter and larger.
3. Brace all piping that is 2 1/2" nominal diameter and larger.
4. Transverse bracings at 40'-0" on center maximum (minimum of one brace per direction of run).
5. Longitudinal bracings at 80'-0" on center maximum (minimum of one brace per direction of run).
6. Transverse bracing shall be 20'-0" on center maximum and longitudinal bracing at 40'-0" on center maximum for gas piping and piping in mechanical rooms.
7. Transverse bracing for one pipe section may also act as longitudinal bracing for the pipe section connected perpendicular to it, if the bracing is installed within 24" of the elbow or tee and is connected to the largest pipe.
8. Do not use branch lines to brace main lines.
9. Provide flexibility in joints where pipes pass through building seismic or expansion joints or where rigidly supported pipes connect to equipment with vibration isolators.
10. At vertical pipe risers, support the weight of the riser at a point or points above the center of gravity of the riser wherever possible. Provide lateral guides at the top and bottom of the riser and at intermediate points not to exceed 30'-0" on center.
11. No bracing is required if the top of single pipe is suspended 12" or less from the connection point at the supporting structural member.

3.12 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.

3.13 ELECTRICAL EQUIPMENT AND ELECTRICAL ROOM PRECAUTIONS

A. Do not install piping, equipment, 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 or equipment within the code required service space for switchboards, disconnects, panelboards, dimmers, control panels, VFDs, individual motor controllers, electronics, etc.

3.14 CATHODIC PROTECTION

A. Install dielectric unions at points in piping where dissimilar metal pipes are connected together.

3.15 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, 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. 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.

C. 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.

3.16 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.

3.17 TESTING

A. Test all 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.

3.18 OPENINGS

A. Locating and sizing of all openings for 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.

3.19 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.

3.20 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.

3.21 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. Manufacturer's recommended operating and maintenance instructions, with all non-applicable information deleted.
6. Assembly and disassembly instructions.
7. Startup procedures.
8. Routine and normal operating instructions.
9. Normal and emergency shutdown instructions.
10. Troubleshooting diagnostic instructions.
11. 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 22 00 00

SECTION 22 05 00 - PLUMBING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 01, and Division 22 Sections apply to this Section.

1.2 SCOPE OF WORK

A. Provide labor, materials, equipment, and services to furnish and install complete plumbing and piping systems which shall include, but not limited to fixtures, equipment, piping, valves, 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. Plumbing fixtures and trim.
2. Piping and fittings.
3. Pipe hangers and supports.
4. Valves.
5. Drains and cleanouts.
6. Trap primers and water hammer arrestors.
7. Welding certificates.

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.

1.4 QUALITY ASSURANCE

A. Steel support welding qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, “Structural Welding Code – Steel.”

B. Pipe welding qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

C. Each length of pipe, fitting, trap, fixture, or device used in any piping system shall be stamped or indelibly marked with type, weight, quality, and manufacturer's name or mark.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Pipes shall be shipped so as not to bend, dent, or otherwise damage the pipe during transport. Contractor shall take all necessary precautions to prevent damage to pipe and fittings during delivery and unloading. Any pipe found to have been damaged due to improper handling shall be removed from the jobsite at Contractor's expense.

B. Handling flammable liquids: Remove and dispose of liquids from existing natural-gas piping according to requirements of authorities having jurisdiction.

C. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

D. Store and handle pipes and tubes having factory-applies protective coatings to avoid damaging coating, and to protect from direct sunlight.

E. Protect stored PE pipes and valves from direct sunlight.

PART 2 – PRODUCTS

2.1 PLUMBING FIXTURES, TRIM AND ACCESSORIES

A. See Schedules on Drawings for plumbing fixtures. Furnish and install all fixtures in accordance with Drawings, manufacturer's recommendations, and all applicable codes.

B. Fixture locations and heights as shown on Architectural Drawings.

C. Comply with applicable provisions and recommendations of CALGreen for water conservation measures.

D. Provide fixtures complete with all trim and materials, fittings, supports, fastening devices, faucets, valves, traps, and appurtenances required.

E. Lavatories and sinks shall be provided with required number of holes by faucet only, unless otherwise specified or required.

F. Install fixtures level, plumb and set at right angles to wall, floor, or both unless otherwise indicated.

G. Make connections between fixtures and waste pipe gastight and watertight with neoprene type gaskets or bowl wax.

H. Where fittings, trim, and accessories are exposed or semi-exposed, provide chrome plated 17 gauge seamless brass.

I. Where fixture supplies and drains penetrate walls, provide chrome plated brass escutcheons with setscrews.

J. Vitreous china: unmarked, true, clear, smooth and bright. Color shall be white unless otherwise indicated.

K. Porcelain lined ware: constructed of smooth, sound iron castings, properly finished, and provided with first quality, high temperature enamel.

2.2 GAS PIPING AND FITTING MATERIALS

A. Above Grade Interior Piping: ASTM A53B seamless, Schedule 40, carbon steel pipe.

B. Above Grade Exterior Piping: ASTM A53B seamless, Schedule 40, carbon steel pipe, hot dipped and galvanized coating.

C. Below Grade Piping: Performance Pipe, "DriscoPlex" 6500 PE 2708 or equal ASTM D2513 polyethylene gas distribution pipe.

D. Above Grade Fittings: 150# black malleable iron fittings and threaded joints for pipes 2" and smaller, butt welded joints for pipes 2 1/2" and larger. Hot dipped and galvanized coating for exterior fittings.

E. Press fittings shall be permitted for use where approved by local authorities having jurisdiction and in compliance with current codes.

F. Below Grade Fittings: ASTM D2513, ASTM D3261, and ASTM D2683 fittings with fusion welded joints.

G. Gas Riser: GF Central Plastics, Elster Perfection, or approved equal anodeless riser for transition from below grade polyethylene to schedule 40 steel piping above grade. Minimum horizontal run shall be 30 inches. Minimum vertical length shall be 30 inches; 6 inches minimum above grade.

H. Forged-steel Flanges and Flanged Fittings: ASME B16.5, minimum Class 150, including bolts, nuts, and gaskets of the following material group, end connections, and facings:

1. End Connections: Threaded or butt welding to match pipe.
2. Lapped Face: not permitted underground.
3. Gasket Materials: ASME B16.20, metallic, flat, asbestos free, aluminum O-rings, and spiral-wound metal gaskets.
4. Bolts and Nuts: ASME B18.2.1, carbon steel aboveground and stainless steel underground.

I. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends.

J. Gas Cocks: For high pressure gas service use Dezurik Series 400 lubricated gas cock with RS49 or RS51 plug seals, UL listed. On low pressure service lines use Milwaukee BB2 100 Butterball, NIBCO, or approved equal.

K. Seismic pipe connection: Metraflex for gas application.

L. Earthquake Valves: Earthquake ball type actuated automatic gas shut off valve, listed by UL and certified by California State Architect. Pacific Seismic Products.

2.3 ABOVEGROUND MANUAL GAS SHUTOFF VALVE SCHEDULE

A. Valves shall be UL listed for Natural Gas.

B. Valves for pipe sizes NPS 2 and smaller at service meter shall be one of the following:
1. Two-piece, full-port, bronze ball valves with bronze trim.
2. Bronze plug valve.

C. Valves for pipe sizes NPS 2-1/2 and larger at service meter shall be one of the following:
1. Two-piece, full-port, bronze ball valves with bronze trim.
2. Bronze plug valve.
3. Cast-iron, non-lubricated plug valve.

D. Distribution piping valves for pipe sizes NPS 2 and smaller shall be one of the following:
1. Two-piece, full-port, bronze ball valves with bronze trim.
2. Bronze plug valve.

E. Distribution piping valves for pipe sizes NPS 2-1/2 and larger shall be the following:
1. Cast-iron, non-lubricated plug valve.

F. Valves in branch piping for single appliance shall be the following:
1. Bronze plug valve.

2.4 WATER PIPING AND FITTING MATERIALS

A. All water piping shall comply with NSF/ANSI Standard 372 for low lead requirements.

B. Above Grade: ASTM B88, Type L copper tubing, hard temper with wrought copper fittings.

C. Below Grade: ASTM B88, Type K copper tubing, hard temper with wrought copper fittings.

D. Joints: 1/2" to 1-1/2" pipe sizes soldered using ASTM B32, lead-free alloys. Include water-flushable flux according to ASTM B813. 100 percent lead free, 95 percent tin and 5 percent antimony composition, silver bearing solders unless otherwise indicated.

E. Joints: 2" and larger pipe sizes brazed using AWS A5.8/A5.8M, AWS BCuP Series copper-phosphorous alloys.

F. Press fittings shall be permitted for use where approved by local authorities having jurisdiction and in compliance with current codes.

G. Water Hammer Arrestors: Provide at quick closing valves such as flush valves, etc. Certified under Plumbing and Drainage Institute Standard WH201 and by ASSE Standard 1010.

H. Select and size water hammer arrestors in accordance with Plumbing and Drainage Institute Standard WH201. Install above ceilings or behind wall access door at each plumbing fixture, or where plumbing fixtures are installed in groups, at each group of fixtures.

I. Insulation: Insulate outdoor piping with 1" Glass Fiber Insulation and 0.016 aluminum jacket.

2.5 WATER PIPING VALVES

A. All valves shall be the product of a single manufacturer. Milwaukee, NIBCO, Stockham, Crane, or approved equal. 125 PSIG steam service rated and 300 PSIG air and water rated. All valves shall be low lead type per NSF/ANSI Standard 372.

B. Provide valves with screwed or flanged ends as required by the piping system in which they are installed.

C. Shut-off valves 2 inches and smaller: Ball Valve. Bronze body, two piece, full port, extended handle that allows operation of valve without disturbing the insulation.

D. Shut-off valves 2 1/2 inches and larger: Gate Valve. Iron body, resilient wedge, outside screw and yoke.

E. Check valves: Bronze body, swing check, screwed. Provide non-slam check on pumped equipment or quick closing fixtures.

F. Relief valves: Bronze body, spring and diaphragm combination pressure and temperature relief valves with test lever and automatically resetting type thermostatic element. Tested under ANSI Z21.22 and rated relief capacities greater than water heater's input rating.

2.6 WASTE AND VENT PIPING AND FITTING MATERIALS

A. Above Grade Waste: Hubless cast iron soil pipe and fittings, service weight per ASTM A888 and Cast-Iron Soil Pipe Institute Standard (CISPI) 301. Couplings conforming to ASTM and CISPI 310; stainless steel covered neoprene gasket sleeve and stainless steel clamps.

B. Below Grade Waste and Vent: ABS-DWV Schedule 40 per ASTM D2661 D2680 and approved with solvent weld socket fittings.

C. Above Grade Vent: ABS-DWV Schedule 40 per ASTM D2661 D2680 and approved with solvent weld socket fittings.

D. Traps: Provide traps at all fixtures connected to waste systems, except for fixtures having integral traps. Type of trap(s) shall be approved by local codes and be of same material as piping system. Exposed traps for fixtures shall be chrome plated 17 gauge brass.

E. Trap Primers: Pressure drop activated brass trap seal primer with view holes and removable filter screen and requires no adjustments or air pre-charge. Select appropriate model for number of drains being served. Precision Plumbing Products, MIFAB, or approved equal.

F. Drains: Size of drain outlets shall be same as connecting pipe and as indicated on Drawings. Provide trap primer connections on all drains. Drain outlet as required for connection to piping.

G. Temperature and Pressure Relief Drain: Material shall be rated at not less than the operating temperature of the system and approved for such use or shall comply with ASME A 112.4.1.

H. Cleanouts: Install cleanouts of same diameter as pipe (4 inch maximum) where indicated or required by code. Cleanouts shall be installed at all points of change in direction and in horizontal waste lines over 50 feet inside building and 100 feet outside building. Locate minimum 18 inches away from building construction to allow sufficient space for rodding.

1. Provide cleanouts in waste drop from each sink and urinal. Provide one wrench for each size and type of cleanout used.
2. Floor Cleanouts: ZURN Z1400 series, or approved equal. Nickel-bronze, round top, with vandal proof screws.
3. Wall Cleanouts: ZURN Z1446 series, or approved equal with stainless steel cover and vandal proof screws.
4. Unfinished Areas: Zurn Z1440, or approved equal. Cast iron cleanout.
5. Grass or Planting Area: Zurn Z1449, or approved equal. Locate in concrete box and cover.

2.7 CONDENSATE DRAIN PIPING

A. Condensate drain piping shall be type DWV copper with wrought copper fittings.

B. Condensate drain between condensing gas fired equipment and neutralization kit shall be schedule 40 PVC with solvent weld fittings per ASTM D1785.

C. Condensate drain piping inside building shall be insulated with 1″ thick closed cell elastomeric foam insulation. Armaflex, Aeroflex, or approved equal.

D. Exterior condensate drain piping that is CPVC shall be factory rated for outdoor installation and UV resistant. Alternatively, Contractor shall paint exterior piping with UV resistant paint appropriate for pipe material.

2.8 UNIONS AND FLANGES

A. Install Watts, Epco, Nibco, or equal, dielectric unions or flanges at points of connection between copper or brass piping or material and steel or cast iron pipe or material except in drain, waste, or vent piping. Dielectric unions installed in potable water systems shall conform to lead free requirements.

B. Install unions in piping 2″ and smaller and flanges in piping 2 1/2" and larger at each connection to all equipment, tanks, and automatic valves.

C. Locate unions for easy removal of equipment, tank, or valve.

2.9 PIPE HANGERS AND SUPPORTS

A. Provide adequate supports, hangers, guides, thrusters, etc. as necessary to allow for proper movement of the piping at the building seismic joints and at the thermal expansion loops and flexible connectors, taking into account the pipe size, flex connection type, required seismic movement and system operating temperature and pressure.

B. Acceptable manufacturers: B-line, Tolco, Superstrut, Unistrut, or approved equal.

C. Plumbers tape or sheetmetal straps shall not be used for hanging or supporting of pipes.

D. Support horizontal piping in accordance with the following schedule:

Pipe Size (inches)	Maximum Hanger Spacing (feet)						Hanger Rod Diameter (inches)		
	Steel	Cast Iron	Copper	Plastic			Steel / Cast Iron	Copper	Plastic
				CPVC	PVC	PP			
upto 1	7	-	5	3.5	3	2.75	3/8	3/8	3/8
1 1/4	9	-	7	3.5	3	2.75	3/8	3/8	3/8
1 1/2 & 2	9	5	8	3.5	3.5	2.75	3/8	3/8	3/8
2 1/2	12	5	9	3.5	3.5	3.5	1/2	1/2	1/2
3	12	5	10	3.5	3.5	3.5	1/2	1/2	1/2
3 1/2	-	5	11	-	-	-	5/8	1/2	-
4	12	5	12	4	4	4	5/8	5/8	5/8
5	12	5	13	4	4	4	5/8	5/8	5/8
6	12	5	14	4	4	4	3/4	3/4	3/4
8 to 12	12	5	14	4	4	4	7/8	3/4	7/8

E. Provide hangers at each change in direction and both sides of valves 4-inch and larger. Place a hanger within 12 inches of each horizontal elbow, valve, strainer, or similar piping specialty item.

F. Support piping on the roof in accordance with the following schedule:

Nominal Pipe Size (inches)	Spacing of Supports (feet)
1/2	6
3/4 or 1	8
1 1/4 or larger	10
1 1/4 or larger (Vertical)	Every floor level

PART 3 – EXECUTION

3.1 PREPARATION

A. Close equipment shutoff valves before turning off natural gas to premises or piping section.

B. Inspect natural gas piping according to NFPA 54 to determine that natural gas utilization devices are turned off in piping section affected.

3.2 PIPE SIZES TO EQUIPMENT

A. Pipe sizes indicated, including required valving, shall be carried full size to equipment served. Any change of size to match equipment connection shall be made within 1'-0" of equipment.

3.3 PIPING GENERAL INSTALLATION

A. Thoroughly clean all pipe and maintain in clean condition during construction temporarily capping or plugging ends of pipe when not being worked on.

B. Cut pipes accurately to measurements established at the site and work into place without springing or undue forcing and out of the way of openings, ductwork, and equipment; ream ends of screwed pipes and tubing to original bore before connecting together.

C. Protect all piping located over switchboards, electrical machinery, or equipment against condensation. Insulate piping and install sheetmetal pan underneath piping running above electrical equipment and panels.

D. Where changes in pipe size occur, use only reducing fittings.

E. Provide screwed unions or flanges in locations required for disconnecting and connecting of all equipment.

F. Pipe runs in masonry and concrete floors shall be sleeved for protection.

G. Chase or sleeve all lines rising in footings and where running concealed through walls.

H. Caulk space between pipes and sleeves in exterior walls and in concrete slabs with graphite packing and waterproof plastic compound; caulk with Dow Corning #3 6548 Silicone RTV Foam per manufacturer's recommendations at fire walls.

I. Place escutcheons, stamped with #16 gauge steel and chromium plated, on pipes passing through sleeves in walls, floors or ceiling where exposed to view within a finished area. Grout in all other lines.

J. Support piping where necessary at sufficiently close intervals (and 24" from each fitting and change of direction) to keep it in alignment and to prevent sagging.

K. Anchor vertical risers with hooks, brackets, or clamps to make rigid.

L. All changes of direction of piping shall be made with fittings. Do not bend pipe.

M. Flash roof vent piping through roof with 24 gauge or heavier galvanized flashing. Make watertight with black fibrous mastic. Extend flashing into roofing felt 12″ from pipes.

N. Insulate cold water piping outdoors for freeze protection.

3.4 PIPING JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Threaded Joints:

1. Thread pipe with tapered pipe threads complying with ASME B1.20.1.
2. Cut threads full and clean using sharp dies.
3. Ream threaded pipe ends to remove burrs and restore full inside diameter of pipe.
4. Apply appropriate tape or thread compound to external pipe threads unless dryseal threading is specified.
5. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

D. Welded Joints:

1. Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators.
2. Bevel plain ends of steel pipe.
3. Patch factory-applied protective coating as recommended by manufacturer at field welds and where damage to coating occurs during construction.

E. Brazed Joints:

1. Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter.

F. Flanged Joints:

1. Install gasket material, size, type, and thickness appropriate for natural-gas service. Install gasket concentrically positioned.

G. Flared Joints:

1. Cut tubing with roll cutting tool. Flare tube end with tool to result in flare dimensions complying with SAE J513. Tighten finger tight, then use wrench. Do not overtighten.

H. PE Piping Heat-Fusion Joints:

1. Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
2. Plain-End Pipe and Fittings: Use butt fusion.
3. Plain-End Pipe and Socket Fittings: Use socket fusion.

3.5 GAS PIPING INSTALLATION

A. Arrange with Owner and PG&E before turning meter off for tie-in for new installation in location shown.

B. Make necessary connections to supply service to equipment as shown. Make installation in accordance with requirements of governing codes and the National Fire Protection Association.

C. Provide building gas shut-off valve in accessible location outside each building. Provide sign affixed to wall at valve location reading: "Gas Shut-Off." Size and location of the sign shall be as required by the Authority Having Jurisdiction. minimum 1/4" size lettering.

D. Cut pipe accurately to measurements established at building; work into place without springing or forcing; and clear all windows, doors, and other openings. Cutting or other weakening of building structure to facilitate piping installation not permitted.

E. Ream all piping to remove burrs and install to permit free expansion and contraction without damage.

F. Make all changes in direction with fittings and changes in main sizes through eccentric reducing fittings with top of pipe flat.

G. Piping at furnaces, etc. supported independently so pipe weight is not supported by equipment.

H. Provide watertight schedule 40 PVC conduit to protect gas piping installed below covered walkways, covered driveways, and where noted on Drawings. Extend sleeve at least 12 inches beyond any area where it is required to be installed.

I. Provide watertight and gastight schedule 40 PVC conduit to vent gas piping installed below slab inside building. Vent conduit to outdoors.

J. Provide the following:

1. Swing joints or run-outs to equipment with swing connections, expansion loops, and/or devices at all other points for flexible piping system.

2. Shut-off valves, balancing valves, and unions or flanges at each branch and in supply and return to each item of equipment. Valves and unions or flanges suitably located to isolate each unit; branch circuit or section of piping to facilitate maintenance and removal of all equipment and apparatus.
3. Caps or plugs for all open ends of pipe and equipment during installation to keep out dirt and other foreign matter.
4. Necessary temporary connections, valves, oversize flushing connections, pumps, etc. as required to properly clean and test system.

3.6 WASTE, VENT AND CONDENSATE DRAIN PIPING INSTALLATION

A. Lay piping in straight lines at a minimum slope of 2 percent in direction of flow of drainage system, unless otherwise noted on the Drawings.

B. Keep stopper in mouth of pipe when pipe when pipe laying is not in process.

C. Make changes in direction with long sweep or bends. Do not change direction of flow more than 90 degrees.

D. Reducing size of drainage piping in direction of flow is prohibited.

E. Make connections of branches to mains with "Y" fittings and 1/8 or 1/16 bends.

F. Install traps and fresh air inlets where required by code regulations.

G. Install traps with offset drain where required to meet ADA clearances.

H. Install trap primers discharge piping appropriate for trap primers installed. Coordinate discharge piping routing and method of connection to inlet side of floor drain and ensure discharge piping has positive drainage towards connection point floor drain. Slope piping at 1/8" per foot.

I. Install cleanouts at ends of horizontal runs in excess of 5'-0" and every 100'-0" of horizontal run.

J. Makeup cleanout plugs with graphite and oil to facilitate easy removal.

K. Extend vents through roof. Vents may be combined in accordance with California Plumbing Code. Arrange piping passing through roofs to be a minimum of 12 inches from walls or other obstructions so as to permit proper flashing.

L. Do not terminate vent outlet less than ten (10) feet from air intakes.

M. Deliver to the owner at completion of work two (2) suitable wrenches for each type of cleanout installed.

N. Take necessary precautions to protect cleanouts during course of construction.

O. Contractor to inquire from Owner the time to make tie-in to existing systems.

3.7 WATER PIPING INSTALLATION

A. Extend piping for hot and cold water, including mains, risers, and supplies to fixtures and indicated equipment. Carry headers for groups of fixtures full size throughout their length.

B. All domestic water piping shall be arranged to drain to low points and to provide for air elimination at high points.

C. All ferrous to non-ferrous pipe connections shall be made with accepted dielectric pipe or flange union isolating joints to prevent any electrolytic action between dissimilar metals.

D. Insulate all domestic hot and hot water return piping and fittings.

E. Make changes in pipe sizes with reducing tees or reducer fittings.

F. Install a shut off valve at domestic water line to each fixture group so that each group can be shut off without shutting down the other parts of the system.

G. Provide shut off valves for all plumbing equipment, fixtures, and fixture trim which do not have supply stop or integral isolation valves included.

H. Arrange and orientate valves, trap primers, water hammer arrestors, etc. in manner accessible for maintenance and/or removal.

I. No water piping will be permitted below slab on grade unless shown on Drawings.

J. Contractor to inquire from Owner the time to make tie-in to existing systems.

3.8 HANGER AND SUPPORT INSTALLATION

A. Support exposed piping tight to wall with support channels and pipe clamps. All pipe clamps shall include rubber cushion.

B. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure. Comply with the drawing specifications and California Building Code.

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 provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.9 are not exceeded.

G. Adjust hangers to distribute loads equally on attachments.

H. Trim excess length of continuous-thread hanger and support rods to 1 1/2 inches.

3.9 PAINTING

A. Paint exposed, exterior metal piping, valves, service regulators, earthquake valves, and piping specialties except components with factory-applied paint or protective coating.

1. Alkyd System: MPI EXT 5.1D.
    a. Prime Coat: Alkyd anticorrosive metal primer.
    b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
    c. Topcoat: Exterior alkyd enamel (flat).
    d. Color: Gray or as selected by Architect.

B. Paint exposed, interior metal piping, valves, service regulators, earthquake valves, and piping specialties except components, with factory-applied paint or protective coating.

2. Latex Over Alkyd Primer System: MPI INT 5.1Q.
    a. Prime Coat: Alkyd anticorrosive metal primer.
    b. Intermediate Coat: Interior latex matching topcoat.
    c. Topcoat: Interior latex (flat).
    d. Color: Gray or as selected by Architect.

C. Damage and Touchup: Repair marred and damaged factory-applied finishes with materials and by procedures to match original factory finish.

D. Refer to Division 09 for additional painting requirements.

3.10 TESTING, ADJUSTING, AND CLEANING

A. Provide testing of all installed gas, domestic water, drainage and vent systems during progress of work. Such tests shall be done in the presence of the Owner's representative, and all Authorities Having Jurisdiction. The inspection authority having jurisdiction and the Engineer shall be notified a minimum of 48 hours prior to performance of all tests so that they may be witnessed.

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. Contractor shall provide all apparatus, temporary work, or any other requirements necessary for such tests. Take all due precautions to prevent damage to the building or its contents that may be incurred by such tests as the Contractor will be required to repair and make good, at own expense, any damage caused.

D. Any defects or deficiencies discovered as result of tests shall be immediately repaired and tests shall be repeated until all test requirements are fully met. No caulking of pipe joints to remedy leaks shall be permitted.

E. Gas Piping: All gas piping shall be tested per NFPA 54 to 60 psig for 1 hour without drop in pressure. Equipment and personnel shall be protected from this test procedure. Measure natural gas system test pressure with a water manometer or an equivalent device calibrated in increments not greater than 0.1 inch water column. System shall not be approved until it can be demonstrated that there is no measurable loss of test pressure during test period.

F. Waste and Condensate Drain Piping: All waste and condensate drain systems shall be tested hydraulically by filling to the highest vent point with water. Piping may be tested in sections. Each section of drainage piping tested shall have all openings tightly closed with screw plugs, or equal device, and stand without loss of level for a period of 4 hours when filled with water which produces at least a 10-foot head at the highest point of the section tested.

G. Water Piping: All water piping shall be tested to 100 psig with potable water and held for 8 hours without drop in pressure before it is covered and concealed. Equipment and personnel shall be protected from this test pressure. After fixtures are connected, test system for 2 hours at 75 psig or prevailing water pressure, whichever is higher.

H. Adjust and regulate all faucets, valves, water heating equipment, etc. and turn over to the Owner in perfect working order.

I. Upon completion of work, clean all equipment and piping installed under this Section.

3.11 DISINFECTION

A. Upon completion of all tests and necessary replacements, all domestic water piping shall be disinfected. Chlorination shall be accomplished by personnel in direct employ of a firm licensed to do this type of work. After work has been accomplished, provide the Owner and Architect with a statement from the laboratory indicating the water is suitable for human consumption.

B. Prior to testing, flush piping with clean water until clean water free of silt or grit is observed for at least one minute.

C. Comply with local requirements where local code requirements are more stringent. Provide necessary labor, equipment, material, and test kits for chlorine application and tests. Make all arrangements with jurisdictional water authority for witnessing chlorination tests and tests of proper disinfection.

D. Sterilize all parts of building water system with water solution containing 50 ppm of available chlorine for at least a 24 hour contact period. After contact period, flush all parts of system with clear water until system tests at no more than 0.2 ppm residual chlorine.

E. Flush thoroughly and submit bacteriological samples to a certified laboratory which shall certify in writing that the water is suitable for drinking.

3.12 TRAINING AND O&MS

A. Refer to Section 22 00 00 Plumbing General Requirements and Division 01 for Training requirements, Operating and Maintenance Manuals, and other Closeout procedures.

END OF SECTION 22 05 00

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 2022 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. Condensing Units.
3. Split Systems.
4. Fans.
5. Roof Hoods and Caps.
6. Ductwork.
7. Duct Insulation and Lining.
8. Dampers and Duct Accessories.
9. Filters.
10. Diffusers, Registers, and Grilles.
11. Louvers.
12. Refrigerant Piping.
13. Mechanical Supports.
14. 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 ROOF HOODS AND CAPS

A. Roof hoods shall be of size, type, and capacity noted on Drawings.

B. Roof caps for exhaust shall be of size required for duct dimensions noted on Drawings.

C. Roof hood and cap housing shall be constructed of heavy gauge galvanized steel and shall be fully weatherproof and painted with name. Cap and hood shall be reinforced to prevent oil canning and deflecting in high winds. Roof caps and hoods shall be complete with bird screen and roof curb. Distance of hood from roof shall be 18" unless otherwise noted on Drawings.

2.4 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.

2.5 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.

2.6 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.

2.7 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.

2.8 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.

2.9 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 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 the 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.

3.4 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.

3.5 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.

3.6 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.

3.7 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.

3.8 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.

3.9 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.

3.10 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.

3.11 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.

3.12 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 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.

3.13 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.

3.14 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.

3.15 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.

3.16 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 26 05 19
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Single conductor building wire.
B. Wiring connectors.
C. Electrical tape.
D. Heat shrink tubing.
E. Oxide inhibiting compound.
F. Wire pulling lubricant.
G. Cable ties.
H. Firestop sleeves.

1.2 RELATED REQUIREMENTS

A. Section 26 05 26 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).
B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011 (Reapproved 2017).
C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010, with Editorial Revision (2020).
D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2020).
E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2017.
F. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes; 2020.
G. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
H. NECA 121 - Standard for Installing Nonmetallic-Sheathed Cable (Type NM-B) and Underground Feeder and Branch-Circuit Cable (Type UF); 2007.
I. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2021.

J. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.

K. CEC - California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

L. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.

M. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.

N. UL 267 - Outline of Investigation for Wire-Pulling Compounds; 2017 Edition, Including All Revisions.

O. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.

P. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.

Q. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.

R. UL 493 - Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables; Current Edition, Including All Revisions.

S. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
   3. 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 conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

B. 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.

C. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing for underground circuits.

1.6 QUALITY ASSURANCE

A. Comply with requirements of CEC.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three 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 conductors and cables in accordance with manufacturer's instructions.

1.8 FIELD CONDITIONS

A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F, unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS

2.1 CONDUCTOR AND CABLE APPLICATIONS

A. Do not use conductors and cables for applications other than as permitted by CEC and product listing.

B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

C. Nonmetallic-sheathed cable is not permitted.

D. Armored cable is not permitted.

E. Metal-clad cable is not permitted.

2.2 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products that comply with requirements of CEC.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

D. Comply with NEMA WC 70.

E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

G. Conductors for Grounding and Bonding: Also comply with Section 26 05 26.

H. Conductor Material:

1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.

2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
3. Tinned Copper Conductors: Comply with ASTM B33.

I. Minimum Conductor Size:
1. Branch Circuits: 12 AWG.
a. Exceptions:
1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
3) 20 A, 277 V circuits longer than 150 feet: 10 AWG, for voltage drop.
2. Control Circuits: 14 AWG.

J. Where conductor size is not indicated, size to comply with CEC but not less than applicable minimum size requirements specified.

K. Conductor Color Coding:
1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
2. Color Coding Method: Integrally colored insulation.
a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
3. Color Code:
a. 480Y/277 V, 3 Phase, 4 Wire System:
1) Phase A: Brown.
2) Phase B: Orange.
3) Phase C: Yellow.
4) Neutral/Grounded: Gray.
b. 208Y/120 V, 3 Phase, 4 Wire System:
1) Phase A: Black.
2) Phase B: Red.
3) Phase C: Blue.
4) Neutral/Grounded: White.
c. Equipment Ground, All Systems: Green.
d. For control circuits, comply with manufacturer's recommended color code.

2.3 SINGLE CONDUCTOR BUILDING WIRE

A. Manufacturers:
1. Copper Building Wire:
a. Cerro Wire LLC: www.cerrowire.com/#sle.
b. General Cable Technologies Corporation; _____: www.generalcable.com/#sle.
c. Southwire Company: www.southwire.com/#sle.

B. Description: Single conductor insulated wire.

C. Conductor Stranding:
   1. Feeders and Branch Circuits:
      a. Size 10 AWG and Smaller: Solid.
      b. Size 8 AWG and Larger: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation:
   1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
      a. Size 6 AWG and Larger: Type XHHW-2.
      b. Installed Underground: Type XHHW-2.
      c. Fixture Wiring Within Luminaires: Type TFFN/TFN for luminaires with labeled maximum temperature of 90 degrees C; Approved suitable type for luminaires with labeled maximum temperature greater than 90 degrees C.

2.4 UNDERGROUND FEEDER AND BRANCH-CIRCUIT CABLE

A. Manufacturers:
   1. Southwire Company: www.southwire.com/#sle.

B. Description: CEC, Type UF multiple-conductor cable listed and labeled as complying with UL 493, Type UF-B.

C. Provide equipment grounding conductor unless otherwise indicated.

D. Conductor Stranding:
   1. Size 10 AWG and Smaller: Solid.
   2. Size 8 AWG and Larger: Stranded.

E. Insulation Voltage Rating: 600 V.

2.5 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

B. Connectors for Grounding and Bonding: Comply with Section 26 05 26.

C. Wiring Connectors for Splices and Taps:
   1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
   2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors.

D. Wiring Connectors for Terminations:
   1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
   2. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.

3. Provide motor pigtail connectors for connecting motor leads in order to facilitate disconnection.
4. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors where connectors are required.
5. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
6. Conductors for Control Circuits: Use crimped terminals for all connections.

E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.

F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.

G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
1. Manufacturers:
a. 3M: www.3m.com/#sle.
b. Ideal Industries, Inc: www.idealindustries.com/#sle.
c. NSI Industries LLC: www.nsiindustries.com/#sle.

H. Mechanical Connectors: Provide bolted type or set-screw type.
1. Manufacturers:
a. Burndy LLC; _____: www.burndy.com/#sle.
b. Ilsco: www.ilsco.com/#sle.
c. Thomas & Betts Corporation: www.tnb.com/#sle.

I. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
1. Manufacturers:
a. Burndy LLC; _____: www.burndy.com/#sle.
b. Ilsco: www.ilsco.com/#sle.
c. Thomas & Betts Corporation: www.tnb.com/#sle.

2.6 ACCESSORIES

A. Electrical Tape:
1. Manufacturers:
a. 3M: www.3m.com/#sle.
2. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
3. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion,

corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.

4. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil; suitable for continuous temperature environment up to 194 degrees F and short-term 266 degrees F overload service.
5. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil; suitable for continuous temperature environment up to 176 degrees F.
6. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil.

B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      b. Burndy LLC; _____: www.burndy.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com/#sle.

C. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.
   1. Manufacturers:
      a. Burndy LLC; _____: www.burndy.com/#sle.
      b. Ideal Industries, Inc: www.idealindustries.com/#sle.
      c. Ilsco: www.ilsco.com/#sle.

D. Wire Pulling Lubricant:
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      b. American Polywater Corporation: www.polywater.com/#sle.
      c. Ideal Industries, Inc: www.idealindustries.com/#sle.
   2. Listed and labeled as complying with UL 267.
   3. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
   4. Suitable for use at installation temperature.

E. Cable Ties: Material and tensile strength rating suitable for application.
   1. Manufacturers:
      a. Burndy LLC; _____: www.burndy.com/#sle.

F. Sealing Systems for Roof Penetrations: Premanufactured components and accessories as required to preserve integrity of roofing system and maintain roof warranty; suitable for cables and roofing system to be installed; designed to accommodate existing penetrations where applicable.
   1. Products:

a. Menzies Metal Products; Electrical Roof Stack and Cap: www.menzies-metal.com/#sle.
b. Menzies Metal Products; Electrical Retro Box: www.menzies-metal.com/#sle.

G. Firestop Sleeves: Listed; provide as required to preserve fire resistance rating of building elements.
1. Products:
a. HoldRite, a brand of Reliance Worldwide Corporation; HydroFlame Pro Series/HydroFlame Custom Built: www.holdrite.com/#sle.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that interior of building has been protected from weather.

B. Verify that work likely to damage wire and cable has been completed.

C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with CEC.

D. Verify that field measurements are as indicated.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.3 INSTALLATION

A. Circuiting Requirements:
1. Unless dimensioned, circuit routing indicated is diagrammatic.
2. When circuit destination is indicated without specific routing, determine exact routing required.
3. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with CEC.
4. Maintain separation of wiring for emergency systems in accordance with CEC.
5. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are indicated as separate, combining them together in a single raceway is not permitted.
6. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.

B. Install products in accordance with manufacturer's instructions.

C. Perform work in accordance with NECA 1 (general workmanship).

D. Install underground feeder and branch-circuit cable (Type UF-B) in accordance with NECA 121.

E. Installation in Raceway:
   1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
   2. Pull all conductors and cables together into raceway at same time.
   3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
   4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

F. Exposed Cable Installation (only where specifically permitted):
   1. Route cables parallel or perpendicular to building structural members and surfaces.
   2. Protect cables from physical damage.

G. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.

H. Secure and support conductors and cables in accordance with CEC using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
   1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
   2. Installation in Vertical Raceways: Provide supports where vertical rise exceeds permissible limits.

I. Terminate cables using suitable fittings.

J. Install conductors with a minimum of 12 inches of slack at each outlet.

K. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

L. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with CEC.

M. Make wiring connections using specified wiring connectors.
   1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
   2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
   3. Do not remove conductor strands to facilitate insertion into connector.

4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.

N. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
   1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
   2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
      b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.

O. Insulate ends of spare conductors using vinyl insulating electrical tape.

P. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.

Q. Identify conductors and cables in accordance with Section 26 05 53.

R. Install firestopping to preserve fire resistance rating of partitions and other elements, using UL listed materials and methods.

S. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.4 FIELD QUALITY CONTROL

A. Inspect and test in accordance with NETA ATS, except Section 4.

B. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
   1. Disconnect surge protective devices (SPDs) prior to performing any high potential testing. Replace SPDs damaged by performing high potential testing with SPDs connected.

C. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Grounding and bonding requirements.

B. Conductors for grounding and bonding.

C. Connectors for grounding and bonding.

1.2 RELATED REQUIREMENTS

A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.

B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

C. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.

D. CEC – California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Verify exact locations of underground metal water service pipe entrances to building.
2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
3. 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 grounding and bonding system components.

B. Manufacturer's 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.

C. Field quality control test reports.

D. Project Record Documents: Record actual locations of grounding electrode system components and connections.

1.6 QUALITY ASSURANCE

A. Comply with requirements of CEC.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three 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 products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 GROUNDING AND BONDING REQUIREMENTS

A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.

B. Do not use products for applications other than as permitted by CEC and product listing.

C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

D. Where conductor size is not indicated, size to comply with CEC but not less than applicable minimum size requirements specified.

E. Grounding System Resistance:
   1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
   2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
   3. Between Grounding Electrode System and Major Electrical Equipment Frames, System Neutral, and Derived Neutral Points: Not greater than 0.5 ohms, when tested using "point-to-point" methods.

F. Bonding and Equipment Grounding:
   1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding

terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with CEC.

2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with CEC.
4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
7. Provide bonding for interior metal piping systems in accordance with CEC. This includes, but is not limited to:
   a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
   b. Metal gas piping.
8. Provide bonding for metal building frame.

G. Communications Systems Grounding and Bonding:
1. Provide intersystem bonding termination at service equipment or metering equipment enclosure and at disconnecting means for any additional buildings or structures in accordance with CEC.
2. Provide bonding jumper in raceway from intersystem bonding termination to each communications room or backboard and provide ground bar for termination.
   a. Bonding Jumper Size: 6 AWG, unless otherwise indicated or required.
   b. Ground Bar Size: 1/4 by 2 by 12 inches unless otherwise indicated or required.
   c. Ground Bar Mounting Height: 18 inches above finished floor unless otherwise indicated.

2.2 GROUNDING AND BONDING COMPONENTS

A. General Requirements:
1. Provide products listed, classified, and labeled as suitable for the purpose intended.
2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 05 26:
1. Use insulated copper conductors unless otherwise indicated.
   a. Exceptions:

1) Use bare copper conductors where installed underground in direct contact with earth.
2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
3. Unless otherwise indicated, use exothermic welded connections for accessible connections.
4. Manufacturers - Exothermic Welded Connections:

D. Ground Bars:
1. Description: Copper rectangular ground bars with mounting brackets and insulators.
2. Size: As indicated.
3. Holes for Connections: As indicated or as required for connections to be made.
4. Manufacturers:

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that work likely to damage grounding and bonding system components has been completed.

B. Verify that field measurements are as indicated.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Make grounding and bonding connections using specified connectors.
1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.

5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

D. Identify grounding and bonding system components 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. Perform inspections and tests listed in NETA ATS, Section 7.13.

D. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.

E. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

F. Submit detailed reports indicating inspection and testing results and corrective actions taken.

END OF SECTION

SECTION 26 05 29
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.2 RELATED REQUIREMENTS

A. Section 26 05 33.13 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.

B. Section 26 05 33.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.

C. Section 26 05 48 - Vibration and Seismic Controls for Electrical Systems.

D. Section 26 51 00 - Interior Lighting: Additional support and attachment requirements for interior luminaires.

E. Section 26 56 00 - Exterior Lighting: Additional support and attachment requirements for exterior luminaires.

1.3 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.

D. MFMA-4 - Metal Framing Standards Publication; 2004.

E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

F. CEC - California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. UL 5B - Strut-Type Channel Raceways and Fittings; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with actual equipment and components to be installed.
   2. Coordinate work to provide additional framing and materials required for installation.

3. Coordinate compatibility of support and attachment components with mounting surfaces at installed locations.
4. Coordinate arrangement of supports with ductwork, piping, equipment and other potential conflicts.
5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
1. Do not install products on or provide attachment to concrete surfaces until concrete has cured.

1.5 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel/strut framing systems, nonpenetrating rooftop supports, and post-installed concrete/masonry anchors.

B. Shop Drawings: Include details for fabricated hangers and supports where materials or methods other than those indicated are proposed for substitution.

C. Manufacturer's 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.

1.6 QUALITY ASSURANCE

A. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
1. Comply with the following. Where requirements differ, comply with most stringent.
a. CEC.
b. Requirements of authorities having jurisdiction.
2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of electrical work.
3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for load

to be supported with minimum safety factor of _____. Include consideration for vibration, equipment operation, and shock loads where applicable.

5. Do not use products for applications other than as permitted by CEC and product listing.
6. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
7. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
   a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
   b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
   c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
   d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Components for Vibration Isolation and/or Seismic Controls: See Section 26 05 48.

C. Conduit and Cable Supports: Straps and clamps suitable for conduit or cable to be supported.
   1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
   2. Conduit Clamps: Bolted type unless otherwise indicated.

D. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.
   1. Manufacturers:

E. Metal Channel/Strut Framing Systems:
   1. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
   2. Comply with MFMA-4.
   3. Channel/Strut Used as Raceway, Where Indicated: Listed and labeled as complying with UL 5B.
   4. Channel Material:
      a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
      b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.
   5. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch.
   6. Minimum Channel Dimensions: 1-5/8 inch wide by 13/16 inch high.

F. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
   1. Minimum Size, Unless Otherwise Indicated or Required:
      a. Equipment Supports: 1/2-inch diameter.
      b. Single Conduit up to 1-inch (27 mm) Trade Size: 1/4-inch diameter.
      c. Single Conduit Larger than 1-inch (27 mm) Trade Size: 3/8-inch diameter.
      d. Trapeze Support for Multiple Conduits: 3/8-inch diameter.

e. Outlet Boxes: 1/4-inch diameter.
f. Luminaires: 1/4-inch diameter.

G. Nonpenetrating Rooftop Supports for Low-Slope Roofs:
1. Description: Steel pedestals with thermoplastic or rubber bases that rest on top of roofing membrane, not requiring attachment to roof structure and not penetrating roofing assembly, with support fixtures as specified.
2. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
3. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports.
4. Mounting Height: Provide minimum clearance of 6 inches under supported component to top of roofing.

H. Anchors and Fasteners:
1. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.
2. Concrete: Use preset concrete inserts or expansion anchors.
3. Solid or Grout-Filled Masonry: Use expansion anchors.
4. Hollow Masonry: Use toggle bolts.
5. Hollow Stud Walls: Use toggle bolts.
6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
7. Sheet Metal: Use sheet metal screws.
8. Wood: Use wood screws.
9. Plastic and lead anchors are not permitted.
10. Powder-actuated fasteners are not permitted.
11. Hammer-driven anchors and fasteners are not permitted.
12. Preset Concrete Inserts: Continuous metal channel/strut and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
a. Manufacturer: Same as manufacturer of metal channel/strut framing system.
b. Comply with MFMA-4.
c. Channel Material: Use galvanized steel.
13. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive support and attachment components.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install hangers and supports in accordance with NECA 1.

C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.

D. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

E. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

F. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

G. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

H. Provide required vibration isolation and/or seismic controls; see Section 26 05 48.

I. Equipment Support and Attachment:
   1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.
   2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
   3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
   4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

J. Conduit Support and Attachment: See Section 26 05 33.13 for additional requirements.

K. Box Support and Attachment: See Section 26 05 33.16 for additional requirements.

L. Interior Luminaire Support and Attachment: See Section 26 51 00 for additional requirements.

M. Exterior Luminaire Support and Attachment: See Section 26 56 00 for additional requirements.

N. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.

O. Secure fasteners in accordance with manufacturer's recommended torque settings.

P. Remove temporary supports.

3.3 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Inspect support and attachment components for damage and defects.

C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 26 05 33.13
CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Galvanized steel rigid metal conduit (RMC).
B. Flexible metal conduit (FMC).
C. Liquidtight flexible metal conduit (LFMC).
D. Galvanized steel electrical metallic tubing (EMT).
E. Rigid polyvinyl chloride (PVC) conduit.
F. High-density polyethylene (HDPE) conduit.

1.2 RELATED REQUIREMENTS

A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Cable assemblies consisting of conductors protected by integral metal armor.
B. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
   1. Includes additional requirements for fittings for grounding and bonding.
C. Section 26 05 29 - Hangers and Supports for Electrical Systems.
D. Section 26 05 33.16 - Boxes for Electrical Systems.
E. Section 26 05 48 - Vibration and Seismic Controls for Electrical Systems.
F. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2020.
B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S); 2020.
C. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit; 2018.
D. ASTM D1002 - Standard Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal); 2010 (Reapproved 2019).
E. ASTM D1598 - Standard Test Methods for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure; 2021.
F. ASTM D1599 - Standard Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings; 2018.

G. ASTM D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing; 2020.

H. ASTM D3261 - Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing; 2016.

I. ASTM F1055 - Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Tubing; 2016a (Reapproved 2022).

J. ASTM F2160 - Standard Specification for Solid Wall High Density Polyethylene (HDPE) Conduit Based on Controlled Outside Diameter (OD); 2016.

K. ASTM F2176 - Standard Specification for Mechanical Couplings Used on Polyethylene Conduit, Duct and Innerduct; 2017.

L. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

M. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2020.

N. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); 2017.

O. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.

P. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2020.

Q. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2021.

R. NEMA TC 7 - Solid-Wall Coilable and Straight Electrical Polyethylene Conduit; 2021.

S. CEC - California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

T. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.

U. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.

V. UL 360 - Liquid-Tight Flexible Metal Conduit; Current Edition, Including All Revisions.

W. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.

X. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.

Y. UL 651A - Schedule 40 and 80 High Density Polyethylene (HDPE) Conduit; Current Edition, Including All Revisions.

Z. UL 746C - Polymeric Materials – Use in Electrical Equipment Evaluations; Current Edition, Including All Revisions.

AA. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.

BB. UL 1203 - Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations; Current Edition, Including All Revisions.

CC. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.

DD. UL 2419 - Outline of Investigation for Electrically Conductive Corrosion Resistant Compounds; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
1. Coordinate minimum sizes of conduits with actual type and quantity of conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
2. Coordinate arrangement of conduits with structural members, ductwork, piping, equipment, and other potential conflicts.
3. Verify exact conduit termination locations required for boxes, enclosures, and equipment.
4. Coordinate work to provide roof penetrations that preserve integrity of roofing system and do not void roof warranty.
5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
1. Do not begin installation of conductors and cables until installation of conduit between termination points is complete.

1.5 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

B. Project Record Documents: Record actual routing for conduits installed underground, conduits embedded within concrete slabs, and conduits 2-inch (53 mm) trade size and larger.

1.6 QUALITY ASSURANCE

A. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by CEC, manufacturer's instructions, and product listing.

B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.

C. Underground:
   1. Under Slab on Grade: Use rigid PVC conduit.
   2. Exterior, Direct-Buried: Use rigid PVC conduit or HDPE.
   3. Exterior, Embedded Within Concrete: Use rigid PVC conduit.
   4. Where rigid polyvinyl chloride (PVC) conduit or high-density polyethylene (HDPE) conduit is provided, transition to galvanized steel rigid metal conduit (RMC) where emerging from underground.
   5. Where rigid polyvinyl (PVC) conduit larger than 2-inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit (RMC) elbows for bends.
   6. Where galvanized steel rigid metal conduit (RMC) or galvanized steel intermediate metal conduit (IMC) is installed in direct contact with earth, use corrosion protection tape, factory-applied corrosion protection coating, or field-applied corrosion protection compound acceptable to authorities having jurisdiction to provide supplementary corrosion protection.
   7. Where steel conduit emerges from concrete into soil, use corrosion protection tape to provide supplementary corrosion protection for a minimum of 4 inches on either side of where conduit emerges.

D. Embedded Within Concrete:
   1. Within Slab on Grade (within structural slabs only where approved by Structural Engineer): Use rigid PVC conduit.
   2. Within Slab Above Ground (within structural slabs only where approved by Structural Engineer): Use rigid PVC conduit.
   3. Within Concrete Walls Above Ground: Use rigid PVC conduit.
   4. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC) where emerging from concrete.
   5. Where galvanized steel electrical metallic tubing (EMT) or galvanized steel rigid metal conduit (RMC) emerges from concrete into salt air, use corrosion protection tape, factory-applied corrosion protection coating, or field-applied corrosion protection compound acceptable to authorities having jurisdiction to provide supplementary corrosion protection for minimum of 4 inches on either side of where conduit emerges.

E. Concealed Within Hollow Masonry Walls: Use galvanized steel rigid metal conduit or electrical metallic tubing (EMT).

F. Concealed Within Hollow Stud Walls: Use electrical metallic tubing (EMT).

G. Concealed Above Accessible Ceilings: Use electrical metallic tubing (EMT).

H. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit (RMC).

I. Exposed, Interior, Not Subject to Physical Damage: Use electrical metallic tubing (EMT).

J. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit.
   1. Locations subject to physical damage include, but are not limited to:
      a. Where exposed below 8 feet, except within electrical and communication rooms or closets.
      b. Where exposed below 20 feet in warehouse areas.

K. Exposed, Exterior: Use galvanized steel rigid metal conduit.

L. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel rigid metal conduit or electrical metallic tubing (EMT).

M. Flexible Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit (FMC).
   1. Maximum Length: 6 feet.

N. Flexible Connections to Vibrating Equipment:
   1. Dry Locations: Use flexible metal conduit (FMC).
   2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit (LFMC).
   3. Maximum Length: 6 feet unless otherwise indicated.
   4. Vibrating equipment includes, but is not limited to:
      a. Transformers.
      b. Motors.

2.2 CONDUIT - GENERAL REQUIREMENTS

A. Comply with CEC.

B. Fittings for Grounding and Bonding: See Section 26 05 26 for additional requirements.

C. Provide conduit, fittings, supports, and accessories required for complete raceway system.

D. Provide products listed, classified, and labeled as suitable for purpose intended.

E. Minimum Conduit Size, Unless Otherwise Indicated:
   1. Branch Circuits: 3/4 inch (21 mm) trade size.
   2. Underground, Interior: 1 inch (27 mm) trade size.
   3. Underground, Exterior: 1-inch trade size.

F. Where conduit size is not indicated, size to comply with CEC but not less than applicable minimum size requirements specified.

2.3 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Manufacturers:
   1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
   2. Western Tube, a division of Zekelman Industries: www.westerntube.com/#sle.
   3. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.

B. Conduit with integral fittings, such as Allied Tube and Conduit's "Kwik-Couple" are not permitted.

C. Interior conduits shall be color-coded based on the wiring or system type they serve. Paint shall be factory applied by the manufacturer
   1. Normal Power Systems: No color
   2. Emergency and Standby Power Systems: Yellow
   3. Fire Alarm: Red
   4. Security: Orange
   5. Telephone and Data: Blue
   6. Audio/Visual: Purple
   7. Other Low Voltage: Green

D. Description: CEC, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

E. Fittings:
   1. Manufacturers:
      a. ABB; T&B: www.electrification.us.abb.com/#sle.
      b. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.us/#sle.
      c. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.
   2. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
   3. Hazardous/Classified Locations: Use fittings listed and labeled as complying with UL 1203 for classification of installed location.
   4. Material: Use steel or malleable iron.
      a. Do not use die cast zinc fittings.
   5. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.4 FLEXIBLE METAL CONDUIT (FMC)

A. Manufacturers:
   1. AFC Cable Systems, a division of Atkore International: www.afcweb.com/#sle.

B. Description: CEC, Type FMC standard-wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems.

C. Fittings:
   1. Manufacturers:
      a. ABB; T&B: www.electrification.us.abb.com/#sle.
      b. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.
   2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   3. Material: Use steel or malleable iron.

a. Do not use die cast zinc fittings.

2.5 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Manufacturers:
1. AFC Cable Systems, a division of Atkore International: www.afcweb.com/#sle.

B. Description: CEC, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

C. Fittings:
1. Manufacturers:
a. ABB; T&B: www.electrification.us.abb.com/#sle.
b. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.
2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
a. Do not use die cast zinc fittings.

2.6 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:
1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
2. Western Tube, a division of Zekelman Industries: www.westerntube.com/#sle.
3. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.

B. Description: CEC, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.

C. Conduits with integral fittings similar to Allied Tube & Conduit's "Kwik-Fit" shall not be used.

D. Interior conduits shall be color-coded based on the wiring or system type they serve. Paint shall be factory applied by the manufacturer
1. Normal Power Systems: No color
2. Emergency and Standby Power Systems: Yellow
3. Fire Alarm: Red
4. Security: Orange
5. Telephone and Data: Blue
6. Audio/Visual: Purple
7. Other Low Voltage: Green

E. Fittings:
1. Manufacturers:
a. ABB; T&B: www.electrification.us.abb.com/#sle.
b. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.us/#sle.
c. Emerson Electric Co; O-Z/Gedney: www.emerson.com/#sle.

2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
   a. Do not use die cast zinc fittings.
4. Connectors and Couplings: Use compression/gland or set-screw type.
   a. Do not use indenter type connectors and couplings.

2.7 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

A. Manufacturers:
   1. ABB; Carlon: www.carlon.com/#sle.
   2. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
   3. Cantex Inc: www.cantexinc.com/#sle.

B. Description: CEC, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.

C. Fittings:
   1. Expansion fittings similar to Carlon's "E945" series shall not be used.
   2. Manufacturer: Same as manufacturer of conduit to be connected.
   3. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

2.8 HIGH-DENSITY POLYETHYLENE (HDPE) CONDUIT

A. Manufacturers:
   1. ABB; Carlon: www.electrification.us.abb.com/#sle.
   2. Blue Diamond Industries, LLC: www.bdiky.com/#sle.
   3. Eastern Wire + Conduit, a division of Atkore International: www.easternwire.com/#sle.

B. Description: CEC, Type HDPE high-density polyethylene solid-wall conduit complying with ASTM F2160 and NEMA TC 7; list and label as complying with UL 651A; Schedule 40 unless otherwise indicated.

C. Joining Methods: Approved by HDPE conduit manufacturer.

D. Mechanical Fittings: Comply with ASTM F2176; list and label as complying with UL 651A.

E. Butt Heat Fusion Fittings: Comply with ASTM D3261.

F. Socket Fusion Fittings: Comply with ASTM D2683.

G. Electrofusion Fittings: Comply with ASTM F1055.

2.9 ACCESSORIES

A. Corrosion Protection Tape: PVC-based, minimum thickness of 20 mil, 0.020 inch.

B. Conduit Joint Compound: Corrosion-resistant, electrically conductive compound listed as complying with UL 2419; suitable for use with conduit to be installed.

C. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.

D. Adhesive for HDPE Conduit:
   1. Specifically designed for bonding dissimilar materials in lieu of transition fittings, including but not limited to polyethylene, fiberglass, PVC, aluminum, and steel; UL 746C recognized.
   2. Approved by adhesive manufacturer for use with materials to be joined.
   3. Adhesive Shear Strength: Not less that 100 psi, when tested in accordance with ASTM D1002.
   4. Hydrostatic Pressure Resistance: No leaks, when tested in accordance with ASTM D1598 at 120 psi for 1,000 hours and when tested in accordance with ASTM D1599 at 250 psi.
   5. Products:
      a. American Polywater Corporation; Polywater BonDuit Conduit Adhesive: www.polywater.com/#sle.

E. Pull Strings: Use nylon or polyester tape with average breaking strength of not less than 1,250 lbf.

F. Foam Conduit Sealant:
   1. Removable, two-part, closed-cell foam, specifically designed for sealing conduit openings against water, moisture, gases, and dust.
   2. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
   3. Rated to hold minimum of 10 ft water head pressure.
   4. Products:
      a. American Polywater Corporation; Polywater AFT Foam Duct Sealant: www.polywater.com/#sle.
      b. American Polywater Corporation; Polywater FST Foam Duct Sealant: www.polywater.com/#sle.

G. Conduit Mechanical Seals:
   1. Listed as complying with UL 514B.
   2. Specifically designed for sealing conduit openings against water, moisture, gases, and dust.
   3. Suitable for sealing around conductors/cables to be installed.
   4. Products:
      a. American Polywater Corporation; PHRD SG Mechanical Seals: www.polywater-haufftechnik.com/#sle.

H. Sealing Compound for Hazardous/Classified Location Sealing Fittings: Listed for use with particular fittings to be installed.

I. Sealing Systems for Concrete Penetrations:
   1. Sleeves: Provide water stop ring or cement coating that bonds to concrete to prevent water infiltration.
   2. Rate for minimum of 40 psig; suitable for sealing around conduits to be installed.
   3. Products:
      a. American Polywater Corporation; PZVR Cement-Coated Concrete Wall Sleeves: www.polywater-haufftechnik.com/#sle.
      b. American Polywater Corporation; PHSD Mechanical Seals: www.polywater-haufftechnik.com/#sle.
      c. American Polywater Corporation; PHSI 150 Varia Double Wall Inserts: www.polywater-haufftechnik.com/#sle.
      d. American Polywater Corporation; PGKD Modular Seals: www.polywater-haufftechnik.com/#sle.

J. Sealing Systems for Roof Penetrations: Premanufactured components and accessories as required to preserve integrity of roofing system and maintain roof warranty; suitable for conduits and roofing system to be installed; designed to accommodate existing penetrations where applicable.
   1. Products:
      a. Alta Products, LLC; Sigrist Pipe Chase Housing, Curbs, and Exit Seals: www.altaproductsllc.com/#sle.
      b. Menzies Metal Products; Electrical Roof Stack and Cap: www.menzies-metal.com/#sle.
      c. Menzies Metal Products; Electrical Retro Box: www.menzies-metal.com/#sle.

K. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.
   1. Products:
      a. Quickflash Weatherproofing Products, Inc: www.quickflashproducts.com/#sle.

L. Duct Bank Spacers: Nonmetallic; designed for maintaining conduit/duct spacing for concrete encasement in open trench installation; suitable for conduit/duct arrangement to be installed.
   1. Products:
      a. Advance Products & Systems, LLC; Duct Bank Spacers: www.apsonline.com/#sle

M. Firestop Sleeves: Listed; provide as required to preserve fire resistance rating of building elements.
   1. Products:
      a. HoldRite, a brand of Reliance Worldwide Corporation; HydroFlame Pro Series/HydroFlame Custom Built: www.holdrite.com/#sle.

N. Bore Spacers: Nonmetallic; designed for maintaining conduit/duct spacing for installation within casing; furnished with roller wheels to facilitate installation, openings to facilitate grout flow, and holes for stabilization cable; suitable for casing and conduit/duct arrangement to be installed.
   1. Products:
      a. Advance Products & Systems, LLC; Bore Spacers: www.apsonline.com/#sle.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive conduits.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install conduit in accordance with NECA 1.

C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.

D. Install intermediate metal conduit (IMC) in accordance with NECA 101.

E. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.

F. Conduit Routing:
   1. Unless dimensioned, conduit routing indicated is diagrammatic.
   2. When conduit destination is indicated without specific routing, determine exact routing required.
   3. Conceal conduits unless specifically indicated to be exposed.
   4. Conduits in the following areas may be exposed, unless otherwise indicated:
      a. Electrical rooms.
      b. Mechanical equipment rooms.
      c. Within joists in areas with no ceiling.
   5. Unless otherwise approved, do not route exposed conduits:
      a. Across floors.
      b. Across top of parapet walls.
      c. Across building exterior surfaces.
   6. Conduits installed underground or embedded in concrete may be routed in shortest possible manner unless otherwise indicated. Route other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
   7. Arrange conduit to maintain adequate headroom, clearances, and access.
   8. For power conduits, arrange conduit to provide no more than the equivalent of three 90 degree bends between pull points.

9. For low voltage conduits, arrange conduit to provide no more than the equivalent of two 90 degree bends between pull points.
10. Arrange conduit to provide no more than 150 feet between pull points.
11. Route conduits above water and drain piping where possible.
12. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
13. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
14. Maintain minimum clearance of 12 inches between conduits and hot surfaces. This includes, but is not limited to:
    a. Heaters.
    b. Hot water piping.
    c. Flues.
15. Group parallel conduits in same area on common rack.

G. Conduit Support:
1. Secure and support conduits in accordance with CEC using suitable supports and methods approved by authorities having jurisdiction; see Section 26 05 29.
2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
4. Use conduit strap to support single surface-mounted conduit.
    a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
5. Use metal channel/strut with accessory conduit clamps to support multiple parallel surface-mounted conduits.
6. Use conduit clamp to support single conduit from beam clamp or threaded rod.
7. Use trapeze hangers assembled from threaded rods and metal channel/strut with accessory conduit clamps to support multiple parallel suspended conduits.
8. Use nonpenetrating rooftop supports to support conduits routed across rooftops, where approved.
9. Use of spring steel conduit clips for support of conduits is not permitted.
10. Use of wire for support of conduits is not permitted.
11. Where conduit support intervals specified in CEC and NECA standards differ, comply with most stringent requirements.

H. Connections and Terminations:
1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.

3. Use suitable adapters where required to transition from one type of conduit to another.
4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
6. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.
7. Secure joints and connections to provide mechanical strength and electrical continuity.

I. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
2. Make penetrations perpendicular to surfaces unless otherwise indicated.
3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
4. Conceal bends for conduit risers emerging above ground.
5. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
6. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty.
7. Provide metal escutcheon plates for conduit penetrations exposed to public view.
8. Install firestopping to preserve fire resistance rating of partitions and other elements.

J. Underground Installation:
1. Provide trenching and backfilling; see Section 31 23 16.13.
2. Minimum Cover, Unless Otherwise Indicated or Required:
   a. Underground, Exterior: 18 inches.
   b. Under Slab on Grade: 12 inches to bottom of slab.

K. Embedment Within Structural Concrete Slabs (only where approved by Structural Engineer):
1. Secure conduits to prevent floating or movement during pouring of concrete.

L. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.

2. Where calculated in accordance with CEC for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
3. Where conduits are subject to earth movement by settlement or frost.

M. Conduit Sealing:
1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
a. Where conduits enter building from outside.
b. Where service conduits enter building from underground distribution system.
c. Where conduits enter building from underground.
d. Where conduits may transport moisture to contact live parts.
2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
a. Where conduits pass from outdoors into conditioned interior spaces.
b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
c. Where conduits penetrate coolers or freezers.
3. Where conduits cross boundaries of hazardous/classified locations, provide identified/listed sealing fittings or conduit mechanical seals as approved by authorities having jurisdiction; locate as indicated or in accordance with CEC.

N. Provide pull string in each empty conduit and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.

O. Provide grounding and bonding; see Section 26 05 26.

P. Identify conduits; see Section 26 05 53.

3.3 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

C. Correct deficiencies and replace damaged or defective conduits.

3.4 CLEANING

A. Clean interior of conduits to remove moisture and foreign matter.

3.5 PROTECTION

A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

SECTION 26 05 33.16
BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.

B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.

C. Floor boxes.

D. Underground boxes/enclosures.

E. 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 33.13 - Conduit for Electrical Systems:
   1. Conduit bodies and other fittings.
   2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.

D. Section 26 05 48 - Vibration and Seismic Controls for Electrical Systems.

E. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

F. Section 26 27 26 - Wiring Devices:
   1. Wall plates.
   2. Access floor boxes.

1.3 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.

C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.

D. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.

E. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013 (Reaffirmed 2020).

F. CEC - California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. SCTE 77 - Specifications for Underground Enclosure Integrity; 2017.

H. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

I. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

J. UL 508A - Industrial Control Panels; Current Edition, Including All Revisions.

K. UL 514A - Metallic Outlet Boxes; 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 CEC.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to CEC.
   4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to CEC.
   5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
   6. Coordinate the work with other trades to preserve insulation integrity.
   7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
   8. 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 cabinets and enclosures, floor boxes, and underground boxes/enclosures.
   1. Underground Boxes/Enclosures: Include reports for load testing in accordance with SCTE 77 certified by a professional engineer or an independent testing agency upon request.

B. Project Record Documents: Record actual locations for outlet and device boxes, pull boxes, cabinets and enclosures, floor boxes, and underground boxes/enclosures.

C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Keys for Lockable Enclosures: Two of each different key.

1.6 QUALITY ASSURANCE

A. Comply with requirements of CEC.

B. 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 products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 BOXES

A. General Requirements:
1. Do not use boxes and associated accessories for applications other than as permitted by CEC and product listing.
2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
3. Provide products listed, classified, and labeled as suitable for the purpose intended.
4. Where box size is not indicated, size to comply with CEC but not less than applicable minimum size requirements specified.
5. Provide grounding terminals within boxes where equipment grounding conductors terminate.

B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
3. Use cast iron boxes or cast aluminum boxes where exposed galvanized steel rigid metal conduit is used.
4. Use suitable concrete type boxes where flush-mounted in concrete.
5. Use suitable masonry type boxes where flush-mounted in masonry walls.
6. Use raised covers suitable for the type of wall construction and device configuration where required.
7. Use shallow boxes where required by the type of wall construction.
8. Do not use "through-wall" boxes designed for access from both sides of wall.
9. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
10. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
11. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.

12. Gangable or sectional boxes shall not be permitted.
13. Minimum Box Size, Unless Otherwise Indicated:
    a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 1-1/2 inch deep (100 by 38 mm) trade size.
    b. Communications Systems Outlets: 4 inch square by 2-1/8 inch (100 by 54 mm) trade size.
    c. Ceiling Outlets: 4 inch octagonal or square by 1-1/2 inch deep (100 by 38 mm) trade size.
14. Wall Plates: Comply with Section 26 27 26.
15. Manufacturers:
    a. Hubbell Incorporated; RACO Products: www.hubbell-rtb.com/#sle.
    b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
    c. Thomas & Betts Corporation: www.tnb.com/#sle.

C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
2. NEMA 250 Environment Type, Unless Otherwise Indicated:
    a. Indoor Clean, Dry Locations: Type 1, painted steel.
    b. Outdoor Locations: Type 3R, painted steel.
3. Junction and Pull Boxes Larger Than 100 cubic inches:
    a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
4. Cabinets and Hinged-Cover Enclosures, Other Than Junction and Pull Boxes:
    a. Provide lockable hinged covers, all locks keyed alike unless otherwise indicated.
5. Finish for Painted Steel Enclosures: Manufacturer's standard grey unless otherwise indicated.
6. Manufacturers:
    a. Cooper B-Line, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. Hoffman, a brand of Pentair Technical Products: www.hoffmanonline.com/#sle.
    c. Hubbell Incorporated; Wiegmann Products: www.hubbell-wiegmann.com/#sle.

D. Underground Boxes/Enclosures:
1. Description: In-ground, open bottom boxes furnished with flush, non-skid covers with legend indicating type of service and stainless steel tamper resistant cover bolts.
2. Size: As indicated on drawings.

3. Depth: As required to extend below frost line to prevent frost upheaval, but not less than 12 inches.
4. Provide logo on cover to indicate type of service. Covers shall read as follows for each system type:
   a. Power Systems: "ELECTRICAL"
   b. Site Lighting and/or Pole Lighting: "LIGHTING"
   c. Fire Alarm Systems: "FIRE ALARM"
   d. Other Low Voltage Systems: "COMMUNICATIONS"
5. Applications:
   a. Sidewalks/paved areas 6'-0" wide and smaller and Landscaped Areas Subject Only to Occasional Nondeliberate Vehicular Traffic: Use polymer concrete enclosures, with minimum SCTE 77 Tier 8 load rating.
   b. Parking Lots, Sidewalks/paved areas larger than 6'-0" wide, and in Areas Subject Only To Occasional Vehicular Traffic: Use reinforced concrete enclosures with galvanzed steel checker plate lids, with HS20-44 rating.
   c. Do not use polymer concrete enclosures in areas subject to deliberate vehicular traffic.
6. Polymer Concrete and Reinforced Concrete Underground Boxes/Enclosures: Comply with SCTE 77 and HS20-44.
   a. Manufacturers:
      1) Oldcastle Precast, Inc: www.oldcastleprecast.com/#sle.
   b. Combination fiberglass/polymer concrete boxes/enclosures are not acceptable. Use all-polymer concrete boxes/enclosures.

2.2 ACCESSORIES

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for boxes and facade materials to be installed.
   1. Manufacturers:
      a. Quickflash Weatherproofing Products, Inc: www.quickflashproducts.com/#sle.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive boxes.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and CEC.

D. Provide separate boxes for emergency power and normal power systems.

E. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.

F. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.

G. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.

H. Box Locations:
   1. Locate boxes to be accessible. Provide access panels in accordance with Section 08 31 00 as required where approved by the Architect.
   2. Unless dimensioned, box locations indicated are approximate.
   3. Locate boxes so that wall plates do not span different building finishes.
   4. Locate boxes so that wall plates do not cross masonry joints.
   5. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
   6. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches horizontal separation unless otherwise indicated.
   7. Acoustic-Rated Walls: Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches horizontal separation.
   8. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
      a. Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches separation where wall is constructed with individual noncommunicating stud cavities or protect both boxes with listed putty pads.
      b. Do not install flush-mounted boxes with area larger than 16 square inches or such that the total aggregate area of openings exceeds 100 square inches for any 100 square feet of wall area.
   9. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 26 05 33.13.
   10. Outlet boxes shall be installed at the locations and elevations shown on the drawings or specified herein. Make adjustments to locations as required by structural conditions and to suit coordination requirements of other trades.
   11. Locate switch outlet boxes on the latch side of doorways unless otherwise indicated.
   12. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:

13. Outlet boxes shall not be installed back to back nor shall through-wall boxes be permitted.
14. For boxes mounted in exterior walls, make sure that there is insulation behind outlet boxes to prevent condensation in boxes.
15. For outlets mounted above counters, benches or backsplashes, coordinate location and mounting heights with built-in units. Adjust mounting height with required location for equipment served.
    a. Concealed above accessible suspended ceilings.
    b. Within joists in areas with no ceiling.
    c. Electrical rooms.
    d. Mechanical equipment rooms.

I. Box Supports:
1. Secure and support boxes in accordance with CEC and Section 26 05 29 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide required seismic controls in accordance with Section 26 05 48.
3. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with CEC. Do not provide support from piping, ductwork, or other systems.
4. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
5. Use far-side support to secure flush-mounted boxes supported from single stud in hollow stud walls. Repair or replace supports for boxes that permit excessive movement.

J. Install boxes plumb and level.

K. Flush-Mounted Boxes:
1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.

L. Install boxes as required to preserve insulation integrity.

M. Underground Boxes/Enclosures:
1. Install enclosure on gravel base, minimum 6 inches deep.
2. Flush-mount enclosures located in concrete or paved areas.
3. Mount enclosures located in landscaped areas with top at 1 inch above finished grade.

4. Install additional bracing inside enclosures in accordance with manufacturer's instructions to minimize box sidewall deflections during backfilling. Backfill with cover bolted in place.

N. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

O. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

P. Close unused box openings.

Q. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use. Leave no unused openings in any box. Install close-up plugs as required to seal all openings and removed knockouts.

R. Provide grounding and bonding in accordance with Section 26 05 26.

S. Identify boxes in accordance with Section 26 05 53.

3.3 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.4 PROTECTION

A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION

SECTION 26 05 33.23
SURFACE RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Surface raceway systems.

B. Wireways.

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 33.13 - Conduit for Electrical Systems.

D. Section 26 05 33.16 - Boxes for Electrical Systems.

E. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

F. Section 26 27 26 - Wiring Devices: Receptacles.

G. Section 27 10 00 - Structured Cabling: Voice and data jacks.

1.3 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

B. CEC - California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.

D. UL 5A - Nonmetallic Surface Raceways and Fittings; Current Edition, Including All Revisions.

E. UL 870 - Wireways, Auxiliary Gutters, and Associated Fittings; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the placement of raceways with millwork, furniture, equipment, etc. installed under other sections or by others.
2. Coordinate rough-in locations of outlet boxes provided under Section 26 05 33.16 and conduit provided under Section 26 05 33.13 as required for installation of raceways provided under this section.
3. Verify minimum sizes of raceways with the actual conductors and components to be installed.
4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:

1. Do not install raceways until final surface finishes and painting are complete.
2. Do not begin installation of conductors and cables until installation of raceways is complete between outlet, junction and splicing points.

1.5 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets including dimensions, knockout sizes and locations, materials, fabrication details, finishes, service condition requirements, and accessories.
   1. Surface Raceway Systems: Include information on fill capacities for conductors and cables.

B. Shop Drawings:
   1. Pre-wired Surface Raceway Systems: Provide plan and elevation views including dimensioned locations of wiring devices and circuiting arrangements.
   2. Wireways: Provide dimensioned plan and elevation views including adjacent equipment with all required clearances indicated.

C. Manufacturer's 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.

1.6 QUALITY ASSURANCE

A. Comply with requirements of CEC.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three 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 products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 RACEWAY REQUIREMENTS

A. Provide all components, fittings, supports, and accessories required for a complete raceway system.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Do not use raceways for applications other than as permitted by CEC and product listing.

2.2 SURFACE RACEWAY SYSTEMS

A. General:

1. Surface nonmetallic raceway is to be utilized in dry interior locations only as covered in Article 352 Part B of the National Electrical Code, as adopted by the National Fire Protection Association and as approved by the American National Standards Institute. The Raceway System shall be UL Listed under File Nos. E90378 Guide RJTX and E90377 Guide RJYT and CSA certified under File No. 350.
2. The raceway and all system components must be UL Listed and exhibit nonflammable self-extinguishing characteristics, tested to comparable specifications of UL 94V-0.

B. Surface Nonmetallic Raceways: Listed and labeled as complying with UL 5A.
   1. Multi-Compartment Raceway:
      a. Raceway:
         1) The raceway base, cover, and divider shall be available in 8' lengths. The system shall be manufactured of rigid PVC compound and have a smooth texture and white color.
         2) The raceway shall be a two-piece design with a base and snap-on cover. Total width shall be 6.68" x 1.75" deep with an approximate thickness of .10". The raceway shall be provided with three wiring channels formed by integral barriers in the base. The base shall have one wiring channel with integral ribs in the bottom to accept divider sections. Divider walls, which snap on the base forming separate channels.
         3) The base shall have three wiring channels separated by two integral barriers. Channels must accommodate standard power and communication devices without restricting capacity of adjacent channels. Barriers shall be removable to form one or two channels and divider walls must be available to replace removed barriers.
         4) The cover shall have flanges to snap-on the base. The divider shall have integral slots that snap-on the base after the integral barrier has been removed.
         5) Fiber Optic / Category Cable Radius Full Capacity Corners and Fittings: A complete line of full capacity corner elbows must be available to maintain a controlled 2" cable bend radius which meets the specifications for Fiber Optic and Category cabling and exceeds the TIA / EIA 569 requirements for communications pathways. Provide fittings as required. Fittings shall comply with this requirement regardless of type of wiring installed.
         6) A full compliment of fittings shall be available including but not limited to flat, internal and external elbows, tees, entrance fittings, cover clips, and end caps. They shall overlap the cover and base to hide uneven cuts and color matched to raceway base and cover. All fittings shall include a base where applicable to eliminate mitering. A transition fitting shall be available to adapt to other raceways.
      b. Device Brackets and Plates:

1) Device brackets shall be available for mounting standard devices in-line or offset from the raceway. A device bracket shall provide up to four single-gang openings at one location. Faceplates shall fit flush in the device plate.

c. Manufacturer:
1) Legrand Wiremold 5400 Series : www.legrand.us/#sle.

2.3 WIREWAYS

A. Manufacturers:
1. Cooper B-Line, a division of Cooper Industries: www.cooperindustries.com/#sle.
2. Hoffman, a brand of Pentair Technical Products: www.hoffmanonline.com/#sle.
3. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.

B. Description: Lay-in wireways and wiring troughs with removable covers; listed and labeled as complying with UL 870.

C. Wireway Type, Unless Otherwise Indicated:
1. Indoor Clean, Dry Locations: NEMA 250, Type 1, painted steel with screw-cover.
2. Outdoor Locations: NEMA 250, Type 3R, painted steel with screw-cover; include provision for padlocking.

D. Finish for Painted Steel Wireways: Manufacturer's standard grey unless otherwise indicated.

E. Minimum Wireway Size: 4 by 4 inches unless otherwise indicated.

F. Where wireway size is not indicated, size to comply with CEC but not less than applicable minimum size requirements specified.

2.4 SOURCE QUALITY CONTROL

A. Factory test each production unit for pre-wired surface raceway systems to verify proper wiring.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that outlet boxes and conduit terminations are installed in proper locations and are properly sized in accordance with CEC to accommodate raceways.

C. Verify that mounting surfaces are ready to receive raceways and that final surface finishes are complete, including painting.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Install raceways plumb and level.

D. Arrange wireways and associated raceway connections to comply with CEC, including but not limited to requirements for deflected conductors and wireways used as pullboxes. Increase size of wireway where necessary.

E. Secure and support raceways in accordance with Section 26 05 29 at intervals complying with CEC and manufacturer's requirements.

F. Close unused raceway openings.

G. Provide grounding and bonding in accordance with Section 26 05 26.

H. Identify raceways in accordance with Section 26 05 53.

I. Prior to and during installation, refer to system layout drawing containing all elements of the system. Installer shall comply with the detailed manufacturer’s instruction sheets, which accompany system components, or the complete system instruction sheets, whichever is applicable. Install per CEC 352.

J. Raceway shall be cut to a smooth, even surface, without burrs or exposed sharp edges. System shall be mechanically continuous and connected to all electrical outlets, and conduits in accordance with manufacturers’ instructions.

K. Provide labels showing circuit and panels numbers at each device per owner’s requirements.

3.3 FIELD QUALITY CONTROL

A. Raceway shall be securely supported at intervals not exceeding 10 feet or in accordance with manufacturer’s installation sheets.

B. All raceway systems shall be installed complete, including insulating bushings and inserts where required by manufacturer’s installation sheets. All unused raceway openings shall be closed.

C. Provide clear ¼ inch wide label with black, typed 11 point lettering on all receptacle faceplates showing panelboard name and circuit number supplying receptacle, unless otherwise noted.

D. Inspect raceways for damage and defects.

E. Surface Raceway Systems with Integrated Devices: Test each wiring device to verify operation and proper polarity.

F. Correct wiring deficiencies and replace damaged or defective raceways.

3.4 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.5 PROTECTION

A. Protect installed raceways from subsequent construction operations.

END OF SECTION

SECTION 26 05 48
VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Vibration isolation requirements.

B. Seismic control requirements.
   1. Includes requirements for seismic qualification of equipment not specified in this section.

C. Vibration-isolated equipment support bases.

D. Vibration isolators.

E. Seismic restraint systems.

1.2 RELATED REQUIREMENTS

A. Section 26 05 29 - Hangers and Supports for Electrical Systems.

1.3 DEFINITIONS

A. Electrical Component: Where referenced in this section in regards to seismic controls, applies to any portion of the electrical system subject to seismic evaluation in accordance with applicable codes, including distributed systems (e.g., conduit, cable tray).

B. Seismic Restraint: Structural members or assemblies of members or manufactured elements specifically designed and applied for transmitting seismic forces between components and the seismic force-resisting system of the structure.

1.4 REFERENCE STANDARDS

A. CBSC (California Building Standards Commission) - California Building Code; 2022 Edition Adopted by Authority Having Jurisdiction, including all applicable amendments and supplements

B. CEC - California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, including all applicable amendments and supplements

C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

D. ASCE 19 - Structural Applications of Steel Cables for Buildings; 2016.

E. ASHRAE (HVACA) - ASHRAE Handbook - HVAC Applications; Most Recent Edition Cited by Referring Code or Reference Standard.

F. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2022.

G. FEMA 413 - Installing Seismic Restraints for Electrical Equipment; 2004.

H. FEMA E-74 - Reducing the Risks of Nonstructural Earthquake Damage; 2012.

I. ICC-ES AC156 - Acceptance Criteria for Seismic Certification by Shake-Table Testing of Nonstructural Components; 2010, with Editorial Revision (2015).

J. MFMA-4 - Metal Framing Standards Publication; 2004.

K. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

L. SMACNA (SRM) - Seismic Restraint Manual Guidelines for Mechanical Systems; 2008.

1.5 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate selection and arrangement of vibration isolation and/or seismic control components with the actual equipment to be installed.
   2. Coordinate the work with other trades to provide additional framing and materials required for installation.
   3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
   4. Seismic Controls:
      a. Coordinate the arrangement of seismic restraints with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
      b. Coordinate the work with other trades to accommodate relative positioning of essential and nonessential components in consideration of seismic interaction.
   5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured.

1.6 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for products, including materials, fabrication details, dimensions, and finishes.
   1. Vibration Isolators: Include rated load capacities and deflections; include information on color coding or other identification methods for spring element load capacities.
   2. Seismic Controls: Include seismic load capacities.

B. Seismic Design Data:
   1. Compile information on project-specific characteristics of actual installed electrical components necessary for determining seismic design forces required to design appropriate seismic controls, including but not limited to the following.
      a. Component operating weight and center of gravity.
      b. Component elevation in the building in relation to the roof elevation (z/h).
      c. Component importance factor (Ip).

d. For distributed systems, component materials and connection methods.
e. Component amplification factor (ap) and component response modification factor (Rp), determined in accordance with ASCE 7 tables.
f. Applicability of overstrength factor (for certain anchorage in concrete and masonry).

2. Include structural calculations, stamped or sealed by seismic controls designer, demonstrating suitability of seismic controls for seismic design forces.

C. Certification for seismically qualified equipment; identify basis for certification.

D. Evaluation Reports: For products specified as requiring evaluation and recognition by a qualified evaluation service, provide current evaluation reports.

1.7 QUALITY ASSURANCE

A. Comply with NFPA 70.

B. Comply with applicable building code.

C. Seismic Controls Designer Qualifications: Registered professional engineer licensed in the State in which the Project is located and with minimum five years experience designing seismic restraints for nonstructural components.
1. Designer may be employed by the manufacturer of the seismic restraint products.

D. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 VIBRATION ISOLATION REQUIREMENTS

A. Design and provide vibration isolation systems to reduce vibration transmission to supporting structure from vibration-producing electrical equipment and/or electrical connections to vibration-isolated equipment.

B. Comply with applicable general recommendations of ASHRAE (HVACA), where not in conflict with other specified requirements:

C. General Requirements:
1. Select vibration isolators to provide required static deflection.
2. Select vibration isolators for uniform deflection based on distributed operating weight of actual installed equipment.
3. Select seismic type vibration isolators to comply with seismic design requirements, including conditions of equipment seismic certification where applicable.
4. Select vibration isolators for outdoor equipment to comply with wind design requirements.

5. Select vibration-isolated equipment support bases and associated vibration isolators to provide minimum 2-inch operating clearance beneath base unless otherwise indicated.

D. Equipment Isolation:
   1. Transformers:
      a. Specified vibration isolators are in addition to any factory-installed internal core and coil assembly vibration isolators unless otherwise indicated.
      b. Floor-Mounted Transformers, Seismic Applications: Use seismic type restrained spring isolators.
      c. Suspended Transformers, Seismic Applications: Use seismic type spring isolator hangers.
      d. Wall-Mounted Transformers, Seismic Applications: Use seismic type resilient material isolator mounts.
      e. Minimum Static Deflection:
         1) Transformers Mounted on Grade-Level Slabs: 0.25 inch deflection unless otherwise indicated.
         2) Transformers Mounted at Above-Grade Levels: 0.5 inch deflection unless otherwise indicated.
   2. Engine Generators:
      a. Specified vibration isolators are in addition to any factory-installed internal vibration isolators between generator set and integral base unless otherwise indicated; obtain generator set manufacturer approval of applied vibration isolation.
      b. Seismic Applications: Use seismic type restrained spring isolators.
      c. Provide vibration-isolated concrete inertia bases where equipment is not designed to be point loaded.
      d. Minimum Static Deflection:
         1) Generators Mounted on Grade-Level Slabs: 1 inch deflection unless otherwise indicated.
         2) Generators Mounted at Above-Grade Levels: 2 inch deflection unless otherwise indicated.

E. Conduit Isolation:
   1. Use flexible conduit or cable for electrical connections to vibration-isolated equipment, including equipment installed under other sections or by others.
      a. Minimum Length: 3 feet unless otherwise indicated.
   2. Vibration Isolators:
      a. Provide vibration isolators for conduit supports:
         1) Located within 50 feet of connected vibration-isolated equipment where flexible connection to equipment is not possible.
         2) For conduits over 2 inch trade size located below or within 50 feet of noise-sensitive areas indicated.

b. Minimum Static Deflection:
   1) First Three Supports Closest to Isolated Equipment: Same as static deflection of equipment; maximum of 2 inch deflection required.
   2) Remainder of Supports: 0.75 inch deflection unless otherwise indicated.
c. Suspended Conduits, Seismic Applications: Use seismic type spring isolator hangers.
d. Use modular seal where vibration-isolated conduits penetrate building elements (e.g. walls, floors) arranged to prevent vibration transmission to structure.

2.2 SEISMIC CONTROL REQUIREMENTS

A. Component Importance Factor (Ip): Electrical components essential to life safety to be assigned a component importance factor (Ip) of 1.5 as indicated or as required. This includes but is not limited to:
   1. Electrical components required to function for life safety purposes after an earthquake.
   2. Electrical components that support or otherwise contain hazardous substances.

B. Seismic Qualification of Equipment:
   1. Provide special certification for electrical equipment furnished under other sections and assigned a component importance factor (Ip) of 1.5, certifying that equipment will remain operable following a design level earthquake.
   2. Seismic qualification to be by shake table testing in accordance with recognized testing standard procedure, such as ICC-ES AC156, acceptable to authorities having jurisdiction.
   3. Notify Architect and obtain direction where mounting restrictions required by conditions of seismic certification conflict with specified requirements.
   4. Seismically qualified equipment to be furnished with factory-installed labels referencing certificate of compliance and associated mounting restrictions.

C. Premanufactured Modular Electrical Equipment: Where not otherwise seismically qualified, premanufactured modules 6 feet high and taller furnished under other sections to be designed in accordance with seismic provisions for nonbuilding structures.

D. Seismic Restraints:
   1. Provide seismic restraints for electrical components except where exempt according to applicable codes and specified seismic design criteria, as approved by authorities having jurisdiction.
   2. Seismic Restraint Exemptions:
      a. Exemptions for Seismic Design Category D, E, and F:
         1) Discrete electrical components that are positively attached to the structure where either of the following apply:

(a) The component weighs 400 pounds or less, has a center of mass located 4 feet or less above the adjacent floor level, flexible connections are provided between the component and associated ductwork, piping, and conduit, and the component importance factor (Ip) is 1.0.
(b) The component weighs 20 pounds or less or, in the case of a distributed system, 5 pounds per foot or less.

b. Conduit, Cable Tray, and Raceway Exemptions, All Seismic Design Categories:
1) Raceways with component importance factor (Ip) of 1.0 where flexible connections are provided between cable tray or raceway and associated components, where cable tray or raceway is positively attached to the structure, and where one of the following apply:
(a) Trapeze supported conduits, cable trays, or raceways with trapeze assemblies using 3/8 inch diameter rod hangers not exceeding 12 inches in length from support point connection to the supporting structure, and the total weight supported by any single trapeze is 100 pounds or less.
(b) Trapeze supported conduits, cable trays, or raceways with trapeze assemblies using 1/2 inch diameter rod hangers not exceeding 12 inches in length from support point connection to the supporting structure, and the total weight supported by any single trapeze is 200 pounds or less.
(c) Trapeze supported conduits, cable trays, or raceways with trapeze assemblies using 1/2 inch diameter rod hangers not exceeding 24 inches in length from support point connection to the supporting structure, and the total weight supported by any single trapeze is 100 pounds or less.
(d) Hanger supported conduits, cable trays, or raceways with individual rod hangers 3/8 inch or 1/2 inch in diameter not exceeding 12 inches in length from support point connection to the supporting structure, and the total weight supported by any single rod is 50 pounds or less.
2) Conduits less than 2-1/2 inch trade size.

c. Lighting Exemptions, All Seismic Design Categories:
1) Suspended luminaires where attachments are designed to accommodate 1.4 times the operating weight acting in both the vertical and horizontal directions and connections to structure allow for 360 degree range of motion in the horizontal plane; arrange to prevent impact between luminaires and the structure or other nonstructural components.
2) Lay-in luminaires weighing less than 56 pounds secured to ceiling grid and provided with safety wires in accordance with ASTM E580/E580M.

3. Comply with applicable general recommendations of the following, where not in conflict with applicable codes, seismic design criteria, or other specified requirements:
   a. ASHRAE (HVACA).
   b. FEMA 413.
   c. FEMA E-74.
   d. SMACNA (SRM).
4. Seismic restraint capacities to be verified by a Nationally Recognized Testing Laboratory (NRTL) or certified by an independent third-party registered professional engineer acceptable to authorities having jurisdiction.
5. Seismic Type Vibration Isolators:
   a. Comply with seismic design requirements, including conditions of equipment seismic certification where applicable.
6. Seismic Restraint Systems:
   a. Except where otherwise restricted, use of either cable or rigid restraints is permitted.
   b. Use only cable restraints to restrain vibration-isolated electrical components, including distributed systems.
   c. Use only one restraint system type for a given electrical component or distributed system (e.g., conduit, cable tray) run; mixing of cable and rigid restraints on a given component/run is not permitted.
   d. Size restraint elements, including anchorage, to resist seismic loads as necessary to restrain electrical component in all lateral directions; consider bracket geometry in anchor load calculations.
   e. Use rod stiffener clips to attach bracing to hanger rods as required to prevent rod buckling from vertical (upward) compressive load introduced by cable or rigid restraints loaded in tension, in excess of downward tensile load due to supported electrical component weight.
   f. Select hanger rods and associated anchorage as required to accommodate vertical (downward) tensile load introduced by rigid restraints loaded in compression, in addition to downward tensile load due to supported electrical component weight.
   g. Clevis hangers may only be used for attachment of transverse restraints; do not use for attachment of longitudinal restraints.
   h. Where seismic restraints are attached to clevis hangers, provide clevis bolt reinforcement accessory to prevent clevis hanger deformation.
   i. Do not introduce lateral loads on open bar joist chords or the weak axis of beams, or loads in any direction at other than panel points unless approved by project Structural Engineer of Record.

j. Manufacturer's certified seismic restraint design may be submitted as an alternative to project-specific design and documentation, subject to approval of authorities having jurisdiction.

E. Seismic Attachments:
1. Attachments to be bolted, welded, or otherwise positively fastened without consideration of frictional resistance produced by the effects of gravity.
2. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) or qualified evaluation service acceptable to authorities having jurisdiction for compliance with applicable building code, and qualified for seismic applications; concrete anchors to be qualified for installation in both cracked and uncracked concrete.
3. Do not use power-actuated fasteners.
4. Do not use friction clips (devices that rely on mechanically applied friction to resist loads). Beam clamps may be used for supporting sustained loads where provided with restraining straps.
5. Comply with anchor minimum embedment, minimum spacing, minimum member thickness, and minimum edge distance requirements.
6. Concrete Housekeeping Pads:
a. Increase size of pad as required to comply with anchor requirements.
b. Provide pad reinforcement and doweling to ensure integrity of pad and connection and to provide adequate load path from pad to supporting structure.

F. Seismic Interactions:
1. Include provisions to prevent seismic impact between electrical components and other structural or nonstructural components.
2. Include provisions such that failure of a component, either essential or nonessential, does not cause the failure of an essential component.

G. Seismic Relative Displacement Provisions:
1. Use suitable fittings or flexible connections to accommodate:
a. Relative displacements at connections between components, including distributed systems (e.g., conduit, cable tray); do not exceed load limits for equipment utility connections.
b. Relative displacements between component supports attached to dissimilar parts of structure that may move differently during an earthquake.
c. Design displacements at seismic separations.
d. Anticipated drifts between floors.

2.3 VIBRATION-ISOLATED EQUIPMENT SUPPORT BASES

A. Manufacturers:
1. Vibration-Isolated Equipment Support Bases:
a. Mason Industries; BR Restrained Bridge Mounts: www.mason-ind.com/#sle.

B. Vibration-Isolated Structural Steel Bases:
   1. Description: Engineered structural steel frames with integral mounting provisions for vibration isolators, sized and configured for mounting of equipment.

C. Vibration-Isolated Concrete Inertia Bases:
   1. Description: Concrete-filled engineered steel forms with integral mounting provisions for vibration isolators, sized and configured for mounting of equipment.
   2. Minimum Base Depth: 6 inches.
   3. Minimum Base Mass (Including Concrete): 1.5 times weight of supported equipment.
   4. Concrete Reinforcement: Welded or tied reinforcing bars running both ways in a single layer.
   5. Concrete: Filled on site with minimum 3000 psi concrete.

2.4 VIBRATION ISOLATORS

A. Manufacturers:
   1. Vibration Isolators:
      a. Mason Industries; BR Restrained Bridge Mounts: www.mason-ind.com/#sle.

B. General Requirements:
   1. Resilient Materials for Vibration Isolators: Oil, ozone, and oxidant resistant.
   2. Spring Elements for Spring Isolators:
      a. Color code or otherwise identify springs to indicate load capacity.
      b. Lateral Stability: Minimum lateral stiffness to vertical stiffness ratio of 0.8.
      c. Designed to operate in the linear portion of their load versus deflection curve over deflection range of not less than 50 percent above specified deflection.
      d. Designed to provide additional travel to solid of not less than 50 percent of rated deflection at rated load.
      e. Selected to provide designed deflection of not less than 75 percent of specified deflection.
      f. Selected to function without undue stress or overloading.
   3. Seismic Snubbing Elements for Seismic Isolators:
      a. Air Gap: Between 0.125 inches and 0.25 inches unless otherwise indicated.
      b. Points of Contact: Cushioned with resilient material, minimum 0.25 inch thick; capable of being visually inspected for damage and replaced.

C. Vibration Isolators for Seismic Applications:
   1. Resilient Material Isolator Mounts, Seismic:
      a. Description: Mounting assemblies for bolting equipment to supporting structure utilizing elastomeric (e.g., neoprene, rubber) isolator material; specifically designed and rated for seismic applications with integral snubbing in all directions.
   2. Spring Isolator Hangers, Seismic:

a. Description: Isolator assembly designed for installation in hanger rod suspension system utilizing single or multiple free-standing, laterally stable steel spring(s) in series with an elastomeric element for the lower hanger rod connection; specifically designed and rated for seismic applications with vertical limit stop to prevent upward travel of hanger rod and cushion impact.
b. Designed to accommodate misalignment of bottom hanger rod up to 30 degrees (plus/minus 15 degrees) without short-circuiting of isolation.

2.5 SEISMIC RESTRAINT SYSTEMS

A. Manufacturers:
1. Seismic Restraint Systems:
a. AFCON, a brand of Anvil International: www.anvilintl.com/#sle.
b. Eaton Corporation: www.eaton.com/#sle.
c. Mason Industries: www.mason-ind.com/#sle.

B. Description: System components and accessories specifically designed for field assembly and attachment of seismic restraints.

C. Cable Restraints:
1. Comply with ASCE 19.
2. Cables: Pre-stretched, galvanized steel wire rope with certified break strength.
3. Cable Connections: Use only swaged end fittings. Cable clips and wedge type end fittings are not permitted in accordance with ASCE 19.
4. Use protective thimbles for cable loops where potential for cable damage exists.

D. Rigid Restraints: Use MFMA-4 steel channel (strut), steel angle, or steel pipe for structural element; suitable for both compressive and tensile design loads.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that mounting surfaces are ready to receive vibration isolation and/or seismic control components and associated attachments.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 CODE-REQUIRED SPECIAL INSPECTIONS

A. Arrange work to accommodate tests and/or inspections performed by Special Inspection Agency employed by Owner or Architect in accordance with Section 01 45 33 and statement of special inspections as required by applicable building code.

B. Frequency of Special Inspections: Where special inspections are designated as continuous or periodic, arrange work accordingly.
1. Continuous Special Inspections: Special Inspection Agency to be present in the area where the work is being performed and observe the work at all times the work is in progress.

2. Periodic Special Inspections: Special Inspection Agency to be present in the area where work is being performed and observe the work part-time or intermittently and at the completion of the work.

C. Prior to starting work, Contractor to submit written statement of responsibility to authorities having jurisdiction and to Owner acknowledging awareness of special requirements contained in the statement of special inspections.

D. Special Inspection Agency services do not relieve Contractor from performing inspections and testing specified elsewhere.

3.3 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install products in accordance with applicable requirements of NECA 1 (general workmanship).

C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.

D. Secure fasteners according to manufacturer's recommended torque settings.

E. Install flexible conduit and cable connections to provide sufficient slack for vibration isolation and/or seismic relative displacements as indicated or as required.

F. Vibration Isolation Systems:
   1. Vibration-Isolated Equipment Support Bases:
      a. Provide specified minimum clearance beneath base.
   2. Spring Isolators:
      a. Position equipment at operating height; provide temporary blocking as required.
      b. Lift equipment free of isolators prior to lateral repositioning to avoid damage to isolators.
      c. Level equipment by adjusting isolators gradually in sequence to raise equipment uniformly such that excessive weight or stress is not placed on any single isolator.
   3. Isolator Hangers:
      a. Use precompressed isolator hangers where required to facilitate installation and prevent damage to equipment utility connection provisions.
      b. Locate isolator hangers at top of hanger rods in accordance with manufacturer's instructions.
   4. Clean debris from beneath vibration-isolated equipment that could cause short-circuiting of isolation.
   5. Use elastomeric grommets for attachments where required to prevent short-circuiting of isolation.
   6. Adjust isolators to be free of isolation short circuits during normal operation.

7. Do not overtighten fasteners such that resilient material isolator pads are compressed beyond manufacturer's maximum recommended deflection.

G. Seismic Controls:
1. Provide specified snubbing element air gap; remove any factory-installed spacers, debris or other obstructions.
2. Use only specified components, anchorage, and hardware evaluated by seismic design. Comply with conditions of seismic certification where applicable.
3. Where mounting hole diameter exceeds bolt diameter by more than 0.125 inch, use epoxy grout, elastomeric grommet, or welded washer to reduce clearance to 0.125 inch or less.
4. Equipment with Sheet Metal Housings:
   a. Use Belleville washers to distribute stress over a larger surface area of the sheet metal connection interface as approved by manufacturer.
   b. Attach additional steel as approved by manufacturer where required to transfer loads to structure.
   c. Where mounting surface is irregular, do not shim housing; reinforce housing with additional steel as approved by manufacturer.
5. Concrete Housekeeping Pads:
   a. Size in accordance with seismic design to meet anchor requirements.
   b. Install pad reinforcement and doweling in accordance with seismic design to ensure integrity of pad and associated connection to slab.
6. Seismic Restraint Systems:
   a. Do not attach seismic restraints and gravity supports to dissimilar parts of structure that may move differently during an earthquake.
   b. Install restraints within permissible angles in accordance with seismic design.
   c. Install cable restraints straight between component/run and structural attachment; do not bend around other nonstructural components or structural elements.
   d. Install cable restraints for vibration-isolated components slightly slack to prevent short-circuiting of isolation.
   e. Install hanger rod stiffeners where indicated using only specified clamps; do not weld stiffeners to hanger rod.

3.4 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect vibration isolation and/or seismic control components for damage and defects.

C. Vibration Isolation Systems:
1. Verify isolator static deflections.
2. Verify required clearance beneath vibration-isolated equipment support bases.
3. Verify vibration isolation performance during normal operation; investigate sources of isolation short circuits.

D. Seismic Controls:
   1. Verify snubbing element air gaps.

E. Correct deficiencies and replace damaged or defective vibration isolation and/or seismic control components.

END OF SECTION

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. CEC - California Electrical Code; 2022 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 CEC.

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 CEC.
   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 CEC.
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 CEC 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. CEC – California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. CECE - 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 CEC.
   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 CECE 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 05 83
WIRING CONNECTIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Electrical connections to equipment.

1.2 RELATED REQUIREMENTS

A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
B. Section 26 05 33.13 - Conduit for Electrical Systems.
C. Section 26 05 33.16 - Boxes for Electrical Systems.
D. Section 26 27 26 - Wiring Devices.
E. Section 26 28 16.16 - Enclosed Switches.

1.3 REFERENCE STANDARDS

A. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).
B. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2021.
C. CEC - California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
   2. Determine connection locations and requirements.
B. Sequencing:
   1. Install rough-in of electrical connections before installation of equipment is required.
   2. Make electrical connections before required start-up of equipment.

1.5 SUBMITTALS

A. Product Data: Provide wiring device manufacturer’s catalog information showing dimensions, configurations, and construction.

1.6 QUALITY ASSURANCE

A. Comply with requirements of CEC.
B. Products: Listed, classified, and labeled as suitable for the purpose intended.
C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.1 MATERIALS

A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
   1. Colors: Comply with NEMA WD 1.
   2. Cord Construction: CEC, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
   3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

B. Disconnect Switches: As specified in Section 26 28 16.16 and in individual equipment sections.

C. Wiring Devices: As specified in Section 26 27 26.

D. Flexible Conduit: As specified in Section 26 05 33.13.

E. Wire and Cable: As specified in Section 26 05 19.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.2 ELECTRICAL CONNECTIONS

A. Make electrical connections in accordance with equipment manufacturer's instructions.

B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.

C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.

D. Provide receptacle outlet to accommodate connection with attachment plug.

E. Provide cord and cap where field-supplied attachment plug is required.

F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.

H. Install terminal block jumpers to complete equipment wiring requirements.

I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION

SECTION 26 09 43
DIGITAL LIGHTING CONTROLS

DISTRIBUTED DIGITAL LIGHTING CONTROLS

1.1GENERAL

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, 2022 Edition
   2. NEMA - National Electrical Manufacturers Association
   3. FCC emission standards
   4. UL - Underwriters Laboratories, Inc. Listings
   5. UL 2043 - Standard for Fire Test for Heat and Visible Smoke Release for Discrete Products Installed in Air-Handling Spaces.
   6. UL 20 - General Use Switches, Plug Load Controls
   7. 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 [CEC].

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 CEC - 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. CEC – California Electrical Code; 2022 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 CEC.
   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 CEC.

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 CEC.
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 CEC.

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 CEC.

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 CEC.

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 27 26
WIRING DEVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Wall switches.

B. Receptacles.

C. Wall plates.

1.2 RELATED REQUIREMENTS

A. Section 26 05 33.16 - Boxes for Electrical Systems.

B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

C. Section 26 05 83 - Wiring Connections: Cords and plugs for equipment.

1.3 REFERENCE STANDARDS

A. FS W-C-596 - Connector, Electrical, Power, General Specification for; 2014h (Validated 2022).

B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush Mounted (General Specification); 2017g, with Amendment.

C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

D. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.

E. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).

F. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2021.

G. CEC – California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.

I. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.

J. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.

K. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.

3. Coordinate the placement of outlet boxes for wall switches with actual installed door swings. Switches shall be located on the strike side of the door, unless otherwise noted, and shall not be obstructed by the door when it is in the open position.
4. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
5. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

B. Sequencing:
1. Do not install wiring devices until final surface finishes and painting are complete.

1.5 SUBMITTALS

A. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

B. 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.

C. Operation and Maintenance Data:
1. GFCI Receptacles: Include information on status indicators.

D. Project Record Documents: Record actual installed locations of wiring devices.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. Screwdrivers for Tamper-Resistant Screws: Two for each type of screw.
2. Extra Wall Plates: One of each style, size, and finish.

1.6 QUALITY ASSURANCE

A. Comply with requirements of CEC.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Products: Listed, classified, and labeled as suitable for the purpose intended.

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 PROTECTION

A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.

PART 2 PRODUCTS

2.1 WIRING DEVICE APPLICATIONS

A. Provide wiring devices suitable for intended use and with ratings adequate for load served.

B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.

C. Provide weather resistant GFCI receptacles with specified weatherproof covers for receptacles installed outdoors or in damp or wet locations.

D. Provide tamper resistant receptacles for receptacles installed in dwelling units, kindergarten classrooms, and daycare facilities.

E. Provide GFCI protection for receptacles installed within 6 feet of sinks.

F. Provide GFCI protection for receptacles installed in kitchens.

G. Provide GFCI protection for receptacles serving electric drinking fountains.

H. Unless noted otherwise, do not use combination switch/receptacle devices.

2.2 WIRING DEVICE FINISHES

A. Provide wiring device finishes as described below unless otherwise indicated.

B. Wiring Devices Installed in Finished Spaces: White with white nylon wall plate.

C. Wiring Devices Installed in Finished Spaces : White with stainless steel wall plate.

D. Wiring Devices Installed in Unfinished Spaces: White with galvanized steel wall plate.

E. Wiring Devices Installed in Wet or Damp Locations: White with specified weatherproof cover.

2.3 WALL SWITCHES

A. Manufacturers:
   1. Hubbell Incorporated: www.hubbell.com/#sle.
   2. Leviton Manufacturing Company, Inc: www.leviton.com/#sle.
   3. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us/#sle.

B. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.

C. Standard Wall Switches: Industrial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.

2.4 RECEPTACLES

A. Manufacturers:
   1. Hubbell Incorporated: www.hubbell.com/#sle.
   2. Leviton Manufacturing Company, Inc: www.leviton.com/#sle.
   3. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us/#sle.

B. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
   2. NEMA configurations specified are according to NEMA WD 6.

C. Convenience Receptacles:
   1. Standard Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R; single or duplex as indicated on the drawings.
   2. Automatically Controlled Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R; controlled receptacle marking on device face per CEC; single or duplex as indicated on the drawings.

D. GFCI Receptacles:
   1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.
      a. Provide test and reset buttons of same color as device.
   2. Standard GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style.
   3. Weather Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as weather resistant type complying with UL 498 Supplement SD suitable for installation in damp or wet locations.

2.5 WALL PLATES

A. Manufacturers:
   1. Hubbell Incorporated: www.hubbell-wiring.com/#sle.
   2. Leviton Manufacturing Company, Inc: www.leviton.com/#sle.
   3. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us/#sle.

B. Wall Plates: Comply with UL 514D.
   1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
   2. Size: Standard.
   3. Screws: Metal with slotted heads finished to match wall plate finish.

C. Nylon Wall Plates: Smooth finish, high-impact thermoplastic.

D. Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.

E. Galvanized Steel Wall Plates: Rounded corners and edges, with corrosion resistant screws.

F. Premarked Wall Plates: Factory labeled as indicated; hot stamped for nylon wall plates and engraved for metal wall plates.

G. Weatherproof Covers for Wet or Damp Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected and identified as extra-duty type.

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 devices and conductors in accordance with CEC.

C. Verify that wall openings are neatly cut and will be completely covered by wall plates.

D. Verify that final surface finishes are complete, including painting.

E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

F. 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. Perform work in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.

B. Coordinate locations of outlet boxes provided under Section 26 05 33.16 as required for installation of wiring devices provided under this section.

1. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
2. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
3. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.

4. Locate receptacles for electric drinking fountains concealed behind drinking fountain according to manufacturer's instructions.

C. Install wiring devices in accordance with manufacturer's instructions.

D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

E. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.

F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.

G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.

H. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.

I. Where split-wired duplex receptacles are indicated, remove tabs connecting top and bottom receptacles.

J. Install wiring devices plumb and level with mounting yoke held rigidly in place.

K. Install wall switches with OFF position down.

L. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.

M. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.

N. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

O. Identify wiring devices in accordance with Section 26 05 53.

3.4 FIELD QUALITY CONTROL

A. Inspect each wiring device for damage and defects.

B. Operate each wall switch, wall dimmer, and fan speed controller with circuit energized to verify proper operation.

C. Test each receptacle to verify operation and proper polarity.

D. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.

E. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.5 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

3.6 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION

SECTION 26 28 13
FUSES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fuses.

B. Spare fuse cabinet.

1.2 RELATED REQUIREMENTS

A. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

B. Section 26 05 73 - Power System Studies: Additional criteria for the selection of protective devices specified in this section.

C. Section 26 28 16.16 - Enclosed Switches: Fusible switches.

1.3 REFERENCE STANDARDS

A. NEMA FU 1 - Low Voltage Cartridge Fuses; 2012.

B. CEC - California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

C. UL 248-1 - Low-Voltage Fuses - Part 1: General Requirements; Current Edition, Including All Revisions.

D. UL 248-4 - Low-Voltage Fuses - Part 4: Class CC Fuses; Current Edition, Including All Revisions.

E. UL 248-12 - Low-Voltage Fuses - Part 12: Class R Fuses; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate fuse clips furnished in equipment provided under other sections for compatibility with indicated fuses.
   2. Coordinate fuse requirements according to manufacturer's recommendations and nameplate data for actual equipment to be installed.
   3. 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 data sheets including voltage and current ratings, interrupting ratings, time-current curves, and current limitation curves.
   1. Spare Fuse Cabinet: Include dimensions.

B. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. Extra Fuses: One set(s) of three for each type and size installed.
2. Fuse Pullers: One set(s) compatible with each type and size installed.
3. Spare Fuse Cabinet Keys: Two.

1.6 QUALITY ASSURANCE

A. Comply with requirements of CEC.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three 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.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Bussmann, a division of Eaton Corporation: www.cooperindustries.com/#sle.

B. Littelfuse, Inc: www.littelfuse.com/#sle.

C. Mersen: ep-us.mersen.com/#sle.

2.2 APPLICATIONS

A. General Purpose Branch Circuits: Class RK1, time-delay.

B. Individual Motor Branch Circuits: Class RK1, time-delay.

C. In-Line Protection for Pole-Mounted Luminaires: Class CC, time-delay.

D. Primary Protection for Control Transformers: Class CC, time-delay.

2.3 FUSES

A. Provide products listed, classified, and labeled as suitable for the purpose intended.

B. Unless specifically indicated to be excluded, provide fuses for all fusible equipment as required for a complete operating system.

C. Provide fuses of the same type, rating, and manufacturer within the same switch.

D. Comply with UL 248-1.

E. Unless otherwise indicated, provide cartridge type fuses complying with NEMA FU 1, Class and ratings as indicated.

F. Voltage Rating: Suitable for circuit voltage.

G. Class R Fuses: Comply with UL 248-12.

H. Class CC Fuses: Comply with UL 248-4.

I. Selectivity: Where the requirement for selectivity is indicated, furnish products as required to achieve selective coordination.

2.4 SPARE FUSE CABINET

A. Description: Wall-mounted sheet metal cabinet with shelves and hinged door with cylinder lock, suitably sized to store spare fuses and fuse pullers specified.

B. Finish: Manufacturer's standard, factory applied grey finish unless otherwise indicated.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that fuse ratings are consistent with circuit voltage and manufacturer's recommendations and nameplate data for equipment.

B. Verify that mounting surfaces are ready to receive spare fuse cabinet.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Do not install fuses until circuits are ready to be energized.

B. Install fuses with label oriented such that manufacturer, type, and size are easily read.

C. Install spare fuse cabinet where indicated.

D. Identify spare fuse cabinet in accordance with Section 26 05 53.

END OF SECTION

SECTION 26 28 16.16
ENCLOSED SWITCHES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Enclosed safety switches.

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 of equipment and associated protective devices specified in this section.
F. Section 26 28 13 - Fuses.

1.3 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
C. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum); 2013.
D. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
E. CEC – California Electrical Code; 2022 Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
F. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
G. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
H. UL 98 - Enclosed and Dead-Front Switches; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades. Avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and within working clearances for electrical equipment required by CEC.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.

3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
4. 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 enclosed switches and other installed components and accessories.

B. Shop Drawings: Indicate outline and support point dimensions, voltage and current ratings, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
   1. Identify mounting conditions required for equipment seismic qualification.

C. Manufacturer's equipment seismic qualification certification.

D. Field Quality Control Test 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, installation, and starting of product.

F. Project Record Documents: Record actual locations of enclosed switches.

G. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 26 28 13 for requirements for spare fuses and spare fuse cabinets.

1.6 QUALITY ASSURANCE

A. Comply with requirements of CEC.

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. 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.

B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed switch internal components, enclosure, and finish.

1.8 FIELD CONDITIONS

A. Maintain ambient temperature between -22 degrees F and 104 degrees F during and after installation of enclosed switches.

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.

E. Source Limitations: Furnish enclosed switches and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

2.2 ENCLOSED SAFETY SWITCHES

A. Description: Quick-make, quick-break enclosed safety switches listed and labeled as complying with UL 98; heavy duty; ratings, configurations, and features as indicated on the drawings.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Seismic Qualification: Provide enclosed safety switches suitable for application under the seismic design criteria specified in Section 26 05 48 where required. Include certification of compliance with submittals.

D. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
   1. Altitude: Less than 6,600 feet.
   2. Ambient Temperature: Between -22 degrees F and 104 degrees F.

E. Horsepower Rating: Suitable for connected load.

F. Voltage Rating: Suitable for circuit voltage.

G. Short Circuit Current Rating:
   1. Provide enclosed safety switches, when protected by the fuses or supply side overcurrent protective devices to be installed, 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.
   2. Minimum Ratings:
      a. Switches Protected by Class H Fuses: 10,000 rms symmetrical amperes.
      b. Heavy Duty Single Throw Switches Protected by Class R, Class J, Class L, or Class T Fuses: 200,000 rms symmetrical amperes.
      c. Double Throw Switches Protected by Class R, Class J, or Class T Fuses: 100,000 rms symmetrical amperes.

H. Provide with switch blade contact position that is visible when the cover is open.

I. Fuse Clips for Fusible Switches: As required to accept fuses indicated.
   1. Where NEMA Class R fuses are installed, provide rejection feature to prevent installation of fuses other than Class R.

J. Conductor Terminations: Suitable for use with the conductors to be installed.

K. Provide insulated, groundable fully rated solid neutral assembly where a neutral connection is required, with a suitable lug for terminating each neutral conductor.

L. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.

M. 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.

N. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.

O. Heavy Duty Switches:
   1. Comply with NEMA KS 1.
   2. Conductor Terminations:
      a. Provide mechanical lugs unless otherwise indicated.
      b. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
   3. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.
      a. Provide means for locking handle in the ON position where required.

P. Provide the following features and accessories where indicated or where required to complete installation:
   1. Hubs: As required for environment type; sized to accept conduits to be installed.
   2. Integral fuse pullers.
   3. Auxiliary Switch: SPDT switch suitable for connection to system indicated, with auxiliary contact operation before switch blades open and after switch blades close.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that the ratings of the enclosed switches are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive enclosed safety switches.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and CEC.

D. Provide required support and attachment in accordance with Section 26 05 29.

E. Provide required seismic controls in accordance with Section 26 05 48.

F. Install enclosed switches plumb.

G. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.

H. Provide grounding and bonding in accordance with Section 26 05 26.

I. Provide fuses complying with Section 26 28 13 for fusible switches as indicated or as required by equipment manufacturer's recommendations.

J. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.

K. Identify enclosed switches in accordance with Section 26 05 53.

3.3 FIELD QUALITY CONTROL

A. Inspect and test in accordance with NETA ATS, except Section 4.

B. Perform inspections and tests listed in NETA ATS, Section 7.5.1.1.

C. Correct deficiencies and replace damaged or defective enclosed safety switches or associated components.

3.4 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.5 CLEANING

A. Clean dirt and debris from switch 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. CEC - California Electrical Code; 2022 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 CEC.

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 CEC.

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 CEC.

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. CEC – California Electrical Code; 2022 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 CEC.

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 CEC.

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 CEC.

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 05 00
COMMON WORK RESULTS FOR COMMUNICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. This section specifies the basic materials and methods for all low voltage pathways installation work included under Division 27 and 28 and where those requirements differ from the requirements of this section, the more stringent shall govern.

B. This section adds refinements to Division 26 that apply to Communications and extra-low-voltage systems.

1.02 SCOPE

A. Materials and/or methods for the following.
1. Communication services
2. Grounding
3. Fasteners
4. Hangers and supports
5. Conduits/Backboxes/Raceways
6. Underground
7. Sleeves and penetrations

1.03 SUBMITTALS

A. Submittals shall be done in accordance with District submittal procedures, see Division 01 Submittals for requirements.

1.04 RELATED REQUIREMENTS

A. Division 07 – Thermal and Moisture Protection

B. Division 26 – Electrical

C. 27 00 00 – Communications Basic Requirements

1.05 REFERENCES

A. ANSI American Nation Standards Institute

B. UL Underwriters Laboratory

C. California Building Code (CBC)

D. California Electrical Code (CEC)

1.06 WARRANTY

A. Refer to Division 01 -– Warranties

PART 2 – PRODUCTS

2.01 All products used on this project shall bear the label and be approved by Underwriters Laboratories unless otherwise approved in writing by District.

2.02 FASTENERS

A. Mounting hardware and anchors recommended by the manufacturer of any material that shall be mounted to the building or structure.
   1. Sheet rock / drywall / wall board: Easy Anchor, toggle bolt, other spread type anchor with load distribution, or approved equal.
   2. Concrete / cinder block / solid masonry: Expanding compression type lag, expanding compression type bolt, expanding compression type, all-thread with nuts, or approved equal.
   3. Tile / Stucco / hollow masonry: Toggle bolts or approved equal.
   4. Wood: Lag screws, wood screws, or approved equal.
   5. Metal: Beam clamps, sheet metal screws, self-drilling screws or approved equal.

2.03 HANGERS AND SUPPORT

A. D-RINGS
   1. Commercial grade

B. J-HOOKS
   1. Panduit J-Pro

2.04 SURFACE RACEWAY

A. Existing: Match raceway already installed in facility, unless otherwise instructed in project documentation.
B. New: Wiremold 2300 and 5400 raceway systems are acceptable.

2.05 CONDUITS AND ACCESSORIES

A. CONDUITS
   1. See Division 26 for requirements.

   2. Conduit for Fire Alarm applications shall be red in color (non-accessible areas are excluded).

   3. All new conduits shall be sized accordingly to achieve a 40% maximum fill ratio with initial cables installed.

   4. Underground conduits shall be Schedule 40 PVC.

B. INNERDUCT
   1. Orange corrugated HDPE (High Density Polythylene) Innerduct shall be used for fiber optic cable protection in interior locations.

   2. Fabric multi-cell innerduct is approved for underground conduits 2” and larger.

C. FITTINGS:
   1. See Division 26 for requirements.

   2. Conduit bodies, condulets, “LBs”, pulling elbows, and any sharp bend fittings are strictly prohibited for communication Cat6A and fiber optic cables. Appropriate conduit sweeps are required.

D. PULL LINE
   1. Minimum 1/8" diameter, or larger braided line of polypropylene or continuous fiber polyolefin. The minimum breaking strength of 1/8 in. line is 200 lbs.

2.06 BACKBOXES, JUNCTION BOXES AND FLOOR BOXES

A. Galvanized one-piece or welded pressed steel type. Boxes shall be at least 2-1/8" deep, 4" square for 1 or 2 gang devices, with device rings. Boxes mounted in wall or ceiling finishes shall be furnished with device rings to match wall surface depth. Provide blank cover for all boxes without fixture or device.

B. Provide blank cover for all surface boxes without a device, sized to match the surface box. No edge of a blank cover shall extend past the edge of a surface box.

C. Junction boxes, larger than 8", located indoors shall be hinged, NEMA-1 rated.

D. Junction boxes, larger than 8", located on exterior walls, or in wet or damp locations shall be hinged, NEMA-3R.

E. Junction boxes of any size located on rooftops (including canopy rooftops) shall be hinged, NEMA 4.

F. Provide and install tamper-proof screws for all exterior boxes.

G. Junction boxes used for Fire Alarm systems are to be red in color with red colored cover plates.

2.07 GROUND BOXES

A. See Division 26 and below for requirements.

B. Approved manufactures are Jensen, Christy or approved equal.

C. All ground boxes shall have metal traffic-rated lids with permanent factory markings of COMM or COMMUNICATIONS.

D. Minimum size is 17" x 30"

E. For AT&T service feeds the requirement is for 30"x48" Intercept Pullboxes. Jensen SKU 100020251/Mod # K304836AT was referenced by AT&T.

F. For Comcast - Christy B2436 at service tie in and B1730 as an inline pullboxes are acceptable.

2.08 PENETRATION SEALING

A. Firestopping: Provide UL Listed Firestopping materials for all penetrations through rated assemblies (walls / floors). See Division 07 for more information.

B. Draft stopping: Foam sealant for use around conduit penetrations (in non-rated assemblies) to prevent passage of air, smoke, and/or toxic gas. See Division 07 for more information.

C. Weatherproofing: Weatherproof sealant for use around conduit penetrations in exterior walls to prevent the intrusion of water. See Division 07 for more information.

2.09 GROUNDING BUS BAR

A. Copper bus bar 2″x10″x1/4″ minimum size with stand-off brackets and insulators, pre-drilled and threaded mounting holes (hole qty. 12 or greater) for equipment grounding lug attachment.

PART 3 - EXECUTION

3.01 COMMUNICATION SERVICES

A. Install inground boxes, conduits, and terminal cabinets per service provider requirements.

3.02 GROUNDING

A. Ground fittings shall be UL approved for each application and installed and/or connected to system in accordance with current CEC Code requirements.

B. See Division 26 for additional requirements.

H. Install grounding bus bar per manufacturer's instructions and in each MDF and IDF.

I. All network equipment, racks, cabinets, and pathways shall be bonded to the grounding bus bars as described in the TIA 607 series of standards.

3.03 HANGERS AND SUPPORTS

A. Install hangers and supports per manufacturer's written instructions.

B. Hanger spacing shall be 48″ or less and within 12″ of sleeves and/or junction/back boxes.

3.04 LOW VOLTAGE PATHWAY/RACEWAYS

A. EMT conduit may be used at following locations:
   1. In dry locations in furred spaces.
   2. In partitions other than concrete or solid masonry.

B. Rigid steel conduit and fittings shall be used for vertical risers and on all roofs, overhangs, walkways, canopies, or any other location exposed to direct weather.

C. Furnish and install pull lines in all unused (empty) conduits or raceways. All pull lines shall be permanently tagged with identification at both ends.

D. Install exposed conduit neatly, parallel to or at right angles to structural members. Maintain a minimum of 12 inches of clearance from steam or hot water pipes. All installed strut channel supports should allow for future conduit attachments. The width of strut channel to match the width of the closest attached junction box. See design document details for attachment requirements.

E. Supports: Support conduit with two-hole straps or strut channel where shown in design documents and/or specified. Single-hole straps are prohibited. Coordinate supports with architectural details. Secure to wood structure by means of bolts or lag screws, to metal by means of shallow self-tapping screws, to concrete by means of insert or expansion bolts, to brickwork by means of expansion bolts, and to hollow masonry or stucco by means of toggle bolts.

F. Spacing for all EMT and rigid steel conduit supports shall be as follows unless otherwise specified in design documents details:

1. Surface conduit spacing and supports and unless otherwise specified or shown on drawing details:
    a. EMT – Size 3/4″ to 2″ – 4′ maximum spacing (3 each supports per 10′ conduit length) and 12″ from each end of conduit at coupling, connector or 90-degree bend.

    b. Rigid steel – Size 3/4″ to 2″ – 4′ maximum spacing (3 each supports per 10′ conduit length) and 12″ from each end of conduit at coupling, connector or 90-degree bend.

G. If conduit is designated for low voltage use, no more than a total of 360 degrees of conduit bend radius will be allowed between pull boxes.

H. All junction boxes shall be connected to conduits using appropriate connecting hardware (i.e. box connectors).

I. Clean, prep and paint with white primer all exposed conduit, junction boxes, channel strut, fittings, and accessories.

J. Before pulling any conductors into an underground PVC conduit (new or existing), the conduit shall be first be proofed by pulling through a mandrel of a diameter ¼ in. smaller

than the conduit inside dia., followed by a swab of the same diameter as the conduit inside diameter.

K. Non-metallic raceway to be installed with mechanical fasteners only, do not remove adhesive tape backing.

L. Capping

1. Cap conduits during construction with manufactured seals. Swab out conduits before installing wires.

2. Cap all empty conduits below grade and in pull boxes with manufacturer's caps to prevent entrance of debris, attach pull string to cap.

M. Underground Conduit

1. Service provider conduits shall be:
   a. AT&T - 1-4" (fiber only) or 2-4" (fiber and copper)

   b. Comcast - 1-2"

2. #10 tracer wire or tracer tape is required for all underground Division 27 PVC conduits.

3.05 J-BOXES

A. Screws shall be used to attach boxes, and must be accurately placed for finish, independently and securely supported by adequate wood backing or by manufactured adjustable channel type heavy-duty box hangers.

1. Boxes shall be attached to metal studs with metal box hangers.

2. Boxes installed in masonry tile or concrete block construction shall be secured with auxiliary plates, bars or clips and be grouted in place.

B. Locate outlets at the following heights unless otherwise noted on Drawings, Specifications, current CBC or as required to meet ADA handicap requirements.

1. Data Outlets: Same height as electrical outlets

2. Telephone Wall Outlets: Above counter/backsplash height or at light switch height.

C. Low Voltage boxes shall be placed within 18" of electrical outlets.

D. For sound control, separate outlets on opposite sides of walls 16" minimum. Where outlets are less than 16" or in sound rated walls, seal airtight with fire rated sheet putty pads.

Fill gap between junction box and wall with acoustical sealant all around perimeter of junction box. Fill conduits larger than 1 1/4" with fire rated putty.

E. Installation of conduit and outlet boxes in fire-resistive walls, floors, floor-ceiling or roof-ceiling assemblies shall comply with Title 24, Part 2, Section 713.

3.06 GROUND BOXES

A. To be installed per Division 26 requirements.

B. Provisions to be made for supporting cables from the box sides (i.e., j-hooks, d-rings)

C. Install a 30" x 48" for service provider AT&T at service tie-in location and/or a 24" x 36" for service provider Comcast at service tie-in location. If less than 360-degrees of bends and less than 200 feet it is acceptable to stub in to the MPOE directly. If greater for 360-degree for bends or 200 feet for length then additional in-line ground boxes are required (30" x 48" for AT&T, 17" x 30" for Comcast). See section Part 2 – Products for more information.

3.07 SLEEVES AND CONDUIT PENETRATIONS

A. Where conduit passes through walls, ceilings, or floors with connection points to junction boxes or raceways mounted to the same wall as the penetration provide a threaded conduit and secured in place with locking rings on both sides. Bend radius requirements shall be maintained where penetrations are made through the back of raceways; junction boxes with adequate depth shall be installed to comply with this requirement.

C. Where conduit passes through walls, ceilings, or floors with connection points to junction boxes or raceways not mounted to the same wall as the penetration, provide EMT conduit and secured in place with strut channel. Box connectors shall always be used to connect EMT to junction boxes and raceways.

D. All wire and cable passing through metalwork shall be sleeved with an appropriate grommet or bushing.

E. FIRE STOPPING

1. Seal all conduit penetrations through fire rated walls and floors fire and smoke tight in conformance with current CBC and current CEC. See Division 07 for more information.

F. DRAFT STOPPING

1. All non-fire rated walls must be draft stopped and sealed. Submit method to be used for approval by inspector and/or project manager. Mineral wool is one product that may be used. See Division 07 for more information.

G. WEATHER SEALING

1. All exterior penetrations shall be sealed watertight. The contractor shall use silicone rubber caulk or other approved methods and materials. Submit method and material with inspector and/or project manager. See Division 07 for more information.

3.08 CLEANING

A. Clean all work prior to concealing, painting, and acceptance. Performed in stages if directed.

B. Clean and repair soiled or damaged painted exposed work and match adjoining work before final acceptance.

C. Remove debris from inside and outside of equipment and enclosures.

3.09 FINAL DOCUMENT SUBMITTALS

A. See 27 00 00 for more information.

END OF SECTION

SECTION 32 12 14 - SUBGRADE AND ROADBED

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes, but is not necessarily limited to the work necessary for the preparation of the subgrade.
   1. The subgrade will be considered as those areas and surfaces of new or existing streets, alleys, driveways, parking lots, sidewalks, or other places upon which additional materials are to be placed under Contract, or which are to be constructed or prepared for the future placement thereupon of other materials in accordance with Section 31 20 00 – Earth Moving, and as provided herein.

1.02 RELATED WORK DESCRIBED ELSEWHERE

A. All underground work contemplated in the area of the subgrade shall be completed and properly backfilled before subgrade work is started. This is intended to include work on the Contract, work to be performed by the School District, or by others.

B. These Specifications are to be used in conjunction with requirements in those sections of the Specifications having to do with specific types of base materials and pavements.
   1. Section 02 41 19 Selective Site Demolition
   2. Section 31 10 00 Site Clearing
   3. Section 31 11 23 Aggregate Base
   4. Section 32 12 16 Asphalt Paving
   5. Section 32 13 13 Concrete Paving

PART 2 - PRODUCTS

2.01 EXCAVATION AND EMBANKMENT

A. The excavation shall include removal of materials which are encountered in excavating to the required grades, including existing pavement and curbs designated to be removed, or as required to accomplish the construction.

2.02 EQUIPMENT

A. Furnish all necessary equipment required to accomplish the excavating, shaping, grading and rolling, and compaction specified herein.

PART 3 - EXECUTION

3.01 SUBGRADE

A. Excavate and shape subgrade to line, grade, and cross section. Roll subgrade with an approved roller until the top 12 inches is compacted to 95 percent of maximum density at optimum moisture content as determined by ASTM D 1557. Remove all soft or otherwise unsuitable material disclosed by the rolling and replace with suitable material from the excavation. Fill holes, and depressions which develop under the roller, to the required grade and cross sections with material from the excavation. The finished subgrade shall be within a tolerance of plus or minus 0.10 of a foot of the grade and cross section shown, shall be smooth and free from irregularities and at the specified density. Compaction shall extend one foot beyond the edge of paving, curb, or form work.

B. The Contractor shall be responsible for the protection of existing improvements; any damage resulting from his operations shall be the Contractor's sole responsibility.

3.02 EXCAVATION BELOW GRADE

A. Where the Lab of Record deems subgrade material to be unsatisfactory, excavation below grade will be required to such depths as necessary to remove the unsatisfactory material. Excavation below grade shall be of the same classification as that above it provided it is removed in the same operation as the normal excavation. Where the Contractor has completed the excavation and is required to remove additional, unsuitable material beyond the scope provided in these specifications, or where the additional depth requires special equipment because of unforeseen conditions, the work shall be performed and a payment for excavation below grade will be made on the basis of extra work as provided in the Contract.

B. If the excavation below grade is required because of negligence on the part of the Contractor, the necessary excavation below grade and the backfilling required to restore the surface satisfactorily shall be at the Contractor's sole expense.

C. The subgrade shall be sprinkled with water as required, and in such quantities as necessary, to obtain the specified compaction.

3.03 PROTECTION OF SUBGRADE

A. After preparing the subgrade as above specified, all unnecessary traffic shall be kept off. Should it be found necessary to haul over the prepared subgrade, the Contractor shall drag and roll the traveled way as frequently as may be necessary to remove ruts, cuts, and breaks in the surface. All cuts, ruts, and breaks in the surface of the subgrade that are not removed by the above operations shall be raked and hand-tamped. All

equipment used for transporting materials over the prepared subgrade shall be equipped with pneumatic tires.

B. Continued use of sections of prepared subgrade for hauling, so as to cut up or deform it from the true cross section, will not be permitted. The Contractor shall protect the prepared subgrade from both construction and public traffic.

C. The subgrade shall be maintained in the finished condition until the first succeeding course is placed.

3.04 PLAY AREAS

A. Excavate and shape play area to the lines, grades, and cross sections shown, or as determined in the field by the Engineer.

END OF SECTION 32 12 14

SECTION 32 13 13 – CONCRETE 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.

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, 2016 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

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 Clayton 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 Clayton 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 Clayton 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 Clayton Standard specifications.

14. Contractor shall provide appropriate traffic control measures as outlined in the City of Clayton 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 and as specified in the Geotechnical Investigation Report.

2. Not used.

3. The Contractor's attention is directed to the City of Clayton Off-Site plans for work within the ROW. Contractor shall adhere to the requirements thereof.

4. The Contractor shall notify the Soil Engineer at least forty-eight (48) hours prior to commencement of any grading operations on-site.

5. A representative of the Soils Engineer 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 Engineer 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. 2" thickness may be placed in one lift.

12. Not used.

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 Clayton 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 (comply with 11B-302.3) 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 Clayton 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 Clayton 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

ABBREVIATIONS

AB	AGGREGATE BASE		
AC	ASPHALT CONCRETE	LTB	LIME TREATED BASE
ACC	ACCESSIBLE	(ME)	MATCH EXISTING ELEVATION
ARCH	ARCHITECTURAL	MH	MANHOLE
BS	BOTTOM OF STEP	ML	MONUMENT LINE
BW	BACK OF WALK ELEVATION	(N)	NEW
BOW	BOTTOM OF WALL ELEVATIONS	PAV	PAVEMENT SURFACE ELEVATION
CB	CATCH BASIN	℄	PROPERTY LINE
CI	CAST IRON	PP	PERFORATED PIPE
℄	CENTER LINE	RIM	RIM ELEVATION
CLF	CHAIN LINK FENCE	RS	TOP OF RAT SLAB ELEVATION
C&G	CURB AND GUTTER	RWL	RAIN WATER LEADER
CONC	CONCRETE	S=	SLOPE
C	CONCRETE ELEVATION	SD	STORM DRAIN
DWY	DRIVEWAY	S.A.D.	SEE ARCHITECT DRAWINGS
E	ELECTRICAL	S.E.D.	SEE ELECTRICAL DRAWINGS
(E)	EXISTING	S.L.D.	SEE LANDSCAPE DRAWINGS
EBOX	ELECTRICAL BOX	S.P.D.	SEE PLUMBING DRAWINGS
EC	EDGE OF CONCRETE	SG	SUBGRADE ELEVATION
EP	EDGE OF PAVEMENT	SS	SANITARY SEWER
EV	ELECTRICAL VAULT	SSCO	SANITARY SEWER CLEANOUT
F	FIRE LINE	S/W	SIDEWALK
FG	FINISH GRADE	STLT	STREET LIGHT
FNC	FENCE	T	TELEPHONE
FH	FIRE HYDRANT	TC	TOP OF CURB
FF	FINISHED FLOOR ELEVATION	TD	TRENCH DRAIN
FL	FLOW LINE	TILE	TOP OF TILE ELEVATION
FOC	FACE OF CURB	TOE	TOE OF BANK
G	GAS	TOW	TOP OF WALL ELEVATION
GB	GRADE BREAK	TP	TELEPHONE POLE
GND	GROUND ELEVATION	TR	TOP OF RAMP
JP	JOINT POLE	TS	TOP OF STEP
ICV	IRRIGATION CONTROL VALVE	TSB	TRAFFIC SIGNAL BOX
INV	INVERT	VLT	VAULT
LF	LINEAR FEET	W	WATER
LS	LANDSCAPE	WV	WATER VALVE

SHEET INDEX

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GRADING & DRAINAGE PLAN	2-C2.1
UNDERGROUND UTILITIES PLAN	2-C3.1
NOTES, LEGEND & DETAILS	2-C4.1
DETAILS	2-C4.2
UNDERGROUND DETAILS	2-C4.3
HORIZONTAL CONTROL PLAN	2-C5.1
EROSION CONTROL PLAN	2-C6.1

LEGEND

DESCRIPTION	PROPOSED	EXISTING
PROPERTY LINE		
CENTERLINE		
CURB & GUTTER		
VERTICAL CURB		
ASPHALT EDGE / SAWCUT		
EXPANSION JOINT		
SCORE JOINT		
VALLEY GUTTER		
TRENCH DRAIN		
PERF PIPE		
RAINWATER LEADER		
STORM LINE		
SANITARY LINE		
WATER LINE		
GAS LINE		
FIRE SPRINKLER	FS FS FS	
FIRE LINE	F F F	
FENCE		
ROLLING FENCE		
CITY CONFORM		
ADA DROP OFF		
FIRE LANE		
TYPICAL RAMP		
ACCESSIBLE RAMP		
TRUNCATED DOMES		
STORM DRAIN INLET		
AREA DRAIN		
END SECTION		
END SECTION MITERED DRAIN GRATE		
DRY WELL CONDENSATE		
BOLLARD		
HYDRANT		
FIRE DEPARTMENT CONNECTION (FDC)		
POST INDICATOR VALVE (PIV)		
THRUST BLOCK		
SHUT OFF VALVE (SOV)		
CHECK VALVE		
BACKFLOW		
ELECTROLIER		
ELECTROLIER CONDUIT & CABLE W/PULL BOX		
DIRECTION & RATE OF SLOPE	0.015	
SWALE		
CONTOUR		
LIGHTING POLE		
EV CHARGING STATION		
ASPHALT PAVING – AUTO		
CONCRETE PAVING – PEDESTRIAN		
SOD		

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REGISTERED PROFESSIONAL ENGINEER
MATTHEW PAUL MARTUS
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Exp. 12/31/25
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REVISIONS

NO.	DATE	DESCRIPTION

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

NOTES, LEGEND & INDEX

ING.2

DRAWN BY: MPM JOB NUMBER: 23118.01

SHEET NO.

2-C0.1

DATE: SEPTEMBER 19, 2024

CONSTRUCTION DOCUMENTS

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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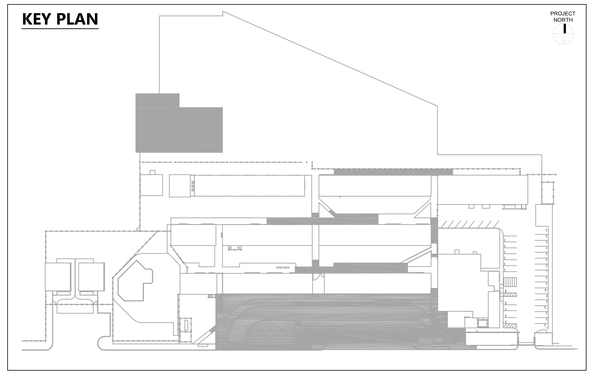
UNAUTHORIZED CHANGES & USES: The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes to the plans must be in writing and must be approved by the preparer of these plans.

LEGEND

- X — TREE TO BE REMOVED REMOVE ALL ROOTS
- O — TREE TO REMAIN – PROTECT FROM DAMAGE. SEE LANDSCAPE SPECIFICATIONS AND DRAWINGS FOR TREE PROTECTION NOTES
- 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. REMOVE ANY IRRIGATION LINES OR VALVES.
- 4 — —x—x—x— FENCE/GATES/FOUNDATIONS TO BE REMOVED
- 5 — REMOVE PLAY STRUCTURES / TILE PLAYMATTING SURFACE, CURBS, DRAINS AND BASE

1. SAWCUT ASPHALT OR REMOVE CONCRETE TO NEAREST CONTROL JOINT
2. EXTENT OF FENCE REMOVAL
3. COLUMN / POLE / RWL TO REMAIN.
4. SDCO / SSCO / INLET TO REMAIN.
5. REMOVE, SALVAGE & RELOCATE METAL BENCHES PER ARCHITECTURAL DRAWINGS
5A. REMOVE BENCHES
6. REMOVE PLANTER
7. REMOVE CURB / CURB & GUTTER / VALLEY GUTTER
8. EXTENT OF REMOVAL OF CURB / CURB & GUTTER / VALLEY GUTTER
9. FENCE / GATE TO REMAIN
10. ELECTRICAL LINES, VAULT TO REMAIN, PROTECT
11. SIGN TO REMAIN
12. REMOVE LIGHT POLE & FOUNDATION
13. SOLAR CANOPY STRUCTURE TO REMAIN
14. REMOVE FLAG POLE & FOUNDATION
15. REMOVE RAILING BETWEEN POSTS, GRIND SMOOTH AND REPAINT

KEY PLAN



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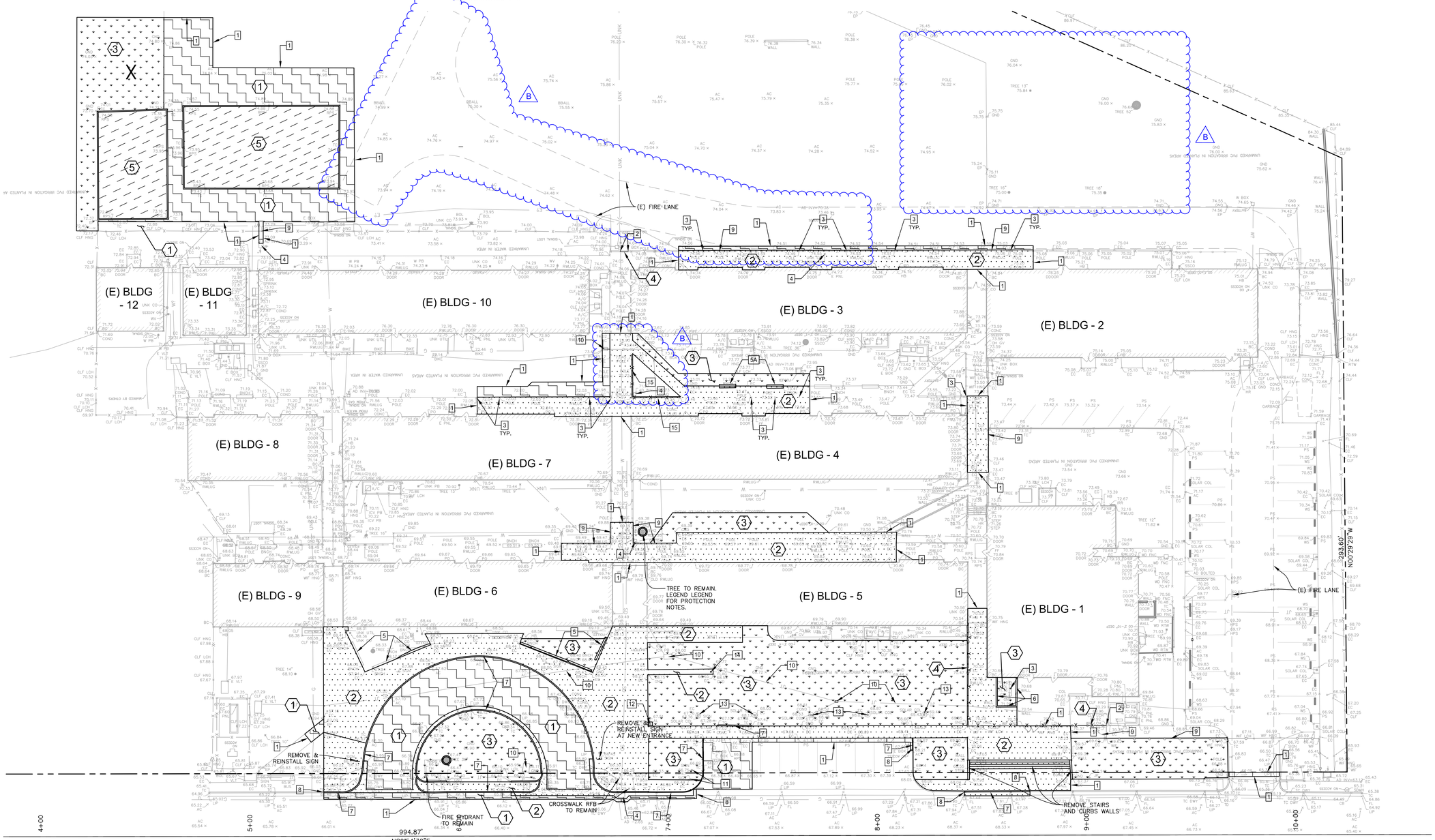
20 0 20 40

(IN FEET)
1 inch = 20 ft.
GRAPHIC SCALE



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AGENCY APPROVAL DSA# 01-121440

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SHEET TITLE

DEMOLITION PLAN

INC.2

DRAWN BY: MPM JOB NUMBER: 23118.01

SHEET NO.

2-C1.1

DATE: SEPTEMBER 19, 2024

CONSTRUCTION DOCUMENTS

GRADING PLAN NOTES:

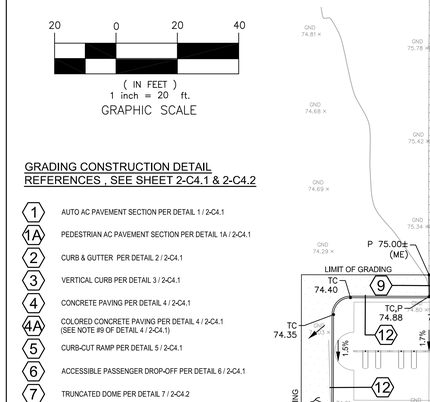
1. 2LF-CURB TRANSITION (0"-6")
2. SAWCUT AND CONFORM TO (E) ASPHALT
3. CONFORM TO (E) CONCRETE AT NEAREST CONTROL JOINT
4. 15LF-CURB TRANSITION (0"-6")
5. 20LF-CURB TRANSITION (0"-6")

20 0 20 40

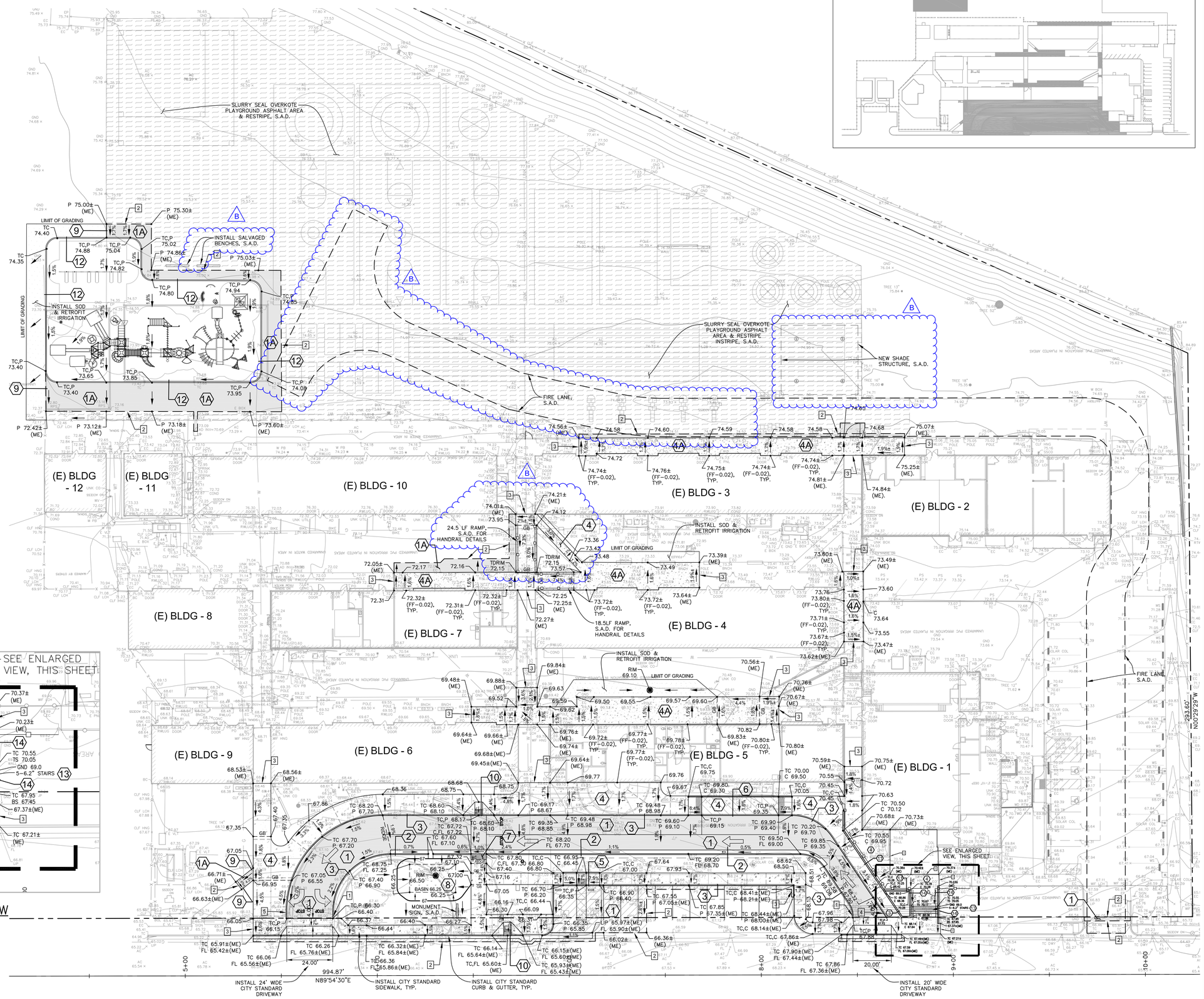
(IN FEET)
1 inch = 20 ft.
GRAPHIC SCALE

GRADING CONSTRUCTION DETAIL REFERENCES , SEE SHEET 2-C4.1 & 2-C4.2

1. AUTO AC PAVEMENT SECTION PER DETAIL 1 / 2-C4.1
1A. PEDESTRIAN AC PAVEMENT SECTION PER DETAIL 1A / 2-C4.1
2. CURB & GUTTER PER DETAIL 2 / 2-C4.1
3. VERTICAL CURB PER DETAIL 3 / 2-C4.1
4. CONCRETE PAVING PER DETAIL 4 / 2-C4.1
4A. COLORED CONCRETE PAVING PER DETAIL 4 / 2-C4.1 (SEE NOTE #9 OF DETAIL 4 / 2-C4.1)
5. CURB-CUT RAMP PER DETAIL 5 / 2-C4.1
6. ACCESSIBLE PASSENGER DROP-OFF PER DETAIL 6 / 2-C4.1
7. TRUNCATED DOME PER DETAIL 7 / 2-C4.2
8. BIO-RETENTION AREA PER DETAIL 8 / 2-C4.2
9. HEADERBOARD PER DETAIL 15 / 2-C4.2
10. CURB-CUT RAMP PER DETAIL 10 / 2-C4.2
11. CONCRETE CURB - TYPE I PER DETAIL 11 / 2-C4.2
12. CONCRETE CURB @ POURED-IN-PLACE PER DETAIL 12 / 2-C4.2
13. CONCRETE STEPS PER DETAIL 13 / 2-C4.2
14. EDGE OF STEP - CURB PER DETAIL 14 / 2-C4.2



ENLARGED VIEW
SCALE: 1"=10'



KEY PLAN

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CYPRESS ENGINEERING GROUP
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Monterey, CA 93940
TEL (831) 218-1802

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San Ramon, CA 94582
TEL (913) 961-1658

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TEL (916) 359-4000

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1223 High Street
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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER MATTHEW PAUL MARKS No. C 68770 Exp. 06/30/25 STATE OF CALIFORNIA

REVISIONS

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

GRADING & DRAINAGE PLAN

INC.2

DRAWN BY: MPM JOB NUMBER: 23118.01

SHEET NO.

2-C2.1

DATE: SEPTEMBER 19, 2024

CONSTRUCTION DOCUMENTS

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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UNDERGROUND UTILITIES CONSTRUCTION DETAIL REFERENCES - SEE SHEET C4.2 & C4.3

1. 16" STORM INLET PER DETAIL 1 / 2-C4.3
2. UTILITY TRENCH PER DETAIL 9 / 2-C4.2
3. TRENCH DRAIN - ECONODRAIN #4 PER DETAIL 3 / 2-C4.3

B

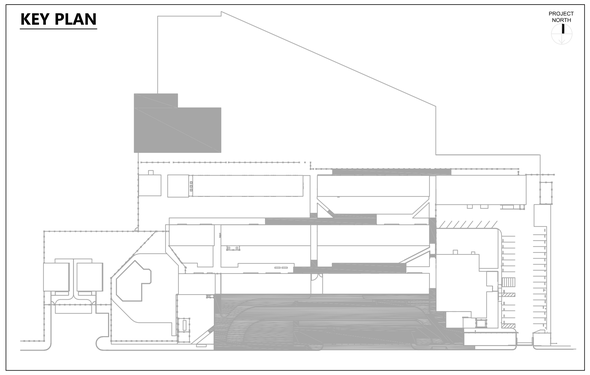
N

20 0 20 40

(IN FEET)
1 inch = 20 ft.
GRAPHIC SCALE

KEY PLAN

PROJECT NORTH



UNDERGROUND UTILITIES PLAN NOTES:

B

1. CONNECT 4" TRENCH DRAIN TO NEAREST SD INLET WITH 4"SD LINE @ S=1.0% MIN

215LF - 4" PP

27 LF - 4" SD @ S = 1.0% MIN.

2 2' WIDE TRENCHING, CONNECT (N) 4" SD LINE TO (E) INLET (E) RIM 73.09± (E) INV 70.69±

(E) BLDG - 12

(E) BLDG - 11

(E) BLDG - 10

(E) BLDG - 3

(E) BLDG - 2

(E) BLDG - 8

(E) BLDG - 7

(E) BLDG - 4

(E) BLDG - 9

(E) BLDG - 6

(E) BLDG - 5

(E) BLDG - 1

B

CLEAN OUT INLET & HYDROWASH TO BE FREE FLOWING

TDRIM 72.15 INV 61.65

TDRIM 72.15 INV 61.59

11 LF - 4" WIDE TD @ S = 0.5% 3

CLEAN OUT INLET & HYDROWASH TO BE FREE FLOWING

RIM 69.10 INV 67.25 1

65 LF - 6" SD @ S = 1.0%

CONNECT 6" SD LINE TO (E) SD LINE, VERIFY LOCATION & DEPTH

ADJUST ELECTRIC BOX TO NEW FG 69.50

ADJUST BOX TO NEW FG

CONNECT (N) 8" SD LINE TO (E) SD LINE (E) INV 63.32±(ME) VERIFY DEPTH & LOCATION AS FIRST ORDER OF WORK

1 RIM 66.50 INV 63.75

48 LF - 8" SD @ S = 0.5% MIN.

STOP

4'-0"

4'-0"

N00°32'60"W 293.60'

994.87'
N89°54'30"E

4+00 5+00 6+00 7+00 8+00 9+00 10+00

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AGENCY APPROVAL DSA# 01-121440

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EXP. 12/31/25
STATE OF CALIFORNIA

REVISIONS

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Bay Point, CA 94565

SHEET TITLE

UNDERGROUND UTILITIES PLAN

INC.2

DRAWN BY: MPM JOB NUMBER: 23118.01

SHEET NO.

2-C3.1

DATE: SEPTEMBER 19, 2024

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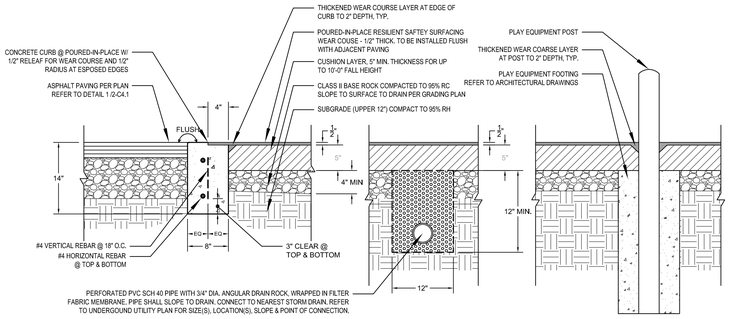
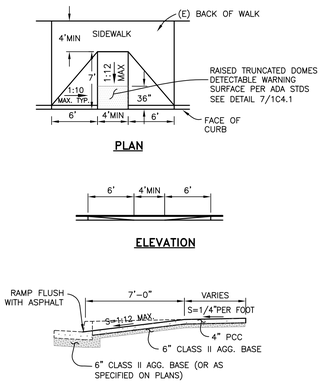


NOTES:
1. REFER TO ARCHITECTURAL PLANS FOR POURED-IN-PLACE RESILENT SAFETY SURFACING, MANUFACTURE, COLORS AND PATTERNS.
2. SCORE JOINTS IN CONCRETE PERIMETER CURB TO BE EVENLY SPACED AT 8'-0" MAX. WITH 1/2" SATURATED ASPHALTIC EXPANSION JOINTS EVENLY SPACED AT 24'-0" MAX.
3. REFER TO SPECIFICATION SECTION 32 13 13 CONCRETE WORK.

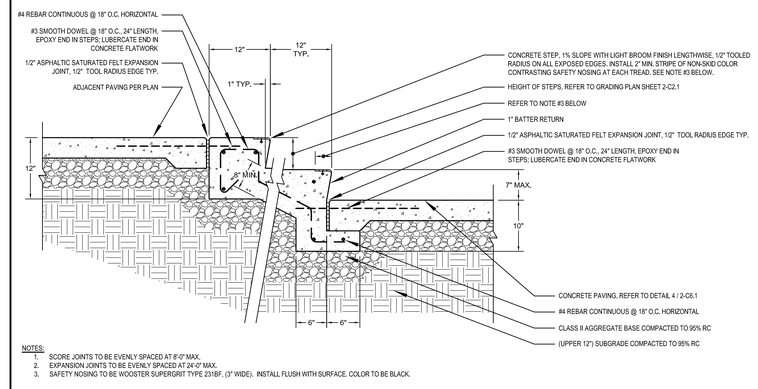
12 CONCRETE CURB @ POURED-IN-PLACE

NOT TO SCALE



10 CURB-CUT RAMP

NOT TO SCALE



NOTES:
1. SCORE JOINTS TO BE EVENLY SPACED AT 8'-0" MAX.
2. EXPANSION JOINTS TO BE EVENLY SPACED AT 24'-0" MAX.
3. SAFETY NOSING TO BE WOOSTER SUPERGRIT TYPE 231BF, (3" WIDE). INSTALL FLUSH WITH SURFACE. COLOR TO BE BLACK.

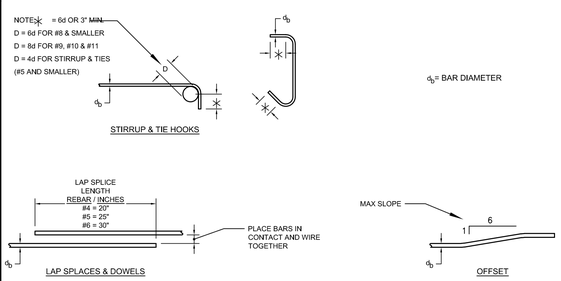
13 CONCRETE STEPS

NOT TO SCALE

NOTES:
1. FOR TYPICAL CONCRETE REINFORCEMENT, BENDING & SPLICING REFER TO DETAIL 11A / 2-C4.2
2. TOP OF CURB TO SLOPE WITH ADJACENT PAVING
3. REFER TO SPECIFICATION SECTION 32 13 13 - CONCRETE PAVING

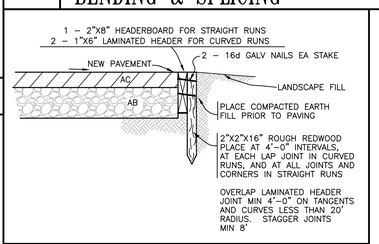
NOT TO SCALE

11 CONCRETE CURB - TYPE I



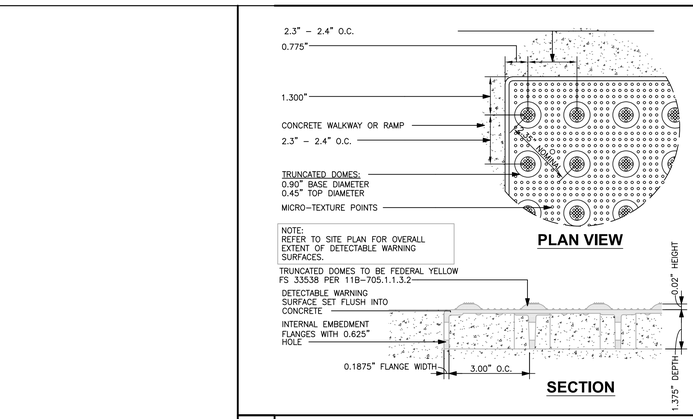
11A TYPICAL CONCRETE REINFORCEMENT BENDING & SPLICING

NOT TO SCALE



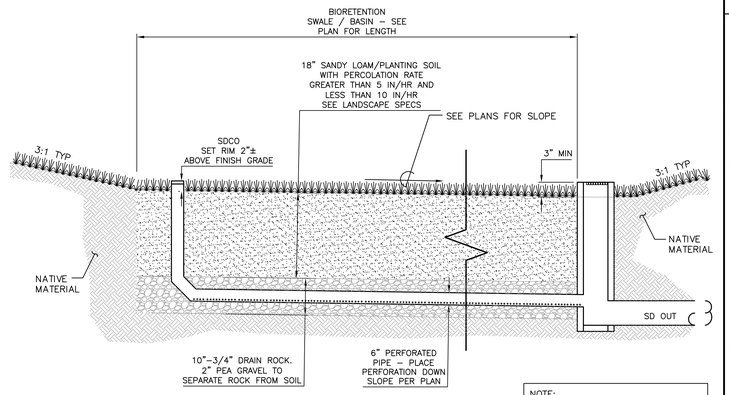
15 HEADER BOARD

NOT TO SCALE



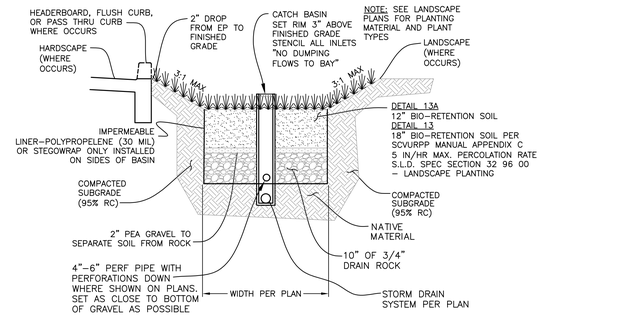
7 TRUNCATED DOME

NOT TO SCALE



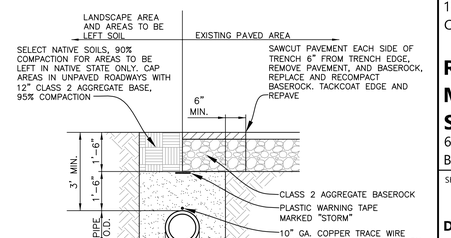
PROFILE

NOTE:
REFER TO LANDSCAPE SPECIFICATION SECTION 32 96 00 - LANDSCAPE PLANTING FOR IMPORTED SOIL IN BIO-RETENTION BASINS



8 BIO-RETENTION SWALE / BASIN

NOT TO SCALE



9 UTILITY TRENCH

AGENCY APPROVAL DSA# 01-121440

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RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

DETAILS

INC.2

DRAWN BY: MPM JOB NUMBER: 23118.01

SHEET NO.

2-C4.2

DATE: SEPTEMBER 19, 2024

CONSTRUCTION DOCUMENTS

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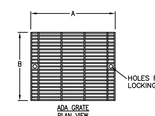
GRATE & FRAME TO BE H-20 TRAFFIC RATED. SD-13

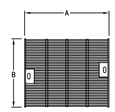


ADA GRATE
PLAN VIEW

NOTES:
1. FOR FRAME SIZES SEE "TYPICAL FRAME AND GRATE" PAGE.
2. ¾" MAXIMUM SPACING BETWEEN BEARING BARS.

AMERICAN DISABILITIES ACT (ADA), WHEEL CHAIR PROOF PEDESTRIAN GRATES					
	GRATE SIZE			GRATE HEIGHT	WEIGHT (LBS)	BEARING BAR QTY.
SIZE	A	B				
12x12	14 5/8"	11 7/8"		1 1/4"	20	18
18x18	20 5/8"	18"		1"	32	26
18x24	20 5/8"	24"		1 1/4"	54	35
24x24	26 3/4"	24"		1 1/4"	68	35
24x30	26 3/4"	30"		1 1/4"	87	44
2 PC.	24x36	26 1/2"	36"	1 1/4"	106	53
2 PC.	24x48	26 5/8"	48"	1 1/4"	133	72

AMERICAN DISABILITIES ACT (ADA), WHEEL CHAIR PROOF TRAFFIC GRATES					
	GRATE SIZE		GRATE HEIGHT	WEIGHT (LBS)	BEARING BAR QTY.
SIZE	A	B			
12x12	14 5/8"	11 7/8"	1 1/4"	20	18
18x18	20 5/8"	18"	2 1/4"	72	26
18x24	20 5/8"	24"	2 1/4"	87	35
24x24	26 3/4"	24"	2 1/4"	122	35
24x30	26 3/4"	30"	2 1/4"	156	44
24x36	26 1/2"	36"	2 1/4"	191	53
24x48	26 5/8"	48"	2 1/4"	236	72



HEEL GRATE
PLAN VIEW

NOTES:
1. FOR FRAME SIZES SEE "TYPICAL FRAME AND GRATE" PAGE.
2. ¾" MAXIMUM SPACING BETWEEN BEARING BARS.
3. TRAFFIC RATED HEEL PROOF GRATES ARE AVAILABLE UPON REQUEST.

HEEL PROOF PEDESTRIAN GRATES					
	GRATE SIZE		GRATE HEIGHT	WEIGHT (LBS)	BEARING BAR QTY.
SIZE	A	B			
12x12	14 5/8"	11 7/8"	1 1/4"	27	27
18x18	20 5/8"	18"	1"	33	42
24x24	26 3/4"	24"	1 1/4"	101	55

NOTES:
1. GRATES ARE HOT-DIPPED GALVANIZED AFTER FABRICATION.
2. ADDITIONAL SIZES AVAILABLE UPON REQUEST
3. LOCKING BOLTS INCLUDED

DRAWING MAY NOT CONFORM TO THE MOST CURRENT SPECIFICATION

Oldcastle Precast®
Northern California
Madera ▲ Morgan Hill ▲ Pleasanton ▲ Santa Rosa ▲ Stockton ▲ Tulare
Phone: 925-750-6650 Fax: 925-750-6660

ADA & HEEL GRATES
FILE NAME: SD-13.DWG
REVISED: MARCH 2016
www.oldcastleprecast.com

TYPICAL GRATES
DRAINAGE INLET
STORM DRAIN

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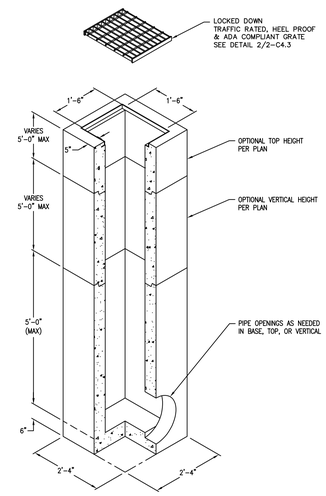
2 INLET GRATES NOT TO SCALE

VERTICAL AVAILABLE TO MEET REQUIRED DEPTH SD-2



VERTICAL WEIGHT PER FOOT: 490 LBS.
FLOOR WEIGHT: 420 LBS.

DRAWING MAY NOT CONFORM TO THE MOST CURRENT SPECIFICATION

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Northern California
Madera ▲ Morgan Hill ▲ Pleasanton ▲ Santa Rosa ▲ Stockton ▲ Tulare
Phone: 925-750-6650 Fax: 925-750-6660

DI-1818
FILE NAME: SD-2.DWG
REVISED: MARCH 2016
www.oldcastleprecast.com

1'-6" X 1'-6" X VARIES (I.D.)
DRAINAGE INLET
STORM DRAIN

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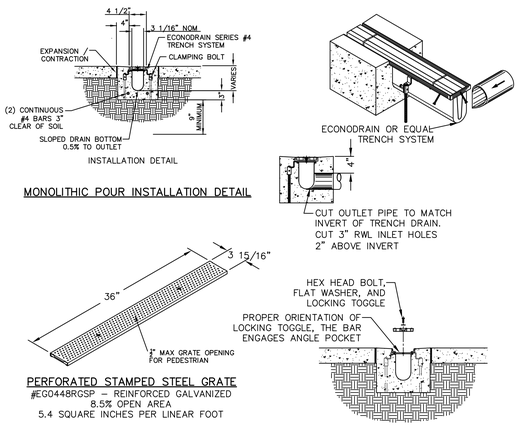
1 STORM INLET NOT TO SCALE

B



MONOLITHIC POUR INSTALLATION DETAIL

PERFORATED STAMPED STEEL GRATE
#EG0448RGSP – REINFORCED GALVANIZED
8.5% OPEN AREA
5.4 SQUARE INCHES PER LINEAR FOOT

GRATE LOCKING DEVICE INSTALLATION

CONSTRUCTION NOTES:
1. ADD REBAR AS REQUIRED
2. EXPANSION / CONTRACTION JOINT SEE CONCRETE DETAIL
3. STANDARD CHANNEL LENGTH IS 8'-0" (96")
4. STANDARD CHANNEL SLOPE IS 0.5%
5. MINIMUM CONCRETE COVERAGE OF OUTLET/INLET PIPES IS 4 INCHES MIN.
6. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
7. SECURE OUTLET & INLET PIPES PRIOR TO CONCRETING OPERATIONS.
8. GRATE OPENINGS SHALL BE 1/2" MAX. DIAMETER, PER CBC 11B-302.3.

3 TRENCH DRAIN - EconoDrain #4 NOT TO SCALE

AGENCY APPROVAL DSA# 01-121440

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UNDERGROUND DETAILS

INC.2

DRAWN BY: MPM JOB NUMBER: 23118.01

SHEET NO.
2-C4.3
DATE: SEPTEMBER 19, 2024

CONSTRUCTION DOCUMENTS

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.

M:\3054 - Rio Vista ES_DWG\3054-C4.1-ND (INC.2).dwg 11-07-24 03:17:41 PM MilanKC

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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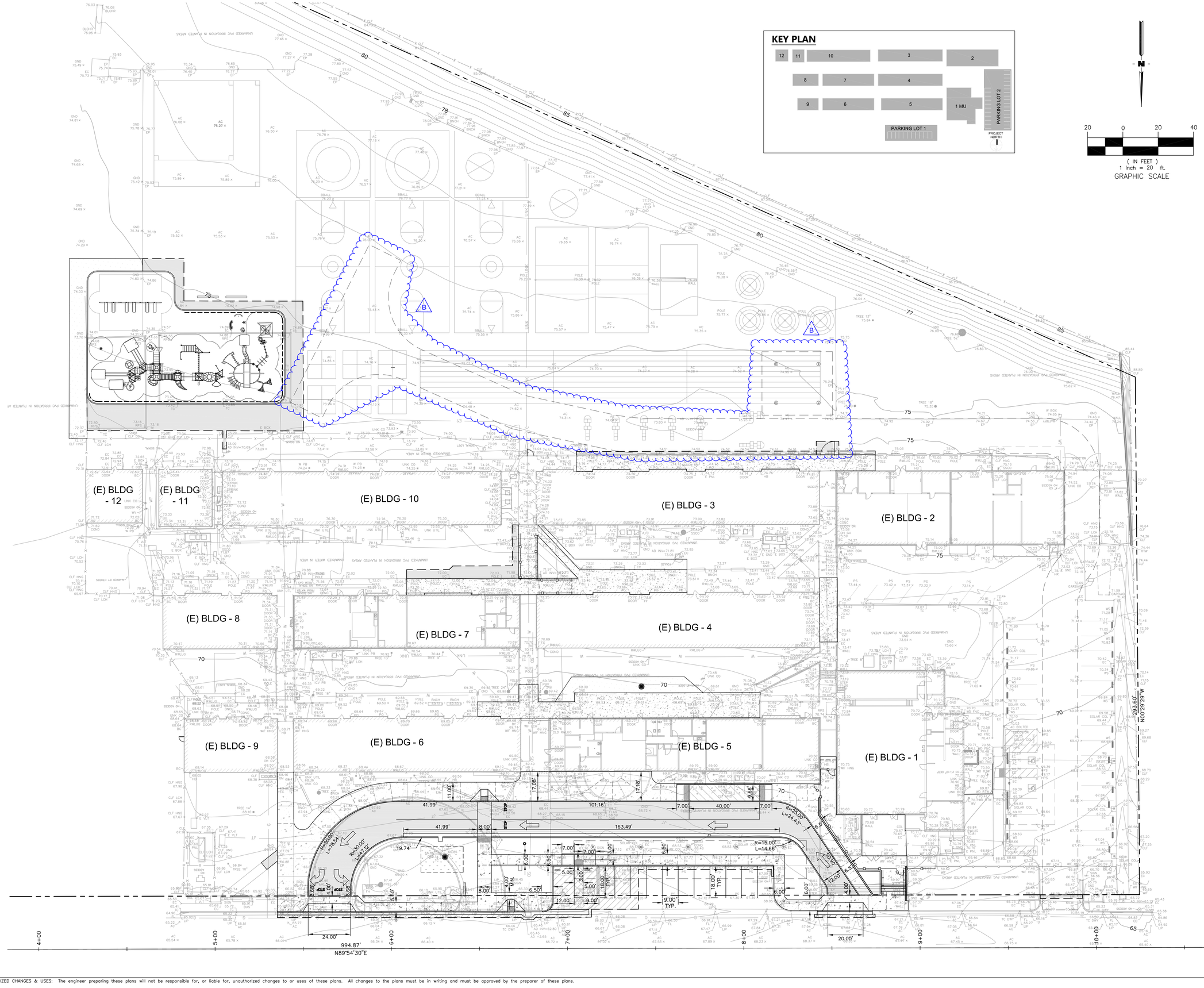

AGENCY APPROVAL DSA# 01-121440

196
991 W HEDDING ST., SUITE 101
SAN JOSE, CA 95126
TEL (408) 715-4470

CARROLL ENGINEERING engineers and surveyors
1101 S. WINCHESTER BLVD. SUITE H-154
SAN JOSE, CA 95128
TEL 408-241-9800
FAX 408-241-0995
E-MAIL: Robert@carroll-engineering.com

CONSULTANTS

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1101 South Winchester Blvd., Suite H184
San Jose, CA 95128
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MECHANICAL ENGINEER
CYPRESS ENGINEERING GROUP
8 Harris Court, Suite A8
Monterey, CA 93940
TEL (831) 218-1802

ELECTRICAL ENGINEER
ATUM ENGINEERING
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San Ramon, CA 94582
TEL (913) 961-1658

STRUCTURAL ENGINEER
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San Francisco, CA 94104
TEL (415) 466-2997

TECHNOLOGY ENGINEER
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5433 El Camino Ave. Ste 5
Carmichael, CA 95608
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LANDSCAPE ARCHITECT
YAMASAKI LANDSCAPE ARCHITECTURE
1223 High Street
Auburn, CA 95603
(530) 885 0040

PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER
MATTHEW PAUL MARKS
No. C 68770
Exp. 06/30/25
STATE OF CALIFORNIA

REVISIONS

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
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

HORIZONTAL CONTROL PLAN

INC.2

DRAWN BY: MPM JOB NUMBER: 23118.01

SHEET NO.

2-C5.1

DATE: SEPTEMBER 19, 2024

CONSTRUCTION DOCUMENTS

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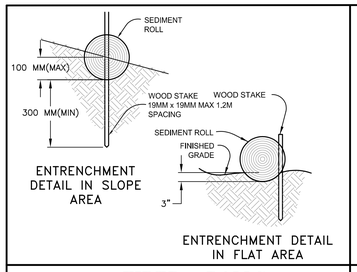
EROSION CONTROL NOTES:

1.) EROSION CONTROL FACILITIES SHALL BE MAINTAINED IN GOOD CONDITION TO PREVENT SILTATION FROM ENTERING INLETS.

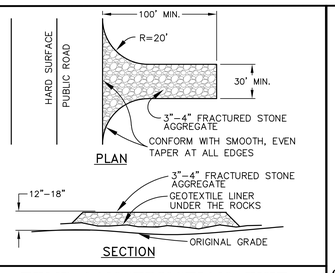
2.) DUST GENERATED ON THE PROJECT SITE SHALL BE CONTROLLED BY SELECTIVE WATERING OF EXPOSED AREAS, ESPECIALLY DURING CLEARING AND GRADING OPERATIONS.

3.) PAVING SHALL BE COMPLETED AS SOON AS IS PRACTICABLE TO REDUCE THE TIME THAT BARE SURFACES AND SOILS ARE EXPOSED IN AREAS WHERE CONSTRUCTION IS DELAYED FOR AN EXTENDED PERIOD OF TIME, THE GROUND SHALL BE REVEGETATED TO MINIMIZE THE GENERATION OF DUST.

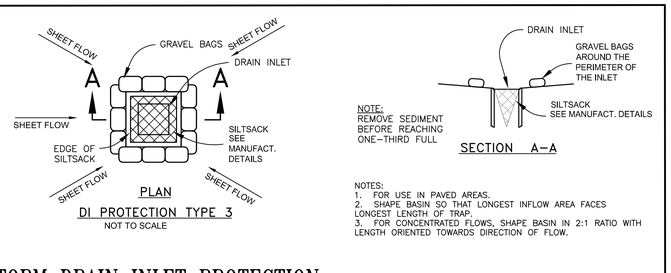
4.) STREET SWEEPING SHALL BE CONDUCTED TO CONTROL DUST AND DIRT TRACKED FROM THE PROJECT SITE ONTO ADJACENT STREETS.



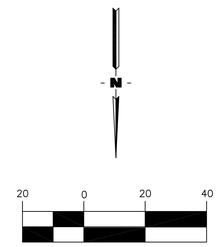
FIBER ROLLS

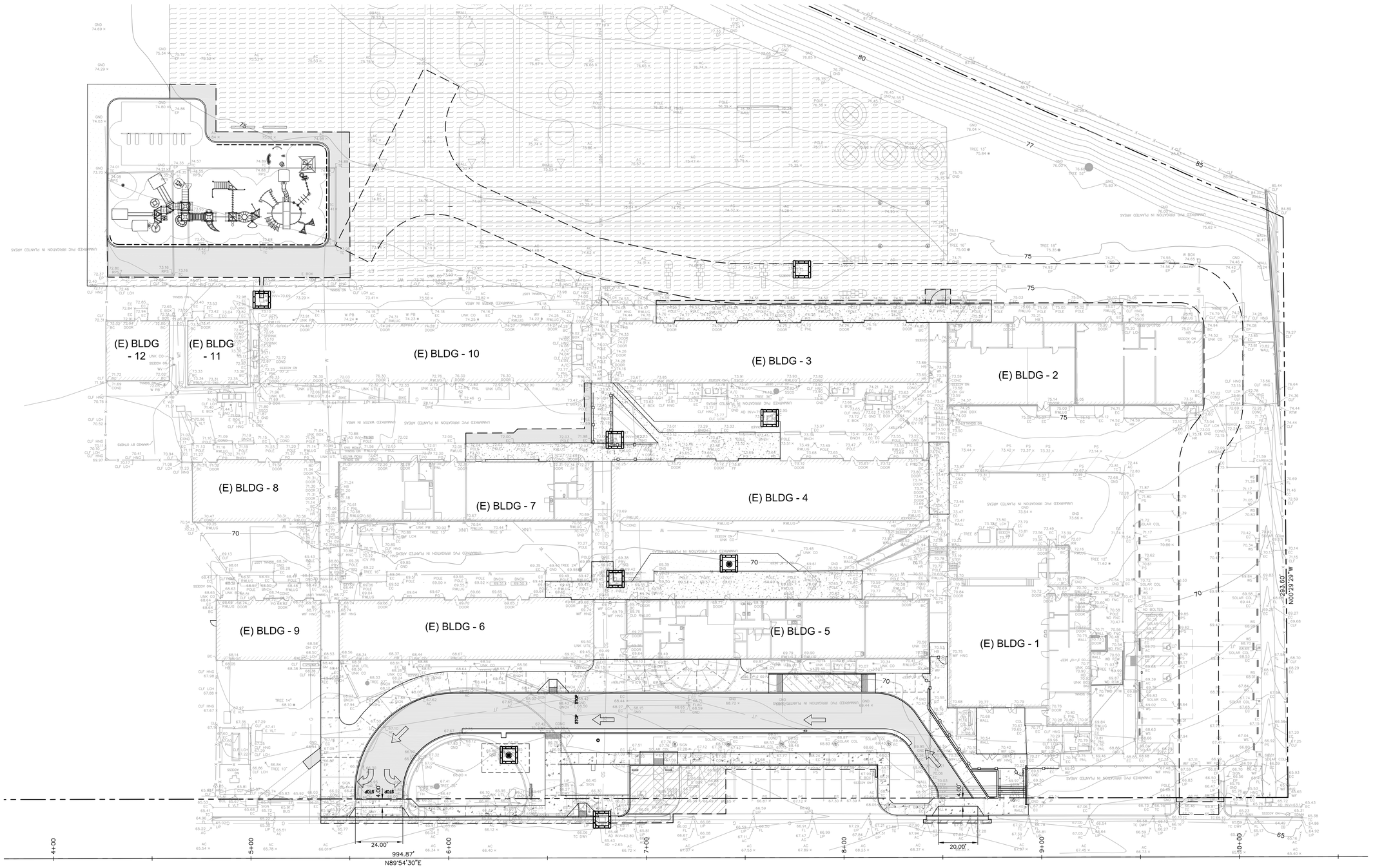


TEMP.CONSTRUCTION EXIT



STORM DRAIN INLET PROTECTION - TYPE 3





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REGISTERED PROFESSIONAL ENGINEER
MATTHEW PAUL MARTIS
No. C 68770
Exp. 12/31/25
CIVIL
STATE OF CALIFORNIA

REVISIONS

1		

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Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

EROSION CONTROL PLAN

INC.2

DRAWN BY: MPM JOB NUMBER: 23118.01

SHEET NO.

2-C6.1

DATE: SEPTEMBER 19, 2024

CONSTRUCTION DOCUMENTS

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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M BAR C VERSA-CANOPY 19.2

PC OWNERSHIP - STRUCTURAL STEEL CONTRACTOR

M BAR C CONSTRUCTION INC.

1770 LA COSTA MEADOWS DRIVE
SAN MARCOS, CA 92078

PHONE: (760) 744-4131
FAX: (760) 744-4449

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 KRIVOKOPICH
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
ℙ 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.

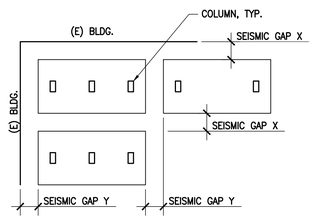
CONSTRUCTION OPTIONS

- 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, SAN MARCOS, CA 92078
ERIK KRIVOPOPICH
PHONE: (760) 744-4131
FAX: (760) 744-4449
ERIK@MBARCONLINE.COM
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

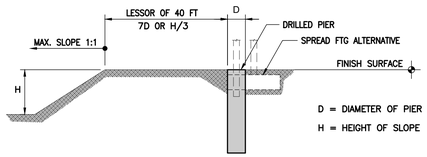
S-2

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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ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K. ROSEPINK S 5885 STATE OF CALIFORNIA

BID INFORMATION

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PRE-CHECK (PC) DOCUMENT

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SITE SPECIFIC INFORMATION

REVISIONS

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4 STEL JOB #	MC03-02-2
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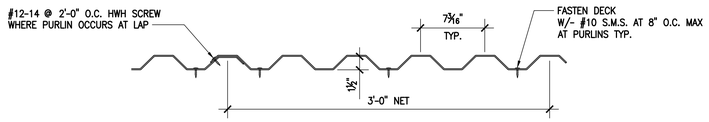
CHECKED	CDL

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

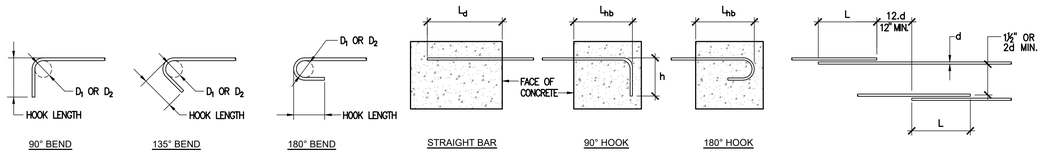


NOTES:

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"	4¼"
#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"

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.

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.

A STANDARD HOOKS

B DEVELOPMENT LENGTHS

C OFFSETS AND LAP SPLICES

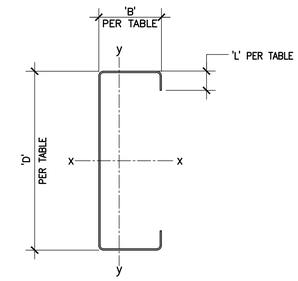
4 - TYPICAL REINFORCEMENT BAR BENDS AND LAPS

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.



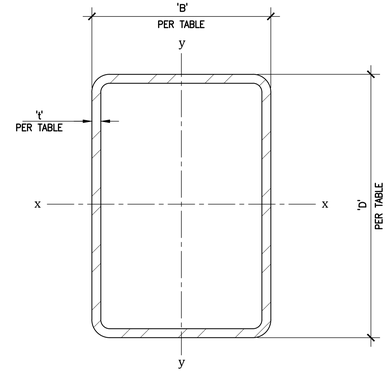
1 - PURLIN & BEAM COLD FORMED C-SECTION

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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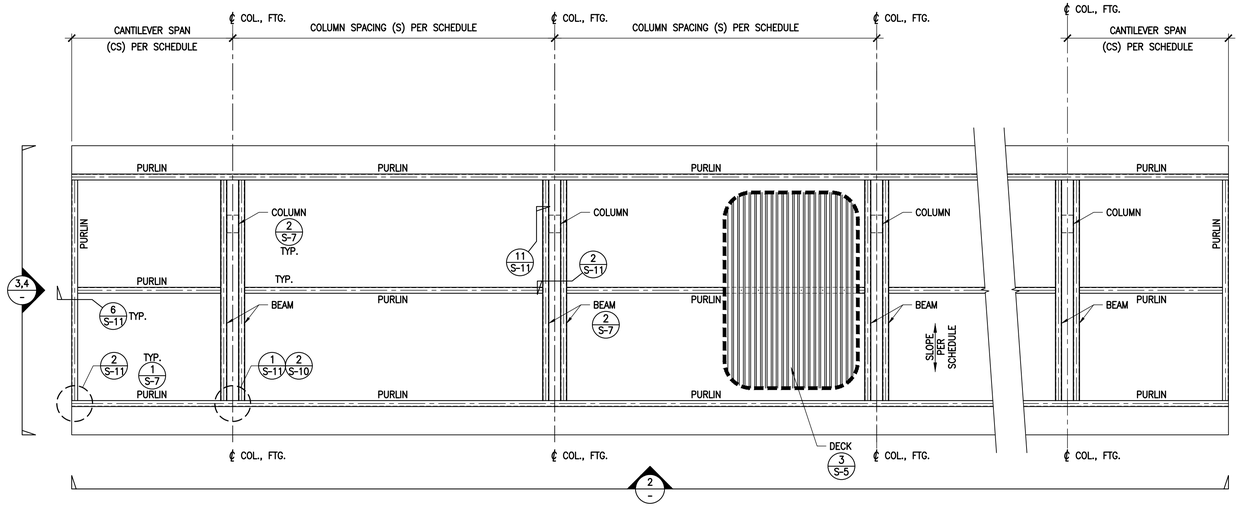
PROPERTIES & REBAR DETAILS

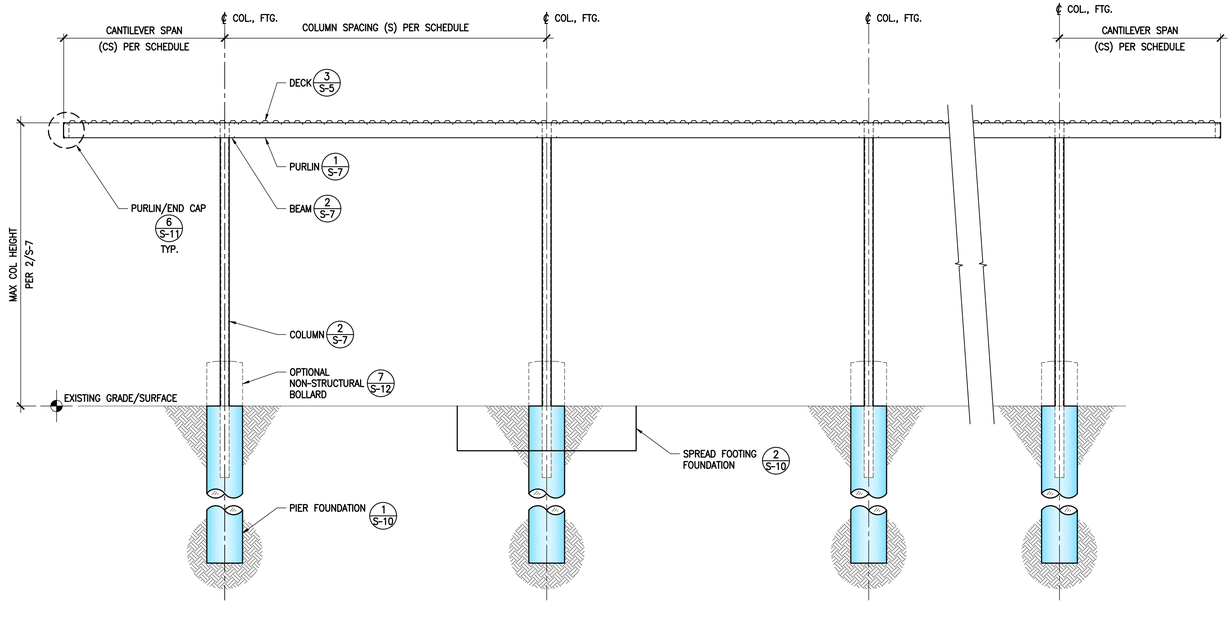
S-5

NOTE: IF DWG. IS NOT 24 x 36, IT IS NOT FULL SIZE



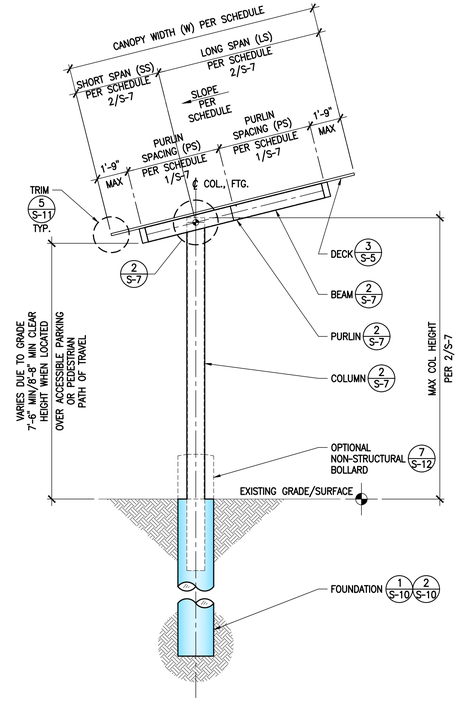
1/- VC14, VC18, VC20, VC24, VC28 & VC30 TYPICAL PLAN VIEW

1/4"=1'-0"



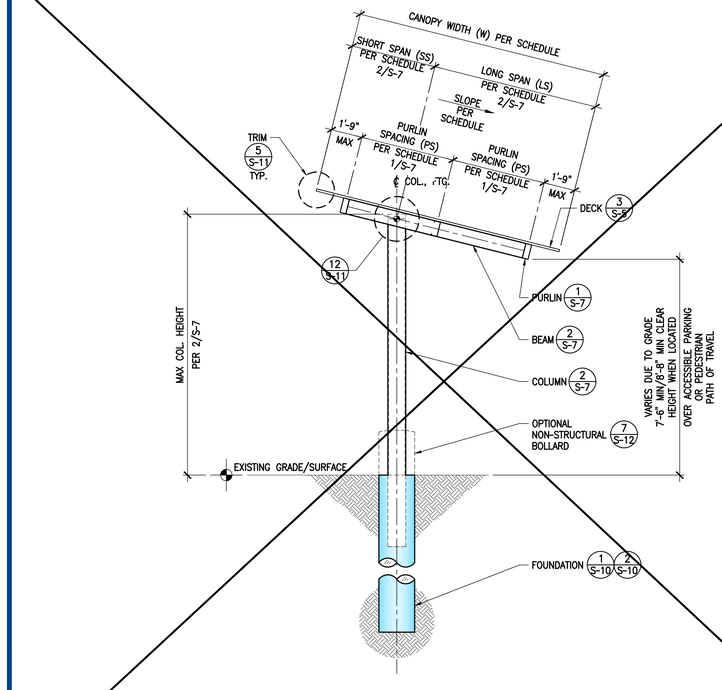
2/- VC14, VC18, VC20, VC24, VC28 & VC30 TYPICAL FRONT ELEVATION

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"

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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

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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"	11'-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- #9	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:
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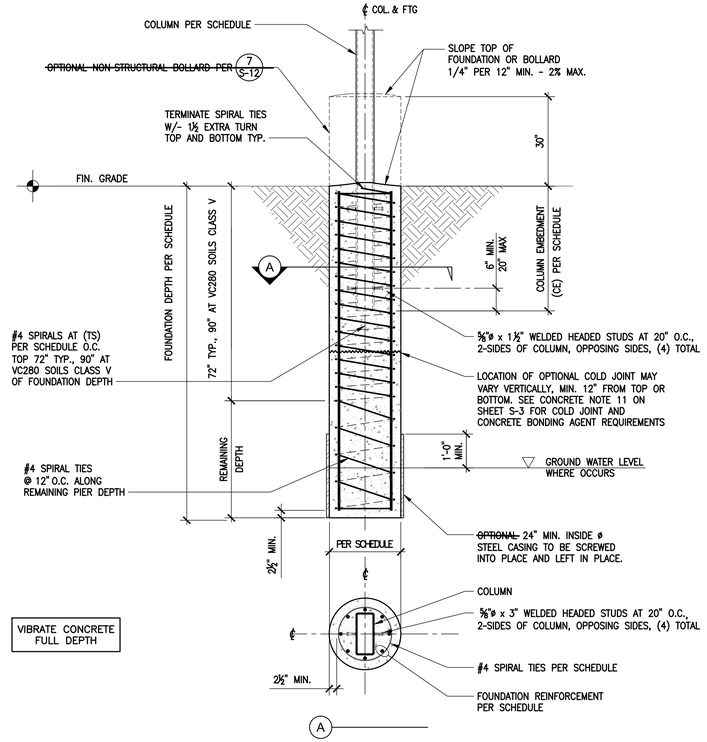
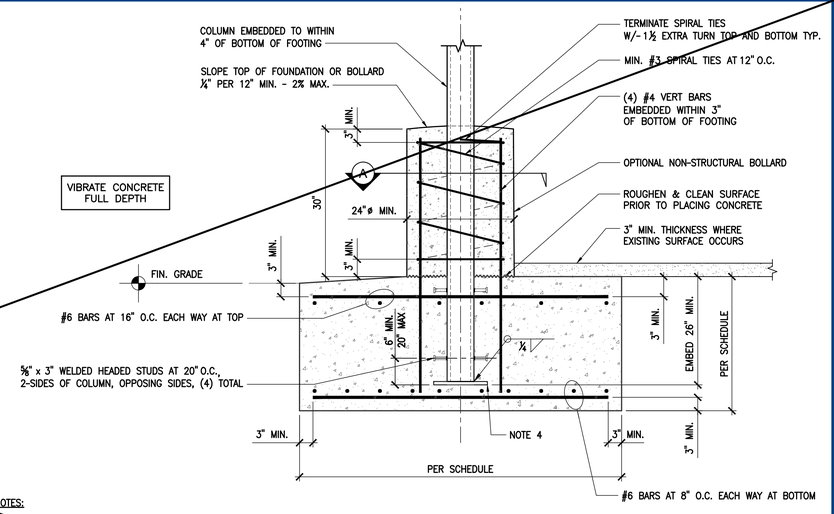
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. SEE SOILS NOTES ON SHEET S-3 FOR INFORMATION ON SOILS CLASS SELECTION.

2 - SPREAD FOOTING SCHEDULE

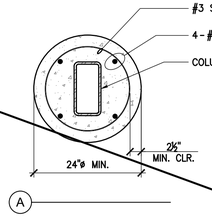


3 - NON-CONSTRAINED PIER FOUNDATION

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"

4 STEEL ENGINEERING
26030 ACERO,
MISSION VIEJO, CA 92691
949.305.1150 | FAX 949.305.1420

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1770 LA COSTA MEADOWS DRIVE, SAN MARCOS, CA 92078
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ERIK@MBARCONLINE.COM
LIC # 869960 B AND C-51 (760) 787-8845

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K. ROSEPINK S 5885 CIVIL STATE OF CALIFORNIA

BID INFORMATION

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REVIEWED FOR
SS ☑ FLS ☑ ACS ☑ CG ☐
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SITE SPECIFIC INFORMATION

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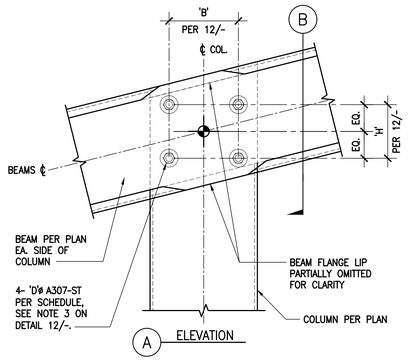
DRAWN BY	MAP
CHECKED	CDL

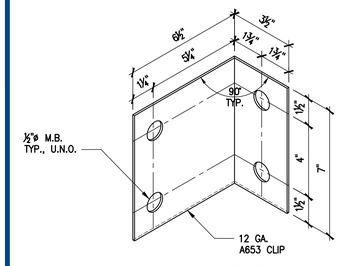
PIER FOUNDATION & SPREAD FOOTING SCHEDULES

S-10

NOTE: IF DWG. IS NOT 24 x 36, IT IS NOT FULL SIZE

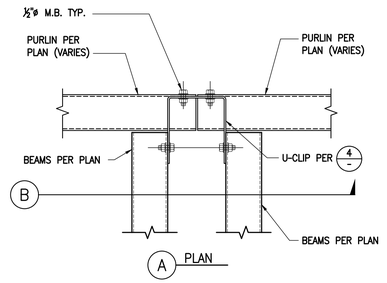


11 - BEAM TO COLUMN - 4 BOLT 1-1/2"=1'-0"

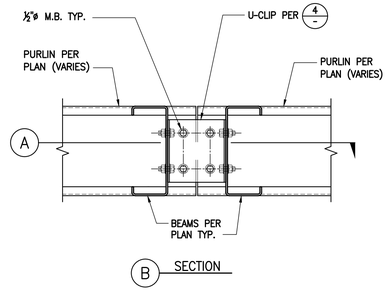


NOTES:
1. USE ⅝" ø M.B. AT VC18, VC20 OPTIONS

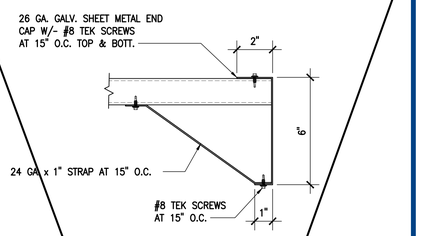
3 - L-CLIP INTERIOR PURLIN TO BEAM 3"=1'-0"



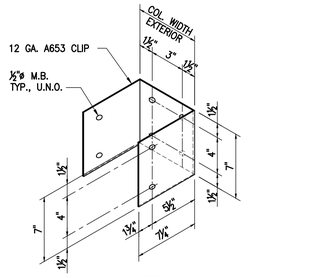
NOTES:
1. ROOF DECK NOT SHOWN FOR CLARITY.
2. PURLINS AT CANTILEVER SHALL BE CONTINUOUS.



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"

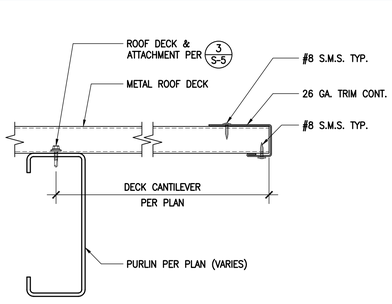
BEAM TO COLUMN CONNECTION SCHEDULE

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"

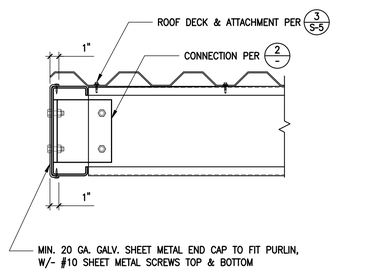
NOTES:
1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. BOLTS SHALL BE A307-ST WITH STANDARD NUTS PER ASTM A563 AND WASHERS TYPICAL U.N.O.
4. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.
5. WASHERS REQUIRED AT BOLTED CONNECTION ON THE OUTSIDE OF BEAMS IN DETAIL 11/-.

12 - BEAM TO COLUMN SCHEDULE N.T.S.

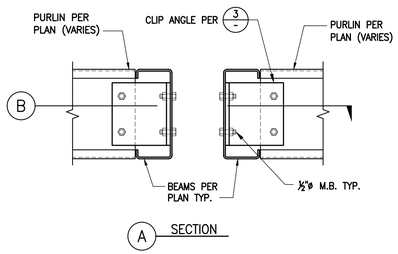
10 - TYPICAL BOLLARD 1/2"=1'-0"



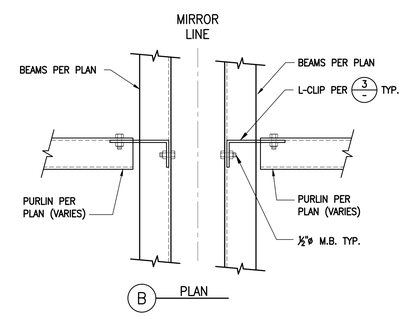
5 - ROOF DECK TRIM DETAIL 3"=1'-0"



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

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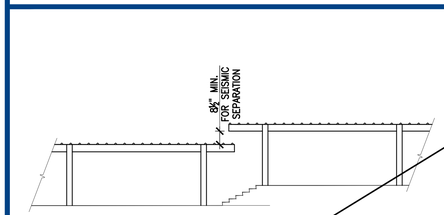
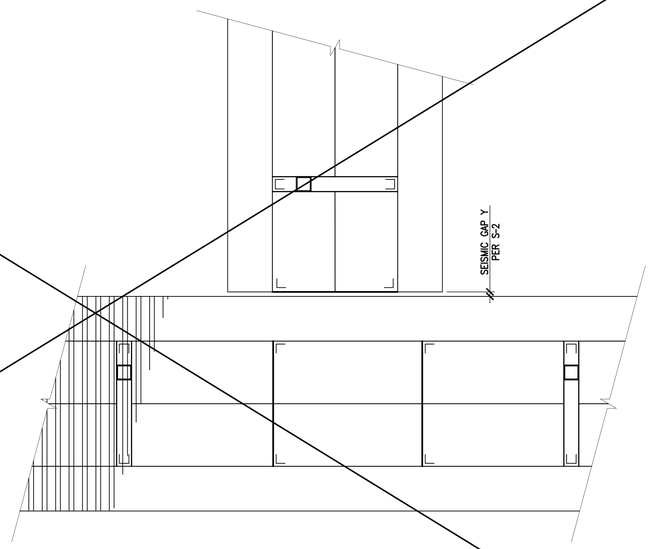


NOTES:

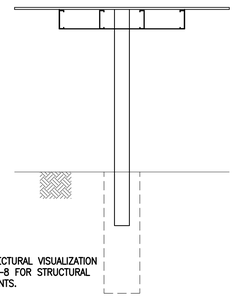
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.
2. OPTION ONLY ALLOWED IF SITE SPECIFIC MAXIMUM DRIFT SNOW LOAD IS LESS THAN THE ALLOWABLE SNOW LOAD OF THE STRUCTURE SELECTIONS.

10 - ELEVATION AT STAIRS 3/32"=1'-0"



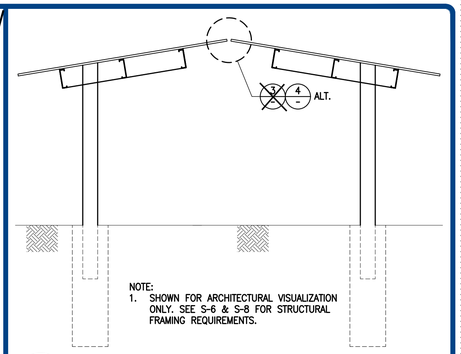
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

9 - 90 DEGREE ROOF CONNECTION OPTION 1/4"=1'-0"



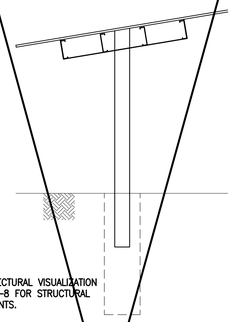
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

5 - CENTERED ROOF ELEVATION OPTION 1 1/4"=1'-0"



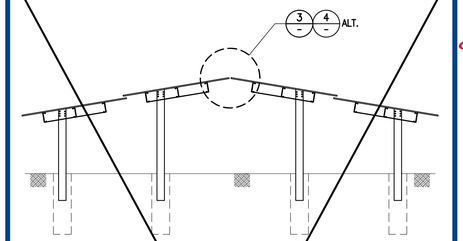
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

1 - GABLE ROOF ELEVATION OPTION 1/4"=1'-0"



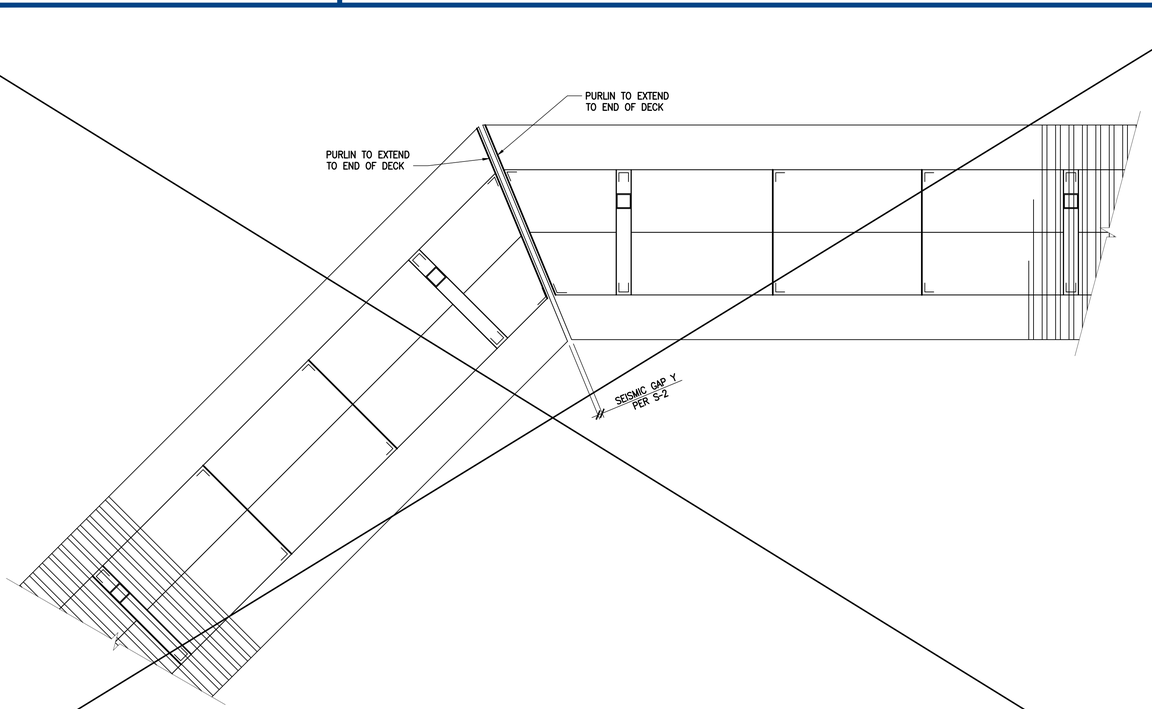
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

6 - CENTERED ROOF ELEVATION OPTION 2 1/4"=1'-0"



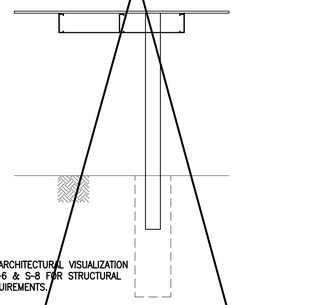
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

2 - DOUBLE GABLE ROOF ELEVATION OPTION 2 3/32"=1'-0"



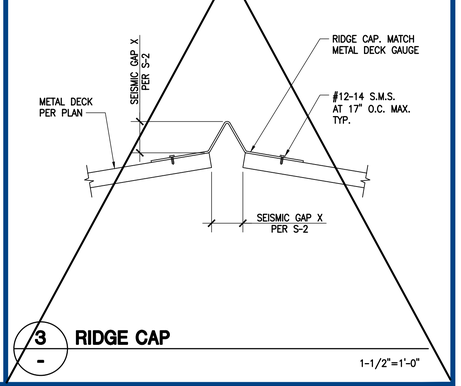
NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

11 - 45 DEGREE ANGLED ROOF CONNECTION OPTION 1/4"=1'-0"

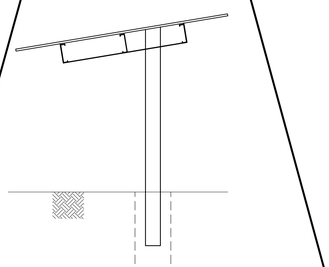


NOTE:
1. SHOWN FOR ARCHITECTURAL VISUALIZATION ONLY. SEE S-6 & S-8 FOR STRUCTURAL FRAMING REQUIREMENTS.

7 - OFFSET ROOF ELEVATION OPTION 1 1/4"=1'-0"

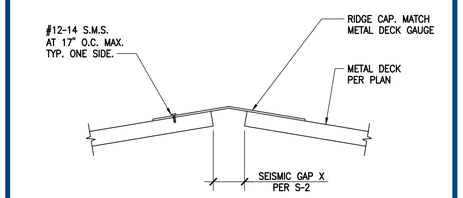


3 - RIDGE CAP 1-1/2"=1'-0"



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"



4 - RIDGE CAP ALTERNATE 1-1/2"=1'-0"

4 STEEL ENGINEERING
26030 ACERO,
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STANDARD DETAILS 3

S-13

NOTE: IF DWG. IS NOT 24 x 36, IT IS NOT FULL SIZE

LEGEND - SITE PLAN

- SCHOOL PROPERTY LINE. SEE 1/2G-002 FOR ENTIRE SCHOOL CAMPUS PROPERTY LINE.
- LIMITS OF WORK
- PROJECT BUILDING MODERNIZATION INC. 2 - THIS SET
- PROJECT BUILDING MODERNIZATION INC. 1
- (E) BUILDING N.I.C
- (E) LANDSCAPING
- (E) SOLAR PANEL
- (E) STAF RESTROOMS
- (E) STUDENT RESTROOMS
- (N) STUDENT RESTROOMS
- (N) SEAL COATING AND PLAY LINES STRIPING
- (N) RUBBERIZED SURFACE
- (N) CONCRETE PAVING
  - EXPANSION JOINT
  - CONTROL JOINT
- (N) ASPHALT CONCRETE PAVING
- (E) CHAINLINK FENCE
- (N) CHAINLINK FENCE
- (E) ORNAMENTAL FENCE
- (N) ORNAMENTAL FENCE
- (E) EXTERIOR LIGHTING ALONG P.O.T.
- FH (E) FIRE HYDRANT
- FDC (E) FIRE DEPARTMENT CONNECTION
- 24'-0" (N) PROPOSED FIRE ENGINE ACCESS PART OF THIS APPLICATION 5
- ASSUMED PROPERTY LINE
- **PATH OF TRAVEL (P.O.T.) INC. 2**
- **PATH OF TRAVEL (P.O.T.) INC. 1**

- 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.

LEGEND - SITE PLAN 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: 293+154+112+168=727. 727 X 5 SF = 3,635 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.

KEYNOTES

01.32.A	(E) GATE W/ 20'-0" CLEAR OPENING WITH KNOX BOX
01.32.B	(E) FIRE HYDRANT
01.32.C	(E) BOLLARDS
01.32.G	(E) GATE W/ 20'-0" CLEAR OPENING - WITH (E) KNOX BOX
01.41.D	(E) ACCESSIBLE RAMP. DSA #01-105316
01.41.F	(E) VAN ACCESSIBLE PARKING STALL & SIGNAGE PART OF THIS APPLICATION INC 1
01.41.G	(E) ACCESSIBLE PARKING STALL AND SIGNAGE PART OF THIS APPLICATION INC 1
01.41.J	(E) ACCESSIBLE BOYS RESTROOM. DSA #01-114761
01.41.K	(E) ACCESSIBLE GIRLS RESTROOM. DSA #01-114761
01.41.L	(E) ACCESSIBLE ORNAMENTAL GATE W/ PANIC HARDWARE. SEE 20/2A-112
01.41.M	(E) ACCESSIBLE STUDENT RESTROOM. PART OF INCREMENT 1 IN THIS APPLICATION.
01.41.N	(E) ACCESSIBLE STAFF RESTROOM. PART OF INCREMENT 1 IN THIS APPLICATION
01.41.O	(E) SERVICE GATE
01.41.P	(E) SOLAR PANEL. DSA #01-112054
01.41.Q	(E) PG&E SERVICE ENCLOSURE
01.41.S	(E) HI-LOW ACCESSIBLE DRINKING FOUNTAIN. PART OF INCREMENT 1 IN THIS APPLICATION
01.41.U	(E) ACCESSIBLE ORNAMENTAL GATE INCLUDED IN INC. 1 SCOPE OF WORK. REFER TO DETAIL 25/2A-111
03.40.A	CONCRETE PAVING PER CIVIL DRAWINGS
05.52.B	(N) STAIR HANDRAIL. REFER TO DETAIL 8/2A-111
05.52.D	(N) HANDRAIL AT ACCESSIBLE RAMP. REFER TO DETAIL 5/2A-112
10.14.C	(N) MARQUEE SIGN. REFER TO DETAIL 10/2A-111. SEE ELECTRICAL AND TECHNOLOGY DRAWINGS FOR THE ENTIRE SCOPE OF WORK
12.67.A	SALVAGED METAL BENCH, FRAME AND SEAT TO BE PAINTED WHITE
13.34.A	(N) PC SHADE STRUCTURE. REFER TO PC DRAWINGS DSA APP# 04-119563
22.47.A	(N) HI-LOW ACCESSIBLE DRINKING FOUNTAIN. REFER TO DETAIL 12/2A-111
32.00.A	(E) TREE. PROTECT DURING CONSTRUCTION
32.00.B	(E) LIGHT POLE. PROTECT DURING CONSTRUCTION.
32.00.C	(E) SOLAR SHADE STRUCTURE DSA APP# 01-112054. PROTECT DURING CONSTRUCTION
32.00.H	(E) COVERED BUS STOP
32.12.A	(N) ASPHALT CONCRETE PAVING S.C.D.
32.13.A	(N) CURB RAMP S.C.D.
32.13.B	(N) CONCRETE FLATWORK. S.C.D.
32.13.D	(N) EXTERIOR CONCRETE STAIR. S.C.D. AND 18/2A-111
32.13.F	(N) LOADING ZONE. S.C.D.
32.14.A	(N) OFCI PLAY EQUIPMENT. REFER TO 4/2A-112.
32.17.B	(N) TRUNCATED DOMES BAND. S.C.D.
32.17.D	(N) PARKING STALLS STRIPING. TYP
32.17.E	(N) VAN ACCESSIBLE PARKING STALL AND SIGNAGE. REFER TO DETAIL 2/2A-111
32.32.A	(N) 6'-0" TALL ORNAMENTAL FENCE
32.32.B	(E) SALVAGED ACCESSIBLE ORNAMENTAL GATE WITH PANIC HARDWARE. REFER TO DETAIL 17/2A-112
32.32.D	(N) ACCESSIBLE CHAIN LINK GATE. REFER TO DETAIL 23/2A-111
32.32.F	(N) ACCESSIBLE ORNAMENTAL GATE. REFER TO DETAIL 19/2A-112
32.32.H	(N) ORNAMENTAL SERVICE GATE. REFER TO DETAIL 19/2A-112
32.41.A	(E) 7' HIGH CHAINLINK FENCE
32.92.D	(N) LANDSCAPING AREA. S.L.D.

PROJECT BUILDING INFORMATION

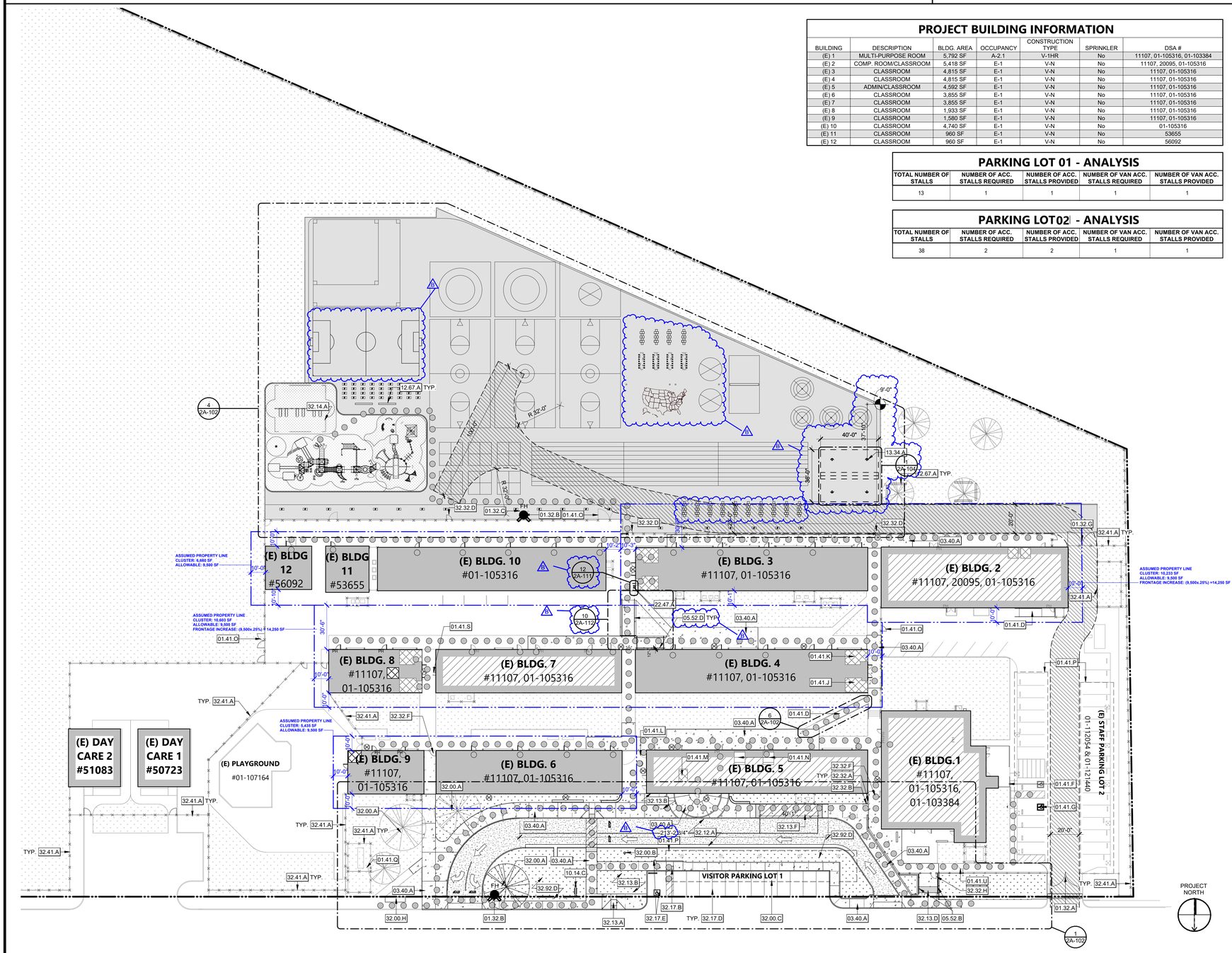
BUILDING	DESCRIPTION	BLDG. AREA	OCCUPANCY	CONSTRUCTION TYPE	SPRINKLER	DSA #
(E) 1	MULTI-PURPOSE ROOM	5,792 SF	A-2.1	V-1HR	No	11107, 01-105316, 01-103384
(E) 2	COMP. ROOM/CLASSROOM	5,418 SF	E-1	V-N	No	11107, 20095, 01-105316
(E) 3	CLASSROOM	4,815 SF	E-1	V-N	No	11107, 01-105316
(E) 4	CLASSROOM	4,815 SF	E-1	V-N	No	11107, 01-105316
(E) 5	ADMIN/CLASSROOM	4,592 SF	E-1	V-N	No	11107, 01-105316
(E) 6	CLASSROOM	3,855 SF	E-1	V-N	No	11107, 01-105316
(E) 7	CLASSROOM	3,855 SF	E-1	V-N	No	11107, 01-105316
(E) 8	CLASSROOM	1,933 SF	E-1	V-N	No	11107, 01-105316
(E) 9	CLASSROOM	1,580 SF	E-1	V-N	No	11107, 01-105316
(E) 10	CLASSROOM	4,740 SF	E-1	V-N	No	01-105316
(E) 11	CLASSROOM	960 SF	E-1	V-N	No	53655
(E) 12	CLASSROOM	960 SF	E-1	V-N	No	56092

PARKING LOT 01 - ANALYSIS

TOTAL NUMBER OF STALLS	NUMBER OF ACC. STALLS REQUIRED	NUMBER OF ACC. STALLS PROVIDED	NUMBER OF VAN ACC. STALLS REQUIRED	NUMBER OF VAN ACC. STALLS PROVIDED
13	1	1	1	1

PARKING LOT02 - ANALYSIS

TOTAL NUMBER OF STALLS	NUMBER OF ACC. STALLS REQUIRED	NUMBER OF ACC. STALLS PROVIDED	NUMBER OF VAN ACC. STALLS REQUIRED	NUMBER OF VAN ACC. STALLS PROVIDED
38	2	2	1	1



SITE PLAN | 1" = 30'-0" | 1

AGENCY APPROVAL DSA# 01-121440

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Monterey, CA 93940
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(530) 885 0040

PROFESSIONAL STAMP

LICENSED ARCHITECT MARINA ALVAREZ PAGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/30/2024	ADDENDUM #1
B	11/18/2024	ADDENDUM #2

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
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

CODE SITE PLAN

INC 2

DRAWN BY: DV JOB NUMBER: 23118.01

SHEET NO.

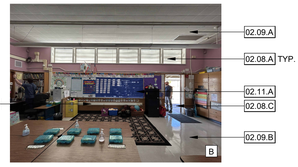
2G-102

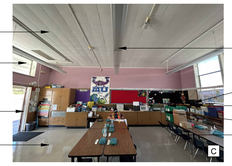
DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

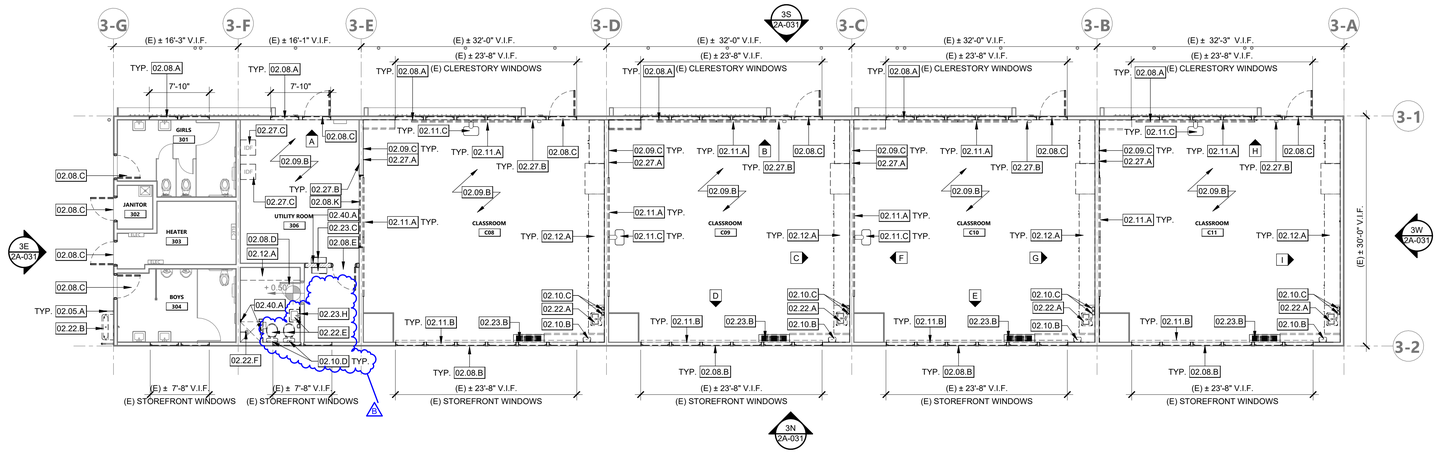
DATE PLOTTED: 11/18/2024 3:15:45 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDIUSD_RIO VISTA ES MOD_INC02_A22.rvt



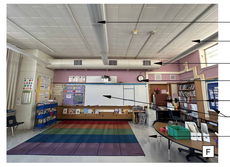


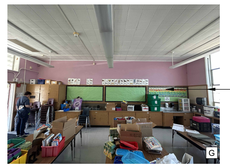




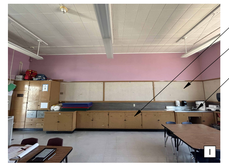






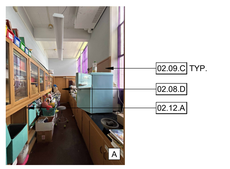




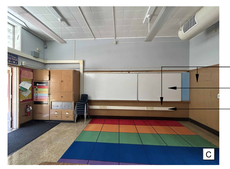


PROJECT NORTH

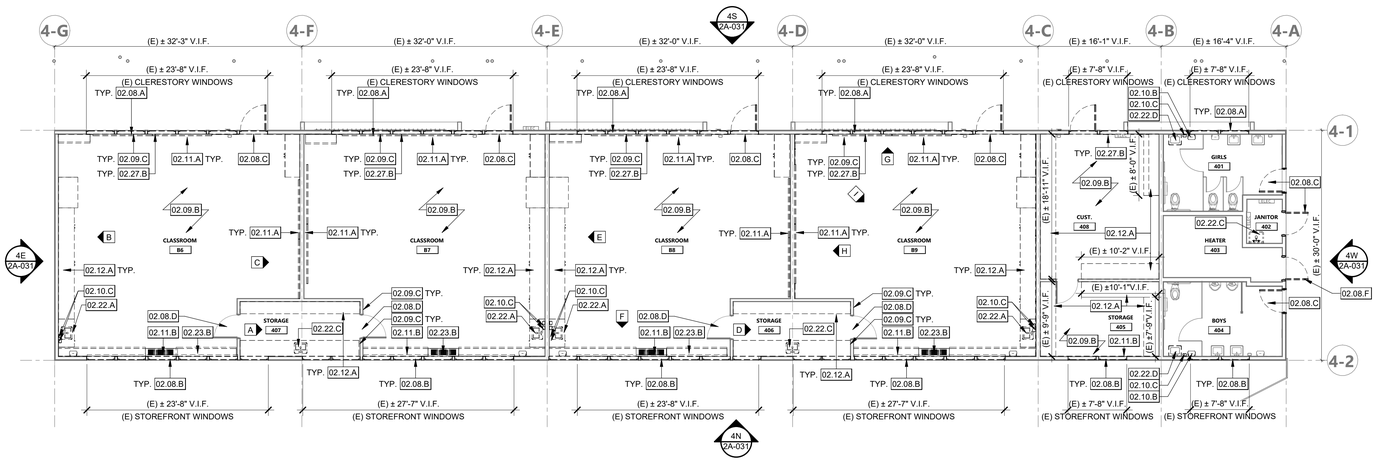
BUILDING 3 DEMOLITION FLOOR PLAN | 1/8" = 1'-0" | 1



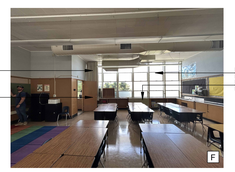


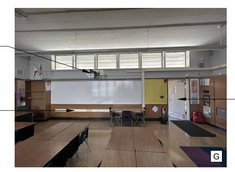
















PROJECT NORTH

BUILDING 4 DEMOLITION FLOOR PLAN | 1/8" = 1'-0" | 2

KEYNOTES

02.00.A	(E) GYP. CEILING TO REMAIN, PATCH DAMAGED CEILING FINISH AND PAINT, ASSUME 25% REPAIRS NEEDED, TYP.
02.00.H	(E) IDF TO BE PROTECTED, S.E.D.
02.00.I	(E) HVAC HOUSING AND DUCTWORK TO REMAIN AND BE PROTECTED DURING CONSTRUCTION. PREPARE SURFACE FOR PAINTING
02.05.A	(E) CANE DETECTION RAILING TO BE DEMOLISHED
02.08.A	(E) CLERESTORY WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT EXISTING OPENING. PREPARE TO RECEIVE NEW
02.08.B	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT EXISTING OPENING. PREPARE TO RECEIVE NEW
02.08.C	(E) DOOR AND ASSOCIATED HARDWARE TO BE DEMOLISHED, (E) WOOD FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR
02.08.D	(E) DOOR HARDWARE TO BE DEMOLISHED. DOOR AND FRAME TO REMAIN AND BE PROTECTED IN PLACE. PREPARE SURFACE FOR PAINTING.
02.08.E	(E) INTERIOR DOOR AND FRAME TO BE DEMOLISHED
02.08.F	(E) DOOR AND ASSOCIATED HARDWARE TO BE DEMOLISHED, (E) HOLLOW METAL FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR
02.08.K	(E) CASED OPENING FRAME TO BE DEMOLISHED. PREPARE OPENING FOR WALL INFILL.
02.09.A	(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.B	(E) VCT FLOORING TO BE DEMOLISHED. PREPARE FOR NEW FLOORING
02.09.C	(E) TACKABLE WALL PANEL AND WOOD TRIM TO BE DEMOLISHED, TYP. FOR ALL WALLS
02.10.B	(E) PAPER TOWEL DISPENSER TO BE REMOVED AND RETURNED TO THE DISTRICT.
02.10.C	(E) HAND SOAP DISPENSER AND (E) HAND SANITIZER DISPENSER TO BE DEMOLISHED.
02.10.D	(E) RESTROOM ACCESSORIES TO BE REMOVED AND RETURN TO THE SCHOOL DISTRICT
02.11.A	(E) WHITEBOARDS AND TACKBOARDS TO BE REMOVED
02.11.B	(E) WINDOW COVERINGS AND TRACK TO BE DEMOLISHED
02.11.C	(E) PROJECTOR TO BE REMOVED AND RETURNED TO THE DISTRICT
02.12.A	(E) CABINETS, COUNTERTOPS, BOOKSHELVES, LAPTOP DESK UNIT, AND ALL RELATED ACCESSORIES TO BE DEMOLISHED
02.12.B	(E) LAPTOP DESK WALL UNIT TO BE DEMOLISHED
02.22.A	(E) SINK TO BE DEMOLISHED. PREPARE TO RECEIVE NEW SINK AND CABINET
02.22.B	(E) DRINKING FOUNTAIN TO BE DEMOLISHED. S.P.D.
02.22.C	(E) SINK AND ACCESSORIES TO BE DEMOLISHED, S.P.D.
02.22.D	(E) PLUMBING FIXTURES TO BE DEMOLISHED, S.P.D.
02.22.E	(E) PLUMBING FIXTURE TO BE REMOVED AND RETURN TO THE SCHOOL DISTRICT S.P.D.
02.22.F	(E) SHOWER AND ACRYLIC SHOWER BASE AND WALL TO BE DEMOLISHED. S.P.D.
02.23.B	(E) FURNACE, PREVIOUSLY ABANDONED TO BE DEMOLISHED
02.23.C	(E) AC UNIT TO BE DEMOLISHED
02.23.H	(E) WALL MOUNTED LIGHT TO BE DEMOLISHED. S.E.D. PATCH AND PREPARE SURFACE FOR PAINTING
02.26.A	(E) LIGHT FIXTURES TO BE DEMOLISHED. PATCH AND PREPARE FOR (N) LIGHT FIXTURES
02.26.B	(E) LIGHTING FIXTURES TO BE DEMOLISHED
02.27.A	(E) CLOCK TO BE DEMOLISHED. S.T.D.
02.27.B	(E) WIRE MOLD TO BE DEMOLISHED. S.T.D.
02.27.C	(E) IDF TO BE DEMOLISHED. S.T.D.
02.40.A	(E) PARTITION WALL TO BE DEMOLISHED

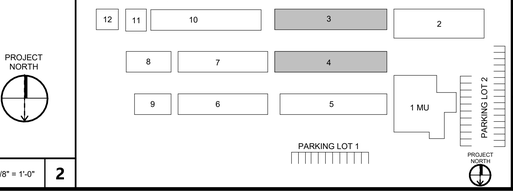
LEGEND - DEMOLITION

- (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
- 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, FIRE ALARM AND TECHNOLOGY DRAWINGS 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.
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 RIO VISTA 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 2A-911 PRIOR TO DEMOLITION OF PLASTER ASSEMBLIES

KEY PLAN



AGENCY APPROVAL DSA#

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YAMASAKI LANDSCAPE ARCHITECTURE
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PROFESSIONAL STAMP

LICENSED ARCHITECT
MARIANA ALVAREZ PARGA
C-36107
REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
B	11/18/2024	ADDENDUM #2

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 Calotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

BLDG 3 & 4- DEMOLITION PLAN

INC.2

DRAWN BY: Author JOB NUMBER: 23118.01

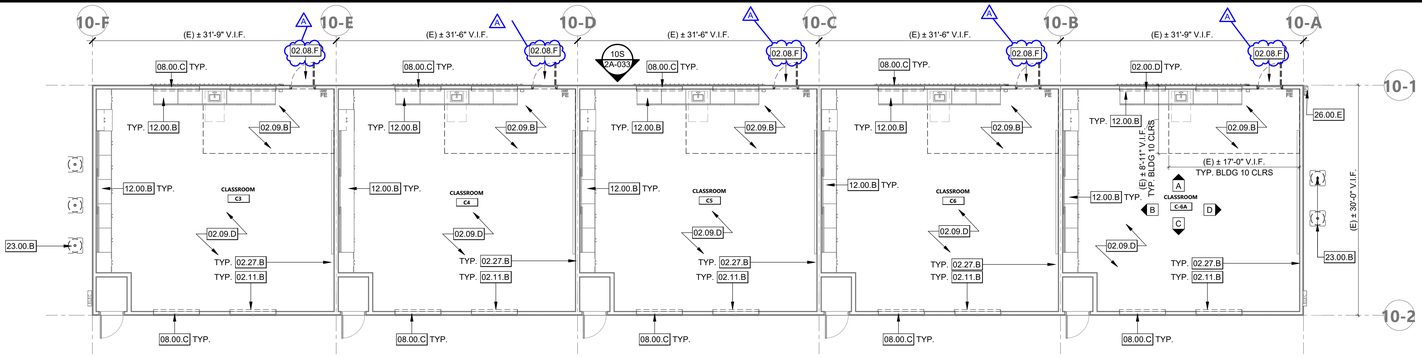
SHEET NO.

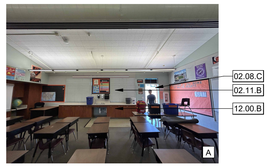
2A-021

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

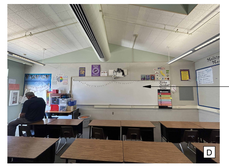
DATE PLOTTED: 11/18/2024 3:13:57 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt





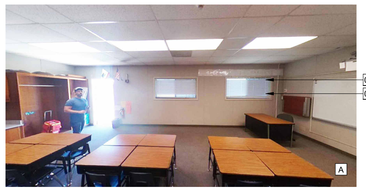


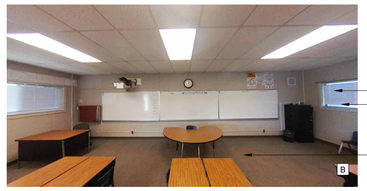


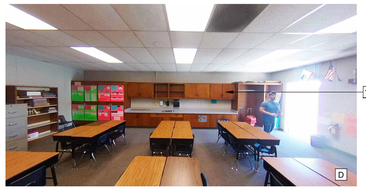


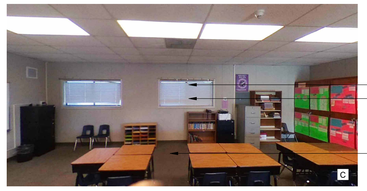
PROJECT NORTH

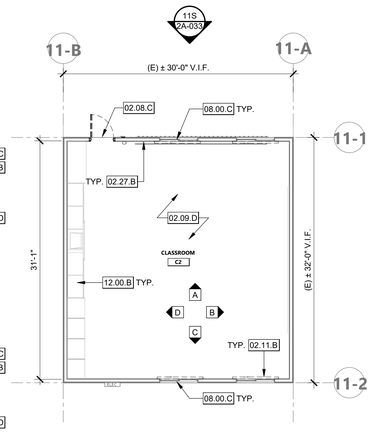
BUILDING 10 DEMOLITION FLOOR PLAN | 1/8" = 1'-0" | 1



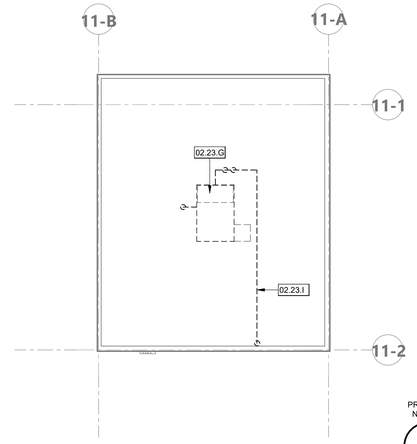






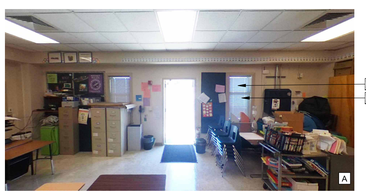


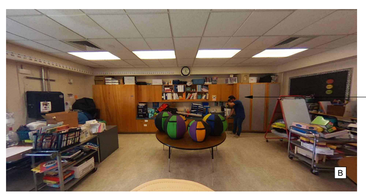
BLDG. 11 DEMOLITION FLOOR PLAN | 1/8" = 1'-0" | 4

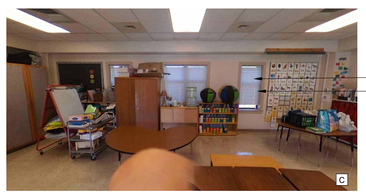


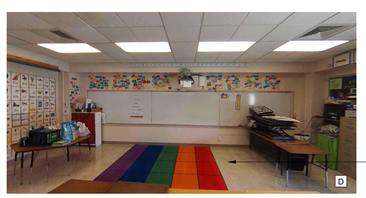
PROJECT NORTH

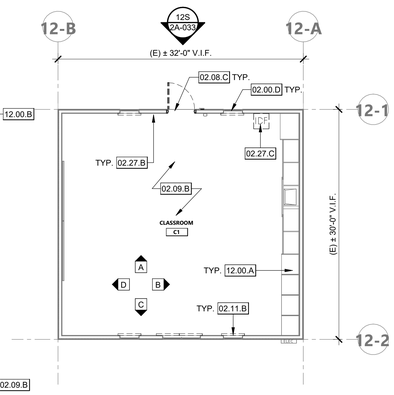
BLDG. 11 DEMOLITION ROOF PLAN | 1/8" = 1'-0" | 2



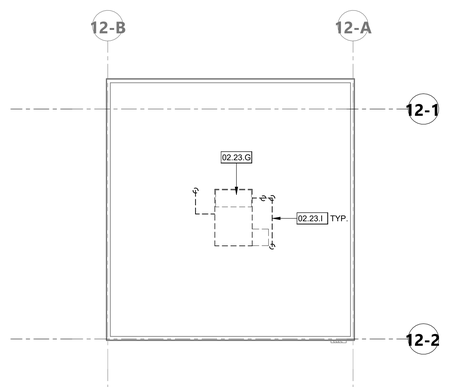








BUILDING 12 DEMOLITION FLOOR PLAN | 1/8" = 1'-0" | 5



PROJECT NORTH

BLDG. 12 DEMOLITION ROOF PLAN | 1/8" = 1'-0" | 3

KEYNOTES

02.00.D	(E) WINDOW TO REMAIN. PROTECT DURING CONSTRUCTION
02.08.C	(E) DOOR AND ASSOCIATED HARDWARE TO BE DEMOLISHED, (E) WOOD FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR
02.08.F	(E) DOOR AND ASSOCIATED HARDWARE TO BE DEMOLISHED, (E) HOLLOW METAL FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR
02.09.B	(E) VCT FLOORING TO BE DEMOLISHED. PREPARE FOR NEW FLOORING
02.09.D	(E) CARPET TO BE DEMOLISHED. PREPARE FOR NEW FLOORING
02.11.A	(E) WHITEBOARDS AND TACKBOARDS TO BE REMOVED
02.11.B	(E) WINDOW COVERINGS AND TRACK TO BE DEMOLISHED
02.23.G	(E) AC UNIT TO BE DEMOLISHED. EXISTING ROOF CURB TO REMAIN. PREPARE AREA FOR NEW AC UNIT. S.MP.D.
02.23.I	(E) PIPING ON ROOF TO BE DEMOLISHED. SEE MECHANICAL DRAWINGS FOR EXTENSION OF DEMOLITION WORK
02.27.B	(E) WIRE MOLD TO BE DEMOLISHED. S.T.D.
02.27.C	(E) IDF TO BE DEMOLISHED. S.T.D.
08.00.C	(E) WINDOW TO BE PROTECTED IN PLACE. SEE ADDITIONAL NOTES ON EXTERIOR ELEVATION FOR FRAME PAINTING.
12.00.A	(E) BICYCLE RACKS
12.00.B	(E) CASEWORK TO BE PROTECTED IN PLACE DURING CONSTRUCTION.
23.00.B	(E) MECHANICAL UNIT TO BE DEMOLISHED. S.MP.D.
26.00.E	(E) BULK-POWER SYSTEM (BPS) TO BE PROTECTED IN PLACE. S.FA.D.

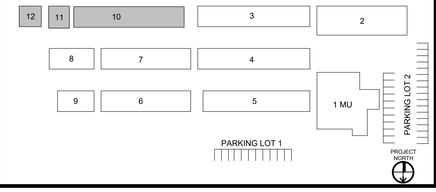
DEMOLITION NOTES

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, FIRE ALARM AND TECHNOLOGY DRAWINGS 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.
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 RIO VISTA 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 2A-911 PRIOR TO DEMOLITION OF PLASTER ASSEMBLIES

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
- REFERENCE PHOTO KEY

KEY PLAN



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LICENSED ARCHITECT MARINA ALVAREZ PAGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/30/2024	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

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Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
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Bay Point, CA 94565

SHEET TITLE

BLDG 10, 11 & 12- DEMOLITION PLAN

INC 2

DRAWN BY: Author JOB NUMBER: 23118.01

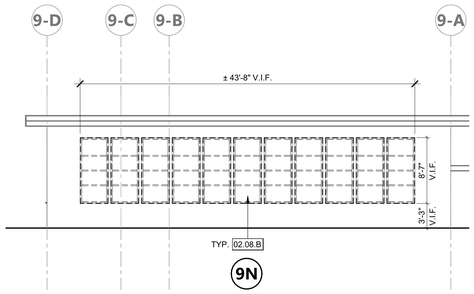
SHEET NO.

2A-023

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:14:03 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



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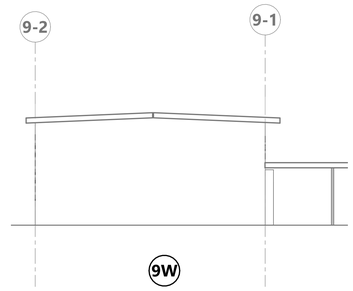

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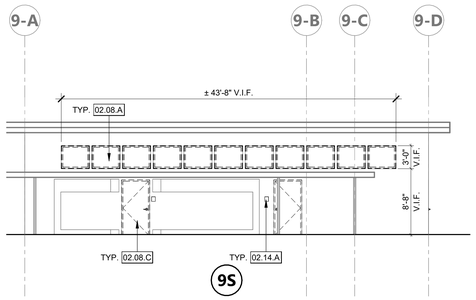

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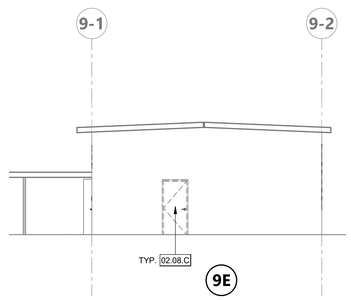
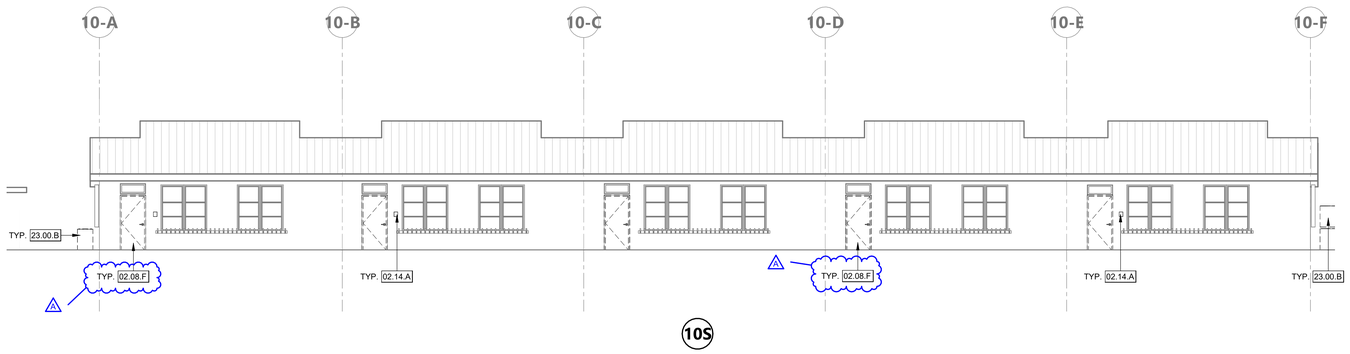


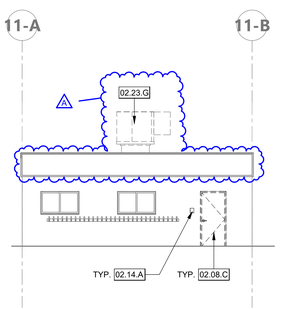
9E

BUILDING 9 EXTERIOR ELEVATIONS | 1/8" = 1'-0" | 1



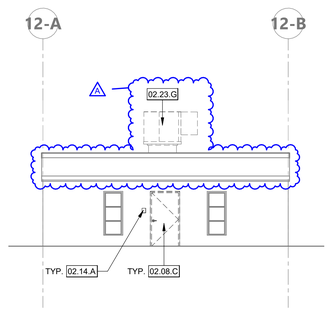
10S

BUILDING 10 EXTERIOR ELEVATIONS | 1/8" = 1'-0" | 2



11S

BUILDING 11 EXTERIOR ELEVATIONS | 1/8" = 1'-0" | 3



12S

BUILDING 12 EXTERIOR ELEVATIONS | 1/8" = 1'-0" | 4

KEYNOTES

02.08.A	(E) CLERESTORY WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT EXISTING OPENING. PREPARE TO RECEIVE NEW
02.08.B	(E) STOREFRONT WINDOWS AND FRAME TO BE DEMOLISHED. PROTECT EXISTING OPENING. PREPARE TO RECEIVE NEW
02.08.C	(E) DOOR AND ASSOCIATED HARDWARE TO BE DEMOLISHED, (E) WOOD FRAME TO REMAIN. PREPARE FOR NEW FRP DOOR
02.08.F	(E) DOOR AND ASSOCIATED HARDWARE TO BE DEMOLISHED, (E) HOLLOW METAL FRAME TO REMAIN. PREPARE FOR NEW FSR DOOR
02.14.A	(E) SIGNAGE TO BE DEMOLISHED
02.23.G	(E) AC UNIT TO BE DEMOLISHED. EXISTING ROOF CURB TO REMAIN. PREPARE AREA FOR NEW AC UNIT. S.MP.D.
23.00.B	(E) MECHANICAL UNIT TO BE DEMOLISHED. S.MP.D.

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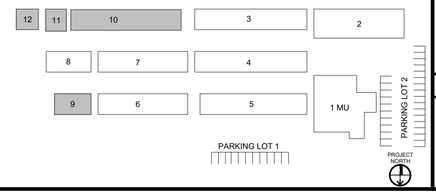
18. SEE PLASTER DEMOLITION & REPAIR NOTES ON 2A-911 PRIOR TO DEMOLITION OF PLASTER ASSEMBLIES

KEY PLAN



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REVISIONS

NO.	DATE	DESCRIPTION
A	10/30/2024	ADDENDUM #1

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RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

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Bay Point, CA 94565

SHEET TITLE

BLDG 9, 10, 11 & 12 - DEMOLITION EXTERIOR ELEVATIONS

INC.2

DRAWN BY: Author JOB NUMBER: 23118.01

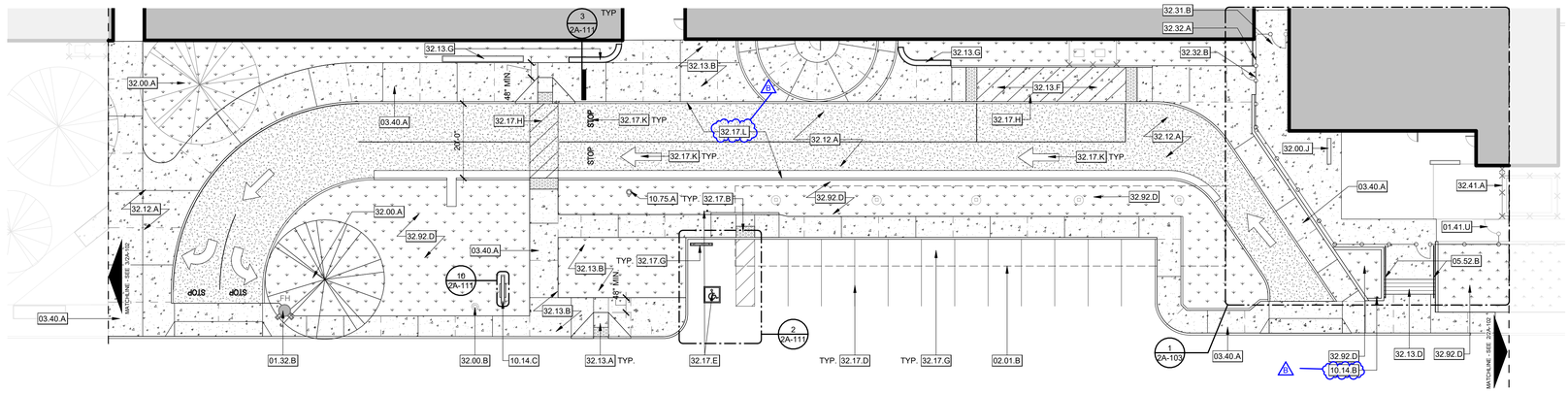
SHEET NO.

2A-033

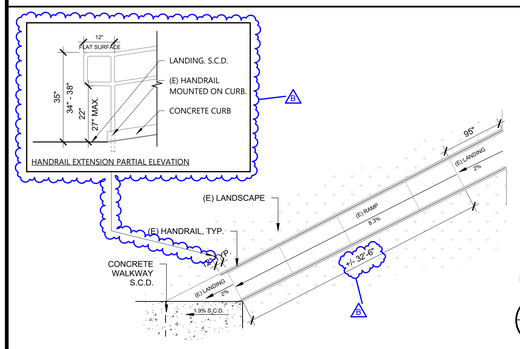
DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

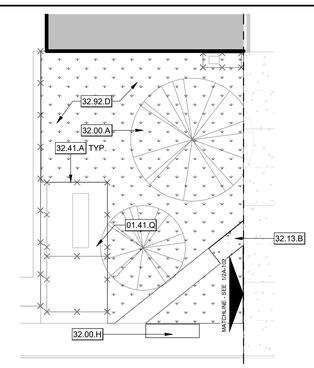
DATE PLOTTED: 11/18/2024 3:14:07 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



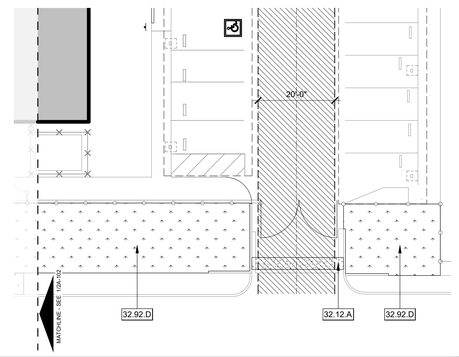
DROP OFF - ENLARGED SITE PLAN | 1/16" = 1'-0" | 1



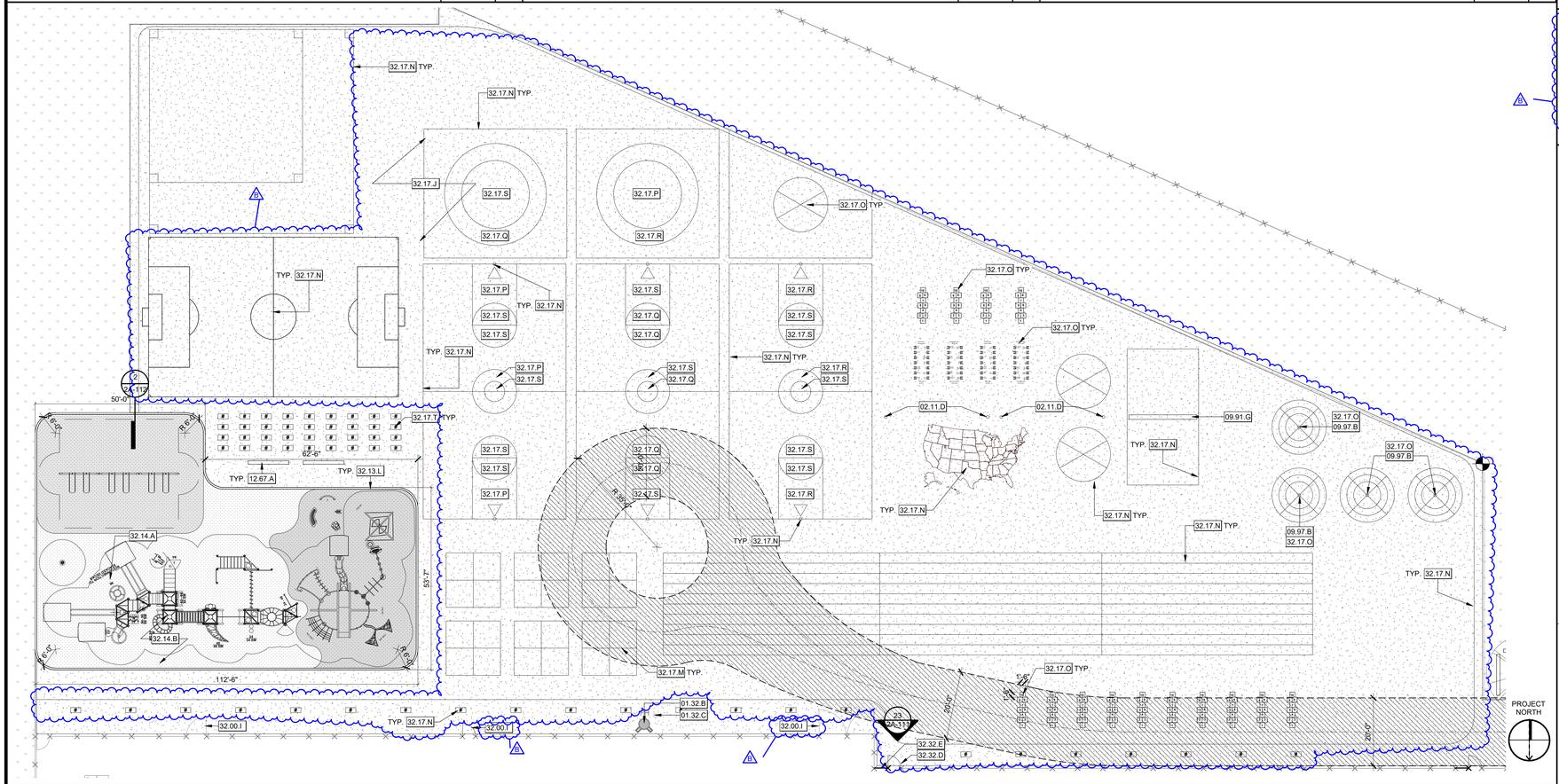
(E) ACCESSIBLE RAMP | N.T.S. | 6



ENLARGED SITE PLAN - EAST | 1/16" = 1'-0" | 3



ENLARGED SITE PLAN - WEST | 1/16" = 1'-0" | 2



PLAYGROUND & ASPHALT PLAY AREA | 1/16" = 1'-0" | 4

KEYNOTES

01.32.B	(E) FIRE HYDRANT
01.32.C	(E) BOLLARDS
01.41.Q	(E) PG&E SERVICE ENCLOSURE
01.41.U	(E) ACCESSIBLE ORNAMENTAL GATE INCLUDED IN INC. 1 SCOPE OF WORK. REFER TO DETAIL 25/2A-111
02.01.B	(E) SOLAR ARRAY COLUMNS TO REMAIN. PROTECT DURING CONSTRUCTION
02.11.D	(E) VOLLEYBALL POST TO BE DEMOLISHED, PATCH BACK ASPHALT
03.40.A	CONCRETE PAVING PER CIVIL DRAWINGS
05.52.B	(N) STAIR HANDRAIL. REFER TO DETAIL 8/2A-111
09.91.G	(E) BALL WALL TO BE PAINTED IN YELLOW
09.97.B	(N) POWDER COAT EXISTING TETHERBALL POLES WITH WHITE FINISH
10.14.B	(N) ACCESSIBLE ROUTE SIGN AT GALVANIZED POST. REFER TO DETAIL 8/2A-923
10.14.C	(N) MARQUEE SIGN. REFER TO DETAIL 10/2A-111. SEE ELECTRICAL AND TECHNOLOGY DRAWINGS FOR THE ENTIRE SCOPE OF WORK
10.75.A	(N) FLAGPOLE. S.C.D.
12.67.A	SALVAGED METAL BENCH. FRAME AND SEAT TO BE PAINTED WHITE
32.00.A	(E) TREE. PROTECT DURING CONSTRUCTION
32.00.B	(E) LIGHT POLE. PROTECT DURING CONSTRUCTION.
32.00.E	(E) CHAINLINK FENCE
32.00.H	(E) COVERED BUS STOP
32.00.I	(E) CHAIN LINK SERVICE GATE
32.00.J	(E) BUILDING COLUMN. PROTECT DURING CONSTRUCTION. S.C.D. FOR COMPLETE DEMOLITION AND NEW SCOPE OF WORK
32.12.A	(N) ASPHALT CONCRETE PAVING S.C.D.
32.13.A	(N) CURB RAMP S.C.D.
32.13.B	(N) CONCRETE FLATWORK. S.C.D.
32.13.D	(N) EXTERIOR CONCRETE STAIR. S.C.D. AND 18/2A-111
32.13.F	(N) LOADING ZONE. S.C.D.
32.13.G	(N) CONCRETE BENCH
32.13.L	(N) CONCRETE CURB FLUSH TO BLACKTOP PLAYGROUND
32.14.A	(N) OFCI PLAY EQUIPMENT. REFER TO 4/2A-112.
32.14.B	(N) RUBBERIZED SURFACE WITH FALL PROTECTION LAYER. REFER TO 1/2A-112
32.17.B	(N) TRUNCATED DOMES BAND. S.C.D.
32.17.D	(N) PARKING STALLS STRIPING. TYP
32.17.E	(N) VAN ACCESSIBLE PARKING STALL AND SIGNAGE. REFER TO DETAIL 2/2A-111
32.17.G	(N) CONCRETE WHEEL STOP
32.17.H	(N) 4" WIDE WHITE. PAINTED STRIPES AT 3' O.C. TYP.
32.17.J	SLURRY SEAL ENTIRE BLACKTOP PLAYGROUND ALSPHALT AREA. PLAY LINES TO BE PAINTED 4" WIDE U.N.O. WITH REFLECTIVE COOLING WHITE COLOR
32.17.K	(N) TRAFFIC DIRECTIONAL STRIPING
32.17.L	(N) CURB PARALLEL TO BUILDINGS 5 & 6 AT DROP-OFF ZONE TO BE PAINTED YELLOW. ALL OTHER CURBS ADJACENT TO THE ASPHALT DRIVEWAY TO BE PAINTED RED
32.17.M	(N) FOUR SQUARE GAME STRIPING TO BE PAINTED WITH A 2" WHITE WIDE STRIPE, ALTERNATING SOLID BLUE, GREEN, RED AND YELLOW COLORS. TYPICAL
32.17.N	(N) GAME STRIPING TO BE PAINTED WITH A 4" WHITE WIDE STRIPE
32.17.O	(N) GAME STRIPING TO BE PAINTED WITH A 4" WIDE WHITE STRIPE, ALTERNATING WITH BLUE, GREEN, RED, AND YELLOW SOLID COLORS.
32.17.P	(N) INFILL WITH SOLID BLUE COLOR
32.17.Q	(N) INFILL WITH SOLID GREEN COLOR
32.17.R	(N) INFILL WITH SOLID RED COLOR
32.17.S	(N) INFILL WITH SOLID YELLOW COLOR
32.17.T	(N) NUMBERING 1-40 TO PAINTED WHITE 10" TALL
32.31.B	(N) 4' WIDE CHAINLINK GATE
32.32.A	(N) 6'-0" TALL ORNAMENTAL FENCE
32.32.B	(E) SALVAGED ACCESSIBLE ORNAMENTAL GATE WITH PANIC HARDWARE. REFER TO DETAIL 17/2A-112
32.32.D	(N) ACCESSIBLE CHAIN LINK GATE. REFER TO DETAIL 23/2A-111
32.32.E	(N) CHAIN LINK FENCE FABRIC
32.41.A	(E) 7' HIGH CHAINLINK FENCE
32.92.D	(N) LANDSCAPING AREA. S.L.D.

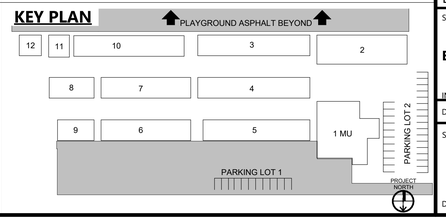
PLAYGROUND EQUIPMENT NOTES

1. STRUCTURE TO BE PURCHASED BY DISTRICT. GENERAL CONTRACTOR IS RESPONSIBLE FOR: ACCEPTING DELIVERY AT SITE, REMOVAL FROM SEMI(S), ENSURING ALL EQUIPMENT IS DELIVERED AND IN GOOD CONDITION, STORAGE, SECURITY, AND INSTALLATION OF PLAY EQUIPMENT.
2. OFCI PLAY EQUIPMENT. CONTRACTOR TO INSTALL PLAY STRUCTURES BASED ON MANUFACTURER'S REQUIREMENTS. FOR MORE INFORMATION CONTACT: LTCPS - FARMINGTON 878 EAST HIGHWAY 60 MONETT, MISSOURI 65708 VOICE: 1-800-325-8828 FAX: 417-354-2273

LEGEND - ENLARGED SITE PLAN

- (E) BUILDING
- (N) CONCRETE PAVING
  - EXPANSION JOINT
  - CONTROL JOINT
  - 4 / 2-CA.1
- (N) ASPHALT CONCRETE PAVING OR SLURRY SEAL — 1 / 2-CA.1
- (N) RUBBERIZED SURFACE AT PLAYGROUND AREA — 1 / 2A-112
- (E) CONCRETE PAVING
- (E) ASPHALT CONCRETE PAVING
- (E) LANDSCAPING
- (N) CHAINLINK FENCE
- (E) CHAINLINK FENCE
- (N) ORNAMENTAL FENCE — 12 / 2A-112
- (E) ORNAMENTAL FENCE
- (E) FIRE ENGINE ACCESS. DSA #01-107164, 01-105316

KEY PLAN



AGENCY APPROVAL DSA#

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PROFESSIONAL STAMP

LICENSED ARCHITECT · MARINA ALVAREZ PARGA · C-36107 REN. 01-31-25 · STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
B	11/18/2024	ADDENDUM #2

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

ENLARGED SITE PLAN

INC 2

DRAWN BY: Author JOB NUMBER: 23118.01

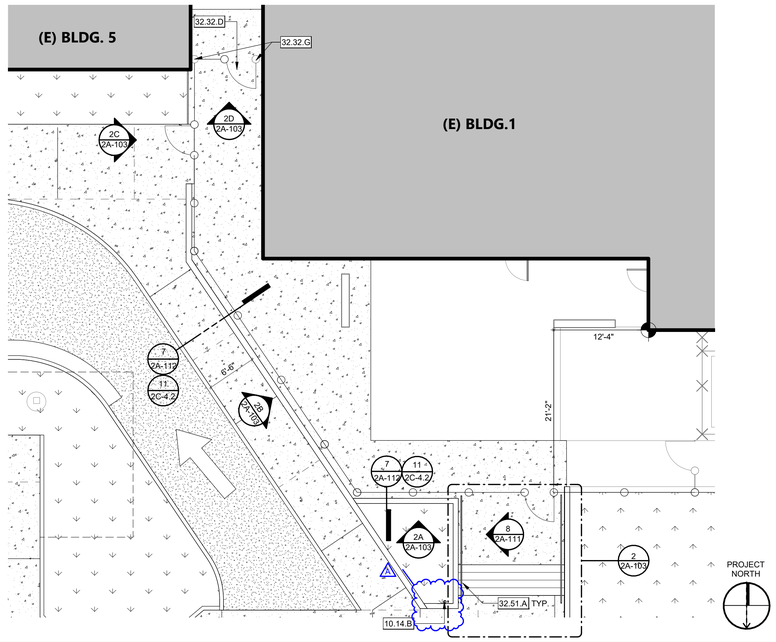
SHEET NO.

2A-102

DATE: OCTOBER 23, 2024

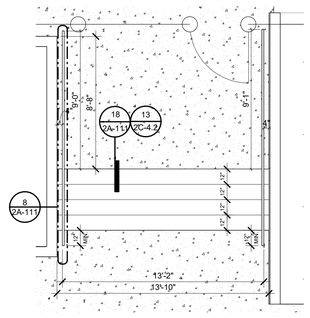
CONSTRUCTION DOCUMENT

FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt
DATE PLOTTED: 11/18/2024 3:14:14 PM



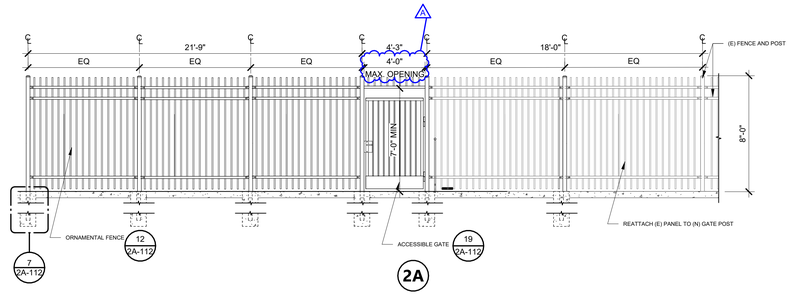
FENCE AND GATE - ENLARGED PLAN

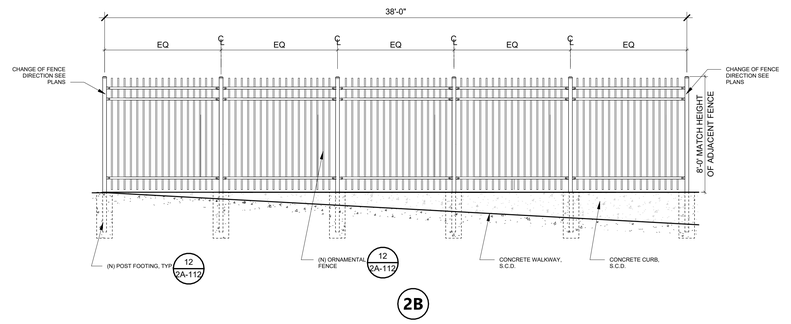
1/8" = 1'-0" | 1

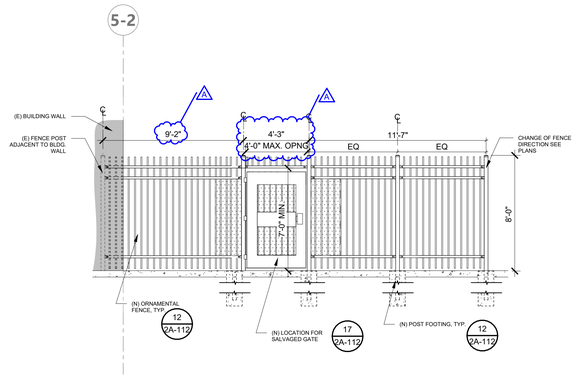


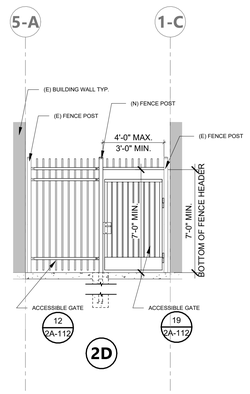
EXTERIOR STAIR - ENLARGED PLAN

1/4" = 1'-0" | 2









FENCING ELEVATIONS

1/4" = 1'-0" | 2

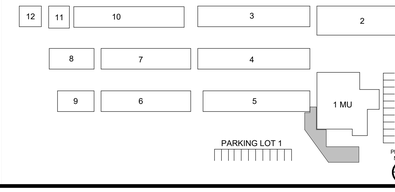
KEYNOTES

10.14.B	(N) ACCESSIBLE ROUTE SIGN AT GALVANIZED POST. REFER TO DETAIL 8/2A-925
32.32.D	(N) ACCESSIBLE CHAIN LINK GATE. REFER TO DETAIL 23/2A-111
32.32.G	(E) FENCE POST TO REMAIN
32.51.A	(N) STAIR RAILING, REFER TO DETAIL 8/2A-111

LEGEND - ENLARGED SITE PLAN

- (E) BUILDING
- (N) CONCRETE PAVING
  - EXPANSION JOINT
  - CONTROL JOINT
  - (4 / 2-C4.1)
- (N) ASPHALT CONCRETE PAVING OR SLURRY SEAL (1 / 2-C4.1)
- (N) RUBBERIZED SURFACE AT PLAYGROUND AREA (1 / 2A-112)
- (E) CONCRETE PAVING
- (E) ASPHALT CONCRETE PAVING
- (E) LANDSCAPING
- (N) CHAINLINK FENCE
- (E) CHAINLINK FENCE
- (N) ORNAMENTAL FENCE (12 / 2A-112)
- (E) ORNAMENTAL FENCE
- (E) FIRE ENGINE ACCESS. DSA #01-107164, 01-105316 (20'-0")

KEY PLAN



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REN. 01-31-25
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REVISIONS

NO.	DATE	DESCRIPTION
A	10/30/2024	ADDENDUM #1

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RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

FENCE & STAIR PLANS

INC 2

DRAWN BY: Author JOB NUMBER: 23118.01

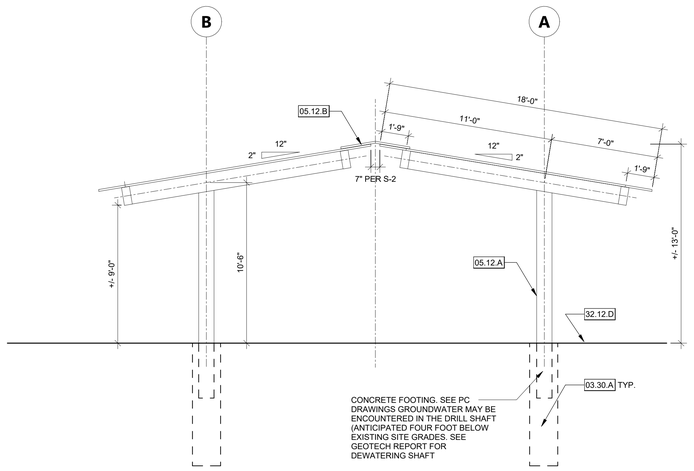
SHEET NO.

2A-103

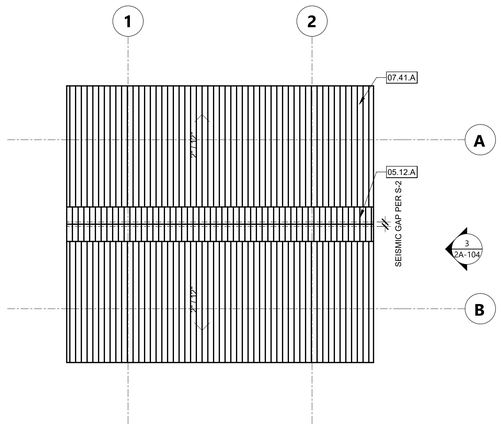
DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

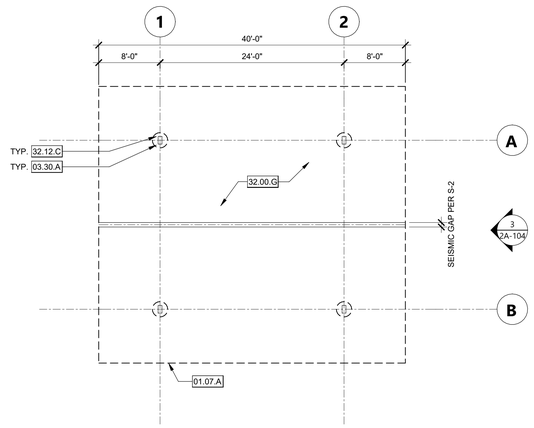
DATE PLOTTED: 11/18/2024 3:14:18 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



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.A	SHADE STRUCTURE CONCRETE FOOTING. PROVIDE STEEL CASING, SEE PC DRAWINGS
05.12.A	PC SHADE STRUCTURE COLUMN, HOT-DIP GALVANIZED, TYPICAL. SEE PC DRAWINGS
05.12.B	RIDGE CAP PER MANUFACTURER. SEE PC DRAWINGS 4/S-13
07.41.A	ROOF DECK. SEE PC DRAWINGS
32.00.G	(E) ASPHALT PLAYGROUND
32.12.C	NEATLY SAWCUT EXISTING ASPHALT CONCRETE (AC) TO PREPARE FOR INSTALLATION OF COLUMN FOUNDATIONS. REPAIR ASPHALT
32.12.D	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

AGENCY APPROVAL DSA#

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SHEET TITLE

PC SHADE STRUCTURE PLANS & ELEVATION

ING.2

DRAWN BY: Author JOB NUMBER: 23118.01

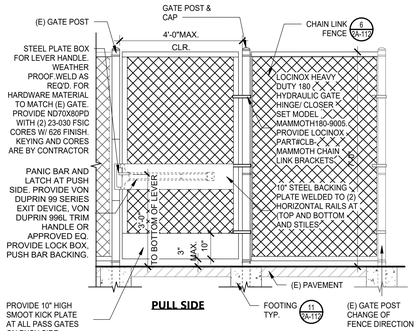
SHEET NO.

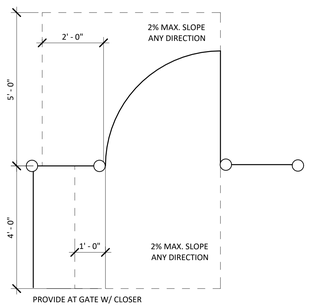
2A-104

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:14:20 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INCD2_A22.rvt





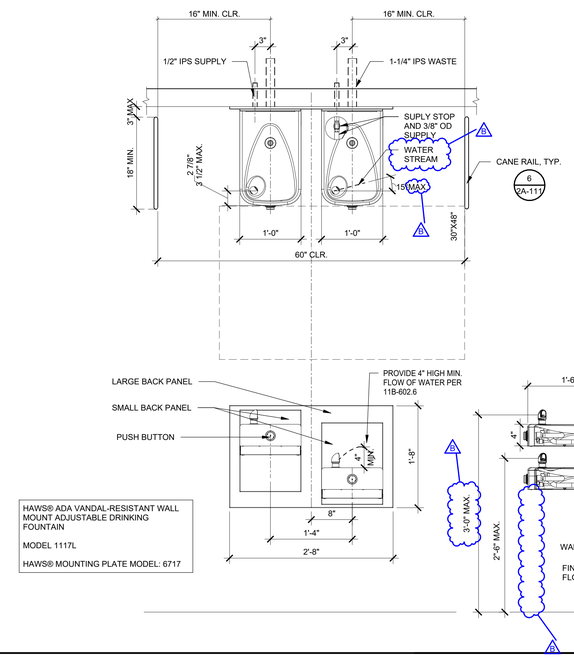
NOTE:
- NOTE THAT ANY CAVITIES CREATED BY ADDING THE KICK PLATE NEED TO BE CAPPED PER 11B-404.2.10.

- ALL GATES AND FENCES TO BE HOT DIPPED GALVENIZED.

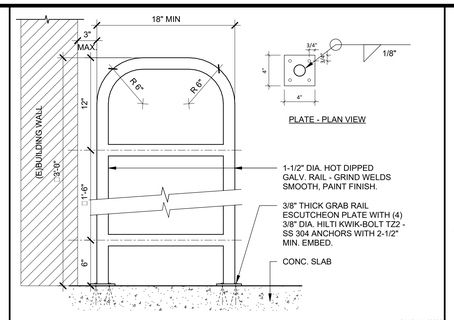
SINGLE SWING GATES	
FENCE POSTS	PANEL HEIGHT
2-1/2" X 12 GA.	UP TO & INCLUDING 6' HEIGHT
3" X 12 GA.	OVER 6' UP TO & INCLUDING 8' HEIGHT
GATE LEAF	OVER 6' UP TO & INCLUDING 8'
UP TO 4'	3" X 12 GA.
4'1" TO 6'	4" X 11 GA.
6'1" TO 8'	6" X 3/16" GA.

21.12.14 - 00000

CHAIN LINK GATE | 1/2" = 1'-0" | 23

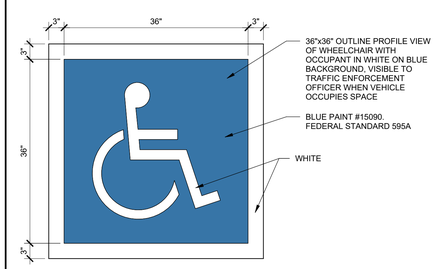


WALL MOUNTED DRINKING FOUNTAIN | 1" = 1'-0" | 12

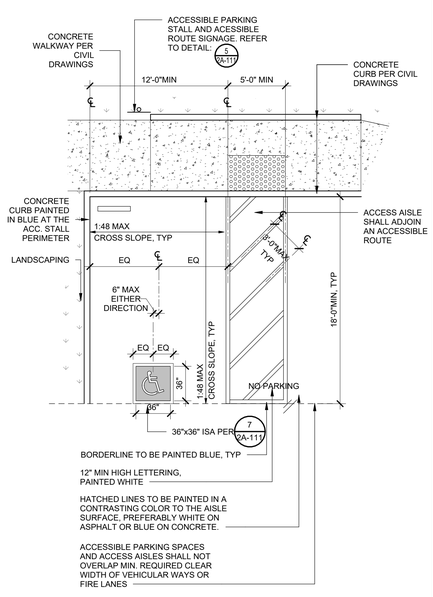


21.12.14 - 00000

(N) DRINKING FOUNTAIN CANE RAIL | 1 1/2" = 1'-0" | 6



ACCESSIBLE PARKING SYMBOL | 1" = 1'-0" | 7



ADA PARKING LOT STRIPING | 3/16" = 1'-0" | 2

21.12.14 - 00000

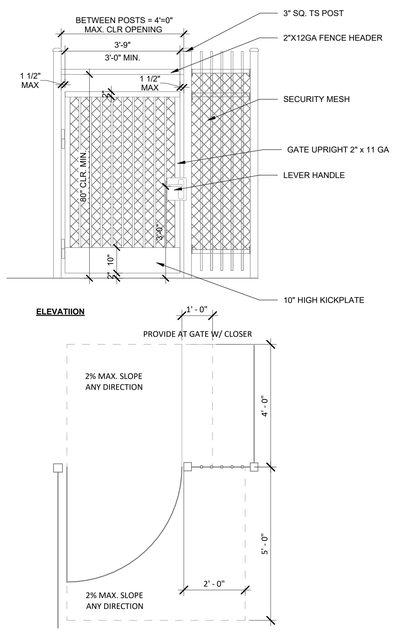
EXTERIOR CONCRETE STAIR | 3/4" = 1'-0" | 18

21.12.14 - 00000

HANDRAIL ANCHORAGE @ FTG. | 1 1/2" = 1'-0" | 13

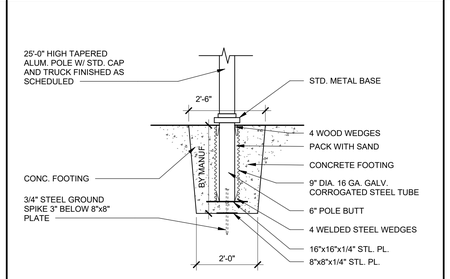
HANDRAIL @ STAIR | 3/4" = 1'-0" | 8

CONCRETE BENCH | 1" = 1'-0" | 3



NOTE: THIS DETAIL IS TO DEMONSTRATE COMPLIANCE ONLY. PART OF INC 1 SCOPE OF WORK.

(E) ACCESSIBLE ORNAMENTAL GATE | 1/2" = 1'-0" | 25



FLAGPOLE FOOTING | 1/2" = 1'-0" | 19

MARQUEE ANCHOR ROD DETAIL | 3" = 1'-0" | 20

ELECTRONIC MARQUEE SIGN | N.T.S. | 10

ACC. PARKING STALL SIGN AND POST | 1 1/2" = 1'-0" | 5

AGENCY APPROVAL DSA# 01-121440

196

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PROFESSIONAL STAMP

LICENSED ARCHITECT MARIANA ALVAREZ PARGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
B	11/18/2024	ADDENDUM #2

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1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

SITE DETAILS

INC 2

DRAWN BY: MEP JOB NUMBER: 23118.01

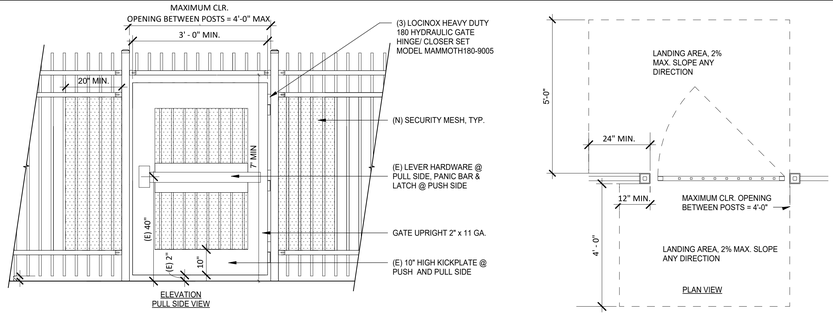
SHEET NO.

2A-111

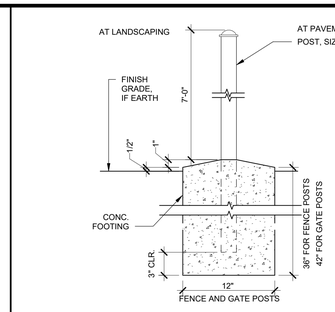
DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

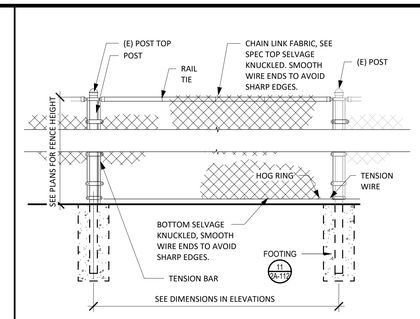
DATE PLOTTED: 11/18/2024 3:14:24 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



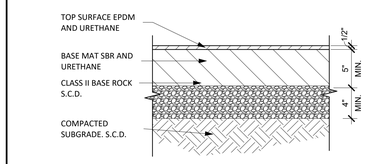
(E) SALVAGED ORNAMENTAL GATE | 1/2" = 1'-0" | 17



FENCE POST FOOTING | 1 1/2" = 1'-0" | 11

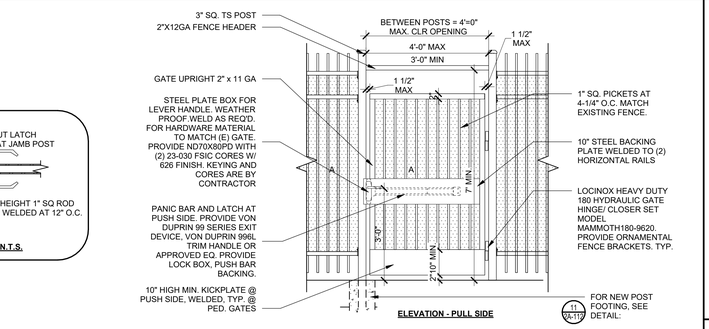


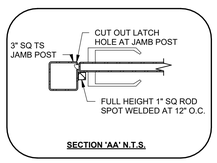
TYP. CHAINLINK FENCE ELEVATION | 1/2" = 1'-0" | 6



BASIS OF DESIGN: PLAYBOUND POURED-IN-PLACE BY SURFACE AMERICA INC.
NOTE: VERIFY AND CONFIRM ALL DIMENSIONS PER MANUFACTURER'S INSTRUCTIONS.

PLAYGROUND SURFACING | 1 1/2" = 1'-0" | 1

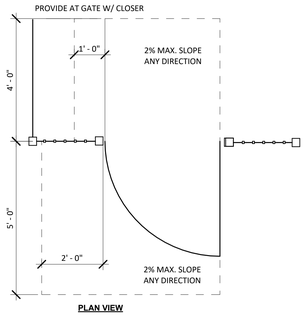




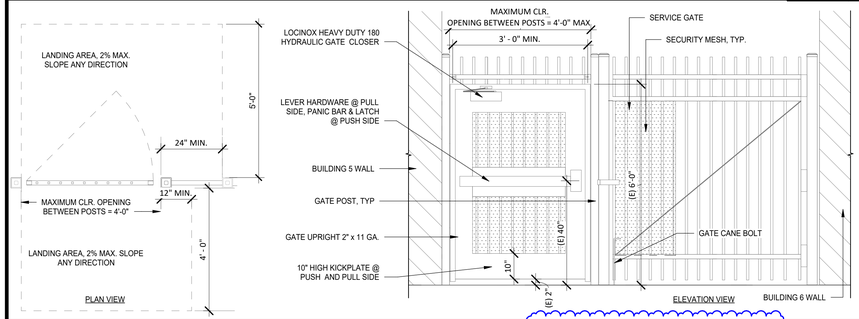
- NOTE THAT ANY CAVITIES CREATED BY ADDING THE KICK PLATE NEED TO BE CAPPED PER 11B-404.2.10.

- ALL GATES AND FENCES TO BE HOT DIPPED GALVENIZED AND PAINTED BLACK TO MATCH EXISTING FENCE AND GATES.

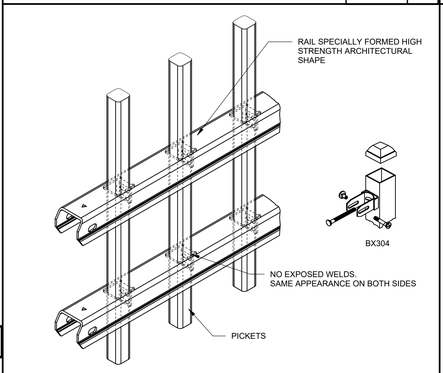
SINGLE SWING GATES	
FENCE POSTS	PANEL HEIGHT
2-1/2" X 12 GA.	UP TO & INCLUDING 6' HEIGHT
3" X 12 GA.	OVER 6' UP TO & INCLUDING 8' HEIGHT
GATE LEAF	OVER 6' UP TO & INCLUDING 8'
UP TO 4'	3" X 12 GA.
4'1" TO 6'	4" X 11 GA.
6'1" TO 8'	6" X 3/16" GA.



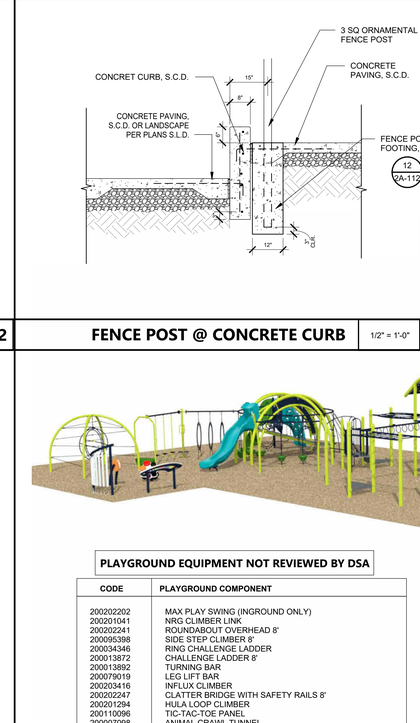
ORNAMENTAL GATE | 1/2" = 1'-0" | 19



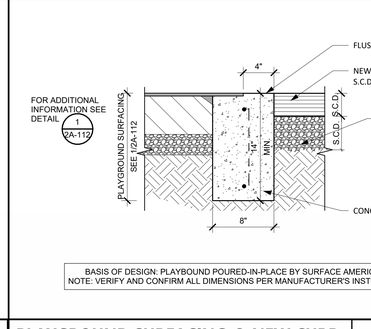
(E) ACCESSIBLE ORNAMENTAL GATE - NO WORK TO BE DONE | 1/2" = 1'-0" | 20



ORNAMENTAL FENCE | 1/2" = 1'-0" | 12



FENCE POST @ CONCRETE CURB | 1/2" = 1'-0" | 7



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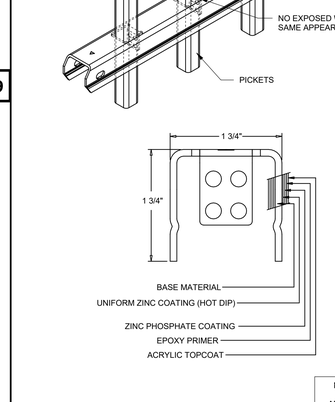
PLAYGROUND SURFACING @ NEW CURB | 1 1/2" = 1'-0" | 2



NOTE: EXEMPT FROM DSA STRUCTURAL SAFETY APPROVAL PER DSA IR A-22

ORNAMENTAL FENCE GATE/RAIL | 1/2" = 1'-0" | 14

PLAYGROUND EQUIPMENT NOT REVIEWED BY DSA

CODE	PLAYGROUND COMPONENT
200202202	MAX PLAY SWING (INGROUND ONLY)
200201041	NRG CLIMBER LINK
200202241	ROUNDABOUT OVERHEAD 8'
200095398	SIDE STEP CLIMBER 8'
200034346	RING CHALLENGE LADDER
200013872	CHALLENGE LADDER 8'
200013892	TURNING BAR
200079019	LEG LIFT BAR
200203416	INFLUX CLIMBER
200202247	CLATTER BRIDGE WITH SAFETY RAILS 8'
200201294	HULA LOOP CLIMBER
200110096	TIC-TAC-TOE PANEL
200007098	ANIMAL CRAWL TUNNEL
200201306	DECK TO DECK STEPS
200202568	TRANSFER STATION
200203319	CYLINDER CLIMBER
200100284	ARCHED BRIDGE WITH SAFETY RAILS 4'
200200663	TELESCOPE PANEL
200203435	ALEX'S LEMONADE STAND
200201098	DOUBLE WIDE PLASTIC SLIDE WITH DECK EXTENSION
200202105	HYPERSONIC SLIDE
200203124	QUANTUM II SPIRAL
200203589	KB SILO SCRAMBLE WITH SINGLE ENCLOSURE - 8FT DECK
200202482	TILTED ROCK WALL
200201866	STEEL MESH SWOOSH ROOF
200201539	STAND-N-SPIN
200203729	NRG X HUB WITH LASER CHALLENGE
200092591	STEPPING STONES
200203437	CONCERTO TALL CHIMES
200203444	CONCERTO 5-CONGAS
200203440	CONCERTO SPIN CABASAS MEDIUM
200203438	CONCERTO VIBES
200203574	POST WHEEL PLASTIC
200203447	KB CULVERT CLIMBER 24"
200203732	NRG DOUBLE ARCH HUB WITH CLIMB AND SLIDE
200202897	AGILITY PODS
200203739	NRG WEBWALL STEPPER (2023)
200201292	INFINITY FLEX
200203738	NRG OVERHEAD RUNGS, INLINE, RINGS (2023)
200203740	NRG FREESTYLE RING ALLEY
200202989	2 UP HUB
200202893	FLOATING POMMELS
200202887	SOLO POD
200095647	SIDE STEP CLIMBER 4' (INGROUND ONLY)

PLAYGROUND COMPLIANCE AND NOTES:

COMPLIANCE STANDARDS:

1. MEETS FINAL ACCESS BOARD REGULATIONS.
2. CPSC HANDBOOK FOR PUBLIC PLAYGROUND SAFETY.
3. ASTM F1487 - PLAYGROUND EQUIPMENT FOR PUBLIC USE.
4. PLAYGROUND EQUIPMENT SHALL COMPLY WITH CBC **11B-240** AND ITS SUB-SECTIONS AS APPLICABLE & **11B-1008**. GROUND SURFACE MUST COMPLY WITH **11B-1008.2.6.**

CERTIFICATION:

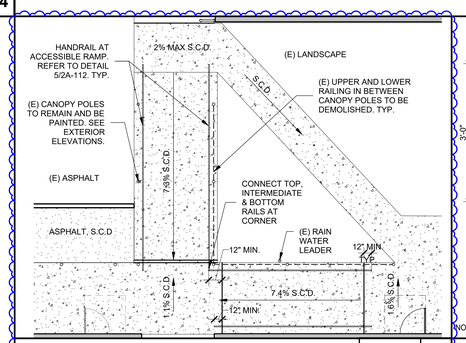
1. PLAY COMPONENTS IDENTIFIED ARE IPEMA CERTIFIED.
2. LAYOUT CONFORMS TO **ASTM F1487** REQUIREMENTS.

GENERAL NOTES:

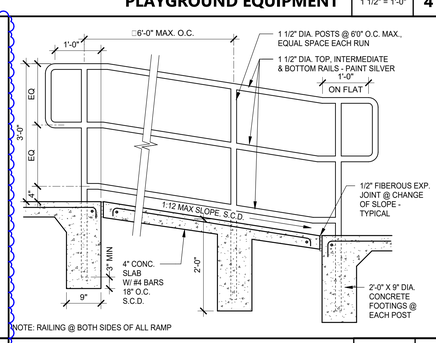
1. ALL DECK HEIGHTS MEASURED FROM TOP OF GROUND COVER.
2. FALL-ABSORBING GROUND COVER REQUIRED UNDER AND AROUND ALL PLAY EQUIPMENT.
3. MINIMUM RECOMMENDED FALL ZONE AROUND THE ENTIRE PLAY STRUCTURE TO BE FREE OF ALL TRIPPING OR COLLISION HAZARDS.
4. FOR ACCESSIBILITY, APPROPRIATE SURFACING MUST BE UTILIZED IN APPLICABLE AREAS.

AGE GROUP: 5-12		
ELEVATED PLAY ACTIVITIES - TOTAL: 17		
ELEVATED PLAY ACTIVITIES ACCESIBLE BY TRANSFER:	11 REQ'D	9
ELEVATED PLAY ACTIVITIES ACCESIBLE BY RAMP:	0 REQ'D	0
GROUND LEVEL ACTIVITY TYPE:	9 REQ'D	3
GROUND LEVEL QUANTITY:	21 REQ'D	6

PLAYGROUND EQUIPMENT | 1 1/2" = 1'-0" | 4



HANDRAILING AT ACCESSIBLE RAMP | 1/8" = 1'-0" | 10



NOTE: RAILING @ BOTH SIDES OF ALL RAMP

ACCESSIBLE RAMP | 3/4" = 1'-0" | 5

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SITE DETAILS

INC.2

DRAWN BY: DV JOB NUMBER: 23118.01

SHEET NO.
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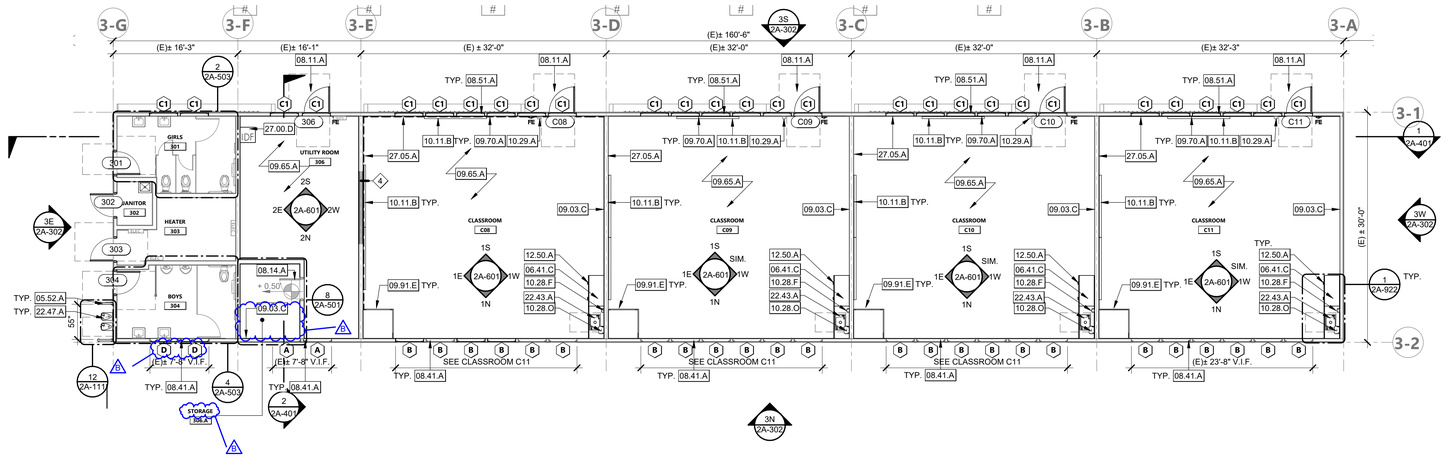
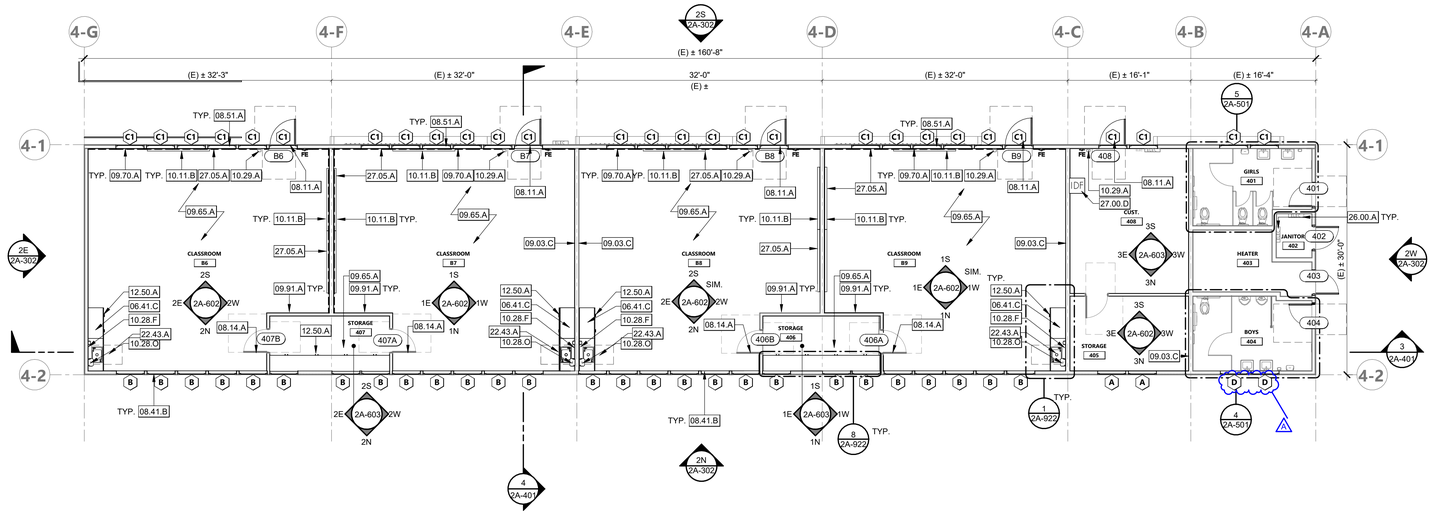


FLOOR PLAN - BUILDING 3 | 1/8" = 1'-0" | 1



FLOOR PLAN - BUILDING 4 | 1/8" = 1'-0" | 2

KEYNOTES

05.52.A	(N) CANE DETECTION RAILING
06.41.C	PLASTIC LAMINATED COUNTERTOP 6" BACKSPLASH, TYP.
08.11.A	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.14.A	(N) HARDWARE AT (E) DOOR. DOOR AND FRAME TO BE PAINTED. SEE DOOR SCHEDULE.
08.41.A	(N) ALUMINUM STOREFRONT WINDOW
08.41.B	(N) STOREFRONT ALUMINUM DOOR
08.51.A	(N) CLERESTORY WINDOWS
09.03.C	APPLY SKIM COAT TO (E) SURFACES WHERE TACKABLE, CASEWORK, AND OTHER ITEMS ATTACHED TO THE WALLS HAVE BEEN DEMOLISHED TO ENSURE A CLEAN AND SMOOTH SURFACE FOR INTERIOR PAINTING.
09.65.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
09.70.A	(N) TACKABLE WALL PANELS
09.91.A	ALL INTERIOR SURFACES TO BE PAINTED, SEE FINISH SCHEDULE FOR PAINT COLOR INFORMATION
09.91.E	(N) PAINT AT EXISTING HVAC HOUSING AND DUCTWORK TO MATCH WALL COLOR, COVER AND PROTECT VENTS DURING PAINTING. SEE FINISH SCHEDULE
10.11.B	(N) WALL MOUNTED WHITEBOARD PER 6/2A-921
10.28.F	(N) WALL MOUNTED HAND SOAP DISPENSER
10.28.O	(N) SURFACE MOUNT PAPER TOWEL DISPENSER
10.29.A	SAVALGED MOTION-ACTIVATED HAND SANITIZER DISPENSER TO BE MOUNTED AT 40" AFF.
12.50.A	(N) PLASTIC LAMINATED FACED ARCHITECTURAL CABINETS
22.43.A	(N) ACCESSIBLE SINK. FOR ADULTS & AGES 9-12 REFER TO DETAIL 1/2A-921. FOR AGES 5-8 REFER TO DETAIL 2/2A-921. S.MP.D.
22.47.A	(N) HI-LOW ACCESSIBLE DRINKING FOUNTAIN. REFER TO DETAIL 12/2A-111
26.00.A	(E) ELECTRICAL PANEL. S.E.D.
27.00.D	(N) IDF CABINET. S.T.D.
27.05.A	(N) SURFACE RACEWAY. S.T.D.

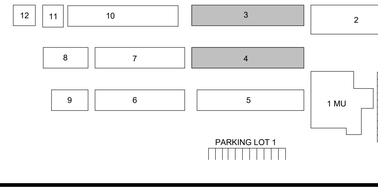
FLOOR PLAN GENERAL NOTES

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 1A-911.

FLOOR PLAN LEGEND

- ROOM NAME / ROOM NUMBER (e.g. 101)
- WALL TYPE TAG (A/)
- DOOR TYPE TAG (101AA)
- WINDOW TYPE TAG (A)
- (E) ELECTRICAL PANEL, S.E.D. (ELEC)
- PANIC HARDWARE (PH)
- FIRE EXTINGUISHER (FE)
- (N) PARTITION AND INFILL WALL
- (E) WALL
- (E) WALL TO BE DEMOLISHED
- (E) 1 HR RATED WALL

KEY PLAN



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BLDG 3 & 4 - FLOOR PLAN

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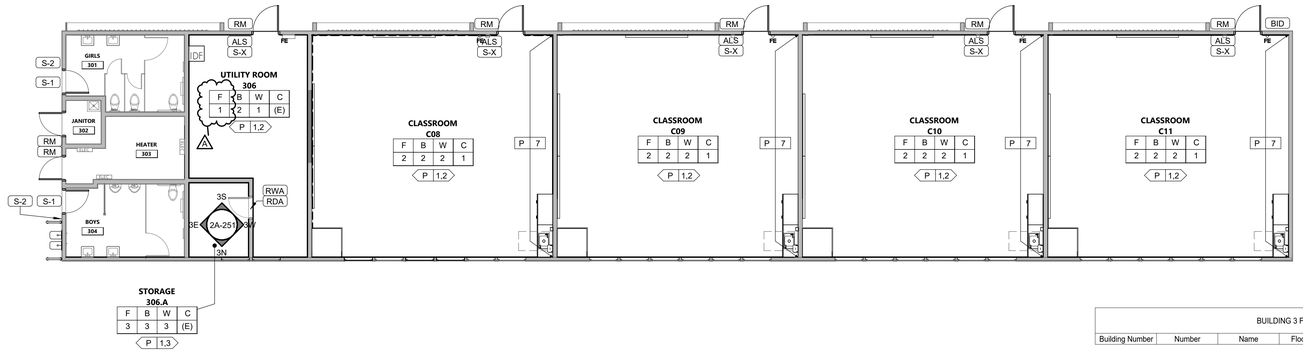
CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:14:30 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDIUSD_RIO VISTA ES MOD_INC02_A22.rvt



PROJECT NORTH

NOTE:

PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **2** RECEIVERS, FOR USE IN THE CLASSROOMS.

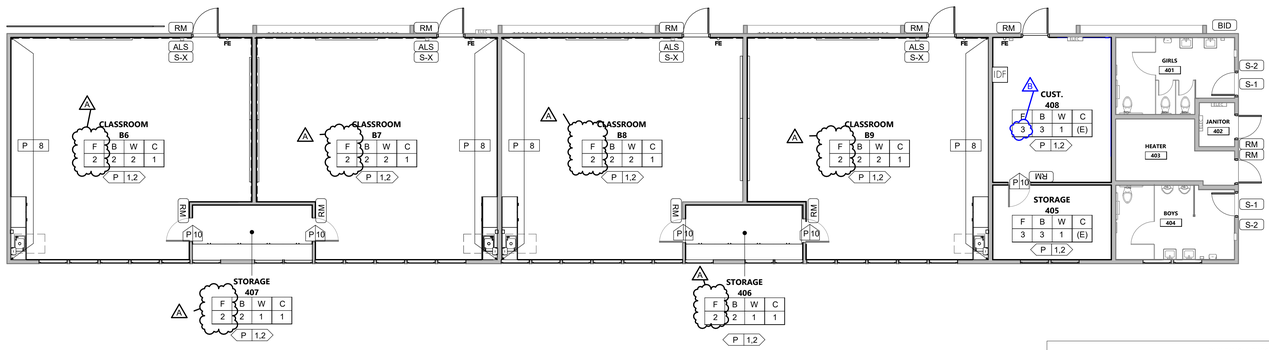
THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

BUILDING 3 FINISH SCHEDULE

Building Number	Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish
BUILDING 3	C11	CLASSROOM	2	2	2	1
BUILDING 3	C10	CLASSROOM	2	2	2	1
BUILDING 3	C09	CLASSROOM	2	2	2	1
BUILDING 3	C08	CLASSROOM	2	2	2	1
BUILDING 3	306	UTILITY ROOM	1	2	1	(E)
BUILDING 3	302	JANITOR	(E)	(E)	(E)	(E)
BUILDING 3	304	BOYS	(E)	(E)	(E)	(E)
BUILDING 3	301	GIRLS	(E)	(E)	(E)	(E)
BUILDING 3	303	HEATER	(E)	(E)	(E)	(E)
BUILDING 3	306.A	STORAGE	3	3	3	(E)

BLDG. 3 - FINISH KEY PLAN

1/8" = 1'-0" | 1



PROJECT NORTH

NOTE:

PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **2** RECEIVERS, FOR USE IN THE CLASSROOMS.

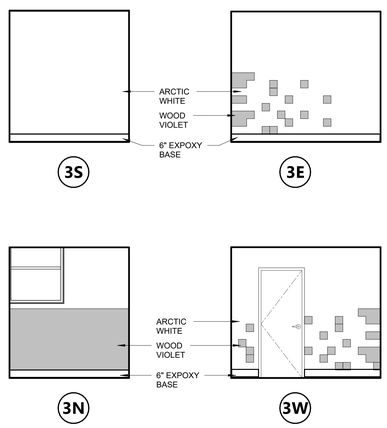
THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

BUILDING 4 FINISH SCHEDULE

Building Number	Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish
BUILDING 4	407	STORAGE	2	2	1	1
BUILDING 4	405	STORAGE	3	3	1	(E)
BUILDING 4	B8	CLASSROOM	2	2	2	1
BUILDING 4	B9	CLASSROOM	2	2	2	1
BUILDING 4	408	CUST.	3	3	1	(E)
BUILDING 4	B6	CLASSROOM	2	2	2	1
BUILDING 4	B7	CLASSROOM	2	2	2	1
BUILDING 4	406	STORAGE	2	2	1	1
BUILDING 4	404	BOYS	(E)	(E)	(E)	(E)
BUILDING 4	403	HEATER	(E)	(E)	(E)	(E)
BUILDING 4	401	GIRLS	(E)	(E)	(E)	(E)
BUILDING 4	402	JANITOR	(E)	(E)	(E)	(E)

BLDG. 4 - FINISH KEY PLAN

1/8" = 1'-0" | 2



NOTE: INTERIOR ELEVATIONS SHOWN ON FINISH PLANS ARE ONLY TO DEMONSTRATE THE PROPOSED TILE LAYOUT. FOR PLUMBING FIXTURES AND RR ACCESSORIES SEE RESTROOM PLAN ENLARGEMENTS.

BLDG. 3 - 306.A RR - WALL TILE LAYOUT

1/4" = 1'-0" | 4

LEGEND - RESTROOM TILE COLOR

- OCEAN BLUE 1049 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- SEA BREEZE 1174 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- SUNFLOWER DH50 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6 DH50
- ORANGE BURST 1097 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- KEY LIME 1098 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- EMERALD 0115 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- ELECTRIC BLUE 1194 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- ARTIC WHITE 0190 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6 ARTIC WHITE 0190
- WOOD VIOLET 1467 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6

LEGEND - SIGNAGE GENERAL NOTES

1. ALL SIGNS ON GLAZING TO BE MOUNTED BACK TO BACK. SEE DETAIL 5/2A-925
2. 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 WAL PREFERABLY ON THE RIGHT (CBC 11I7B.5.7)
   - D. INSTALL AT 60" AFF MAX. TO THE BOTTOM OF HIGHEST TEXT LINE.
   - 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.
3. SIGNAGE MATERIAL
   - A. ALL SIGNS TO BE 1/4" ACRYLIC PLASTIC
     a. NON-GLARE FINISH
   - B. MOUNTING ON DF TAPE WITH SILICONE AS REQUIRED.
   - C. FIGURES TO BE ETCHED WITH ENAMEL FILLED
4. 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

1. ATTACHED CARPET SHALL HAVE A FIRM CUSHION, PAD, OR BACKING. CARPET OR CARPET TILE SHALL FEATURE A LEVEL LOOP, TEXTURED LOOP, LEVEL CUT PILE, OR LEVEL CUT/UNCUT PILE TEXTURE. THE PILE HEIGHT SHOULD NOT EXCEED 2 INCHES (12.7 MM). EXPOSED EDGES OF CARPET MUST BE FASTENED TO FLOOR SURFACES AND EQUIPPED WITH TRIM ALONG THE ENTIRE LENGTH, COMPLYING WITH SECTION 11B-303.

LEGEND - SIGNAGE SYMBOLS

RM	ROOM NAME / NUMBER SIGN, SEE DETAILS	2/2A-925
S-1	RESTROOM ROOM DOOR SYMBOL, SEE DETAILS	18/2A-925
S-2	RESTROOM ROOM WALL SIGN, SEE DETAILS	13/2A-925
S-X	TACTILE "EXIT" SIGN (INTERIOR), SEE DETAILS	7/2A-925
S-XR	TACTILE "EXIT ROUTE" SIGN (INTERIOR), SEE DETAILS	10/2A-925
S-M	"MAXIMUM OCCUPANCY" SIGN (INTERIOR), SEE DETAIL	16/2A-925
ALS	ASSISTIVE LISTENING SIGN, SEE DETAIL	9/2A-925
RWA	RESTROOM WALL - ALL-GENDER	13/2A-925
RDA	RESTROOM DOOR - ALL-GENDER	18/2A-925
BID	BUILDING ID SIGN	20/2A-925

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.

FLOOR FINISHES (F)

(F)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARKS
(E#)	EXISTING FLOOR			MATCH EXISTING ADJACENT
1	LUXURY VINYL TILE	NATURAL 48250	09 65 19	SHAW - SOLITUDE
2	LVT (MULTICOLOR)	5 COLORS - SEE LEGEND	09 65 19	SHAW CONTRACT - JOY SQUARED
3	EPOXY FLOORING	TBD		6" COVE BASE, DURA-FLEX

BASE FINISHES (B)

(B)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARKS
(E#)	EXISTING BASE			MATCH EXISTING ADJACENT
2	4" RUBBER BASE	BLACK		JOHNSONITE
3	6" EPOXY COVE BASE	BLACK		6" COVE BASE, DUR-A-FLEX

WALL FINISHES (W)

(W)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARKS
(E#)	EXISTING WALL			MATCH EXISTING ADJACENT
1	GYPSUM WALL BOARD	REFER TO FINISH PLANS		SEE FLOOR PLAN FOR DETAILS
2	TACKABLE WALL PANEL 7' HIGH	QUARTZ		CLARIDGE - TACK WALL
3	CERAMIC WALL TILE	COLOR WHEEL - 7 COLORS TOTAL	DALTILE	COLOR WHEEL - RR AGES 5-8
4	CERAMIC WALL TILE	COLOR WHEEL - 2 COLORS TOTAL	DALTILE	COLOR SHEEL - RR AGES 9-12
5	CERAMIC WALL TILE	COLOR WHEEL - 2 COLORS TOTAL	DALTILE	COLOR WHEEL - RR ADULT

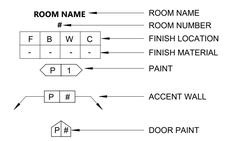
CEILING FINISHES (C)

(C)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARK
(E#)	EXISTING CEILING			MATCH EXISTING ADJACENT
1	5/8" GYP BOARD	P-2 (SEE PAINT SCHEDULE)		

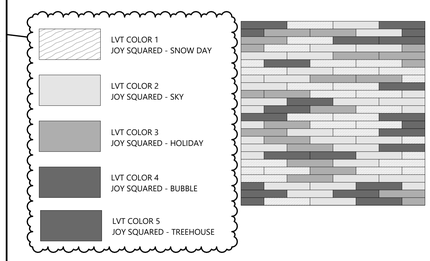
PAINT (P)

(P)	DESCRIPTION	COLOR	SPECIFICATIO N SECTION	REMARK
(E#)	EXISTING PAINT			MATCH EXISTING ADJACENT
1	INTERIOR WALL PAINT	SW7757 HIGH REFLECTIVE WHITE	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
2	INTERIOR CLASSROOM CEILING PAINT	SW7757 HIGH REFLECTIVE WHITE	PROF. FLAT	SHERWIN WILLIAMS
3	INTERIOR RESTROOM CEILING PAINT	SW7757 HIGH REFLECTIVE WHITE	PROF. SEMIGLOSS	SHERWIN WILLIAMS
4	INTERIOR ACCENT WALL(OFFICE)	SW7631 CITY LOFT	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
5	INTERIOR ACCENT WALL (OFFICE)	SW9137 NIEBLA AZUL	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
6	INTERIOR ACCENT WALL (OFFICE)	SW6191 CONTENDED	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
7	INTERIOR ACCENT WALL (CLASSROOM)	SW9046 GENTLE AQUAMARINE	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
8	INTERIOR ACCENT WALL (CLASSROOM)	SW6716 DANCING GREEN	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
9	(ACCENT)	TBD		SHERWIN WILLIAMS
10	INTERIOR DOOR FRAME PAINT	SW7757		SHERWIN WILLIAMS

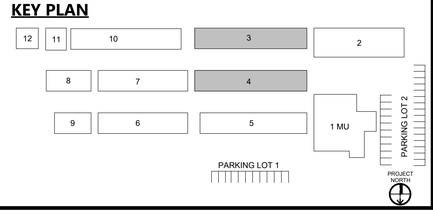
FINISHES PLAN



TYPICAL CLASSROOM LVT LAYOUT (F2)



KEY PLAN



AGENCY APPROVAL DSA#

196

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REVISIONS

NO.	DATE	DESCRIPTION
A	10/30/2024	ADDENDUM #1
B	11/18/2024	ADDENDUM #2

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
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

BLDG 3 & 4 - FINISH & SIGNAGE PLAN

INC 2

DRAWN BY: Author JOB NUMBER: 23118.01

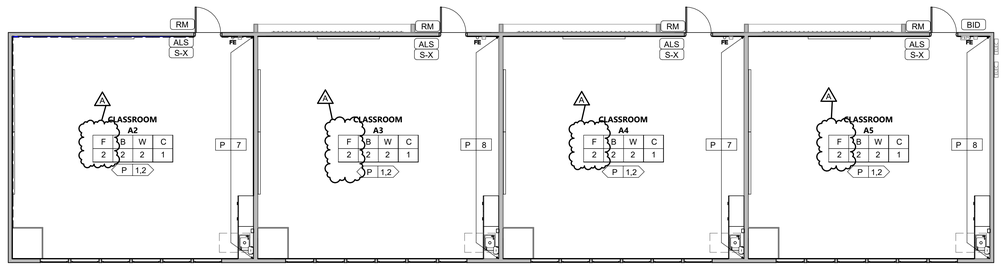
SHEET NO.

2A-251

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:14:32 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDJUSD_RIO VISTA ES MOD_INC02_A22.rvt



PROJECT NORTH

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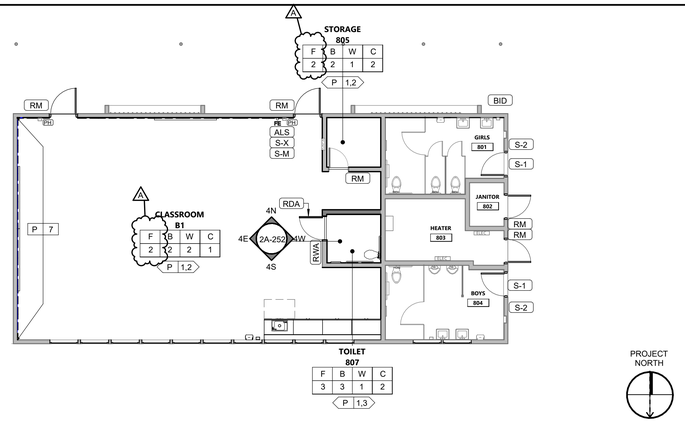
BUILDING 6 FINISH SCHEDULE

Building Number	Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish
BUILDING 6	A2	CLASSROOM	2	2	2	1
BUILDING 6	A3	CLASSROOM	2	2	2	1
BUILDING 6	A4	CLASSROOM	2	2	2	1
BUILDING 6	A5	CLASSROOM	2	2	2	1

BLDG. 6 - FINISH KEY PLAN 1/8" = 1'-0" **1**



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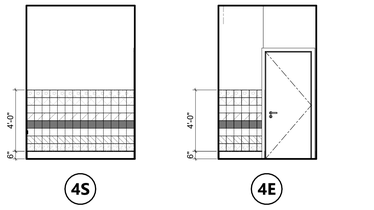
BUILDING 8 FINISH SCHEDULE

Building Number	Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish
BUILDING 8	B1	CLASSROOM	2	2	2	1
BUILDING 8	804	BOYS	(E)	(E)	(E)	(E)
BUILDING 8	803	HEATER	(E)	(E)	(E)	(E)
BUILDING 8	801	GIRLS	(E)	(E)	(E)	(E)
BUILDING 8	805	STORAGE	2	2	1	2
BUILDING 8	807	TOILET	3	3	1	2
BUILDING 8	802	JANITOR	(E)	(E)	(E)	(E)

BLDG. 8 - FINISH KEY PLAN 1/8" = 1'-0" **2**



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BLDG. 8 - 807 RR - WALL TILE LAYOUT 1/4" = 1'-0" **4**

PROJECT NORTH

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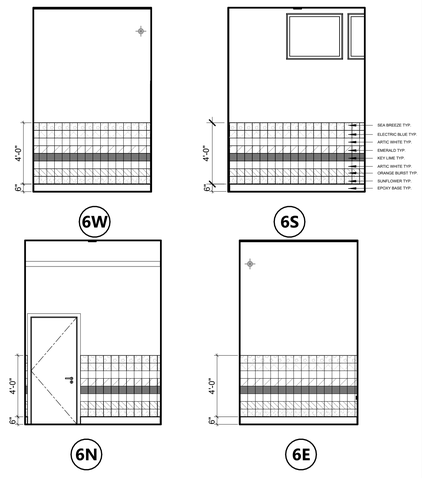
BUILDING 9 FINISH SCHEDULE

Building Number	Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish
BUILDING 9	A1	CLASSROOM	2	2	2	1
BUILDING 9	901	STORAGE	2	2	1	1
BUILDING 9	902	RR	3	3	1	2

BLDG. 9 - FINISH KEY PLAN 1/8" = 1'-0" **3**



NOTE: INTERIOR ELEVATIONS SHOWN ON FINISH PLANS ARE ONLY TO DEMONSTRATE THE PROPOSED TILE LAYOUT. FOR PLUMBING FIXTURES AND RR ACCESSORIES SEE RESTROOM PLAN ENLARGEMENTS.

BLDG. 9 - 902 RR - WALL TILE LAYOUT 1/4" = 1'-0" **6**

LEGEND - SIGNAGE GENERAL NOTES

1. ALL SIGNS ON GLAZING TO BE MOUNTED BACK TO BACK. SEE DETAIL 5/2A-925
2. 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 WAL PREFERABLY ON THE RIGHT (CBC 11B7B.5.7)
   - D. INSTALL AT 60" AFF MAX. TO THE BOTTOM OF HIGHEST TEXT LINE
   - 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.
3. SIGNAGE MATERIAL
   - A. ALL SIGNS TO BE 1/4" ACRYLIC PLASTIC
     a. NON-GLARE FINISH
   - B. MOUNTING ON DF TAPE WITH SILICONE AS REQUIRED.
   - C. FIGURES TO BE ETCHED WITH ENAMEL FILLED
4. 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

1. ATTACHED CARPET SHALL HAVE A FIRM CUSHION, PAD, OR BACKING. CARPET OR CARPET TILE SHALL FEATURE A LEVEL LOOP, TEXTURED LOOP, LEVEL CUT PILE, OR LEVEL CUT/UNCUT PILE TEXTURE. THE PILE HEIGHT SHOULD NOT EXCEED 2 INCHES (12.7 MM). EXPOSED EDGES OF CARPET MUST BE FASTENED TO FLOOR SURFACES AND EQUIPPED WITH TRIM ALONG THE ENTIRE LENGTH, COMPLYING WITH SECTION 11B-303.

LEGEND - SIGNAGE SYMBOLS

RM	ROOM NAME / NUMBER SIGN, SEE DETAILS	2/2A-925
S-1	RESTROOM ROOM DOOR SYMBOL, SEE DETAILS	18/2A-925
S-2	RESTROOM ROOM WALL SIGN, SEE DETAILS	13/2A-925
S-X	TACTILE "EXIT" SIGN (INTERIOR), SEE DETAILS	7/2A-925
S-XR	TACTILE "EXIT ROUTE" SIGN (INTERIOR), SEE DETAILS	10/2A-925
S-M	"MAXIMUM OCCUPANCY" SIGN (INTERIOR), SEE DETAIL	16/2A-925
ALS	ASSISTIVE LISTENING SIGN, SEE DETAIL	9/2A-925
RWA	RESTROOM WALL - ALL-GENDER	13/2A-925
RDA	RESTROOM DOOR - ALL-GENDER	18/2A-925
BID	BUILDING ID SIGN	20/2A-925

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.

FLOOR FINISHES (F)

(F)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARKS
(E#)	EXISTING FLOOR			MATCH EXISTING ADJACENT
1	LUXURY VINYL TILE	NATURAL 48250	09 65 19	SHAW - SOLITUDE
2	LVT (MULTICOLOR)	5 COLORS - SEE LEGEND	09 65 19	SHAW CONTRACT - JOY SQUARED
3	EPOXY FLOORING	TBD		6" COVE BASE, DUR-A-FLEX

BASE FINISHES (B)

(B)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARKS
(E#)	EXISTING BASE			MATCH EXISTING ADJACENT
2	4" RUBBER BASE	BLACK		JOHNSONITE
3	6" EPOXY COVE BASE	BLACK		6" COVE BASE, DUR-A-FLEX

WALL FINISHES (W)

(W)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARKS
(E#)	EXISTING WALL			MATCH EXISTING ADJACENT
1	GYPSUM WALL BOARD	REFER TO FINISH PLANS		SEE FLOOR PLAN FOR DETAILS
2	TACKABLE WALL PANEL 7' HIGH	QUARTZ		CLARIDGE - TACK WALL
3	CERAMIC WALL TILE	COLOR WHEEL - 7 COLORS TOTAL	DALTILE	COLOR WHEEL - RR AGES 5-8
4	CERAMIC WALL TILE	COLOR WHEEL - 2 COLORS TOTAL	DALTILE	COLOR SHEEL - RR AGES 9-12
5	CERAMIC WALL TILE	COLOR WHEEL - 2 COLORS TOTAL	DALTILE	COLOR WHEEL - RR ADULT

CEILING FINISHES (C)

(C)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARK
(E#)	EXISTING CEILING			MATCH EXISTING ADJACENT
1	5/8" GYP BOARD	P-2 (SEE PAINT SCHEDULE)		

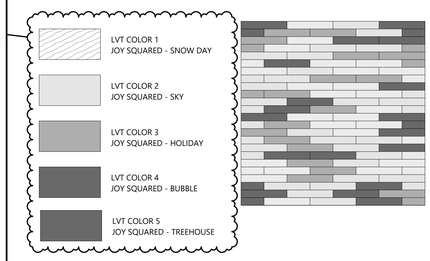
PAINT (P)

(P)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARK
(E#)	EXISTING PAINT			MATCH EXISTING ADJACENT
1	INTERIOR WALL PAINT	SW7757 HIGH REFLECTIVE WHITE	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
2	INTERIOR CLASSROOM CEILING PAINT	SW7757 HIGH REFLECTIVE WHITE	PROF. FLAT	SHERWIN WILLIAMS
3	INTERIOR RESTROOM CEILING PAINT	SW7757 HIGH REFLECTIVE WHITE	PROF. SEMIGLOSS	SHERWIN WILLIAMS
4	INTERIOR ACCENT WALL(OFFICE)	SW7631 CITY LOFT	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
5	INTERIOR ACCENT WALL (OFFICE)	SW9137 NIEBLA AZUL	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
6	INTERIOR ACCENT WALL (OFFICE)	SW6191 CONTENDED	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
7	INTERIOR ACCENT WALL (CLASSROOM)	SW9046 GENTLE AQUAMARINE	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
8	INTERIOR ACCENT WALL (CLASSROOM)	SW6716 DANCING GREEN	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
9	(ACCENT)	TBD		SHERWIN WILLIAMS
10	INTERIOR DOOR FRAME PAINT	SW7757		SHERWIN WILLIAMS

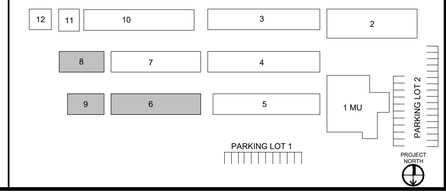
FINISHES PLAN



TYPICAL CLASSROOM LVT LAYOUT (F2)



KEY PLAN



LEGEND - RESTROOM TILE COLOR

- OCEAN BLUE 1049 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- SEA BREEZE 1174 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- SUNFLOWER DH50 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6 DH50
- ORANGE BURST 1097 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- KEY LIME 1098 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- EMERALD 0115 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- ELECTRIC BLUE 1194 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6
- ARTIC WHITE 0190 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6 ARTIC WHITE 0190
- WOOD VIOLET 1467 SQUARE GLOSSY COLOR WHEEL CLASSIC 6X6

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PROFESSIONAL STAMP

LICENSED ARCHITECT · MARISNA ALVAREZ PARGA · C-36107 REN. 01-31-25 · STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/30/2024	ADDENDUM #1
B	11/18/2024	ADDENDUM #2

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1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

BLDG 6, 8 & 9 - FINISH & SIGNAGE PLAN

INC.2

DRAWN BY: DV JOB NUMBER: 23118.01

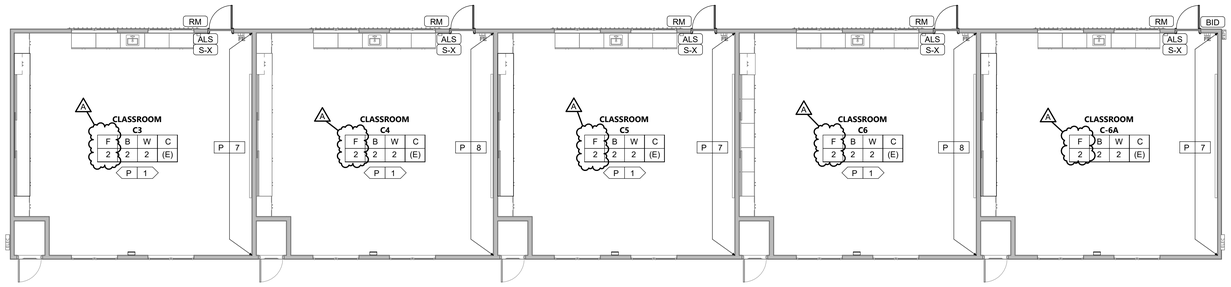
SHEET NO.

2A-252

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:14:35 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INCD2_A22.rvt



PROJECT NORTH

NOTE:

PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **2** RECEIVERS, FOR USE IN THE CLASSROOMS.

THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

BUILDING 10 FINISH SCHEDULE

Building Number	Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish
BUILDING 10	C3	CLASSROOM	2	2	2	(E)
BUILDING 10	C-6A	CLASSROOM	2	2	2	(E)
BUILDING 10	C4	CLASSROOM	2	2	2	(E)
BUILDING 10	C5	CLASSROOM	2	2	2	(E)
BUILDING 10	C6	CLASSROOM	2	2	2	(E)

BLDG. 10 - FINISH KEY PLAN

1/8" = 1'-0" | 1

PROJECT NORTH

NOTE:

PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **2** RECEIVERS, FOR USE IN THE CLASSROOMS.

THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

BUILDING 12 FINISH SCHEDULE

Building Number	Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish
BUILDING 12	C1	CLASSROOM	2	2	2	(E)

BLDG. 12 - FINISH KEY PLAN

1/8" = 1'-0" | 3

PROJECT NORTH

NOTE:

PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **2** RECEIVERS, FOR USE IN THE CLASSROOMS.

THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

BUILDING 11 FINISH SCHEDULE

Building Number	Number	Name	Floor Finish	Base Finish	Wall Finish	Ceiling Finish
BUILDING 11	C2	CLASSROOM	2	2	2	(E)

BLDG. 11 - FINISH KEY PLAN

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. 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 WAL PREFERABLY ON THE RIGHT (CBC ll17B.5.7)
   - D. INSTALL AT 60" AFF MAX. TO THE BOTTOM OF HIGHEST TEXT LINE.
   - 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.
3. SIGNAGE MATERIAL
   - A. ALL SIGNS TO BE 1/4" ACRYLIC PLASTIC
     a. NON-GLARE FINISH
   - B. MOUNTING ON DF TAPE WITH SILICONE AS REQUIRED.
   - C. FIGURES TO BE ETCHED WITH ENAMEL FILLED
4. 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

1. ATTACHED CARPET SHALL HAVE A FIRM CUSHION, PAD, OR BACKING. CARPET OR CARPET TILE SHALL FEATURE A LEVEL LOOP, TEXTURED LOOP, LEVEL CUT PILE, OR LEVEL CUT/UNCUT PILE TEXTURE. THE PILE HEIGHT SHOULD NOT EXCEED 2 INCHES (12.7 MM). EXPOSED EDGES OF CARPET MUST BE FASTENED TO FLOOR SURFACES AND EQUIPPED WITH TRIM ALONG THE ENTIRE LENGTH, COMPLYING WITH SECTION 11B-303.

LEGEND - SIGNAGE SYMBOLS

RM	ROOM NAME / NUMBER SIGN, SEE DETAILS	2/2A-925
S-1	RESTROOM ROOM DOOR SYMBOL, SEE DETAILS	18/2A-925
S-2	RESTROOM ROOM WALL SIGN, SEE DETAILS	13/2A-925
S-X	TACTILE "EXIT" SIGN (INTERIOR), SEE DETAILS	7/2A-925
S-XR	TACTILE "EXIT ROUTE" SIGN (INTERIOR), SEE DETAILS	10/2A-925
S-M	"MAXIMUM OCCUPANCY" SIGN (INTERIOR), SEE DETAIL	16/2A-925
ALS	ASSISTIVE LISTENING SIGN, SEE DETAIL	9/2A-925
RWA	RESTROOM WALL - ALL-GENDER	13/2A-925
RDA	RESTROOM DOOR - ALL-GENDER	18/2A-925
BID	BUILDING ID SIGN	20/2A-925

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.

FLOOR FINISHES (F)

(F)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARKS
(E#)	EXISTING FLOOR			MATCH EXISTING ADJACENT
1	LUXURY VINYL TILE	NATURAL 48250	09 65 19	SHAW - SOLITUDE
2	LVT (MULTICOLOR)	5 COLORS - SEE LEGEND	09 65 19	SHAW CONTRACT - JOY SQUARED
3	EPOXY FLOORING	TBD		6" COVE BASE, DUR-A-FLEX

A

BASE FINISHES (B)

(B)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARKS
(E#)	EXISTING BASE			MATCH EXISTING ADJACENT
2	4" RUBBER BASE	BLACK		JOHNSONITE
3	6" EPOXY COVE BASE	BLACK		6" COVE BASE, DUR-A-FLEX

WALL FINISHES (W)

(W)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARKS
(E#)	EXISTING WALL			MATCH EXISTING ADJACENT
1	GYPSUM WALL BOARD	REFER TO FINISH PLANS		SEE FLOOR PLAN FOR DETAILS
2	TACKABLE WALL PANEL 7' HIGH	QUARTZ		CLARIDGE - TACK WALL
3	CERAMIC WALL TILE	COLOR WHEEL - 7 COLORS TOTAL	DALTILE	COLOR WHEEL - RR AGES 5-8
4	CERAMIC WALL TILE	COLOR WHEEL - 2 COLORS TOTAL	DALTILE	COLOR SHEEL - RR AGES 9-12
5	CERAMIC WALL TILE	COLOR WHEEL - 2 COLORS TOTAL	DALTILE	COLOR WHEEL - RR ADULT

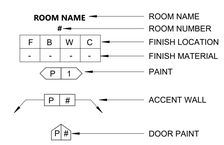
CEILING FINISHES (C)

(C)	DESCRIPTION	COLOR	SPECIFICATION SECTION	REMARK
(E#)	EXISTING CEILING			MATCH EXISTING ADJACENT
1	5/8" GYP BOARD	P-2 (SEE PAINT SCHEDULE)		

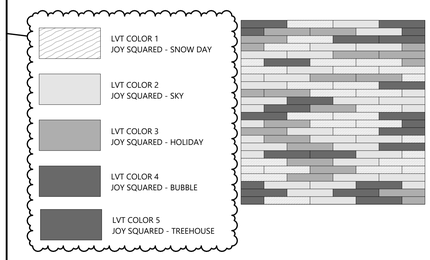
PAINT (P)

(P)	DESCRIPTION	COLOR	SPECIFICATIO N SECTION	REMARK
(E#)	EXISTING PAINT			MATCH EXISTING ADJACENT
1	INTERIOR WALL PAINT	SW7757 HIGH REFLECTIVE WHITE	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
2	INTERIOR CLASSROOM CEILING PAINT	SW7757 HIGH REFLECTIVE WHITE	PROF. FLAT	SHERWIN WILLIAMS
3	INTERIOR RESTROOM CEILING PAINT	SW7757 HIGH REFLECTIVE WHITE	PROF. SEMIGLOSS	SHERWIN WILLIAMS
4	INTERIOR ACCENT WALL(OFFICE)	SW7631 CITY LOFT	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
5	INTERIOR ACCENT WALL (OFFICE)	SW9137 NIEBLA AZUL	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
6	INTERIOR ACCENT WALL (OFFICE)	SW6191 CONTENDED	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
7	INTERIOR ACCENT WALL (CLASSROOM)	SW9046 GENTLE AQUAMARINE	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
8	INTERIOR ACCENT WALL (CLASSROOM)	SW6716 DANCING GREEN	SHADOW SEMIGLOSS	SHERWIN WILLIAMS
9	(ACCENT)	TBD		SHERWIN WILLIAMS
10	INTERIOR DOOR FRAME PAINT	SW7757		SHERWIN WILLIAMS

FINISHES PLAN



TYPICAL CLASSROOM LVT LAYOUT (F2)



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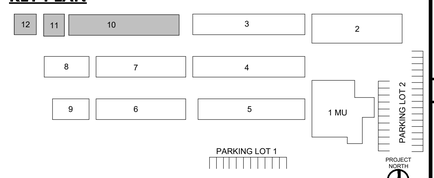

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BLDG 10, 11 & 12 - FINISH & SIGNAGE PLAN

INC 2

DRAWN BY: Author JOB NUMBER: 23118.01

SHEET NO.

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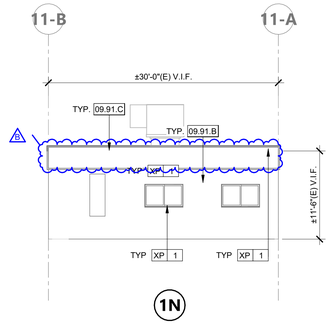
DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:14:36 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



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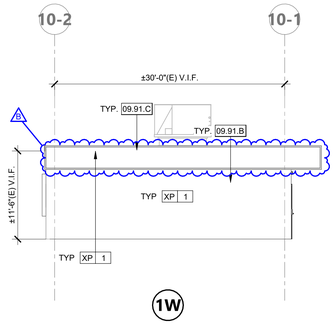

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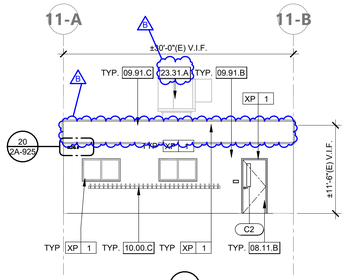

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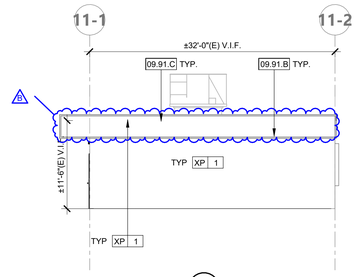
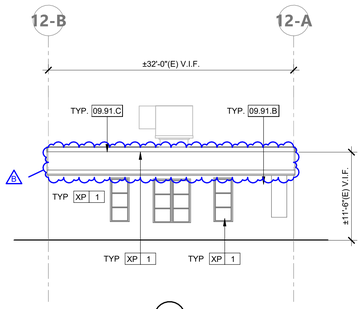


1E

BUILDING 11 EXTERIOR ELEVATIONS | 1/8" = 1'-0" | 1



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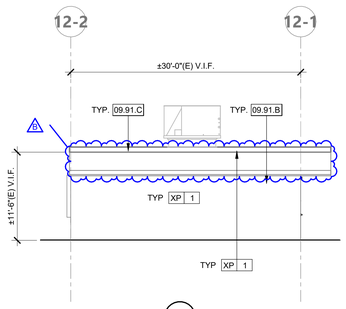

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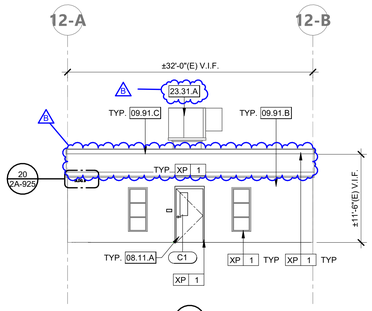

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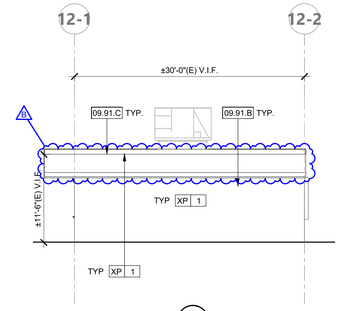


2E

BUILDING 12 EXTERIOR ELEVATIONS | 1/8" = 1'-0" | 2

KEYNOTES

08.11.A	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.11.B	(N) WOOD DOOR AND FRAME, PAINTED
09.91.B	ALL EXTERIOR SURFACES ARE TO BE PAINTED, INCLUDING, BUT NOT LIMITED TO, WALLS, WOOD TRIMS, COVERED WALKWAYS, WOOD BENCHES, STRIPING ON CONCRETE WALKWAYS, RAILINGS AND HANDRAILS, EXTERIOR DOORS AND FRAMES, WINDOW FRAMES AND SILLS, AND ANY SIGNAGE OR ARCHITECTURAL FEATURES. REFER TO EXTERIOR PAINTING SCHEDULE
09.91.C	REPAINT METAL FASCIAS, GUTTERS, FLASHINGS, DOWNSPOUTS, CANOPY POSTS OR SUPPORTS, MISCELLANEOUS METALS, AND WALL/HVAC VENTS. REFER TO EXTERIOR PAINTING SCHEDULE
10.00.C	(E) COAT RACK TO BE REMOVED AND REINSTALLED DURING EXTERIOR PAINTING.
23.31.A	(N) MECHANICAL UNIT PER MECHANICAL DRAWINGS.

EXTERIOR ELEVATION GENERAL NOTES

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE WINDOW SCHEDULE.
2. PATCH AND REPAIR EXTERIOR SURFACES AS NEEDED OR WHERE INDICATED
3. ALL WALL PATCHS TO BE PAINTED. MATCH EXISTING EXTERIOR WALL COLOR. PROVIDE A FLUSH TRANSITION BETWEEN EXISTING AND NEW SURFACES.
4. EXTERIOR REPAINTING SCOPE OF WORK:
   - A. REPAIR ALL DAMAGED SURFACES TO ACHIEVE A FLUSH, CLEAN FINISH.
   - B. SAND, CLEAN, AND RE-PRIME ALL EXISTING SURFACES.
   - C. REPAINT ALL EXISTING PAINTED SURFACES, INCLUDING BUT NOT LIMITED TO WALLS, WALKWAY SOFFITS, CONDUITS, PIPES, GUTTERS, DOWNSPOUTS, TRIM, AND DOOR AND WINDOW FRAMES OF EXISTING BUILDINGS.
   - D. REPAINT ALL PAINTED SITE EQUIPMENT, INCLUDING BUT NOT LIMITED TO BENCHES, CANOPY POSTS, BASKETBALL EQUIPMENT, AND FREESTANDING WALLS.
   - E. USE COLORS AS SPECIFIED IN THE DISTRICT-APPROVED COLOR PALETTE.
   - F. PAINT ALL DOOR FRAMES, WINDOW FRAMES AS INDICATED ON THE PLANS.

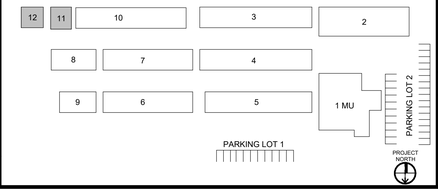
EXTERIOR ELEVATION LEGEND

- A6 — WALL TYPE TAG
- 101AA — DOOR TYPE TAG
- A — WINDOW TYPE TAG
- XP 1 — EXTERIOR PAINT TAG
- (N) WALL INFILL

EXTERIOR PAINTING SCHEDULE

Key Name	DESCRIPTION	MANUFACTURER	FINISH	COLOR	COMMENTS	REMARK
1	EXTERIOR PAINT		EGGSHELL			
2	EXTERIOR ACCENT PAINT		EGGSHELL			
3	EXTERIOR ACCENT PAINT		EGGSHELL			
4	EXTERIOR ACCENT PAINT		EGGSHELL			
5	EXTERIOR FASCIA PAINT		EGGSHELL			
6	EXTERIOR GUTTER PAINT		SEMI-GLOSS			
7	EXTERIOR TRIM PAINT		SEMI-GLOSS			
8	EXTERIOR BUILDING ID PAINT		EGGSHELL			

KEY PLAN



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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

BLDG 11 & 12 - EXTERIOR ELEVATIONS

INC 2

DRAWN BY: Author JOB NUMBER: 23118.01

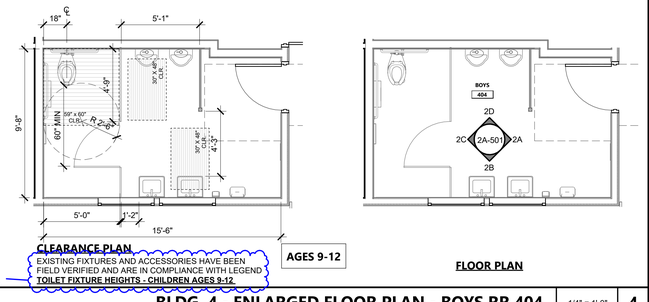
SHEET NO.

2A-306

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:14:41 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



CLEARANCE PLAN

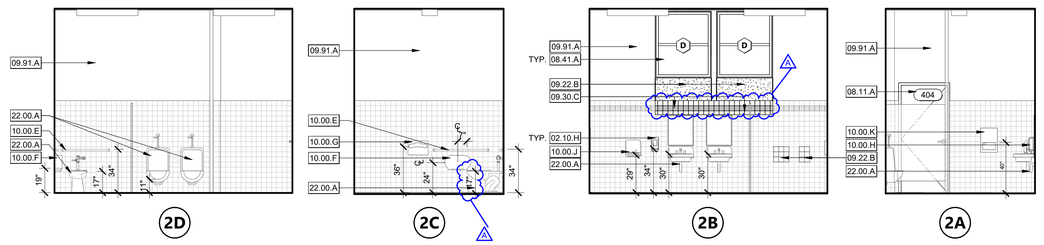
EXISTING FIXTURES AND ACCESSORIES HAVE BEEN FIELD VERIFIED AND ARE IN COMPLIANCE WITH LEGEND

TOILET FIXTURE HEIGHTS - CHILDREN AGES 9-12

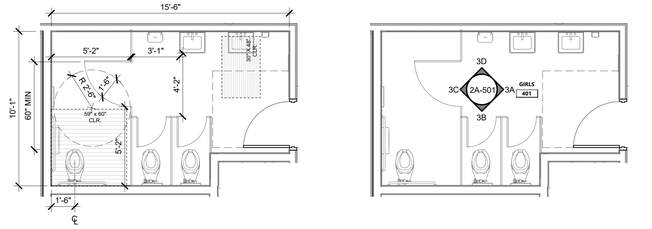
AGES 9-12

FLOOR PLAN

BLDG. 4 - ENLARGED FLOOR PLAN - BOYS RR 404 | 1/4" = 1'-0" | 4



BLDG. 4 - 404 BOYS RR - INTERIOR ELEVATIONS | 1/4" = 1'-0" | 2



CLEARANCE PLAN

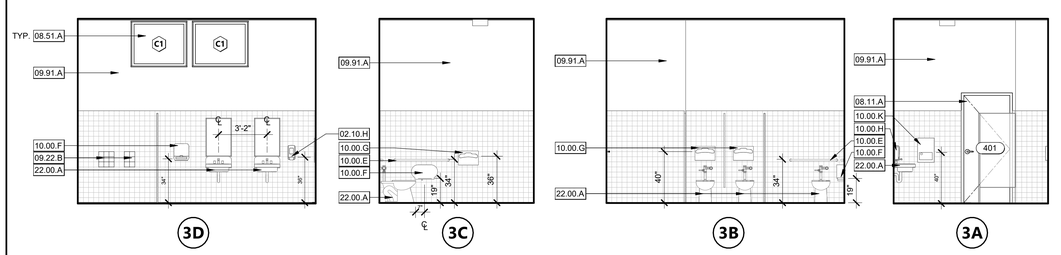
EXISTING FIXTURES AND ACCESSORIES HAVE BEEN FIELD VERIFIED AND ARE IN COMPLIANCE WITH LEGEND

TOILET FIXTURE HEIGHTS - CHILDREN AGES 9-12

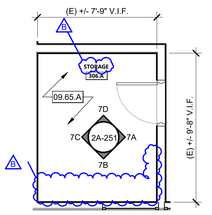
AGES 9-12

FLOOR PLAN

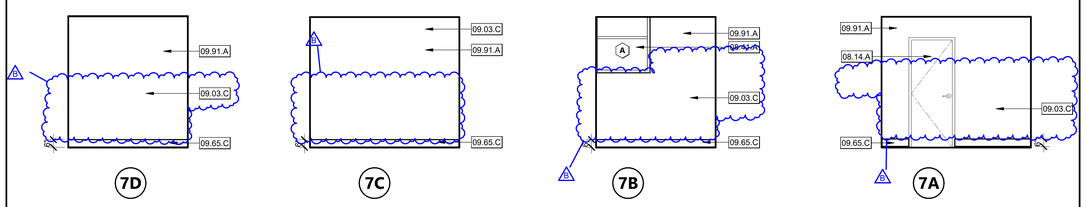
BLDG. 4 - ENLARGED FLOOR PLAN - GIRLS RR 401 | 1/4" = 1'-0" | 5



BLDG. 4 - INTERIOR ELEVATIONS - GIRLS RR 401 | 1/4" = 1'-0" | 6



STORAGE 306.A - ENLARGED FLOOR PLAN | 1/4" = 1'-0" | 8



BLDG. 3 - INTERIOR ELEVATIONS - STORAGE 306.A | 1/4" = 1'-0" | 7

KEYNOTES

02.10.H	REMOVE AND REINSTALL (E) SOAP AND HAND SANITIZER DISPENSERS
08.11.A	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.14.A	(N) HARDWARE AT (E) DOOR. DOOR AND FRAME TO BE PAINTED. SEE DOOR SCHEDULE.
08.41.A	(N) ALUMINUM STOREFRONT WINDOW
08.51.A	(N) CLERESTORY WINDOWS
09.03.C	APPLY SKIM COAT TO (E) SURFACES WHERE TACKABLE, CASEWORK, AND OTHER ITEMS ATTACHED TO THE WALLS HAVE BEEN DEMOLISHED TO ENSURE A CLEAN AND SMOOTH SURFACE FOR INTERIOR PAINTING.
09.22.B	(N) INFILL WALL. PATCH BACK AND PAINT TO MATCH ADJACENT SURFACES.
09.30.C	(N) CERAMIC TILE OVER GYP. BOARD. CONTINUE WALL TILE LAYOUT TO MATCH EXISTING. USE WOOD VIOLET FOR TILE STRIPING AND ARCTIC WHITE FOR REMAINING TILES
09.65.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
09.65.C	(N) 6" WALL BASE. SEE FINISH SCHEDULE
09.91.A	ALL INTERIOR SURFACES TO BE PAINTED, SEE FINISH SCHEDULE FOR PAINT COLOR INFORMATION
10.00.E	(E) GRAB BAR
10.00.F	(E) TOILET PAPER TISSUE DISPENSER
10.00.G	(E) TOILET SEAT COVER DISPENSER
10.00.H	(E) HAND SOAP DISPENSER
10.00.J	(E) SURFACE MOUNT PAPER TOWEL DISPENSER
10.00.K	(E) SURFACE MOUNT NAPKIN DISPOSAL
22.00.A	(E) PLUMBING FIXTURE TO REMAIN

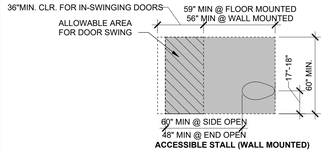
LEGEND - RESTROOM GENERAL NOTES

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

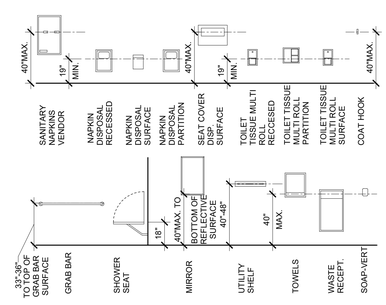
FIXTURE	ADULT	FOR CHILDREN'S USE AGES 5-8	FOR CHILDREN'S USE AGES 9-12	CBC TABLE 11B-604.9
DISPENSER OR MIRROR HEIGHT	40" MAX.	40" MAX.	40" MAX.	
DRINKING FOUTAIN BUBBLER HEIGHT	36" MAX.	PARALLEL APROACH 30" MAX.	PARALLEL APROACH 30" MAX.	
DRINKING FOUTAIN KNEE CLEARANCE	27" MIN.	27" MIN.	27" MIN.	
HIGH 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.	
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"-17"	
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

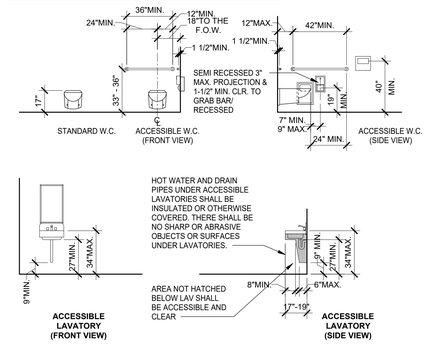


FOR ADDITIONAL ACCESS REQUIREMENTS, SEE 2G-900

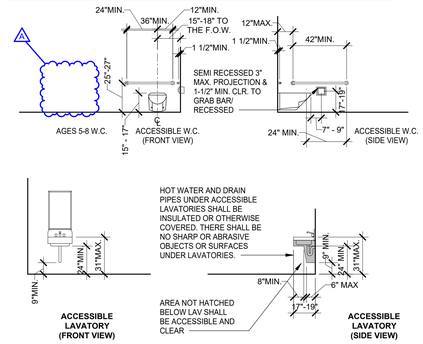
MOUNTING HEIGHTS



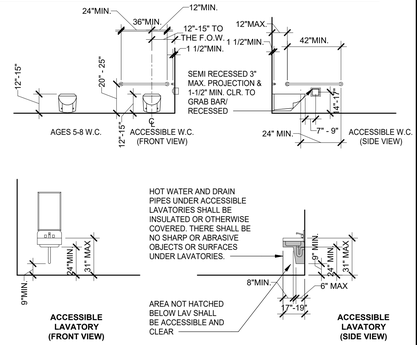
TOILET FIXTURE HEIGHTS - ADULT



TOILET FIXTURE HEIGHTS - CHILDREN AGES 9-12



TOILET FIXTURE HEIGHTS - CHILDREN AGES 5-8



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LICENSED ARCHITECT MARIANA ALVAREZ PARGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
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RESTROOM PLAN ENLARGEMENTS

INC.2

DRAWN BY: Author JOB NUMBER: 23118.01

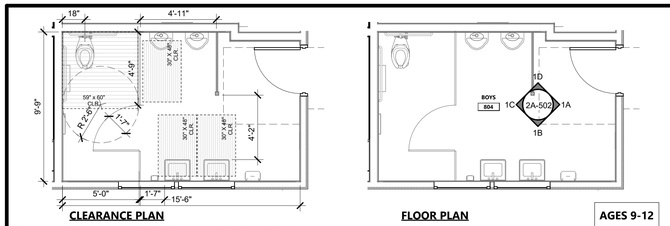
SHEET NO.

2A-501

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:14:49 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



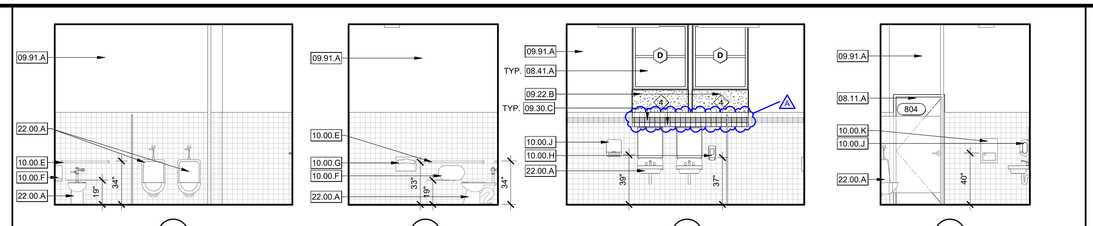
CLEARANCE PLAN

FLOOR PLAN

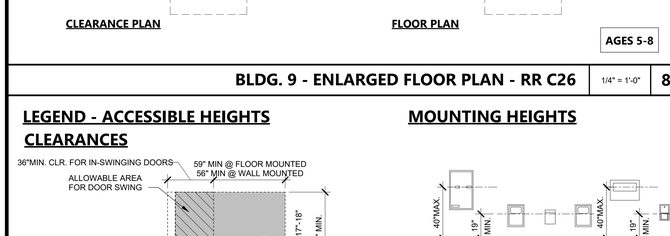
AGES 9-12

△1 EXISTING FIXTURES AND ACCESSORIES HAVE BEEN FIELD VERIFIED AND ARE IN COMPLIANCE WITH LEGEND **TOILET FIXTURE HEIGHTS - CHILDREN AGES 9-12**

BLDG. 8 - ENLARGED FLOOR PLAN - BOYS RR 804 | 1/4" = 1'-0" | 5



BLDG. 8 - 804 BOYS RR - INTERIOR ELEVATIONS | 1/4" = 1'-0" | 1



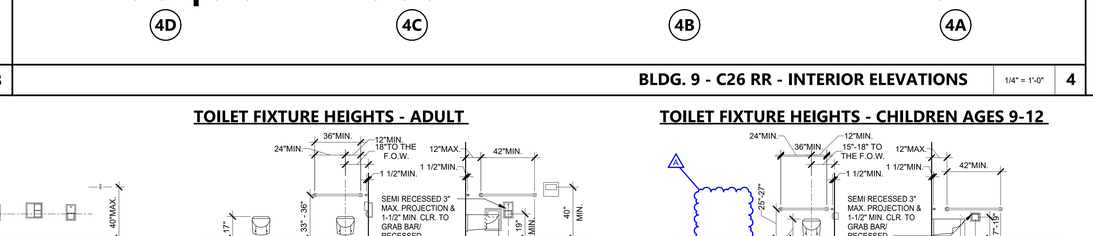
CLEARANCE PLAN

FLOOR PLAN

AGES 9-12

△2 EXISTING FIXTURES AND ACCESSORIES HAVE BEEN FIELD VERIFIED AND ARE IN COMPLIANCE WITH LEGEND **TOILET FIXTURE HEIGHTS - CHILDREN AGES 9-12**

BLDG. 8 - ENLARGED FLOOR PLAN - GIRLS RR 801 | 1/4" = 1'-0" | 6



BLDG. 8 - 801 GIRLS RR - INTERIOR ELEVATIONS | 1/4" = 1'-0" | 2

CLEARANCE PLAN

FLOOR PLAN

AGES 5 AND YOUNGER

BLDG. 8 - ENLARGED FLOOR PLAN - RR 807 | 1/4" = 1'-0" | 7

BLDG. 8 - 807 RR - INTERIOR ELEVATIONS | 1/4" = 1'-0" | 3

CLEARANCE PLAN

FLOOR PLAN

AGES 5-8

BLDG. 9 - ENLARGED FLOOR PLAN - RR C26 | 1/4" = 1'-0" | 8

BLDG. 9 - C26 RR - INTERIOR ELEVATIONS | 1/4" = 1'-0" | 4

LEGEND - ACCESSIBLE HEIGHTS CLEARANCES

FOR ADDITIONAL ACCESS REQUIREMENTS, SEE CG-900

MOUNTING HEIGHTS

TOILET FIXTURE HEIGHTS - ADULT

TOILET FIXTURE HEIGHTS - CHILDREN AGES 9-12

TOILET FIXTURE HEIGHTS - CHILDREN AGES 5-8

KEYNOTES

02.10.F	(E) PTD, HSD, TSCD AND TTD TO BE REMOVED AND REINSTALLED AFTER (N) RR FINISHES
08.11.A	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.41.A	(N) ALUMINUM STOREFRONT WINDOW
08.51.A	(N) CLERESTORY WINDOWS
09.22.A	(N) PARTITION WALL
09.22.B	(N) INFILL WALL. PATCH BACK AND PAINT TO MATCH ADJACENT SURFACES.
09.30.A	(N) CERAMIC TILE. REFER TO FINISH SCHEDULE.
09.30.C	(N) CERAMIC TILE OVER GYP. BOARD. CONTINUE WALL TILE LAYOUT TO MATCH EXISTING. USE WOOD VIOLET FOR TILE STRIPING AND ARCTIC WHITE FOR REMAINING TILES
09.65.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
09.65.C	(N) 6" WALL BASE. SEE FINISH SCHEDULE
09.91.A	ALL INTERIOR SURFACES TO BE PAINTED, SEE FINISH SCHEDULE FOR PAINT COLOR INFORMATION
09.91.F	(E) DUCTWORK TO BE PAINTED. MATCH WALL COLOR. SEE FINISH SCHEDULE
10.00.E	(E) GRAB BAR
10.00.F	(E) TOILET PAPER TISSUE DISPENSER
10.00.G	(E) TOILET SEAT COVER DISPENSER
10.00.H	(E) HAND SOAP DISPENSER
10.00.J	(E) SURFACE MOUNT PAPER TOWEL DISPENSER
10.00.K	(E) SURFACE MOUNT NAPKIN DISPOSAL
10.28.A	(N) GRAB BAR. MAINTAIN 1-1/2" CLEAR AROUND/BELOW GRAB BAR. PER MOUNTING DETAILS 5/2A-921
10.28.L	(N) SURFACE MOUNT TOILET TISSUE DISPENSER
10.28.M	(N) SURFACE MOUNT TOILET SEAT PROTECTOR DISPENSER
10.28.O	(N) SURFACE MOUNT PAPER TOWEL DISPENSER
22.00.A	(E) PLUMBING FIXTURE TO REMAIN
22.43.B	(N) ACC. LAVATORY, PER PLUMBING DRAWINGS
22.43.C	(N) ACC. WATER CLOSET PER PLUMBING DRAWINGS

LEGEND - RESTROOM GENERAL NOTES

1. MOUNTING HEIGHTS SHOWN ARE TYPICAL, UNLESS OTHERWISE NOTED.
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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.
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11. SEE 2G 900 FOR TYPICAL FIXTURE AND ACCESSORY PLACEMENT DIMENSIONS

INTERIOR ELEVATION LEGEND

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 APROACH 30" MAX.	PARALLEL APROACH 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.	
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"17"	
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.	

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C-36107
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REVISIONS △2

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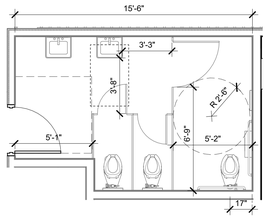
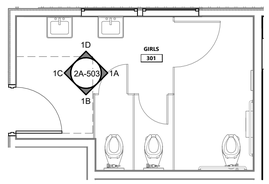
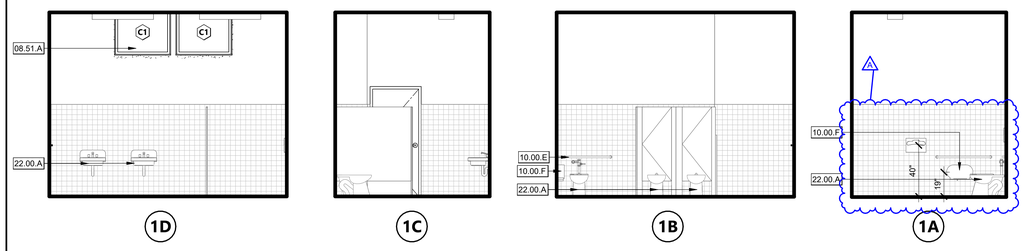




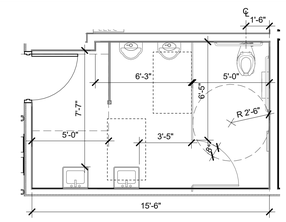
CLEARANCE PLAN **FLOOR PLAN** **AGES 9-12**

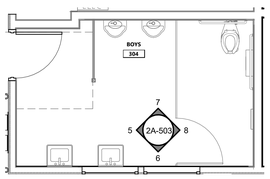
⚠2 EXISTING FIXTURES AND ACCESSORIES HAVE BEEN FIELD VERIFIED AND ARE IN COMPLIANCE WITH LEGEND
TOILET FIXTURE HEIGHTS - CHILDREN AGES 9-12

BLDG. 3 - ENLARGED FLOOR PLAN - GIRLS RR 301 | 1/4" = 1'-0" | 2



BLDG. 3 - GIRLS RR 301 - INTERIOR ELEVATIONS | 1/4" = 1'-0" | 1

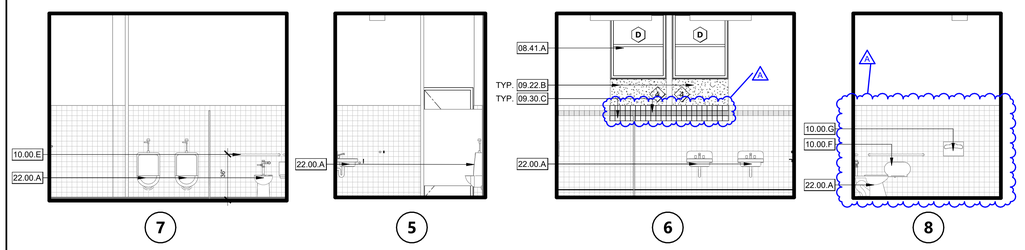




CLEARANCE PLAN **FLOOR PLAN** **AGES 9-12**

⚠2 EXISTING FIXTURES AND ACCESSORIES HAVE BEEN FIELD VERIFIED AND ARE IN COMPLIANCE WITH LEGEND
TOILET FIXTURE HEIGHTS - CHILDREN AGES 9-12

BLDG. 3 - ENLARGED FLOOR PLAN - BOYS RR 304 | 1/4" = 1'-0" | 4



BLDG. 3 - BOYS RR 304 - INTERIOR ELEVATIONS | 1/4" = 1'-0" | 3

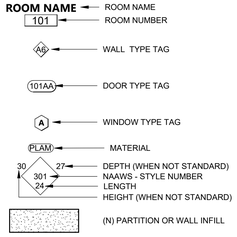
KEYNOTES

08.41.A	(N) ALUMINUM STOREFRONT WINDOW
08.51.A	(N) CLERESTORY WINDOWS
09.22.B	(N) INFILL WALL. PATCH BACK AND PAINT TO MATCH ADJACENT SURFACES.
09.30.C	(N) CERAMIC TILE OVER GYP. BOARD. CONTINUE WALL TILE LAYOUT TO MATCH EXISTING. USE WOOD VIOLET FOR TILE STRIPING AND ARCTIC WHITE FOR REMAINING TILES
10.00.E	(E) GRAB BAR
10.00.F	(E) TOILET PAPER TISSUE DISPENSER
10.00.G	(E) TOILET SEAT COVER DISPENSER
22.00.A	(E) PLUMBING FIXTURE TO REMAIN

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

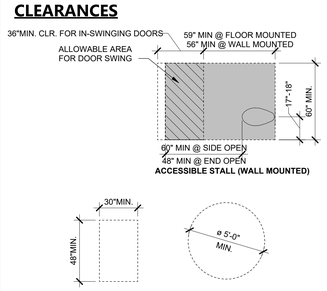
INTERIOR ELEVATION LEGEND



CLEARANCE TO FINISH SURFACE

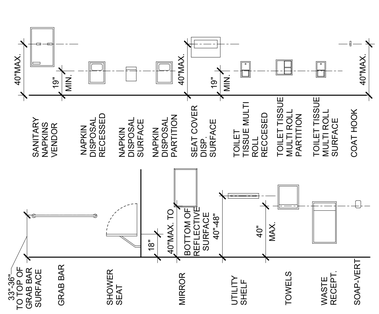
FIXTURE	ADULT	FOR CHILDREN'S USE AGES 5-8	FOR CHILDREN'S USE AGES 9-12	CBC TABLE 11B-604.9
DISPENSER OR MIRROR HEIGHT	40" MAX.	40" MAX	40" MAX.	
DRINKING FOUTAIN BUBBLER HEIGHT	36" MAX.	PARALLEL APROACH 30" MAX.	PARALLEL APROACH 30" MAX.	
DRINKING FOUTAIN KNEE CLEARANCE	27" MIN.	27" MIN.	27" MIN.	
HIGH 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.	
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"-17"	
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

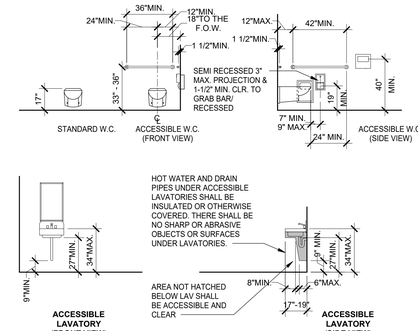


FOR ADDITIONAL ACCESS REQUIREMENTS, SEE VG-900

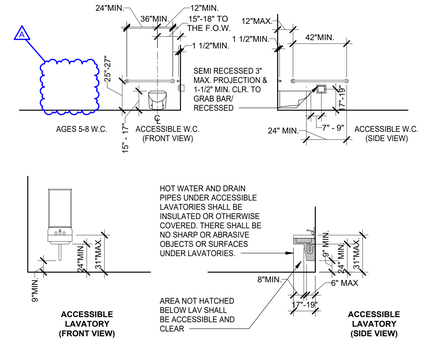
MOUNTING HEIGHTS



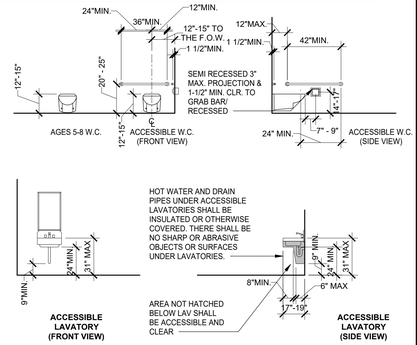
TOILET FIXTURE HEIGHTS - ADULT



TOILET FIXTURE HEIGHTS - CHILDREN AGES 9-12



TOILET FIXTURE HEIGHTS - CHILDREN AGES 5-8



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C-36107
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REVISIONS

NO.	DATE	DESCRIPTION
A	10/30/2024	ADDENDUM #1
B	11/18/2024	ADDENDUM #2

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SHEET TITLE

RESTROOM PLAN ENLARGEMENTS

INC.2

DRAWN BY: Author JOB NUMBER: 23118.01

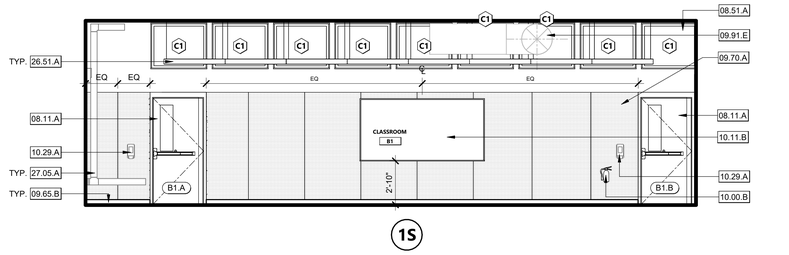
SHEET NO.

2A-503

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:15:06 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



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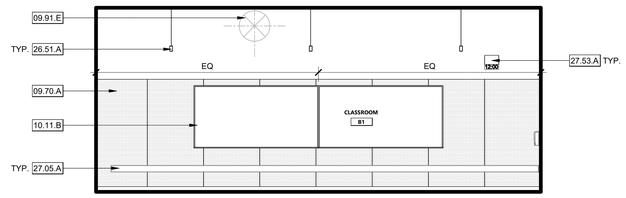

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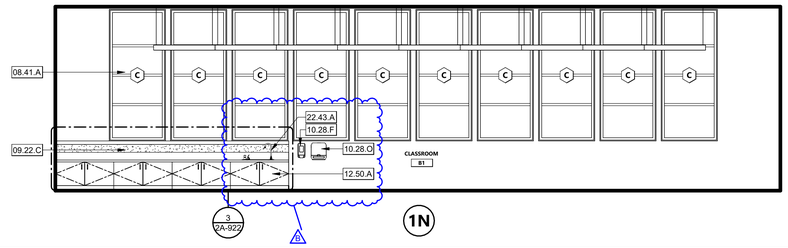

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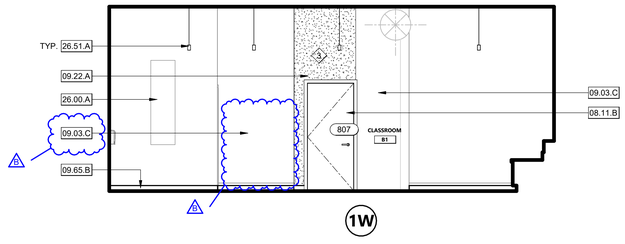
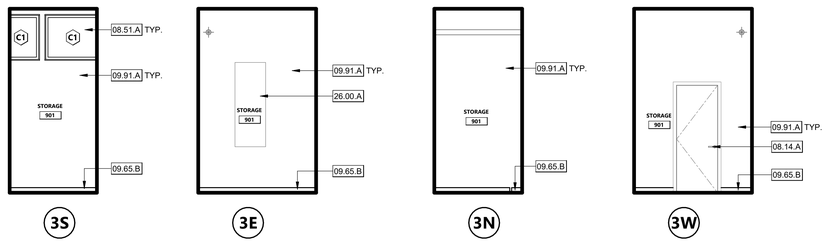


1W

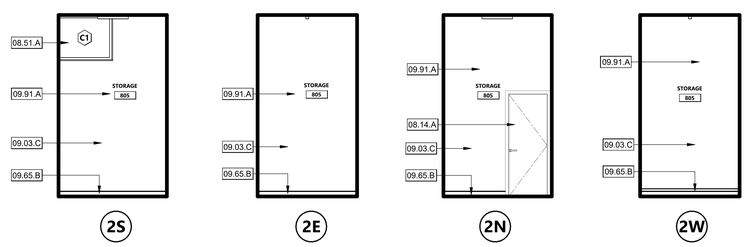
AGE 5 ONLY

BUILDING 8 - CLASSROOM B1 | 1/4" = 1'-0" | 1



3S 3E 3N 3W

BUILDING 9 -STORAGE - C12 | 1/4" = 1'-0" | 3



2S 2E 2N 2W

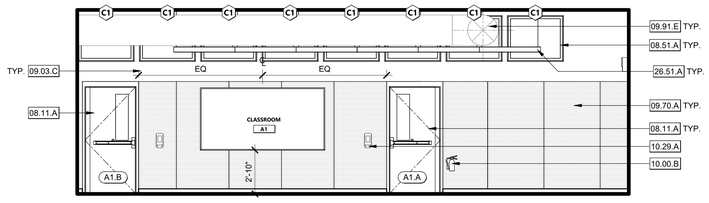
BUILDING 8 - STORAGE - 805 | 1/4" = 1'-0" | 2

KEYNOTES

06.41.C	PLASTIC LAMINATED COUNTERTOP 6" BACKSPLASH, TYP.
08.11.A	(N) EXTERIOR FRP FLUSH DOOR INSTALLED IN THE EXISTING WOOD FRAME
08.11.B	(N) WOOD DOOR AND FRAME, PAINTED
08.14.A	(N) HARDWARE AT (E) DOOR. DOOR AND FRAME TO BE PAINTED. SEE DOOR SCHEDULE.
08.41.A	(N) ALUMINUM STOREFRONT WINDOW
08.51.A	(N) CLERESTORY WINDOWS
09.03.C	APPLY SKIM COAT TO (E) SURFACES WHERE TACKABLE, CASEWORK, AND OTHER ITEMS ATTACHED TO THE WALLS HAVE BEEN DEMOLISHED TO ENSURE A CLEAN AND SMOOTH SURFACE FOR INTERIOR PAINTING.
09.22.A	(N) PARTITION WALL
09.22.B	(N) INFILL WALL. PATCH BACK AND PAINT TO MATCH ADJACENT SURFACES.
09.22.C	(N) WALL UNDER EXISTING WINDOW SILL
09.29.A	(N) 5/8" GYPSUM BOARD BELOW WINDOW SILL, PAINTED WHERE EXPOSED
09.65.A	(N) FLOORING AND WALL BASE THROUGHOUT, SEE FINISH SCHEDULE FOR FLOORING INFORMATION
09.65.B	(N) 4" WALL BASE. SEE FINISH SCHEDULE
09.70.A	(N) TACKABLE WALL PANELS
09.91.A	ALL INTERIOR SURFACES TO BE PAINTED, SEE FINISH SCHEDULE FOR PAINT COLOR INFORMATION
09.91.E	(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	(N) WALL MOUNTED WHITEBOARD PER 6/2A-921
10.28.F	(N) WALL MOUNTED HAND SOAP DISPENSER
10.28.O	(N) SURFACE MOUNT PAPER TOWEL DISPENSER
10.29.A	SAVALGED MOTION-ACTIVATED HAND SANITIZER DISPENSER TO BE MOUNTED AT 40" AFF.
12.50.A	(N) PLASTIC LAMINATED FACED ARCHITECTURAL CABINETS
12.60.A	(N) MID HEIGHT BOOKSHELVES. REFER TO DETAIL SECTION 9/2A-926
22.43.A	(N) ACCESSIBLE SINK. FOR ADULTS & AGES 9-12 REFER TO DETAIL 1/2A-921. FOR AGES 5-8 REFER TO DETAIL 2/2A-921. S.MP.D.
26.00.A	(E) ELECTRICAL PANEL. S.E.D.
26.51.A	(N) LED PENDANT LIGHTS, S.E.D.
27.05.A	(N) SURFACE RACEWAY. S.T.D.
27.53.A	(N) CLOCK/SPEAKER PER TECHNOLOGY DRAWINGS

LEGEND - INTERIOR ELEVATION GENERAL NOTES

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET 2A-811.
2. ALL STEEL TO BE GALVANIZED AND PAINTED.
3. LIGHT SWITCHES TO BE MOUNTED AT 45" FROM FF



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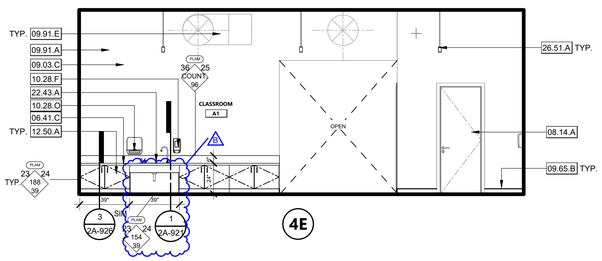

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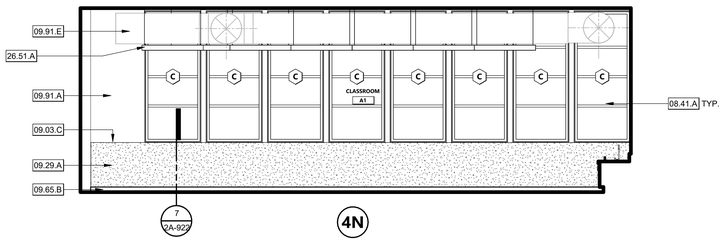

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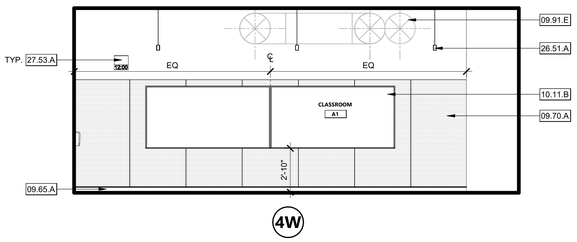
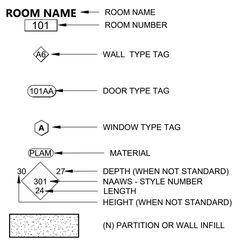


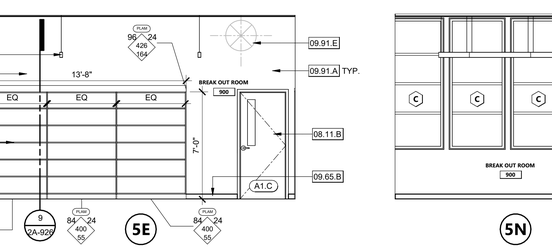
4W

AGES 5-8

BUILDING 9 - CLASSROOM - A1 | 1/4" = 1'-0" | 4

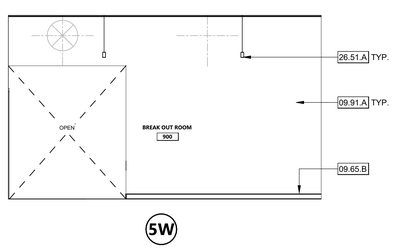
INTERIOR ELEVATION LEGEND





5S 5E

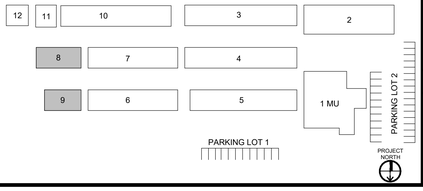
5N



5W

BUILDING 9 - OFFICE - 900 | 1/4" = 1'-0" | 5

KEY PLAN



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REVISIONS

NO.	DATE	DESCRIPTION
B	11/18/2024	ADDENDUM #2

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SHEET TITLE
BLDG 8 & 9 - INTERIOR ELEVATIONS

INC.2

DRAWN BY: Author JOB NUMBER: 23118.01

SHEET NO.
2A-604

DATE: OCTOBER 23, 2024

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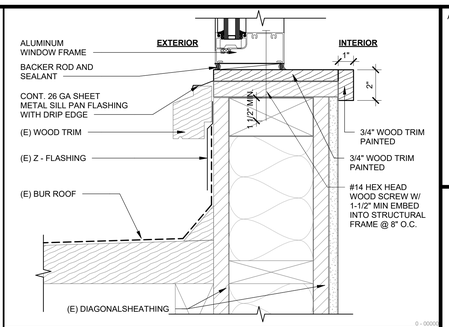
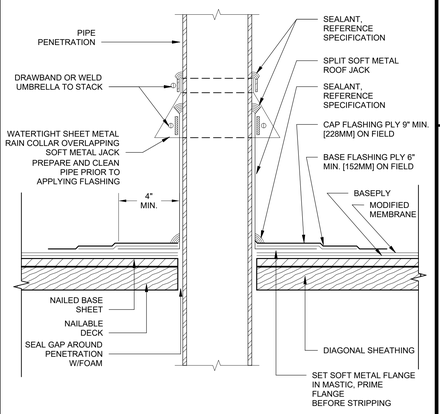


CLERESTORY @ ROOF | 3" = 1'-0" | 1

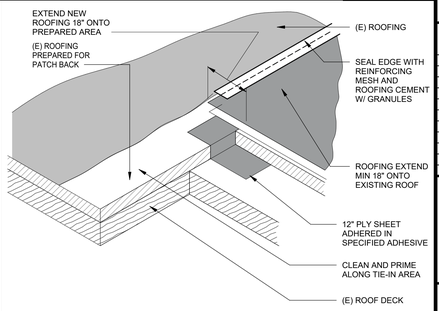


NOTE:

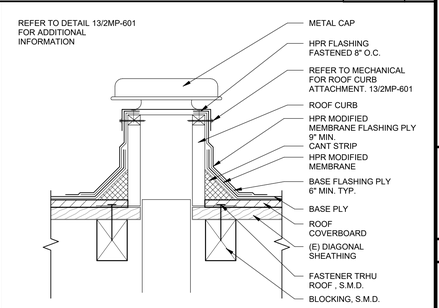
REFERENCE SPECIFICATION FOR SURFACING, MEMBRANE ADHESIVE TYPE, AND INSULATION/COVER BOARD TYPE AND ATTACHMENT METHOD

SEE MECH. DWGS (1 / 2MP-602)

ROOF PENETRATION | N.T.S. | 3



TIE IN / PATCH BACK | NTS | 4



ROOFING AT ROOF CAP/HOOD | 6" = 1'-0" | 5

A

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REVISIONS

NO.	DATE	DESCRIPTION
B	11/18/2024	ADDENDUM #2

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
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

EXTERIOR DETAILS

INC.2

DRAWN BY: DV JOB NUMBER: 23118.01

SHEET NO.

2A-701

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

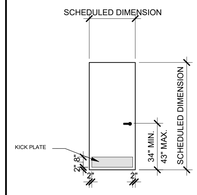
DATE PLOTTED: 11/18/2024 3:15:17 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt

DOOR SCHEDULE - INC. 02

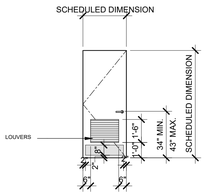
MARK	ROOM	FIRE RATING	SIZE WIDTH	SIZE HEIGHT	SIZE THICKNESS	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	PANIC HARDWARE	HARDWARE GROUP	COMMENTS
Building 3																	
301	GIRLS	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	03	LOUVERS
302	JANITOR	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	05	LOUVERS
303	HEATER	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) HM	PW	7/2A-821	10/2A-821	3/2A-821	-	06	LOUVERS
304	BOYS	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	03	LOUVERS
306	UTILITY ROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	05	
C08	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
C09	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
C10	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
C11	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
Building 4																	
401	GIRLS	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	03	LOUVERS
402	JANITOR	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	05	LOUVERS
403	HEATER	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) HM	PW	7/2A-821	10/2A-821	3/2A-821	-	06	LOUVERS
404	BOYS	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	04	LOUVERS
408	CUST.	NR	3'-4"	7'-0"	1 3/4"	C	FRP	PW	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	05	
B6	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
B7	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
B8	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
B9	CLASSROOM	NR	3'-6"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
Building 6																	
A2	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
A3	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
A4	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
A5	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	01	
Building 8																	
801	GIRLS	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	04	LOUVERS
802	JANITOR	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	05	LOUVERS
803	HEATER	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) HM	PW	7/2A-821	10/2A-821	3/2A-821	-	06	LOUVERS
804	BOYS	NR	3'-0"	7'-0"	1 3/4"	B	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	04	LOUVERS
807	TOILET	NR	3'-0"	7'-0"	1 3/4"	A	WD	P	A	WD	PW	8/2A-821	8/2A-821	3/2A-821		08	
B1.A	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	P.H.	02	
B1.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	P.H.	02	
Building 9																	
902	RR	NR	3'-0"	7'-0"	1 3/4"	A	WD	PW	(E) A	(E) WD	PW	1/2A-821	1/2A-821	3/2A-821		07	KICK PLATE
A1.A	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	P.H.	02	
A1.B	CLASSROOM	NR	3'-4"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	P.H.	02	
A1.C	BREAK OUT ROOM	NR	3'-0"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) WD	PW	4/2A-821	5/2A-821	3/2A-821	-	02	
Building 10																	
C3	CLASSROOM	NR	3'-0"	7'-0"	1 3/4"	C	FRP	PW	(E) A	(E) HM	PW	7/2A-821	10/2A-821	3/2A-821	-	01	
C4	CLASSROOM	NR	3'-0"	7'-0"	1 3/4"	C	FRP	PW	(E) A	(E) HM	PW	7/2A-821	10/2A-821	3/2A-821	-	01	
C5	CLASSROOM	NR	3'-0"	7'-0"	1 3/4"	C	FRP	PW	(E) A	(E) HM	PW	7/2A-821	10/2A-821	3/2A-821	-	01	
C6	CLASSROOM	NR	3'-0"	7'-0"	1 3/4"	C	FRP	PW	(E) A	(E) HM	PW	7/2A-821	10/2A-821	3/2A-821	-	01	
C-6A	CLASSROOM	NR	3'-0"	7'-0"	1 3/4"	C	FRP	PW	(E) A	(E) HM	PW	7/2A-821	10/2A-821	3/2A-821	-	01	
Building 11																	
C2	CLASSROOM	NR	3'-0"	7'-0"	1 3/4"	C	FRP	PW	(E) A	(E) HM	PW	11/2A-821	12/2A-821	9/2A-821	-	01	
Building 12																	
C1	CLASSROOM	NR	3'-6"	7'-0"	1 3/4"	C	FRP	P	(E) A	(E) HM	PW	11/2A-821	12/2A-821	9/2A-821	-	01	

DOOR SCHEDULE - EXISTING RECEIVING MODIFICATIONS

MARK	ROOM	FIRE RATING	SIZE WIDTH	SIZE HEIGHT	SIZE THICKNESS	DOOR TYPE	DOOR MATERIAL	NEW FINISH	PANIC HARDWARE	NEW HARDWARE GROUP	COMMENTS
Building 3											
306.A	STORAGE	NR	2'-8"	7'-0"	1 3/4"	(E) D	(E) WD	PW	-	07	KICK PLATE
Building 4											
405	CUST.	NR	2'-10"	7'-0"	1 3/8"	(E) D	(E) WD	PW		07	KICK PLATE
406A	STORAGE	NR	3'-0"	6'-11"	1 3/8"	(E) D	(E) WD	PW		07	KICK PLATE
406B	STORAGE	NR	3'-0"	6'-11"	1 3/8"	(E) D	(E) WD	PW		07	KICK PLATE
407A	STORAGE	NR	3'-0"	6'-11"	1 3/8"	(E) D	(E) WD	PW		07	KICK PLATE
407B	STORAGE	NR	3'-0"	6'-11"	1 3/8"	(E) D	(E) WD	PW		07	KICK PLATE
Building 8											
805	STORAGE	NR	2'-6"	6'-8"	1 3/8"	(E) D	(E) WD	PW		07	KICK PLATE
Building 9											
901	STORAGE	NR	2'-8"	7'-0"	1 3/8"	(E) E	(E) WD	PW		07	KICK PLATE



DOOR TYPE 'A'



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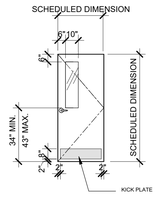

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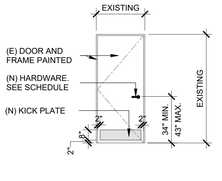

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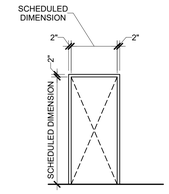
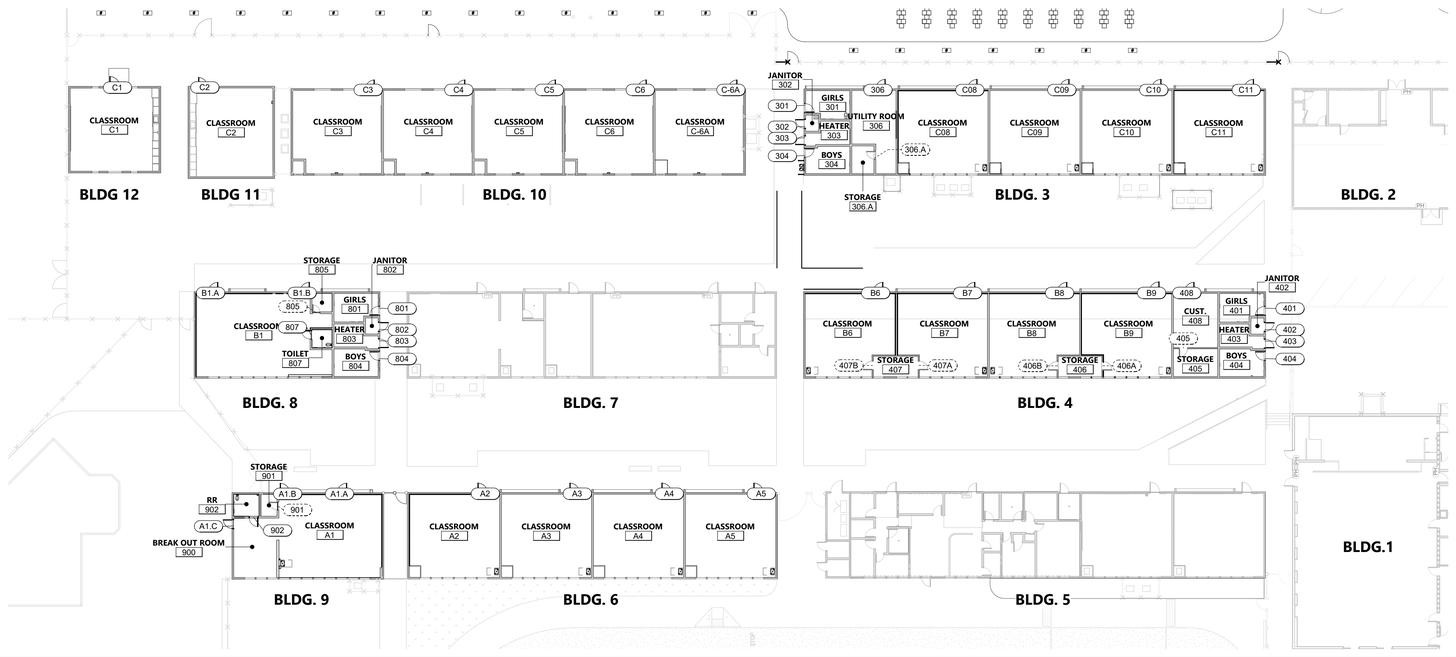


DOOR FRAME 'A'



FLOOR PLAN - DOOR SCHEDULE

3/64" = 1'-0"

1

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 REMARKS 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 9 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

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
PW - PAINT WOOD DOOR

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 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.

AGENCY APPROVAL DSA# 01-121440

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LICENSED ARCHITECT
MARIANA ALVAREZ PARGA
C-36107
REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
A	10/30/2024	ADDENDUM #1
B	11/18/2024	ADDENDUM #2

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE
DOOR SCHEDULE

ING.2

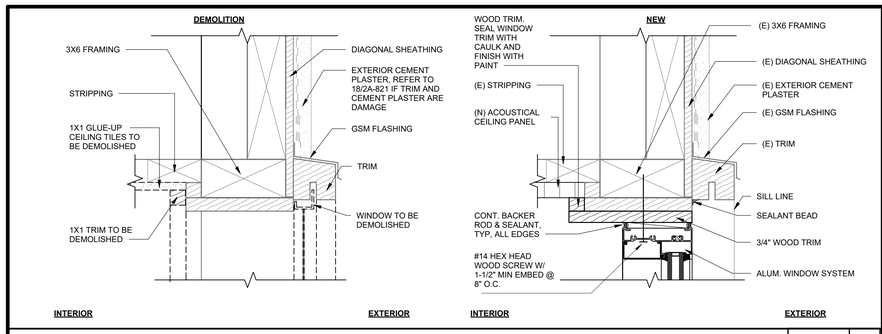
DRAWN BY: Author JOB NUMBER: 23118.01

SHEET NO.
2A-801

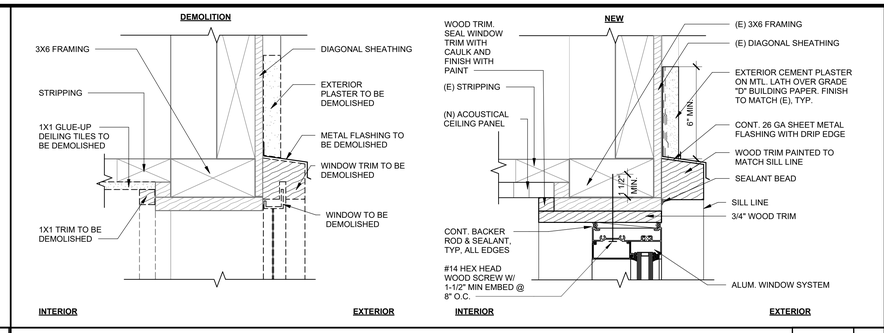
DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

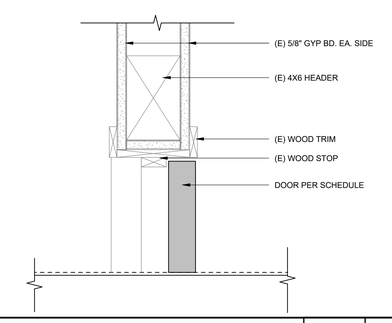
DATE PLOTTED: 11/18/2024 3:15:19 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



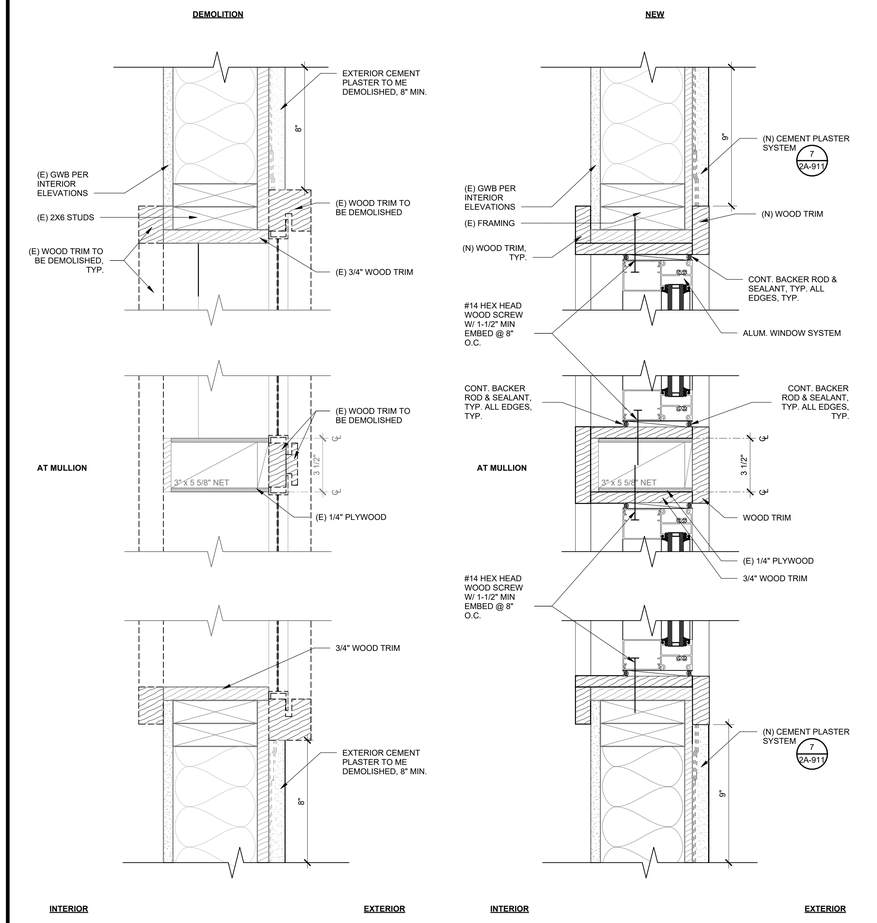
WINDOW HEAD 3" = 1'-0" **16**



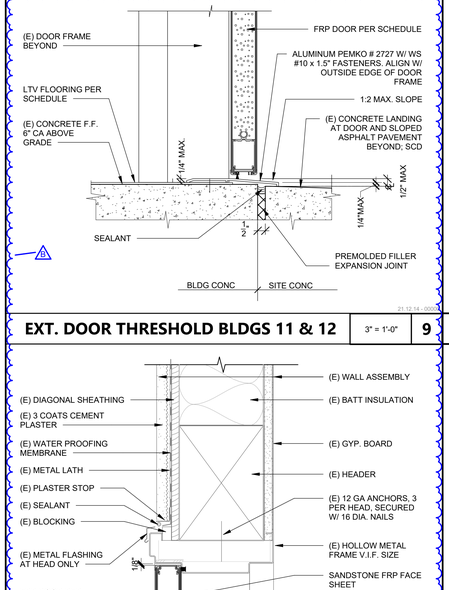
WINDOW HEAD (ALTERNATE) 3" = 1'-0" **6**



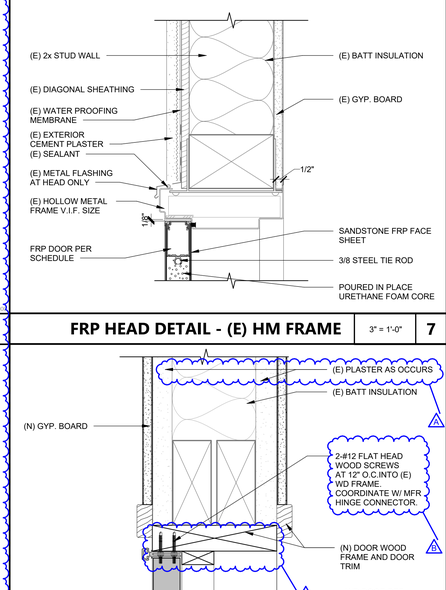
INT. WD DOOR HEAD (JAMB SIM.) 3" = 1'-0" **1**



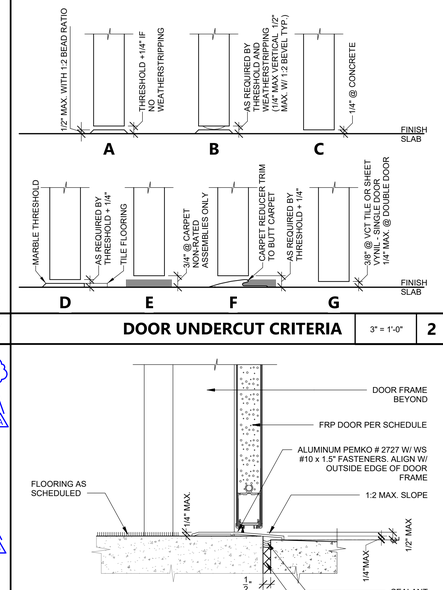
WINDOW JAMB 3" = 1'-0" **19**



EXT. DOOR THRESHOLD BLDGS 11 & 12 3" = 1'-0" **9**

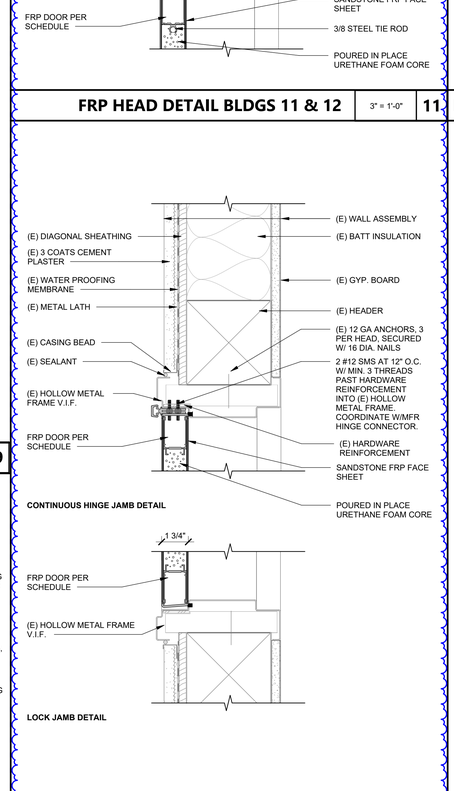


FRP HEAD DETAIL - (E) HM FRAME 3" = 1'-0" **7**

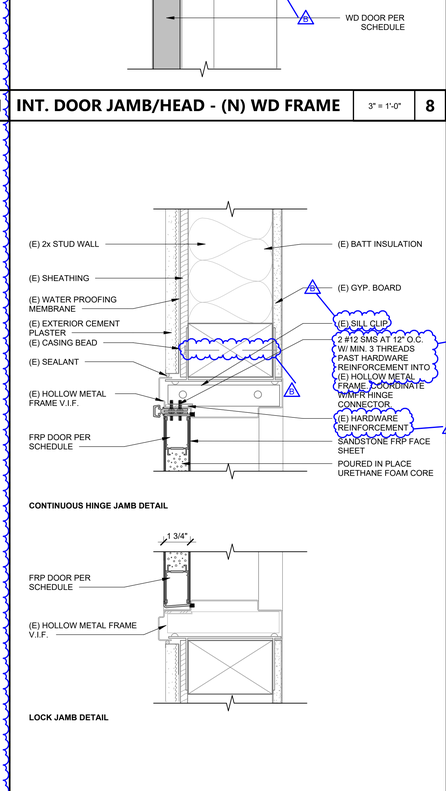


DOOR UNDERCUT CRITERIA 3" = 1'-0" **2**

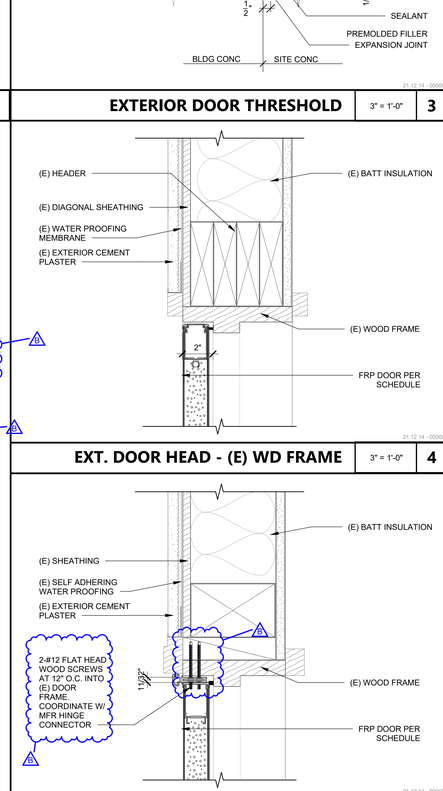
WINDOW SILL 3" = 1'-0" **20**



FRP JAMB DETAIL BLDGS 11 & 12 3" = 1'-0" **12**



FRP JAMB DETAIL - (E) HM FRAME 3" = 1'-0" **10**



EXT. DOOR HEAD - (E) WD FRAME 3" = 1'-0" **4**

EXT. DOOR JAMB - (E) WD FRAME 3" = 1'-0" **5**

AGENCY APPROVAL DSA# 01-121440

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LICENSED ARCHITECT MARIANA ALVAREZ PARGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

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611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

DOOR AND WINDOW DETAILS

ING.2

DRAWN BY: DV JOB NUMBER: 23118.01

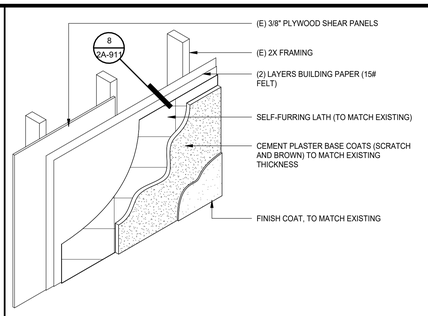
SHEET NO.

2A-821

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:15:25 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



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

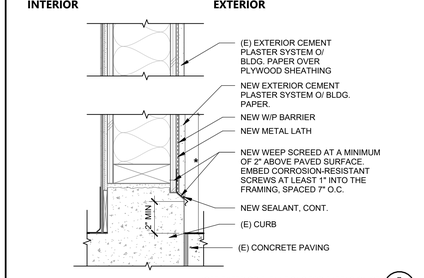
2. INSTALLATION OF THE WATER RESISTIVE BARRIER (BUILDING PAPER)
   A MINIMUM 6" VERTICAL AND 2" HORIZONTAL WEATHERBOARD / SHINGLE LAP IS REQUIRED, LAP TOP AND SIDES UNDER THE EXISTING AND ALLOW THE BOTTOM TO LAP OVER THE EXISTING PAPER.

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.

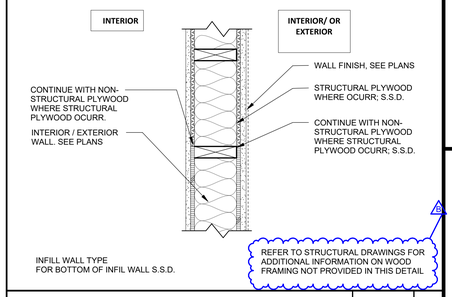
21.12.14 - 00001

EXTERIOR PLASTER ASSEMBLY | 1" = 1'-0" | **7**

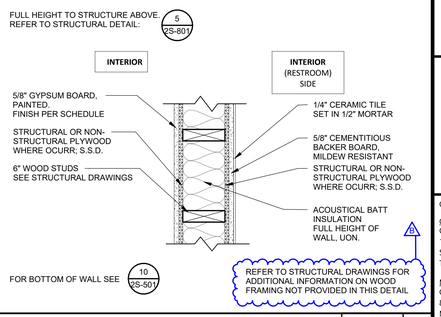


*SEE EXTERIOR ELEVATIONS FOR EXTENSION OF WALL PATCHING. FOR PLASTER ASSEMBLY SEE: 7 / 2A-911

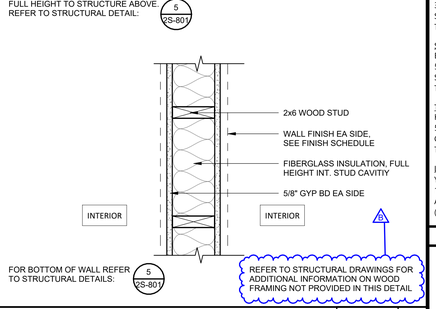
CEMENT PLASTER @ EXTERIOL WALL | 1 1/2" = 1'-0" | **8**



WALL TYPE 2 | 1 1/2" = 1'-0" | **1**



WALL TYPE 3 | 1 1/2" = 1'-0" | **2**



WALL TYPE 4 | 1 1/2" = 1'-0" | **3**

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196

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REVISIONS

A FOR PLAN CHECK ONLY, PER DSA IR_A-19

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SHEET TITLE

WALL TYPES & DETAILS

INC.2

DRAWN BY: MP JOB NUMBER: 23118.01

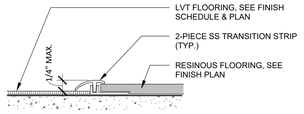
SHEET NO.

2A-911

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:15:27 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDJUSD_RIO VISTA ES MOD_INC02_A22.rvt



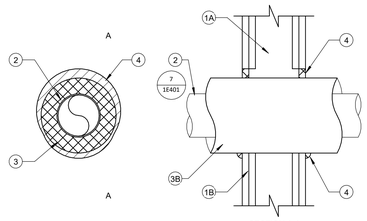
LVT FLOORING - EPOXY

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)

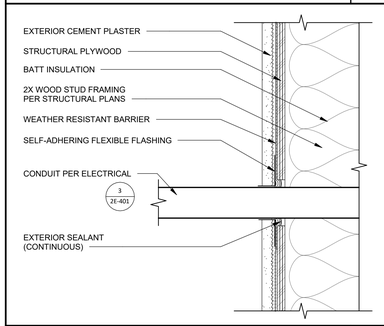


1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   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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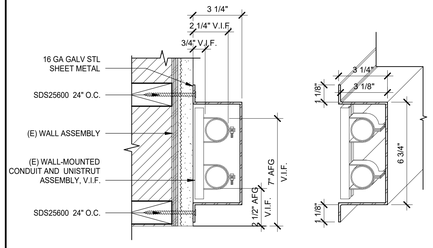
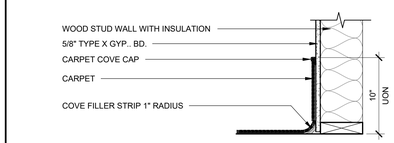
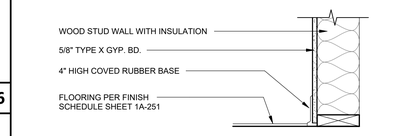
PENETRATION @ EXTERIOR WALL | 3" = 1'-0" | 19



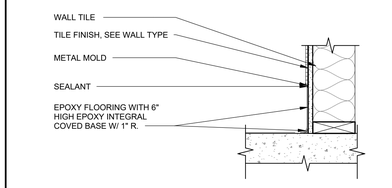
CONDUIT CHASE SECTION DTL | 3" = 1'-0" | 20



CARPET BASE | A



RUBBER BASE | B

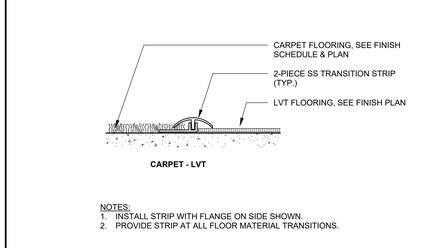


EPOXY COVE BASE @ TOILET ROOMS | C

21.12.14 - 00000

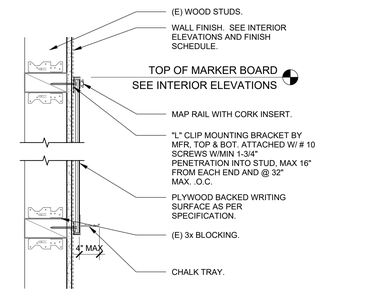
FLOOR BASE | 1 1/2" = 1'-0" | 12

TYP. BACKING/BLOCKING - WOOD STUD | 1" = 1'-0" | 14



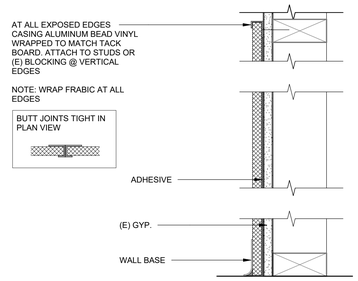
NOTES:
1. INSTALL STRIP WITH FLANGE ON SIDE SHOWN.
2. PROVIDE STRIP AT ALL FLOOR MATERIAL TRANSITIONS.

CARPET TO LVT FLOORING TRANSITION | 12" = 1'-0" | 15



21.12.14 - 00000

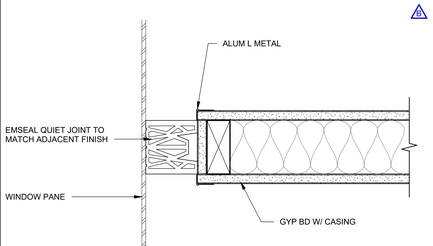
MARKER BOARD ANCHORAGE | 1 1/2" = 1'-0" | 6



21.12.14 - 00000

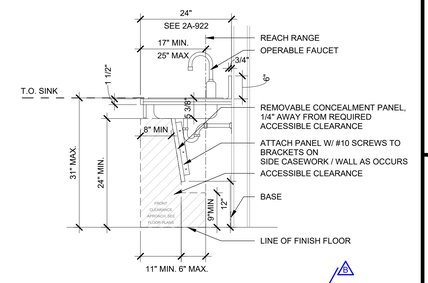
TACKBOARD | N.T.S. | 7

MIRROR MOUNTING | 1 1/2" = 1'-0" | 8

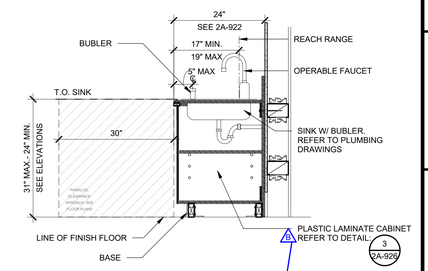


21.12.14 - 00000

WALL TO (E) WINDOW | 3" = 1'-0" | 10



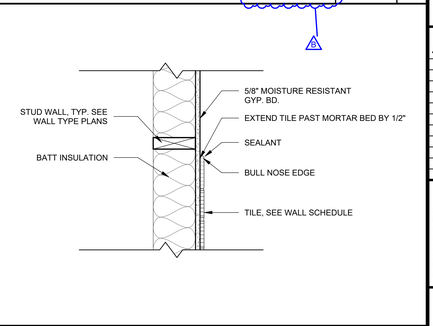
TYP SINK MTG AGES 6-12 | 3/4" = 1'-0" | 1



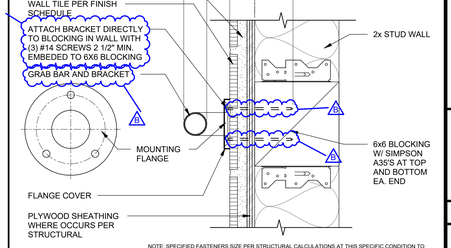
TYP SINK MTG AGE 5 ONLY | 3/4" = 1'-0" | 2

21.12.14 - 00000

LAVATORY MOUNTING AGES 5-8 | 1" = 1'-0" | 3



TILE TERMINATION | 1 1/2" = 1'-0" | 4



NOTE: SPECIFIED FASTENERS SIZE PER STRUCTURAL CALCULATIONS AT THIS SPECIFIC CONDITION TO ALLOW 250 POUNDS AT ANY LOCATION. FOR STANDARD WALL ASSEMBLY AND FINISH INSTALL PER MANUFACTURER'S RECOMMENDATION

GRAB BAR BLOCKING | 3" = 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
B	11/18/2024	ADDENDUM #2

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SHEET TITLE

INTERIOR DETAILS

INC 2

DRAWN BY: MP JOB NUMBER: 23118.01

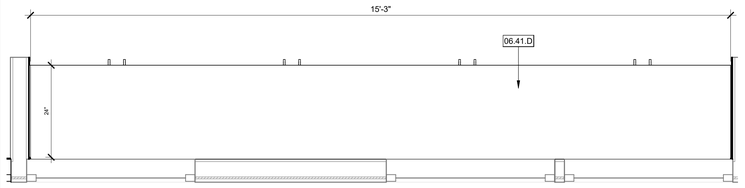
SHEET NO.

2A-921

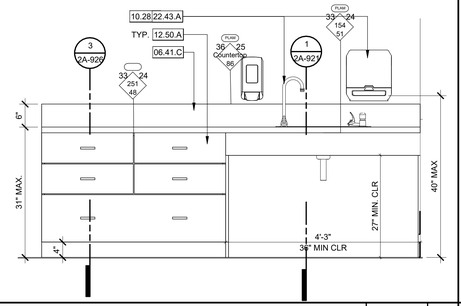
DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

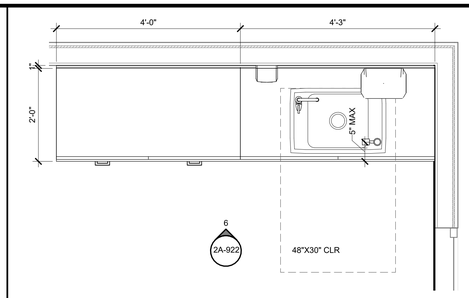
DATE PLOTTED: 11/18/2024 3:15:30 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



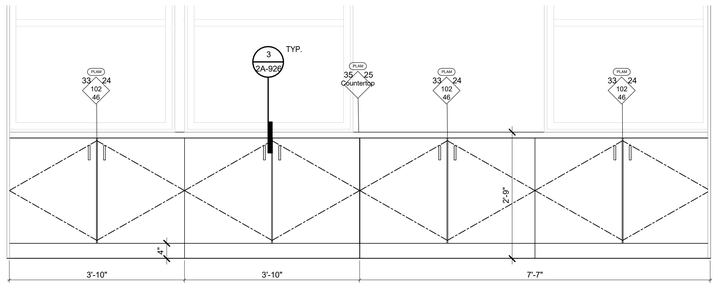
BUILDING 4 - TYPICAL STORAGE CASEWORK ENLARGED PLAN | 3/4" = 1'-0" | 8



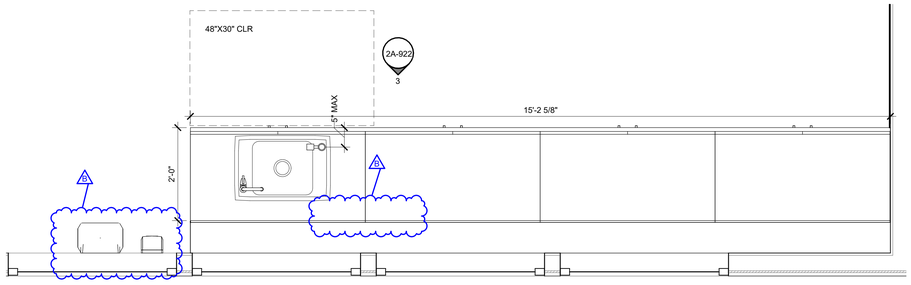
TYPICAL CLASSROOM CASEWORK ELEVATION | 3/4" = 1'-0" | 6



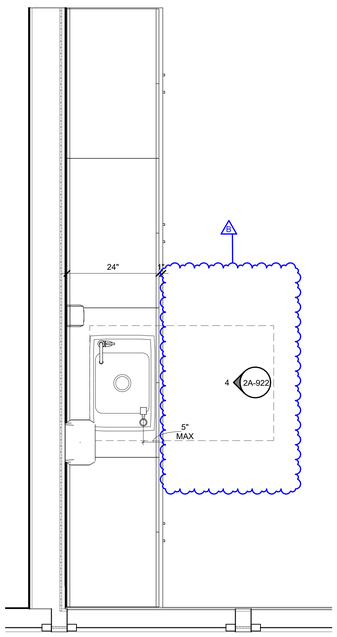
TYPICAL CLASSROOM CASEWORK ENLARGED PLAN | 3/4" = 1'-0" | 1



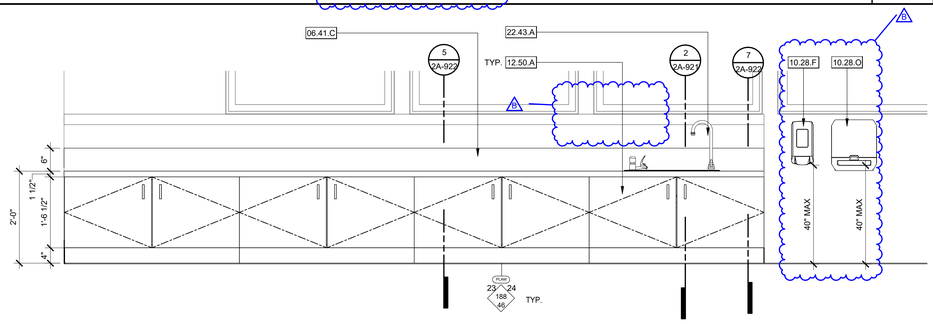
BUILDING 4 - TYPICAL STORAGE CASEWORK ELEVATION | 3/4" = 1'-0" | 9



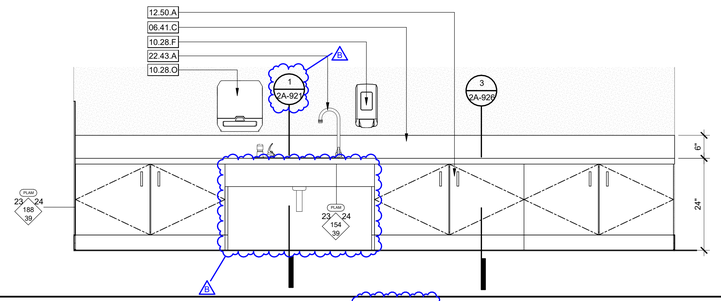
AGE 5 AND YOUNGER CLRM CASEWORK ENLARGED PLAN - BLDG 8 | 3/4" = 1'-0" | 2



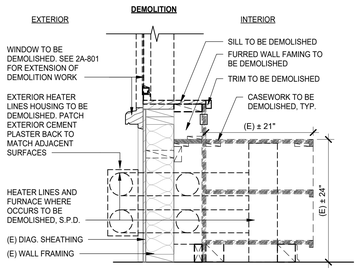
AGE 5-8 CLRM CASEWORK ENLARGED PLAN - BLDG 9 | 3/4" = 1'-0" | 10

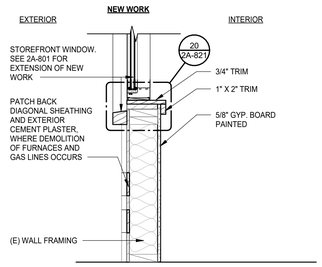


AGE 5 AND YOUNGER CLRM CASEWORK ELEVATION - BLDG 8 | 3/4" = 1'-0" | 3

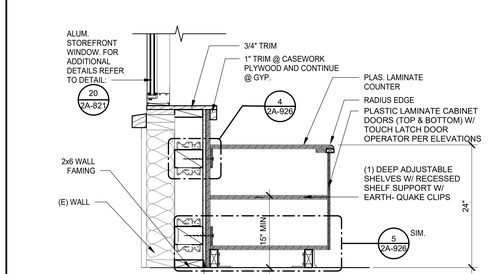


AGE 5-8 CLRM CASEWORK ELEVATION - BLDG 9 | 3/4" = 1'-0" | 4





(E) FURRED WALL DEMOLITION & NEW WORK | 1" = 1'-0" | 7



NEW FURRED WALL @ CASEWORK PERIMETER | 1" = 1'-0" | 5

KEYNOTES

06.41.C	PLASTIC LAMINATED COUNTERTOP 6" BACKSPLASH, TYP.
06.41.D	PLASTIC LAMINATED COUNTERTOP
10.28.F	(N) WALL MOUNTED HAND SOAP DISPENSER
10.28.O	(N) SURFACE MOUNT PAPER TOWEL DISPENSER
12.50.A	(N) PLASTIC LAMINATED FACED ARCHITECTURAL CABINETS
22.43.A	(N) ACCESSIBLE SINK. FOR ADULTS & AGES 9-12 REFER TO DETAIL 1/2A-921. FOR AGES 5-8 REFER TO DETAIL 2/2A-921. S.MP.D.

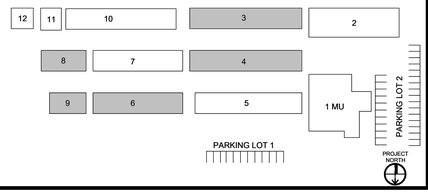
LEGEND - INTERIOR ELEVATION GENERAL NOTES

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET 2A-811.
2. ALL STEEL TO BE GALVANIZED AND PAINTED.
3. LIGHT SWITCHES TO BE MOUNTED AT 45" FROM FF

INTERIOR ELEVATION LEGEND

ROOM NAME — ROOM NAME
101 — ROOM NUMBER
A8 — WALL TYPE TAG
101AA — DOOR TYPE TAG
A — WINDOW TYPE TAG
PLAM — MATERIAL
30 / 24 — DEPTH (WHEN NOT STANDARD)
27 / 301 / 24 — NAAWS - STYLE NUMBER, LENGTH, HEIGHT (WHEN NOT STANDARD)
(N) PARTITION OR WALL INFILL

KEY PLAN



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DRAWN BY: Author JOB NUMBER: 23118.01

SHEET NO.

2A-922

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

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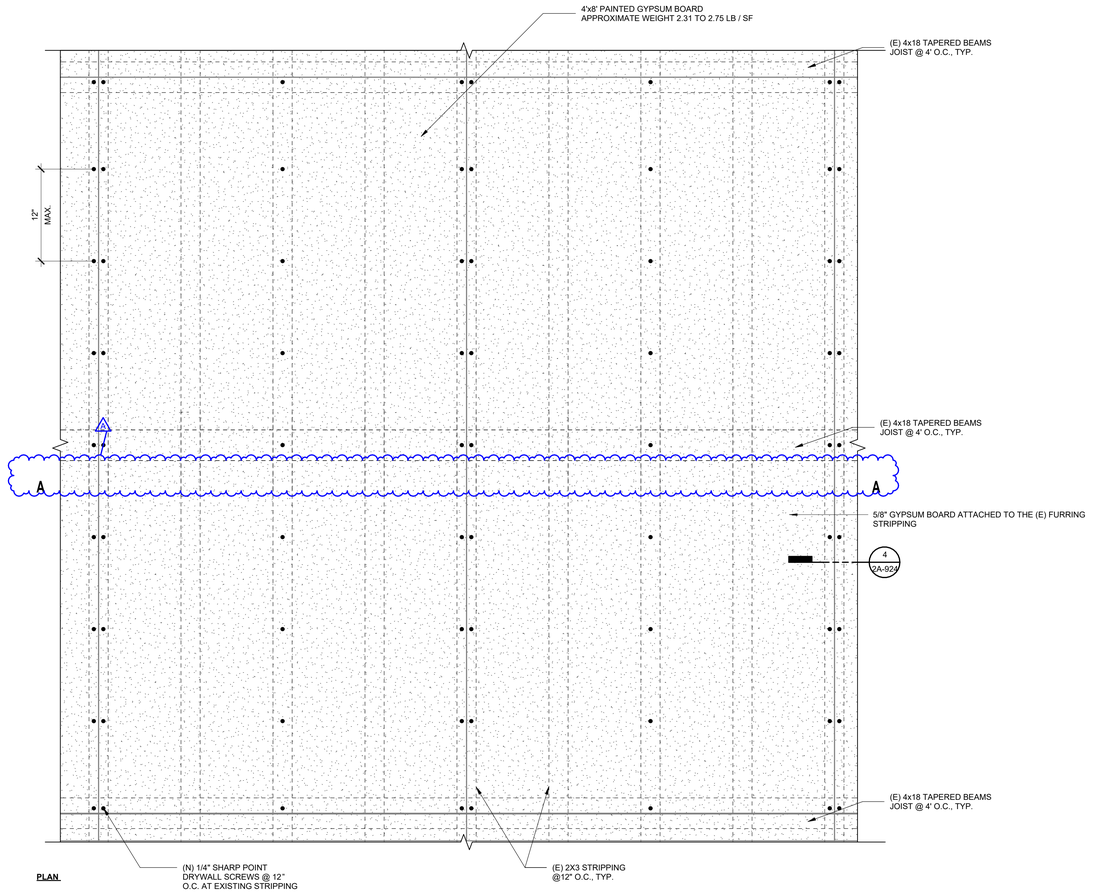
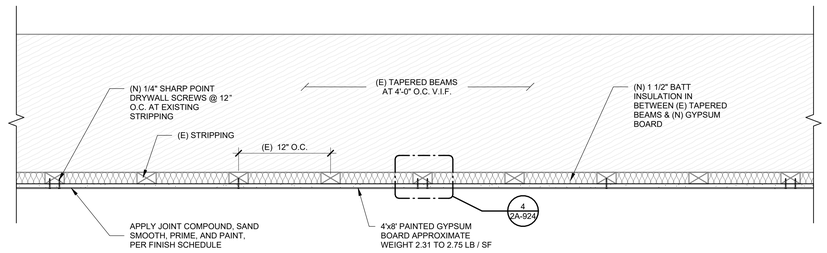
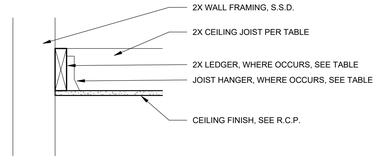


PLAN



SECTION AA

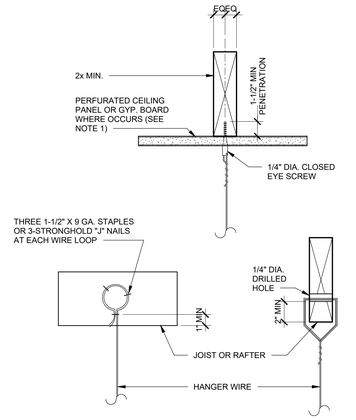
DIRECT ATTACH ACOUSTIC CEILING PANEL TO EXISTING FRAMING | 1 1/2" = 1'-0" | 9



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.

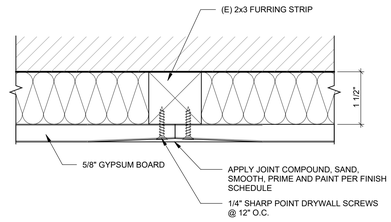
NOTES:
1. WHERE LEDGER S ARE NAILED THROUGH PLYWOOD, USE 20d NAILS INSTEAD OF 16d AS SCHEDULED
2. FOR SPANS LONGER THAN 10'-0", PROVIDE FULL-DEPTH 2X BLOCKING @ MID-SPAN

CEILING FRAME - WOOD (ALT) | 1 1/2" = 1'-0" | 1



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.
2. SEE ELECTRICAL DRAWINGS FOR LIGHTING FIXTURE MOUNT; THIS DETAIL NOT APPLICABLE

HANGER WIRE CONN.TO SAWN TIMBER | 3" = 1'-0" | 3



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DRAWN BY: Author JOB NUMBER: 23118.01

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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

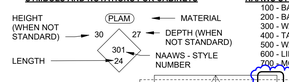
A. 4X4 WOOD BACKING WITH A34 CLIPS AT EACH SIDE EACH END. SEE DETAILS ON 2A-926 FOR BACKING TO STUD CONNECTION.

B. STUDS OF WALLS BACKING CABINETS SHALL RUN FROM SLAB TO STRUCTURE ABOVE.

C. ALL WOOD FRAMING MUST COMPLY WITH LOCAL BUILDING CODES. SEE STRUCTURAL DRAWINGS

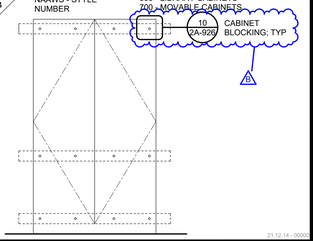
D. PROVIDE #10 WOOD SCREWS (FOR WOOD STUDS). SPACE ANCHORS AT 16" O.C. MINIMUM OF ONE SCREW AT EACH TOP AND BOTTOM CORNER OF EACH CABINET UNIT. SEE 10/2A-926 FOR CABINET TO BLOCKING CONNECTION.

SYMBOLS AND NOTATIONS FOR CABINETS



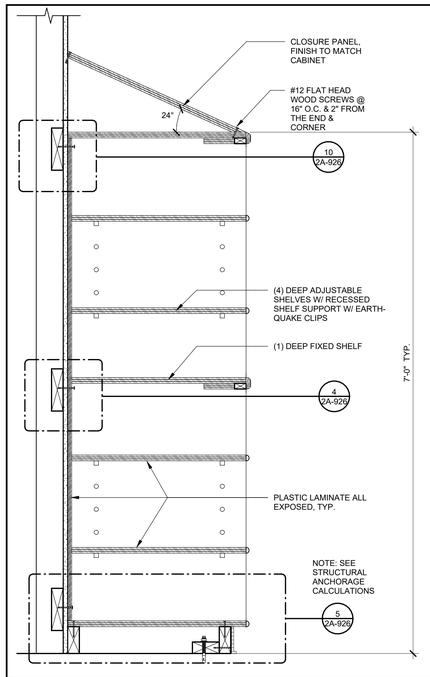
NAAWS STYLE CATEGORIES:

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



21.12.14 - 0000

NOTES | 1/2" = 1'-0" | 2



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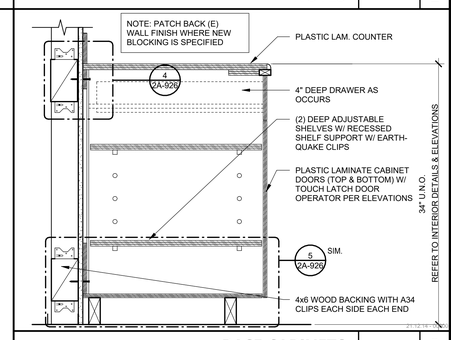
BOOKSHELF | 1 1/2" = 1'-0" | 9



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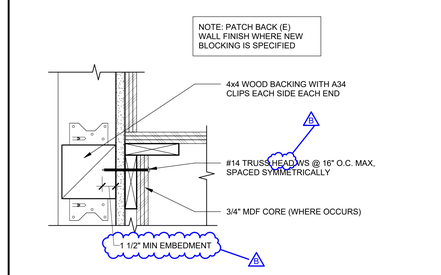
BASE CABINETS | 1 1/2" = 1'-0" | 3



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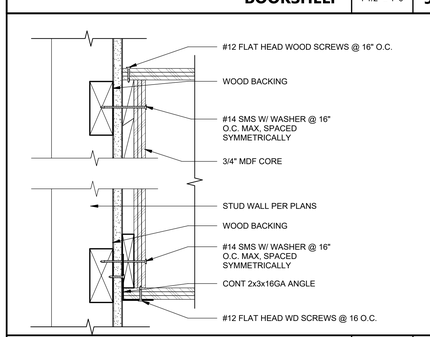
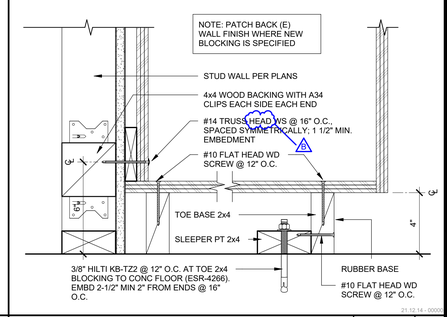
CABINETRY BLOCKING - COUNTER | 3" = 1'-0" | 4



CABINETRY BLOCKING | 3" = 1'-0" | 10



21.12.14 - 0000

CABINETRY BLOCKING - BASE | 3" = 1'-0" | 5

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LICENSED ARCHITECT
MARISNA ALVAREZ PARGA
C-36107
REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
B	11/18/2024	ADDENDUM #2

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

CASEWORK DETAILS

INC.2

DRAWN BY: EW JOB NUMBER: 23118.01

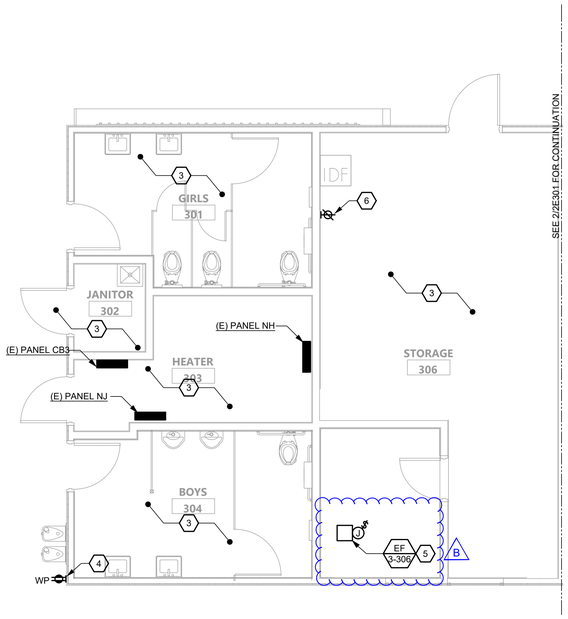
SHEET NO.

2A-926

DATE: OCTOBER 23, 2024

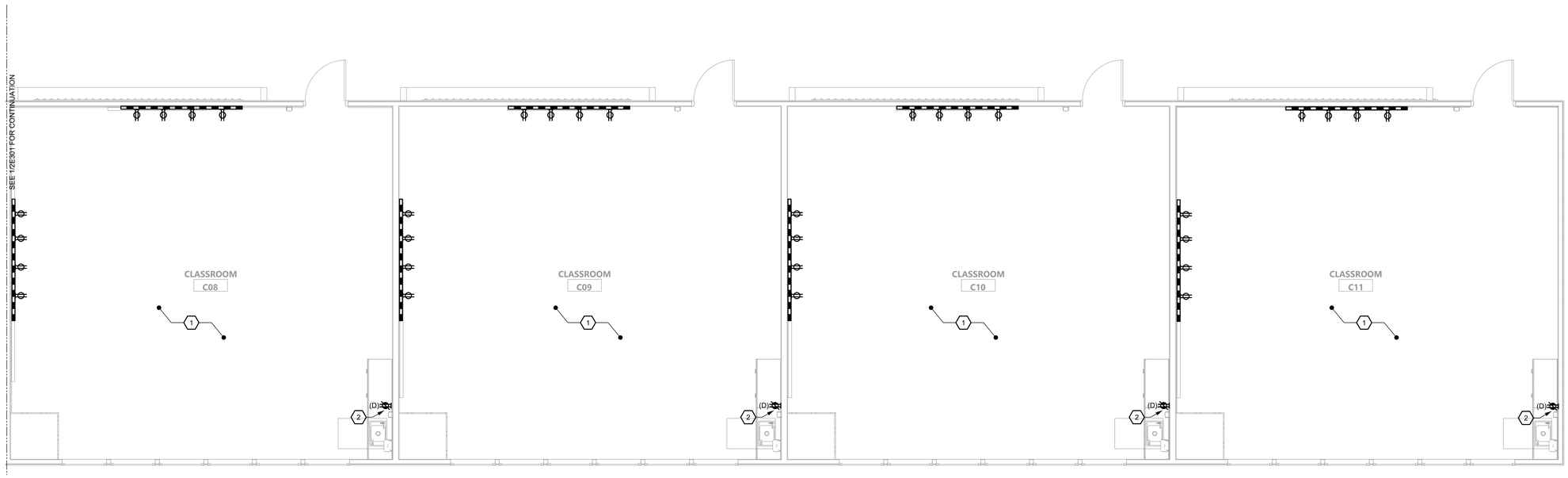
CONSTRUCTION DOCUMENT

DATE PLOTTED: 11/18/2024 3:15:38 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



1 BLDG 3 - POWER & SIGNAL PLAN

1/4" = 1'-0"



2 BLDG 3 - POWER & SIGNAL PLAN

1/4" = 1'-0"

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. CONNECT ALL NEW GENERAL PURPOSE RECEPTACLES, THIS BUILDING, TO NEAREST AVAILABLE 120V 20A SPARE CIRCUIT.
5. CONNECT TO SAME LIGHTING CIRCUIT, THIS ROOM. LIGHTING AND EXHAUST FAN SHALL BE CONTROLLED BY LIGHTING OCCUPANCY SENSOR AND LIGHTING WALL SWITCH.
6. 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.

GENERAL DEMOLITION NOTES

A. IN AREAS INDICATED TO BE RENOVATED, REMOVE THAT PORTION OF THE EXISTING ELECTRICAL INSTALLATION INCLUDING, BUT NOT LIMITED TO, ALL RECEPTACLES, MOTOR/EQUIPMENT CONNECTIONS, WIRING, CONDUITS AND APPURTENANCES. 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. 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. BREAKER SIZES SHOWN ON PANEL SCHEDULES SUPERSEDES MOCP SIZES SHOWN ON EQUIPMENT SCHEDULE

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.

AGENCY APPROVAL

196

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atium ENGINEERING
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tel: 913.961.1658
email: info@atiumeng.com

PROFESSIONAL STAMP



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SHEET TITLE

POWER & SIGNAL PLANS

INCREMENT: INC. 2

DRAWN BY: TL JOB NUMBER: 23118.02

SHEET NO.

2E301

DATE: AUGUST 28, 2024

FILE LOCATION: G:\Shared drives\01_PROJECTS\Mad\ Architecture_47\2347.50 - Mount Diablo USD Modernization\05_Drawings\01_DWGs\Rio Vista\Inc 2\2347.50 - RV - 2E300 - Power Plan.dwg
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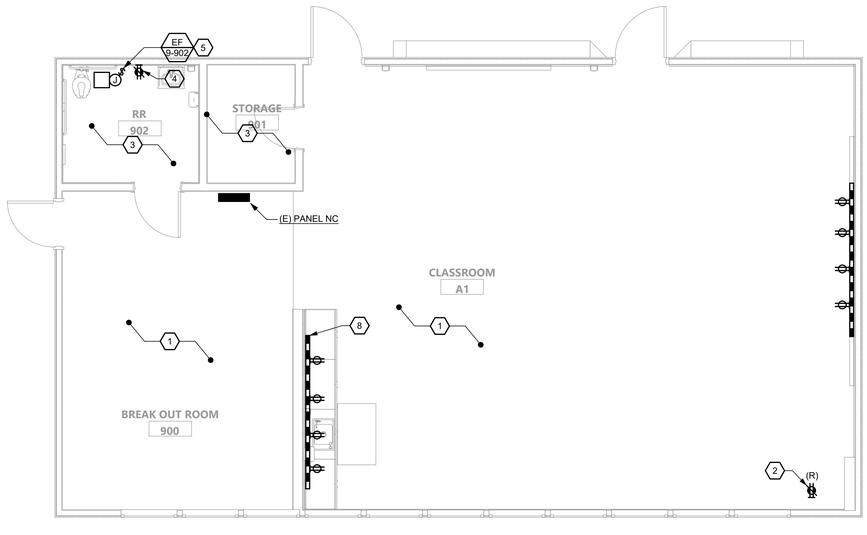
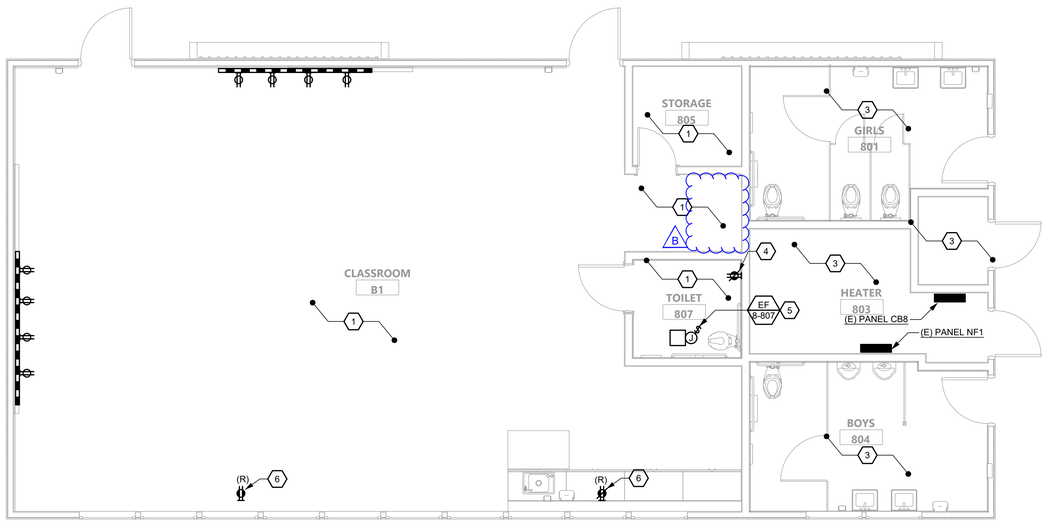
DATE PLOTTED: FILE LOCATION:



1 BLDG 9 - POWER & SIGNAL PLAN

1/4" = 1'-0"



2 BLDG 8 - POWER & SIGNAL PLAN

1/4" = 1'-0"

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. CONNECT ALL NEW GENERAL PURPOSE RECEPTACLES, THIS BUILDING, TO NEAREST AVAILABLE 120V 20A SPARE CIRCUIT.
5. CONNECT TO SAME LIGHTING CIRCUIT, THIS ROOM. LIGHTING AND EXHAUST FAN SHALL BE CONTROLLED BY LIGHTING OCCUPANCY SENSOR AND LIGHTING WALL SWITCH.
6. NEW LOCATION FOR RELOCATED EXISTING GFCI RECEPTACLE ALONG THIS WALL.
7. NEW LOCATION FOR RELOCATED EXISTING GFCI RECEPTACLE AT SINK.
8. NEW LOCATION FOR RECEPTACLES ON SURFACE RACEWAY AT WHITEBOARD.

GENERAL DEMOLITION NOTES

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AGENCY APPROVAL

196

991 W HEDDING STREET, SUITE 101
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PROFESSIONAL STAMP



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Bay Point, CA 94565

SHEET TITLE

POWER & SIGNAL PLANS

INCREMENT: INC. 2

DRAWN BY: TL JOB NUMBER: 23118.02

SHEET NO.

2E304

DATE: AUGUST 28, 2024

FILE LOCATION: G:\Shared drives\01_PROJECTS\Mad\ Architecture_47\2347.50 - Mount Diablo USD Modernization\05_Drawings\01_DWGs\Rio Vista\Inc 2\2347.50 - RV - 2E300 - Power Plan.dwg
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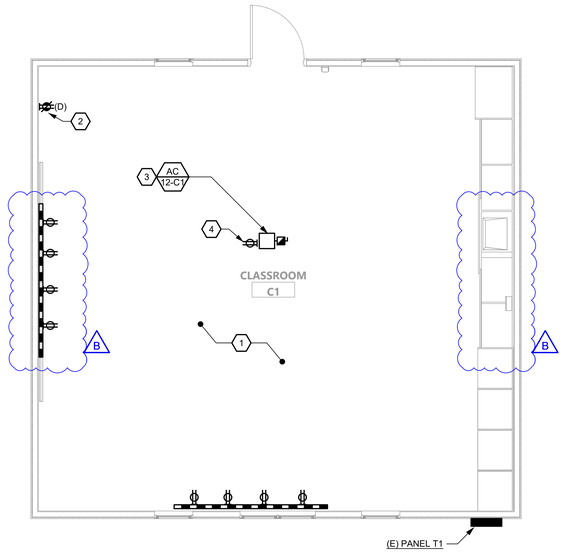
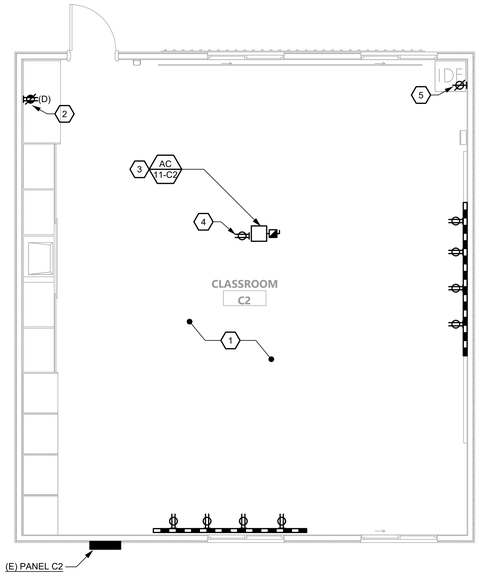


1 BLDGS 11 & 12 - POWER & SIGNAL PLAN

1/4" = 1'-0"



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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. DISCONNECT AND RECONNECT POWER CONNECTION FOR REPLACE-IN-KIND HVAC UNIT, THIS LOCATION. FOR UNIT WITHOUT EXISTING DISCONNECT SWITCH IN WORKING CONDITION AND WITHOUT GENERAL PURPOSE RECEPTACLE WITHIN 25FT OF UNIT, PROVIDE AS REQUIRED PER CODE.
4. CONNECT ALL NEW GENERAL PURPOSE RECEPTACLES, THIS BUILDING, TO NEAREST AVAILABLE 120V 20A SPARE CIRCUIT.
5. 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.

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PROFESSIONAL STAMP



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B	11/18/2024	ADDENDUM #2
B	11-15-2024	ADDENDUM

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

POWER & SIGNAL PLANS

INCREMENT: INC. 2

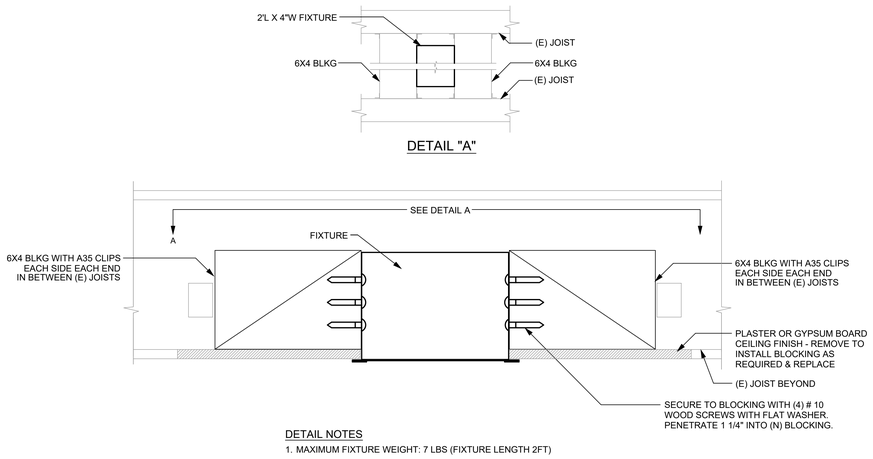
DRAWN BY: TL JOB NUMBER: 23118.02

SHEET NO.

2E306

DATE: AUGUST 28, 2024

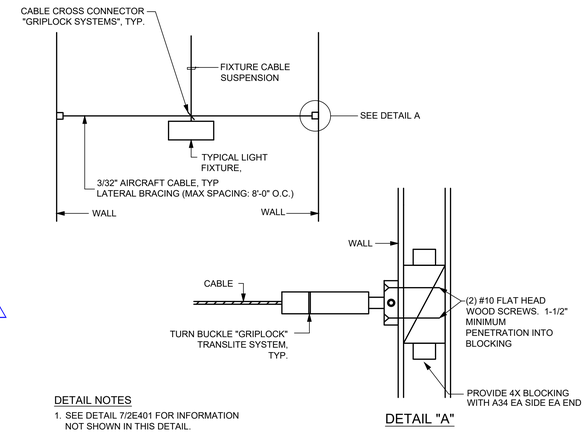
FILE LOCATION: G:\Shared drives\01_PROJECTS\Madl Architecture_47\2347.50 - Mount Diablo USD Modernization\05_Drawings\01_DWG\sRio Vista\Inc 2\2347.50 - RV - 2E300 - Power Plan.dwg
LAST SAVED ON: 11/15/24 at 3:32pm, PLOTTED ON: 11/15/24 at 3:57pm
DATE PLOTTED: FILE LOCATION:



6 RECESSED FIXTURE MOUNTING

NOT TO SCALE

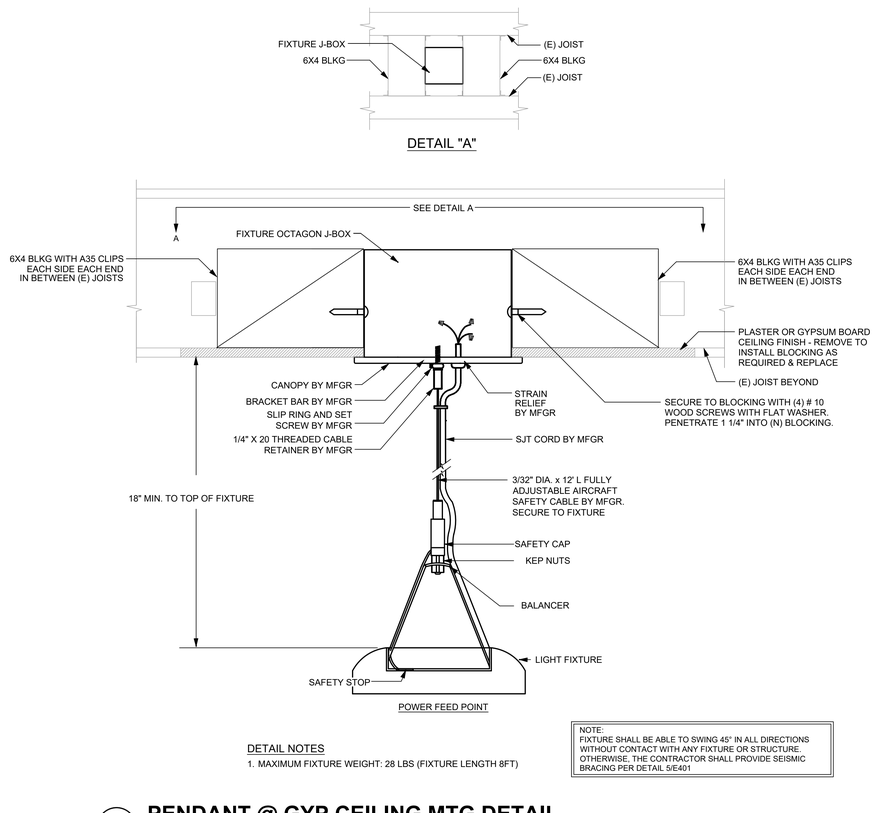
4 NOT USED



5 LIGHT FIXTURE SEISMIC BRACING

NOT TO SCALE

1 NOT USED



7 PENDANT @ GYP CEILING MTG DETAIL

NOT TO SCALE

2 NOT USED

3 NOT USED

FILE LOCATION: G:\Shared drives\01_PROJECTS\Madi Architecture_47\23347.50 - Mount Diablo USD Modernization\05_Drawings\01_DWGs\Rio Vista\Inc 2\23347.50 - RIV - 2E400 - Details.dwg
LAST SAVED ON: 11/15/24 at 3:32pm, PLOTTED ON: 11/15/24 at 3:57pm

DATE PLOTTED: FILE LOCATION:

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PROFESSIONAL STAMP

REVISIONS

#		
B	11/18/2024	ADDENDUM #2
B	11-15-2024	ADDENDUM

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

DETAILS

INCREMENT: INC. 2

DRAWN BY: TL JOB NUMBER: 23118.02

SHEET NO.

2E401

DATE: AUGUST 28, 2024

INTERIOR FIRE ALARM CABLE		
TYPE	**DESCRIPTION**	**USE(S)**
A	1 PAIR #16AWG FPL	FIRE ALARM INITIATING DEVICE CIRCUIT (NON-ADDRESSABLE) ATLAS #202-16-1-2J
M	1 PAIR #16AWG FPL TWISTED NON-SHIELDED	FIRE ALARM DATA & INITIATING CIRCUIT - SLC LOOP ATLAS #218-16-1-1TP
N	1 PAIR #12AWG, FPL NON-SHIELDED	FIRE ALARM NOTIFICATION CIRCUIT ATLAS #202-12-1-2J

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.

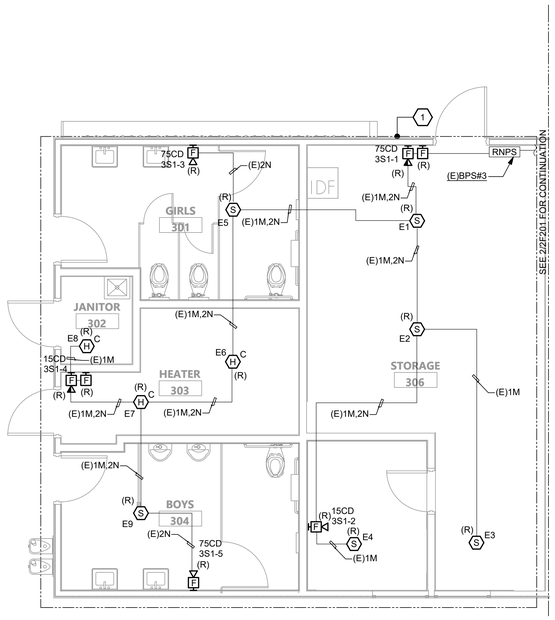
J. PROVIDE FIRE RATED ACCESS PANELS WHERE REQUIRED TO ALLOW ACCESS TO ABOVE CEILING HEAT DETECTORS FOR MAINTENANCE.

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# 01-105316.

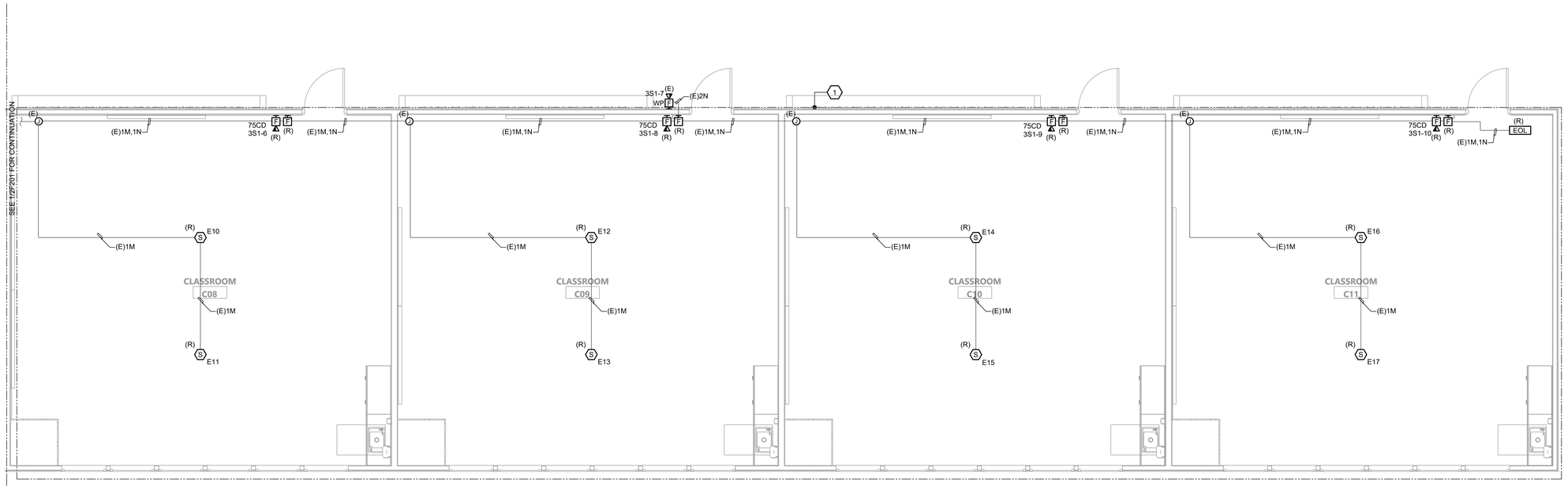
SHEET NOTES

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 FOR REFERENCE ONLY. ANY EXISTING DEVICES THAT ARE NO LONGER IN WORKING CONDITION SHALL BE REPLACED-IN-KIND. FIELD VERIFY EXISTING DEVICES PRIOR TO COMMENCEMENT OF WORK.



1 BLDG 3 - FIRE ALARM PLAN

1/4" = 1'-0"



2 BLDG 3 - FIRE ALARM PLAN

1/4" = 1'-0"

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AGENCY APPROVAL

PROFESSIONAL STAMP

REVISIONS

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE
FIRE ALARM PLANS

INCREMENT: INC. 2

DRAWN BY: TL JOB NUMBER: 23118.02

SHEET NO.
2F201

DATE: AUGUST 28, 2024

FILE LOCATION: G:\Shared drives\01_PROJECTS\Mad\ Architecture_47\2347.50 - Mount Diablo USD Modernization\05_Drawings\01_DWGs\Rio Vista\Inc 2\2347.50 - RV - 2F200 - Fire Alarm Plan.dwg
LAST SAVED ON: 9/25/24 at 1:08pm, PLOTTED ON: 11/05/24 at 6:21pm
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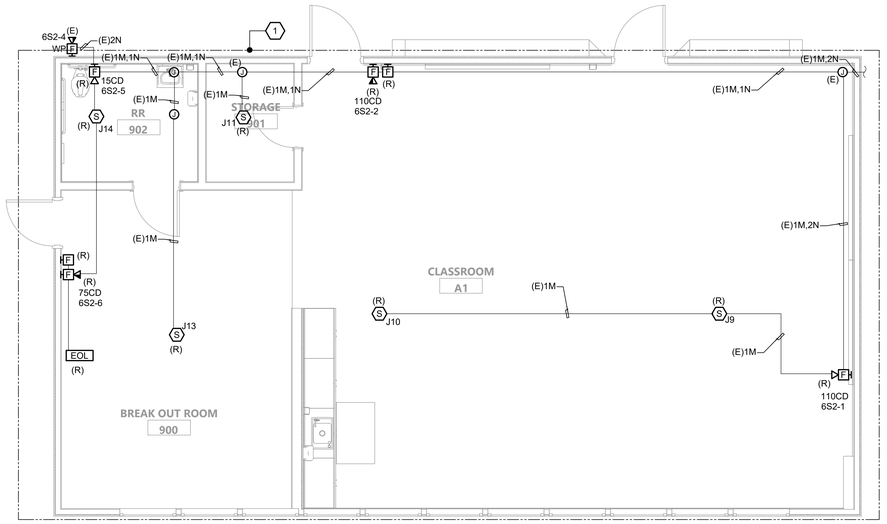
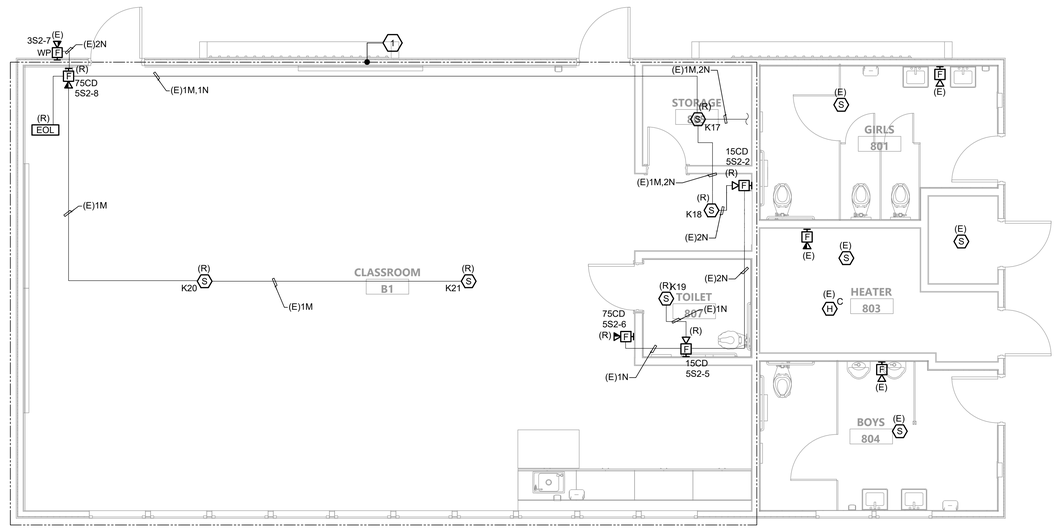


1 BLDG 9 - FIRE ALARM PLAN

1/4" = 1'-0"



2 BLDG 8 - FIRE ALARM PLAN

1/4" = 1'-0"

INTERIOR FIRE ALARM CABLE

TYPE	DESCRIPTION	USE(S)
A	1 PAIR #16AWG FPL	FIRE ALARM INITIATING DEVICE CIRCUIT (NON-ADDRESSABLE) ATLAS #202-16-1-2J
M	1 PAIR #16AWG FPL TWISTED NON-SHIELDED	FIRE ALARM DATA & INITIATING CIRCUIT - SLC LOOP ATLAS #218-16-1-1TP
N	1 PAIR #12AWG, FPL NON-SHIELDED	FIRE ALARM NOTIFICATION CIRCUIT ATLAS #202-12-1-2J

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.

I. MAINTAIN ALL SPACING AND PENETRATION REQUIREMENTS THROUGH FIRE RATED OR AREA SEPARATION WALLS. VERIFY EXACT LOCATIONS OF THESE WALLS WITH ARCHITECTURAL DRAWINGS.

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L. EXISTING NOTIFICATION DEVICES, WIRING, AND CIRCUITS SHOWN BASED ON DSA APPLICATION# 01-105316.

(#) SHEET NOTES

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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

FIRE ALARM PLANS

INCREMENT: INC. 2

DRAWN BY: TL JOB NUMBER: 23118.02

SHEET NO.

2F204

DATE: AUGUST 28, 2024

FILE LOCATION: G:\Shared drives\01_PROJECTS\Madi Architecture_4\23347.50 - Mount Diablo USD Modernization\05_Drawings\01_DWGs\Rio Vista\nc 23347.50 - RV - 2F200 - Fire Alarm Plan.dwg
LAST SAVED ON: 9/25/24 at 1:08pm, PLOTTED ON: 11/05/24 at 6:21pm
DATE PLOTTED:
FILE LOCATION:

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	3
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	4, 5
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	MCGUIRE MCT150	BRASSCRAFT SCR19X C	TRUEBRO LAV GUARD 2	Y	1, 2, 4, 5
U-1	WALL HUNG URINAL (ELEMENTARY. HT.)	AMERICAN STANDARD	PINTBROOK 6002.001	INT	2"	1-1/2"	3/4"	—	MOEN 8312M0125 (0.125 GPF)	—	—	JAY R. SMITH 0637	—	—	—	—	N	4, 5
WC-1	FLOOR MOUNT WATER CLOSET (ADULT ADA HT.)	AMERICAN STANDARD	MADERA FLOWISE 3461.001	INT	4"	2"	1-1/2"	—	MOEN 8310M128 (1.28 GPF)	BEMIS 1955SSCT	—	—	—	—	—	—	Y	4, 5
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	4, 5

1. 0.5 GPM ECONO-FLOW VANDAL PROOF NON-AERATING WATER SUPPLY.
2. PROVIDE WITH LOOSE KEY AND B3-16A SUPPLY.
3. PROVIDE WITH ELKAY LK1141A BUBBLER.
4. FOR RESTROOM PLUMBING FIXTURE HEIGHTS REFER TO ARCHITECT DETAILS.
5. FOR ADA FIXTURE LOCATIONS SEE ARCHITECT PLANS.

PACKAGED AIR CONDITIONING UNITS SCHEDULE (B)

TAG	LOCATION BLD. / ROOM SERVED	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-11-C2	BLD. 11 ROOF RM. C2	CARRIER	48GCGT04C2A3-0A3A0 ULTRA LOW NOX 2-STAGE COOLING	—	35.67	25.56	60	49	1,200	0.91	200	500	1,894	0.50	16.00	81	208 / 1	27	40	800	5/2MP-601	1, 2, 3, 4, 5, 6, 7, 8, 12
AC-12-C1	BLD. 12 ROOF RM. C1	CARRIER	48GCGJ05A3M5-3A3A0 ULTRA LOW NOX 2-STAGE COOLING	—	49.90	37.80	60	49	1,600	1.50	200	500	2,114	1.00	17.40	81	208 / 3	26	30	805	5/2MP-601	1, 3, 4, 5, 9, 10, 11, 12

1. WEIGHT INCLUDES ALL OPTIONS AND ACCESSORIES.
2. FURNISHED W/ CANFAB CURB ADAPTER CFCYB-003, FIELD VERIFY CURB ADAPTER FITS (E) CURB DIMENSIONS.
3. CONNECT TO (E) THERMOSTAT NETWORKED TO SCHOOL CONTROL SYSTEM. COORDINATE WITH MANUFACTURER.
4. PROVIDE WITH MERV 13 FILTERS.
5. VERTICAL DISCHARGE CONFIGURATION.
6. FURNISHED WITH ULTRA LOW LEAK - VERTICAL ECONOMIZER X WITH SOLID-STATE W7220 CONTROLLER . VERIFY COMPATIBLE W/ (E) THERMOSTAT / SCHOOL CONTROL SYSTEM.
7. FURNISHED W/ ULTRA LOW NOX - FLUE DISCHARGE DEFLECTOR
8. FURNISHED W/ SIDE FILTER ACCESS DOOR KIT & 16X25X2 MERV-13 REPLACEMENT AIR FILTERS.
9. FURNISHED W/ MICROMETL CURB ADAPTER CA-CAR-537-TRN-544-24, FIELD VERIFY CURB ADAPTER FITS (E) CURB DIMENSIONS.
10. FURNISHED WITH ULTRA LOW LEAK ECONOMIZER W/ POWERED EXHAUST & CONTROLLERS COMPATIBLE W/ (E) THERMOSTAT / SCHOOL CONTROL SYSTEM.
11. FURNISHED WITH LOUVERED HAIL GUARDS, UN POWERED CONVENIENCE OUTLET, AND HINGED ACCESS PANELS.
12. 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.

GAS FIRED FURNACE SCHEDULE (B)

TAG	LOCATION BLD. / ROOM SERVED	MANUFACTURER	MODEL NO.	GAS HEATING		AIRFLOW CFM	ESP IN. W.G.	OUTSIDE AIR MIN. CFM	OUTSIDE AIR MAX. DCV CFM	AFUE %	MOTOR	ELECTRICAL			WEIGHT LBS	MOUNTING DETAIL	NOTES
				INPUT MBH	OUTPUT MBH						HP	V / PH	MCA	MOCP			
F-10-C2	BLD. 10 RM. C2	CARRIER	58SU0B100M2120	100	80	1,620	0.8	200	500	80	1	115 / 1	18.2	20	155	1/2MP-601	1, 2, 3, 4
F-10-C3	BLD. 10 RM. C3	CARRIER	58SU0B100M2120	100	80	1,620	0.8	200	500	80	1	115 / 1	18.2	20	155	1/2MP-601	1, 2, 3, 4
F-10-C4	BLD. 10 RM. C4	CARRIER	58SU0B100M2120	100	80	1,620	0.8	200	500	80	1	115 / 1	18.2	20	155	1/2MP-601	1, 2, 3, 4
F-10-C5	BLD. 10 RM. C5	CARRIER	58SU0B100M2120	100	80	1,620	0.8	200	500	80	1	115 / 1	18.2	20	155	1/2MP-601	1, 2, 3, 4
F-10-C6	BLD. 10 RM. C6	CARRIER	58SU0B100M2120	100	80	1,620	0.8	200	500	80	1	115 / 1	18.2	20	155	1/2MP-601	1, 2, 3, 4

1. PROVIDE WITH VENT KIT.
2. PROVIDE WITH 2" THICK MERV 13 FILTERS.
3. CONNECT TO (E) THERMOSTAT NETWORKED TO SCHOOL CONTROL SYSTEM. COORDINATE WITH MANUFACTURER.
4. PROVIDE ECONOMIZER CONTROLLER & SENSORS COMPATIBLE W/ (E) THERMOSTAT / SCHOOL CONTROL SYSTEM. PROVIDE MOTORIZED OUTSIDE AIR DAMPER TO BE CONTROLLED BY ECONOMIZER CONTROLLER.
5. 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.

COOLING COILS SCHEDULE (B)

TAG	LOCATION BLD. / ROOM SERVED	MANUFACTURER	MODEL NO.	CONDENSING UNIT	NOMINAL CAPACITY TONS	COOLING	REFRIGERANT PIPING		WEIGHT LBS	NOTES
						TOTAL MBH	LIQUID	GAS		
CC-10-C2	BLD. 10 RM. C2	CARRIER	CVPVA4821XMC	CU-10-C2	4	54.43	3/8"	7/8"	45	1, 2
CC-10-C3	BLD. 10 RM. C3	CARRIER	CVPVA4821XMC	CU-10-C3	4	54.43	3/8"	7/8"	45	1, 2
CC-10-C4	BLD. 10 RM. C4	CARRIER	CVPVA4821XMC	CU-10-C4	4	54.43	3/8"	7/8"	45	1, 2
CC-10-C5	BLD. 10 RM. C5	CARRIER	CVPVA4821XMC	CU-10-C5	4	54.43	3/8"	7/8"	45	1, 2
CC-10-C6	BLD. 10 RM. C6	CARRIER	CVPVA4821XMC	CU-10-C6	4	54.43	3/8"	7/8"	45	1, 2

1. VERIFY REFRIGERANT PIPE SIZES AND ROUTING LIMITATIONS WITH MANUFACTURER PRIOR TO INSTALLATION.
2. 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.

CONDENSING UNITS SCHEDULE (B)

TAG	LOCATION BLD. / ROOM SERVED	MANUFACTURER	MODEL NO.	COOLING COIL	NOMINAL CAPACITY TONS	COOLING	REFRIGERANT PIPING		SEER	ELECTRICAL			WEIGHT LBS	MOUNTING DETAIL	NOTES
						TOTAL MBH	LIQUID	GAS		V / PH	MCA	MOCP			
CU-10-C2	BLD. 10 OUTSIDE RM. C2	CARRIER	24AHA448A006	CC-10-C2	4	45.64	3/8"	7/8"	14	460 / 3	8.4	15	215	12/2MP-601	1, 2, 3, 4
CU-10-C3	BLD. 10 OUTSIDE RM. C3	CARRIER	24AHA448A006	CC-10-C3	4	45.64	3/8"	7/8"	14	460 / 3	8.4	15	215	12/2MP-601	1, 2, 3, 4
CU-10-C4	BLD. 10 OUTSIDE RM. C4	CARRIER	24AHA448A006	CC-10-C4	4	45.64	3/8"	7/8"	14	460 / 3	8.4	15	215	12/2MP-601	1, 2, 3, 4
CU-10-C5	BLD. 10 OUTSIDE RM. C5	CARRIER	24AHA448A006	CC-10-C5	4	45.64	3/8"	7/8"	14	460 / 3	8.4	15	215	12/2MP-601	1, 2, 3, 4
CU-10-C6	BLD. 10 OUTSIDE RM. C6	CARRIER	24AHA448A006	CC-10-C6	4	45.64	3/8"	7/8"	14	460 / 3	8.4	15	215	12/2MP-601	1, 2, 3, 4

1. VERIFY REFRIGERANT PIPE SIZES AND ROUTING LIMITATIONS WITH MANUFACTURER PRIOR TO INSTALLATION.
2. FURNISHED W/ LOW PRESSURE SW KIT
3. FURNISHED W/ CRANKCASE HEATER KIT.
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 (B)

TAG	LOCATION BLD. / ROOM SERVED	MANUFACTURER	MODEL NO.	TYPE	AIRFLOW CFM	ESP IN. W.G.	FAN RPM	SOUND POWER SONES	MOTOR			WEIGHT LBS	MOUNTING DETAIL	NOTES
									WATTS	HP	V / PH			
EF-8-807	BLD. 8 RR. 807	GREENHECK	SP-A200	CEILING EXHAUST FAN	120	0.25	648	1.1	19	—	115 / 1	35	2 OR 3 /2MP-601	1, 2, 3, 4
EF-9-902	BLD. 9 RR. 902	GREENHECK	SP-A200	CEILING EXHAUST FAN	120	0.25	648	1.1	19	—	115 / 1	35	2 OR 3 /2MP-601	1, 2, 3, 4

1. CONTROL W/ LIGHTS BY WALL SWITCH / OCCUPANCY SENSOR.
2. PROVIDE WITH UL LISTING, FAN MOUNTED SPEED CONTROL, & BACKDRAFT DAMPER.
3. PROVIDE WITH FACTORY ISOLATION KIT.
4. PROVIDE ROOF CURB CAP. FOR MOUNTING SEE DETAIL 13/2MP-601.

AGENCY APPROVAL DSA# 01-121440

196

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CEG JOB NO: 23146

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER — MELVIN SETTLEMIRE — No. M31059 — EXP. JUNE 30, 2025 — MECHANICAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
B	11/18/24	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
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

SCHEDULES - MECHANICAL & PLUMBING

INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23118.01

SHEET NO.

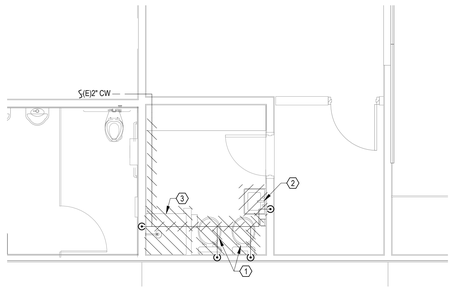
2MP-002

DATE: SEPTEMBER 24, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: E:\Shared Drives\HVAC\19-6 Nineteen Six\23146 - Rio Vista ES Mod\03 Dwgs\Rio Vista ES Mod Inc 2.dwg

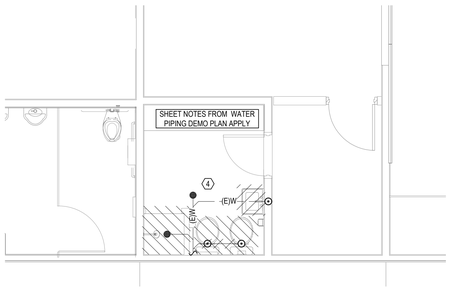
DATE PLOTTED: 11/14/2024 1:40 PM



1 / 2MP-402

WATER PIPING
BLDG 3 RESTROOM 305 PARTIAL DEMO PLAN

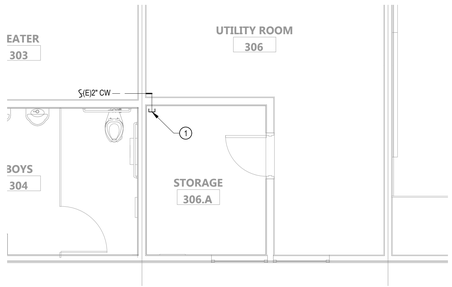
SCALE: 1/4" = 1'-0"



2 / 2MP-402

WASTE & VENT PIPING
BLDG 3 RESTROOM 305 PARTIAL DEMO PLAN

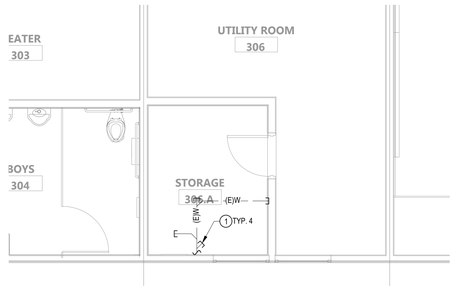
SCALE: 1/4" = 1'-0"



3 / 2MP-402

WATER PIPING
BLDG 3 RESTROOM 305 PARTIAL NEW PLAN

SCALE: 1/4" = 1'-0"



4 / 2MP-402

WASTE & VENT PIPING
BLDG 3 RESTROOM 305 PARTIAL NEW PLAN

SCALE: 1/4" = 1'-0"

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.
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.

(#) DEMOLITION SHEET NOTES

1. REMOVE (E) FLOOR MOUNT WATER CLOSET & RETURN TO SCHOOL DISTRICT. CAP UTILITIES CONCEALED IN WALL OR BELOW FLOOR. PATCH BUILDING FINISHES TO MATCH FINAL FINISHES.
2. REMOVE (E) LAVATORY & SUPPORTS RETURN TO SCHOOL DISTRICT. CAP UTILITIES CONCEALED IN WALL OR BELOW FLOOR. PATCH BUILDING FINISHES TO MATCH FINAL FINISHES.
3. REMOVE (E) SHOWER COMPLETE. CAP UTILITIES CONCEALED IN WALL & BELOW FLOOR. PATCH BUILDING FINISHES TO MATCH FINAL FINISHES.
4. LOCATE & CAP (E) VENT PIPING.

(#) NEW SHEET NOTES

1. (E) UTILITIES CAPPED CONCEALED IN WALL OR BELOW FLOOR. BUILDING FINISHES PATCHED TO MATCH FINAL FINISHES.

KEY PLAN



AGENCY APPROVAL DSA# 01-121440

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER
MEIN SERTTUNI
No. M31059
EXP. JUNE 30, 2025
MECHANICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
B	11/18/24	ADDENDUM 1

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PROJECT OWNER & TITLE

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1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

BLDGS 3 - DEMO & NEW RESTROOM PLANS

INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23118.01

SHEET NO.

2MP-402

DATE: SEPTEMBER 24, 2024

CONSTRUCTION DOCUMENTS

FILE LOCATION: E:\Shared Drives\HVAC\19-6 Nineteen Six\23146 - Rio Vista ES Mod\03 Dwgs\Rio Vista ES Mod Inc 2.dwg

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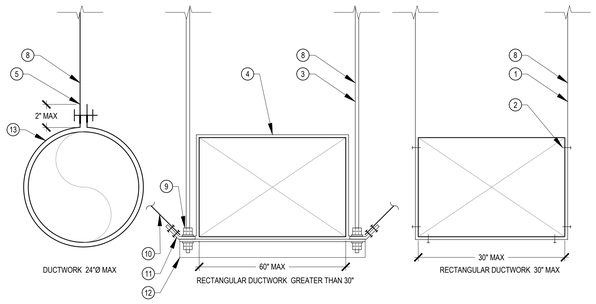
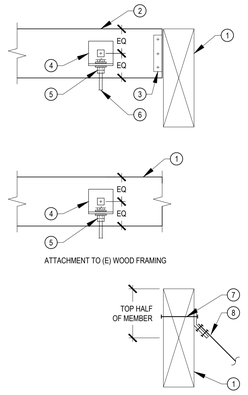


NOTE:
1. HANGER SHALL BE LOCATED AT 8'-0" O.C. MAX AND AT ALL CHANGES IN DIRECTION.
2. DUCT SUPPORTS SHOWN W/O BRACING SHALL HAVE A CROSS SECTIONAL AREA LESS THAN 6 SQFT & MAX. WEIGHT OF 20 LB /FT.

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.

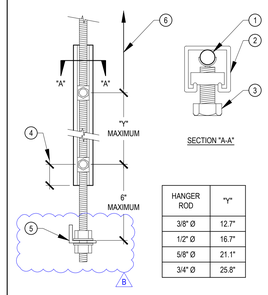
11 DUCT HANGER N.T.S.



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 11/2MP-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.



HANGER ROD	"Y"
3/8" Ø	12.7"
1/2" Ø	16.7"
5/8" Ø	21.1"
3/4" Ø	25.8"

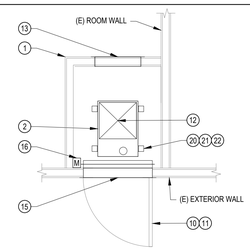
DETAIL NOTES:

1. HANGER ROD
2. UNISTRUT P1000 VERTICAL STIFFENER
3. UNISTRUT P2486 VERTICAL STIFFENER
4. 2" MAXIMUM FROM END, TYP.
5. EQUIPMENT INTEGRAL HANGING MOUNT.
6. 6" MAXIMUM TO TOP CONNECTION.

NOTE:

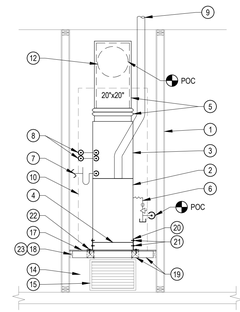
1. VERTICAL STIFFENER NOT REQUIRED IF TOTAL TOD LENGTH DOES NOT EXCEED THE "Y" DIMENSION.
2. MINIMUM OF STIFFENER ASSEMBLY CLAMPS AS REQUIRED BY MANUFACTURER.

4 ROD STIFFENER N.T.S.



DETAIL NOTES:

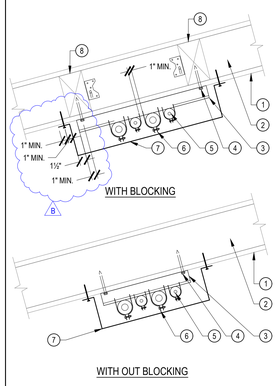
1. (E) BUILDING FURNACE CLOSET.
2. FURNACE, SEE PLANS.
3. COOLING COIL, SEE PLANS.
4. 4" FILTER RACK W/ TOOL LESS HINGED ACCESS FOR 2" MERV 13 FILTERS.
5. INSTALL LINED SUPPLY DUCT W/ FLEX CONNECTION FROM COOLING COIL TO (E) SUPPLY DUCTWORK TO CLASSROOM. INSTALL ALL NEW DUCTWORK IN FURNACE CLOSET.
6. PIPE GAS TO FURNACE W/ SHUT-OFF VALVE, FLEX CONNECTION, AND DIRT LEG.
7. RUN CONDENSATE DRAIN W/ TRAP TO (E) CD PIPING TO (E) DRYWELL. PROVIDE CD PUMP IF REQUIRED.
8. PIPE REFRIGERANT LINES THRU BACK OF (E) CLOSET TO CONDENSING UNIT OUTSIDE. SEE PLANS.
9. INSTALL TYPE B FLUE TO (E) ROOF TERMINATION. SIZE PER MANUFACTURER DIRECTIONS.
10. EXTERIOR CLOSET DOOR.
11. (E) LOW CA LOUVER & HIGH LOUVER ON DOOR.
12. (E) SUPPLY DUCT.
13. (E) RETURN REGISTER.
14. (E) RETURN PLENUM. COVER & SEAL ALL COMBUSTIBLE MATERIALS INSIDE PLENUM WITH NON COMBUSTIBLE FIRE RATED GYP. BOARD OR SM DUCT.
15. (E) OUTSIDE AIR LOUVER MOUNTED BELOW DOOR &CONNECTED TO (E) RETURN PLENUM.
16. INSTALL NEW MOTORIZED DAMPER AT THE (E) OUTSIDE AIR LOUVER. V.I.F. (E) LOUVER SIZE & MATCH MOTORIZED DAMPER ACCORDINGLY.
17. REMOVE (E) PLYWOOD PLATFORM & REPLACE W/ FIRE RETARDANT 3/4" PLYWOOD PLATFORM SECURED TO (E) SUPPORT FRAMING.
18. (E) 2x4 PLATFORM SUPPORT FRAMING.
19. INSTALL 4x4 JOISTS W/ A34 CLIPS BOXED UNDER FURNACE. LOCATE JOISTS UNDER FURNACE & CLEAR OF RETURN AIR OPENING. TYP. 4.
20. (3"x6"x1/8" x 3'L GALV. STEEL ANGLE, TYP. (2) ON EACH SIDE.
21. SECURE ANGLE TO FILTER BOX & FURNACE W/ (2) IN LINE #10 SM SCREWS ATTACHED TO THE FURNACE & (2) IN-LINE #10 SM SCREWS ATTACH TO THE FILTER BOX AT EACH OF THE (4) TOTAL MOUNTING ANGLE CLIPS.
22. SECURE ANGLE TO 4x4 W/ 1/2"Ø3"L LAG SCREWS & WASHERS.
23. (E) LEDGER W/ 2-16D AT EA (E) STUD, V.I.F. PROVIDE 2-10 WHERE (E) CONNECTION CAN NOT BE VERIFIED, TYP 3 SIDES.



DETAIL NOTES:

1. HEAT PUMP/CONDENSING UNIT. FOR LOCATION, SEE PLANS. ENSURE UNIT IS LEVEL.
2. POST-INSTALLED 3/8"Ø SS HILTI KWIK BOLT TZ2 WEDGE ANCHOR. MINIMUM 2" EMBEDMENT. TYP OF 4 @ MOUNTING HOLE LOCATIONS.
3. 3/8" THICK NEOPRENE ISOLATOR PAD, TYP. OF 4.
4. (E) CONCRETE HOUSEKEEPING PAD.

12 SPLIT SYSTEM HEAT PUMP/CONDENSING UNIT MOUNTING ON SLAB N.T.S.



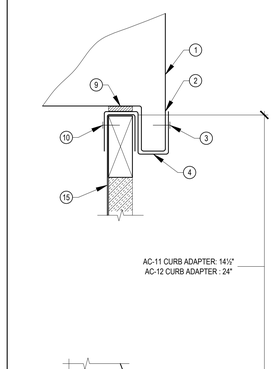
DETAIL NOTES:

1. (E) BUILDING EXTERIOR ROOF OVERHANG.
2. (E) BUILDING RAFTERS.
3. B-LINE B22 GALVANIZED STRUT CHANNEL.
4. ATTACH STRUT CHANNEL TO (E) ROOF RAFTERS OR BLOCKING WITH 1/4" LAG SCREWS W/ WASHERS BOTH ENDS OF STRUT, MIN. 2" PENETRATION. SEAL PENETRATIONS WATER TIGHT.
5. REFRIGERANT LINE SET PIPES.
6. B-LINE B2000 SERIES PIPE CLAMPS W/ B1999 VIBRA CUSHION, TYP.
7. 16 GA. GALV. SM. COVER. PAINT TO MATCH ADJACENT SURFACE.
8. 4x4 BLOCKING W/ SIMPSON A34 EA SIDE & EA. END.

GENERAL NOTES:

1. 4'-0" MAX. SPANS BETWEEN STRUT PIPE SUPPORTS, MIN. 2 SUPPORTS.

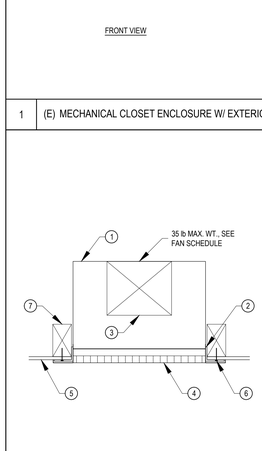
8 ROOF OVERHANG PIPE SUPPORT N.T.S.



DETAIL NOTES:

1. ROOF TOP 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. MICROMETL UNIT HOLD DOWNS, MICRO-HOLD NO. WSS403-02 FABRICATED FROM 6" WIDE 16 GAUGE STEEL. MINIMUM 3 PER SIDE, 3" MIN 6" MAX FROM END OF UNIT.
5. (E) FLASHING.
6. (E) 1/4"x4" LAG SCREW @ 2'-0" O.C. MAX EACH SIDE (MINIMUM 3 SCREWS PER SIDE)
7. NOTE # NOT USED.
8. (E) 2x8
9. SEALING GASKET
10. SECURE HOLD DOWN TO CURB ADAPTOR WITH (4) #10 x 1/2" TEK SCREWS, TYP.
11. NAIL FLASHING TO WOOD
12. (E) WOOD NAILER BY CURB MFR
13. (E) ROOF CURB
14. (E) RIGID INSULATION ALL AROUND
15. CURB ADAPTOR. CONTRACTOR TO VERIFY ALL DIMENSIONS
16. 14 GAUGE TIE-DOWN, 6" WIDE. MINIMUM 3 PER SIDE, 3" MIN 6" MAX FROM END OF UNIT.
17. SECURE TIE-DOWN TO (E) CURB WITH SIX (6) #12 SHEET METAL SCREWS PER TIE-OOWN
18. EXISTING DIAGONAL SHEATHING

5 ROOFTOP AIR CONDITIONER MOUNTING ON CURB ADAPTOR 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.

2 CEILING EXHAUST FAN DETAIL (MOUNTING OPTION 1) N.T.S.

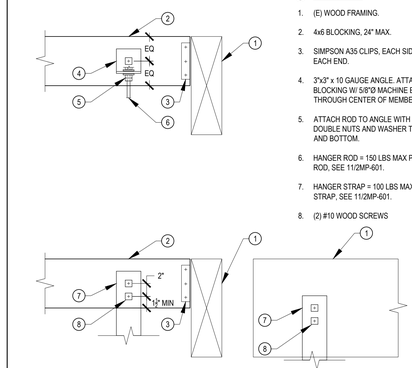
DETAIL NOTES:

1. (E) BUILDING EXTERIOR WALL.
2. B-LINE B22 GALVANIZED STRUT CHANNEL.
3. ATTACH STRUT CHANNEL TO (E)WALL STUDS WITH 1/4" LAG SCREWS W/ WASHERS BOTH ENDS OF STRUT, MIN. 2" PENETRATION. SEAL PENETRATIONS WATER TIGHT.
4. REFRIGERANT PIPES W/ INSULATION & AL. JACKETS.
5. B-LINE B2000 SERIES PIPE CLAMPS W/ B1999 VIBRA CUSHION, TYP.
6. B-LINE B22 BOLTED 90° W/ B231 CLIP TO SUPPORT PIPES FROM SLIDING DOWN.
7. 16 GA. GALV. SM. COVER. PAINT TO MATCH ADJACENT SURFACE.

GENERAL NOTES:

1. 5'-0" MAX. SPANS BETWEEN STRUT PIPE SUPPORTS.

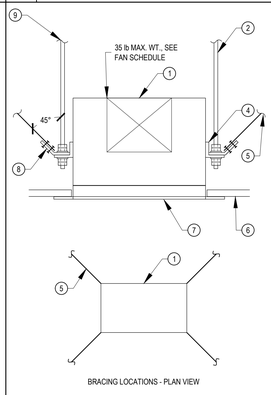
10 HORIZONTAL PIPE SUPPORT TO WALL N.T.S.



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 11/2MP-601.
7. HANGER STRAP = 100 LBS MAX PER STRAP, SEE 11/2MP-601.
8. (2) #10 WOOD SCREWS

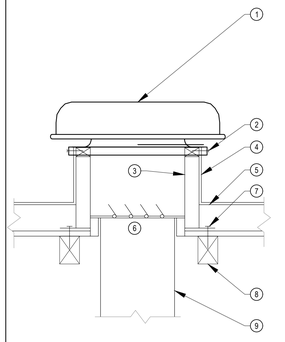
6 TOP CONNECTION N.T.S.



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 4/2MP-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.

3 CEILING EXHAUST FAN DETAIL (HANGING OPTION 2) N.T.S.



DETAIL NOTES:

1. (E) BUILDING EXTERIOR WALL.
2. (E) BUILDING STUDS.
3. B-LINE B22 GALVANIZED STRUT CHANNEL.
4. ATTACH STRUT CHANNEL TO (E) WALL STUDS OR BLOCKING WITH 1/4" LAG SCREWS W/ WASHERS BOTH ENDS OF STRUT, MIN. 2" PENETRATION. SEAL PENETRATIONS WATER TIGHT.
5. REFRIGERANT LINE SET PIPES.
6. B-LINE B2000 SERIES PIPE CLAMPS W/ B1999 VIBRA CUSHION, TYP.
7. 16 GA. GALV. SM. COVER. PAINT TO MATCH ADJACENT SURFACE.
8. 4x4 BLOCKING W/ SIMPSON A34 T&B EA. END.

GENERAL NOTES:

1. 4'-0" MAX. SPANS BETWEEN STRUT PIPE SUPPORTS, MIN. 2 SUPPORTS.

9 VERTICAL PIPE SUPPORT TO WALL N.T.S.

DETAIL NOTES:

1. ROOF CAP / 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 DETAIL 5/2A-701.
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.

13 ROOF CAP / HOOD MOUNTING N.T.S.

911 W HEDDING ST., SUITE 101
SAN JOSE, CA 95126
TEL (408) 715-4470

CEG JOB NO: 23146

CYPRESS Engineering Group
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TEL (916) 359-4000

PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER
MEHTIN SERT UYAR
No. M31059
EXP. JUNE 30, 2025
MECHANICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
B	11/18/24	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
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE
DETAILS - MECHANICAL & PLUMBING

INCREMENT: INC.2

DRAWN BY: RR JOB NUMBER: 23118.01

SHEET NO.
2MP-601

DATE: SEPTEMBER 24, 2024

AGENCY APPROVAL DSA# 01-121440

CONSTRUCTION DOCUMENTS

FILE LOCATION: E:\Shared Drives\HVAC\19-6 Nineteen Six\23146 - Rio Vista ES Mod\03 Dwgs\Rio Vista ES Mod Inc 2.dwg

DATE PLOTTED: 11/14/2024 1:42 PM

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
TJI	TRUS JOIST I-JOIST
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

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 ON THESE DRAWINGS WAS OBTAINED FROM EXISTING CONSTRUCTION DOCUMENTS ENTITLED "ADDITION NO 3 TO MT DIABLO ELEMENTARY SCHOOL" DATED JUNE 5, 1959 AND PREPARED BY ASSOCIATED ARCHITECTS ANDERSON & SIMONDS, CONFER & WILLIS, REYNOLDS & CHAMBERLAIN AND DOCUMENTS ENTITLED "5 MULTI PURPOSE ROOM ADDITIONS MT DIABLO ELEMENTARY SCHOOL" DATED MARCH 22, 1991 AND PREPARED BY JERRY LOVING, ARCHITECT & ASSOCIATES INC. 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.

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, 300 LBS CONCENTRATED LOAD

E. WIND DESIGN DATA:
1. BASIC WIND SPEED = 100 mph (3 SECOND GUST)
2. EXPOSURE CATEGORY = C
3. INTERNAL PRESSURE COEFFICIENT = +/- 0.18
4. EXTERIOR COMPONENT AND CLADDING DESIGN WIND PRESSURE = 25.52 PSF (WALL ZONE 5), 21.83 PSF (WALL ZONE 4), 66.52 PSF (ROOF ZONE 3), 45.87 PSF (ROOF ZONE 2), 34.77 PSF (ROOF ZONE 1), 19.98 PSF (ROOF ZONE 1).

F. SEISMIC DESIGN DATA:
1. I = 1.25
2. S_{DS} = 1.332
3. S_S : 1.665 S_1 : 0.6, S_{MS} : 1.998
4. SITE CLASS = D (DEFAULT)
5. SEISMIC DESIGN CATEGORY = D

IV. CONCRETE

A. MIXING, BATCHING, TRANSPORTING AND PLACING OF ALL CONCRETE SHALL CONFORM TO ACI 301, SPECIFICATION FOR STRUCTURAL CONCRETE FOR BUILDINGS.

B. ALL CONCRETE SHALL BE THOROUGHLY CONSOLIDATED.

C. THE SCHEDULE BELOW INDICATES THE MINIMUM CONCRETE DESIGN MIX REQUIREMENTS. SEE SPECIFICATIONS FOR ADDITIONAL CONCRETE PROPERTIES.

TYPE	LOCATION	MINIMUM 28-DAY STRENGTH (PSI)	MAXIMUM WEIGHT (PCF)
A	CONC PAD	3000	150
B	SLAB ON GRADE	3000	150

D. CONCRETE CLEAR COVER OVER MILD REINFORCING STEEL SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
1. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH = 3"
2. CONCRETE EXPOSED TO EARTH OR WEATHER:
   a. NO. 5 BARS AND SMALLER = 1-1/2"
   b. NO. 6 BARS AND LARGER = 2"
3. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
   a. SLABS, WALLS, JOISTS:
4. NO. 11 BARS AND SMALLER = 3/4"
5. NO. 14 BARS AND LARGER = 1-1/2"
   a. BEAMS, COLUMNS:
6. PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS = 1-1/2"
   a. SHELLS, FOLDED PLATE MEMBERS:
7. NO. 5 BARS AND SMALLER = 1/2"
8. NO. 6 BARS AND LARGER = 3/4"

E. NON-SHRINK GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 6000 PSI AT 28 DAYS.

F. CONSTRUCTION JOINTS
1. NO HORIZONTAL CONSTRUCTION JOINTS ARE PERMITTED IN BEAMS, WALLS OR SLABS UNLESS APPROVED BY THE SEOR IN WRITING.
2. ALL CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TYPICAL CONSTRUCTION JOINT DETAILS.
3. ALL CONSTRUCTION JOINT LOCATIONS SHALL BE COORDINATED AND CONSTRUCTED IN ACCORDANCE WITH ARCHITECTURAL FINISHES AND TREATMENTS.
4. ALL SURFACES OF CONSTRUCTION JOINTS SHALL BE CLEANED TO REMOVE DUST, CHIPS OR OTHER FOREIGN MATTER PRIOR TO PLACING ADJACENT CONCRETE.

V. REINFORCING STEEL

A. ALL REINFORCING BARS SHALL BE DEFORMED BARS CONFORMING TO THE REQUIREMENTS OF ASTM A615 AND ASTM A706 WHERE REQUIRED; ALL BARS TO BE GRADE 60 UNLESS OTHERWISE NOTED.

B. REINFORCING BARS TO BE WELDED SHALL BE ASTM A706.

C. WELDED WIRE REINFORCING SHALL BE ASTM A185.

D. WELDED BAR ANCHORS SHALL BE NELSON D2L DEFORMED BAR ANCHORS PER ICC-ES ESR-5217.

E. DETAIL REINFORCING STEEL BASED ON THE PROJECT REQUIREMENTS, ACI 318, AND ACI 315.

F. TERMINATION OF REINFORCEMENT:
1. TERMINATE ALL BARS IN LAPS, 90 DEGREE BENDS OR WITH DOWELS EPOXIED INTO EXISTING CONCRETE.
2. PROVIDE DOWELS INTO FOOTINGS BELOW AND SLABS ABOVE AT WALLS AND COLUMNS OF SAME SIZE AND SPACING AS VERTICAL REINFORCEMENT.

VI. 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 0'-6" OR LESS ABOVE THE GROUND SHALL BE PRESSURE TREATED, AWPA CATEGORY 2 (UC2) OR HIGHER.

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. USE MAXIMUM NAIL SIZE LISTED BY MANUFACTURER. FILL ALL HOLES TO ACHIEVE MAXIMUM VALUES AS SPECIFIED BY THE MANUFACTURER.

I. NAILS SHALL BE COMMON WIRE GAGE, UNLESS OTHERWISE NOTED AND CONFORM TO CBC TABLE 2304.10.2.

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.

VII. 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 V3 PER ICC-ES ESR-3814 AS MANUFACTURED BY HILTI, INC.
   c. HIT-HY 200 V3 PER ICC-ES ESR-4868 AS MANUFACTURED BY HILTI, INC.
2. FOR INSTALLATION IN FULLY-GROUTED MASONRY, EPOXY SHALL BE ONE OF THE FOLLOWING:
   a. SET-XP PER IAPMO ER-265 AS MANUFACTURED BY SIMPSON STRONG TIE.
   b. HY-270 PER ICC-ES ESR-4143 AS MANUFACTURED BY HILTI, INC.
3. 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. 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-XP
#3	3	2900	2750	4353
#4	4	5180	4940	6984
#5	5	8130	7870	9760
#6	6	11120	11120	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-XP
3/8	3	3360	3510	4344
1/2	4	6010	6150	6984
5/8	5	9440	9330	9760
3/4	6	7120	12860	12830

ANCHORS SHALL NOT BE INSTALLED INTO CONCRETE THAT IS LESS THAN 21 DAYS OLD.

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 5/16	2 5/8	30	30
1/2	2 3/8	2 5/8	50	40
5/8	4 1/16	4 3/4	40	60
3/4	5 9/16	5 3/4	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	5 3/8	5 3/8	90	80
3/4	5 1/4	6	125	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 (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 (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	2547
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, MASONRY OR STEEL
   c. HILTI, INC. X-CP 72 PER ICC-ES ESR-2379 FOR ANCHORAGE OF SILL PLATES TO CONCRETE
   d. DEWALT POWDER-ACTUATED FASTENERS PER ICC-ES ESR-2024 FOR ANCHORAGE OF METAL TO CONCRETE, MASONRY OR STEEL AND ANCHORAGE OF WOOD SILLS 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.

IX. SUBMITTALS AND DEFERRED APPROVALS

A. THE CONTRACTOR SHALL REVIEW EACH SUBMITTAL PRIOR TO SENDING TO THE ARCHITECT AND SEOR. SUBMITTALS WILL ONLY BE REVIEWED IF THEY ARE BASED ON THE LATEST DESIGN, IF THEY ADDRESS ANY COMMENTS FROM PREVIOUS VERSIONS OF THE SUBMITTAL, IF THE WORK IS COORDINATED WITH ALL OTHER TRADES, AND IF THE SUBMITTAL DOES NOT INCLUDE SUBSTITUTION REQUESTS. SUBMITTALS NOT MEETING THESE REQUIREMENTS WILL BE RETURNED TO THE CONTRACTOR WITHOUT COMMENT.

B. THE SEOR'S REVIEW OF EACH SUBMITTAL SHALL BE FOR GENERAL CONFORMANCE WITH THE DESIGN INTENT.

C. NO WORK SHALL PROCEED PRIOR TO THE SEOR'S AND ARCHITECT'S APPROVAL OF THE SUBMITTAL.

D. THE FOLLOWING ITEMS REQUIRE A SUBMITTAL FOR STRUCTURAL REVIEW. SEE THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
1. REINFORCING STEEL SHOP DRAWINGS
2. CONCRETE MIX DESIGNS

X. TESTING AND INSPECTION

A. SPECIAL INSPECTIONS SHALL BE PERFORMED BY A SPECIAL INSPECTOR PER CBC SECTIONS 1704A AND 1705A. THE SPECIAL INSPECTOR SHALL BE RETAINED BY THE OWNER AND NOT BY THE CONTRACTOR.

B. EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN SEISMIC FORCE RESISTING SYSTEM SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY PER CBC SECTION 1704A.4 TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK FOR THE SYSTEM OR COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN THE FOLLOWING:
1. ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.
2. ACKNOWLEDGEMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL.
3. PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND THE DISTRIBUTION OF REPORTS.
4. IDENTIFICATION AND QUALIFICATION OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION.

C. SEE PROJECT DSA 103 FORM FOR THE WORK REQUIRES STRUCTURAL TESTS AND SPECIAL INSPECTIONS. FOR SPECIFIC REQUIREMENTS OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS, SEE THE SPECIFICATIONS AND GENERAL NOTES.

AGENCY APPROVAL DSA# 01-121440

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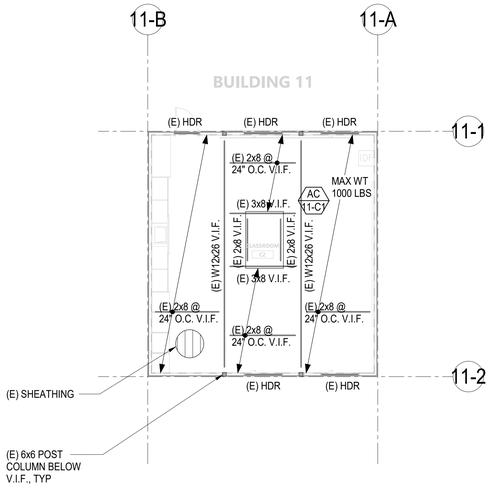
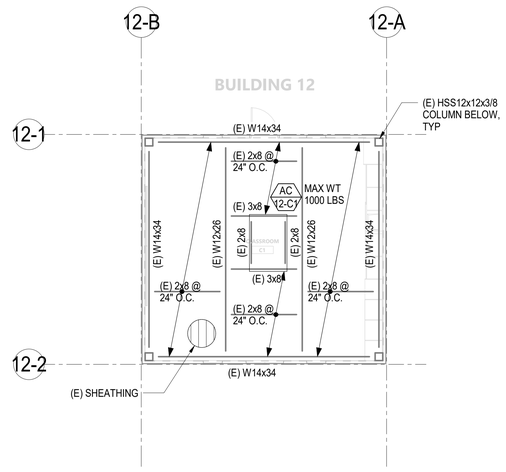


1 ROOF FRAMING PLAN BUILDING 11

1/8" = 1'-0"



2 ROOF FRAMING PLAN BUILDING 12

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
4. COORDINATE LOCATION OF MECHANICAL UNITS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS. SMD FOR ANCHORAGE REQUIREMENTS.

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NO.	DATE	DESCRIPTION
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PROJECT OWNER & TITLE

MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
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SHEET TITLE

BUILDINGS 11 & 12 ROOF FRAMING PLANS

INC.2

DRAWN BY: SN JOB NUMBER: 23118.01

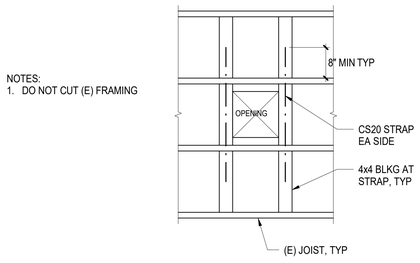
SHEET NO.

2S-203

DATE: AUGUST 28, 2024

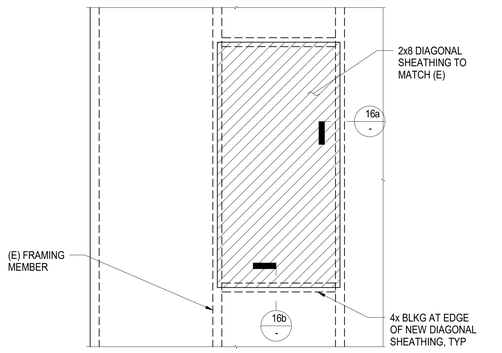
CONSTRUCTION DOCUMENTS

DATE PLOTTED: 11/6/2024 11:05:02 PM FILE LOCATION: Z:\Shared\Projects\2023\23161 - Rio Vista ES Modernization\Drawings\Structural\Increment 2\23161 - Rio Vista ES Modernization - R23.rvt



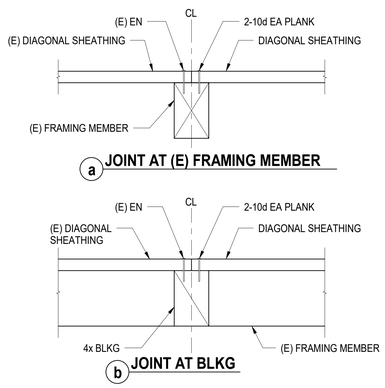
14 SMALL OPENING IN DIAPHRAGM (21"x21" MAX)

NTS



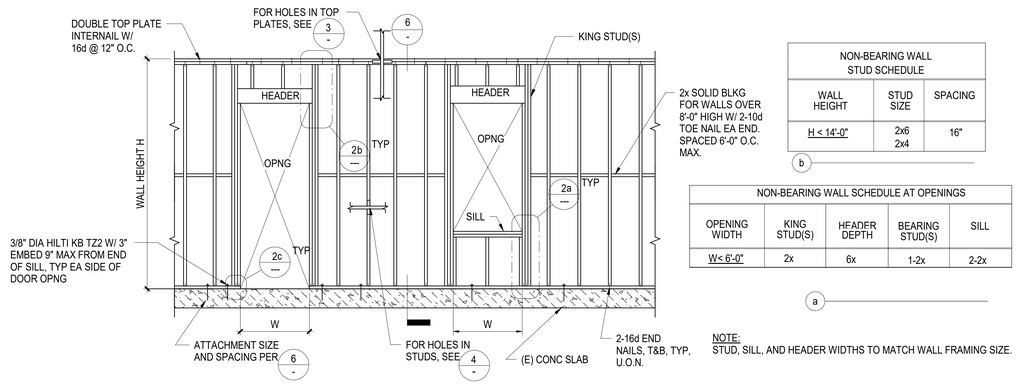
15 DIAGONAL SHEATHING AT ROOF

NTS



16 DIAGONAL SHEATHING NAILING

NTS



NON-BEARING WALL STUD SCHEDULE		
WALL HEIGHT	STUD SIZE	SPACING
H < 14'-0"	2x6 2x4	16"

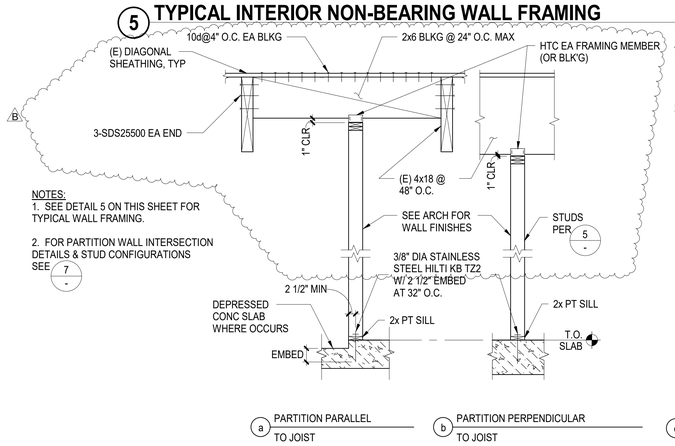
b

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.

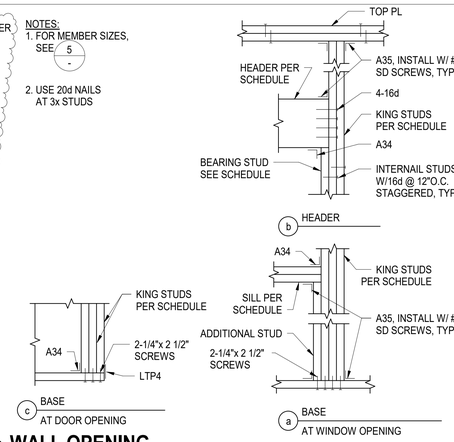
5 TYPICAL INTERIOR NON-BEARING WALL FRAMING



a PARTITION PARALLEL TO JOIST

b PARTITION PERPENDICULAR TO JOIST

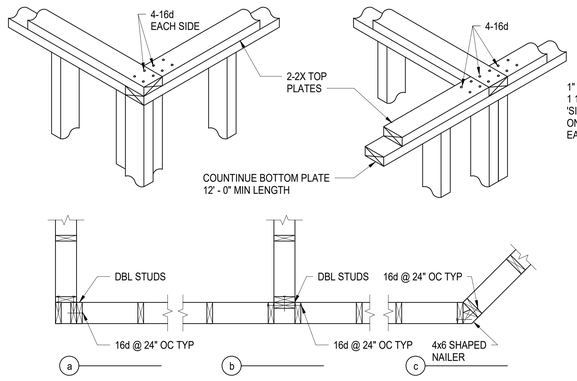
NOTES:
1. FOR MEMBER SIZES, SEE 5 -
2. USE 20d NAILS AT 3x STUDS



c BASE AT DOOR OPENING

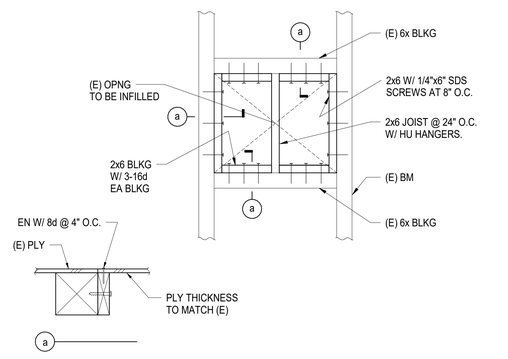
6 NON-BEARING WALL PARTITION

NTS



7 WALL INTERSECTIONS

NTS

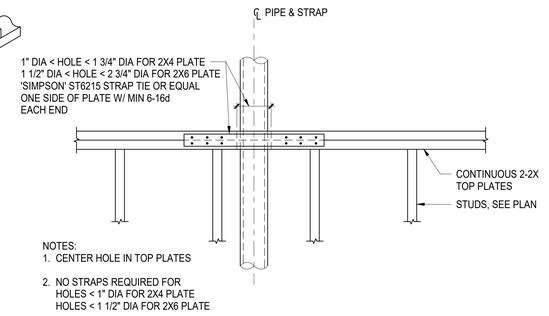


8 INFILL OF EXISTING OPENING

NTS

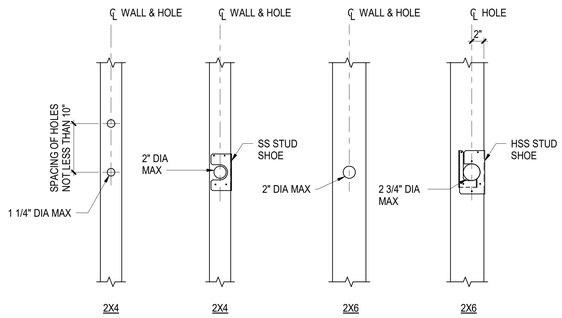
2 WALL OPENING

NTS



3 TOP PLATE PENETRATIONS

NTS



4 PENETRATIONS IN STUDS

NTS

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SHEET TITLE
FRAMING DETAILS

INC.2

DRAWN BY: SN JOB NUMBER: 23118.01

SHEET NO.
2S-801

DATE: AUGUST 28, 2024

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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-800) (2 2T-800)
G	GROUND BOX	JENSEN	HT1730	GREY = EXISTING (5 2T-802) (6 2T-802) △
J	JUNCTION BOX	COMMERCIAL GENERIC	N/A	GREY = EXISTING (8 2T-801)
	UNDERGROUND CONDUIT	COMMERCIAL GENERIC	N/A	GREY = EXISTING (4 2T-802) (7 2T-802) △
	CONDUIT (EMT & GRC)	COMMERCIAL GENERIC	N/A	GREY = EXISTING (9 2T-800) (12 2T-800) (13 2T-800)
E	CONDUIT STUB	COMMERCIAL GENERIC	N/A	GREY = EXISTING
2300	SURFACE RACEWAY	WIREMOLD	WM2300	N/A (1 2T-401)
J J J	J-HOOK (SINGLE/STACKED)	PANDUIT	SEE 27 05 00	N/A (3 2T-400)
5400	SURFACE RACEWAY	WIREMOLD	WM5400	COORDINATE W/ ELEC. (1 2T-801)
#	CAT6A DATA DROP LOCATION (# = QTY) - DATA PERMANENT LINK	PANDUIT	SEE 27 10 00	N/A (7 2T-401)
M	MODULAR PLUG DATA PERMANENT LINK, CAT6A JACK / CABLE / MOD PLUG	PANDUIT	SEE 27 10 00	N/A
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-801) (6 2T-801) (9 2T-801)
	INTERIOR WIRELESS ACCESS POINT	ARUBA	OFCI	OFCI
	MOUNT	ARUBA	S0J40A	N/A
WP AP	CAT6A DATA DROP LOCATION (QTY = 2) - EXTERIOR WIRELESS ACCESS POINT	PANDUIT	SEE 27 10 00	N/A (10 2T-401)
	EXTERIOR WIRELESS ACCESS POINT	ARUBA	OFCI	OFCI
	MOUNT	ARUBA	R9H97A	N/A
W	CAT6A DATA DROP LOCATION (QTY = 1) - IP PHONE	PANDUIT	SEE 27 10 00	+48 AFF, PHONE PLATE (11 2T-401)
	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 (6 2T-800) (2 2T-801) (1 2T-802) (2 2T-402)
	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 (10 2T-800) (11 2T-800)
IP CLOCK SPEAKER	CAT6A DATA DROP LOCATION (QTY = 1) - IP CLOCK/SPEAKER/IP MODULE COMBO BOX	ATLAS	SEE SHEET 2T-701	N/A (8 2T-400)
WP	CAT6A DATA DROP LOCATION - EXTERIOR INTERCOM SPEAKER/IP MODULE	ATLAS	SEE SHEET 2T-701	N/A (4 2T-400)
TEL	PHONE HANDSET EQUIPMENT	POLY	OFCI	OFCI
MPOE	MINIMUM POINT OF ENTRY	EXISTING	EXISTING	N/A

INTRUSION SYMBOL LEGEND:

ALL EQUIPMENT AND MATERIALS ARE CONTRACTOR FURNISHED, INSTALLED AND CONFIGURED (UNO)

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL / PART NUMBER	NOTES / DETAIL REFERENCES
IACP	INTRUSION ALARM CONTROL PANEL	BOSCH	D9412GV4	EXISTING
	CONTROL PANEL ENCLOSURE	BOSCH	D8103	EXISTING
	CONTROL PANEL ENCLOSURE LOCK/KEY	BOSCH	D101	EXISTING
	DUAL BATTERY HARNESS	BOSCH	D122	EXISTING
	POWER SUPPLY / ENCLOSURE	BOSCH	D1640/D8109	EXISTING
	POPEX LOOP MODULE	BOSCH	B299	N/A
	BATTERY 12VDC, 8 AH	POWERSONIC	PS-1280	N/A
KP	ALPHANUMERIC KEYPAD	BOSCH	B930	EXISTING
	MOTION DETECTOR, WALL MOUNT	BOSCH	ZX835	N/A (7 2T-800) (14 2T-800) (3 2T-402)
	WALL MOUNT GIMBLE	BOSCH	B328	
DC	DOOR CONTACT	GEORGE RISK INDUSTRIES	195-12WG	N/A (3 2T-802) △
	POPIT MODULE	BOSCH	D9127U	
	CABLE 18AWG/2-CONDUCTOR - INTERIOR	WEST PENN	224	COLOR = WHITE
	CABLE 18AWG/2-CONDUCTOR - OSP	WEST PENN	AQ-224	N/A
	CABLE 18AWG/4-CONDUCTOR - INTERIOR	WEST PENN	244	COLOR = GRAY
	CABLE 18AWG/4-CONDUCTOR - OSP	WEST PENN	AQ-244	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: 04/03/2024

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.

INTRUSION ALARM SCOPE OF WORK:

1. CONTRACTOR SHALL PROVIDE (N) MOTION DETECTORS, DOOR CONTACTS, MODULES, PATHWAY, CABLING, MOUNTS, AND OTHER COMPONENTS REQUIRED FOR A COMPLETE AND FULLY OPERATIONAL INTRUSION SYSTEM, INCLUDING ANY REQUIRED COMPONENTS NOT SPECIFICALLY NOTED ON THE DRAWINGS.
2. CONTRACTOR SHALL SEAMLESSLY INTEGRATE THE (N) COMPONENTS WITH THE EXISTING BOSCH INTRUSION SYSTEM.
3. CONTRACTOR SHALL PROVIDE ALL PROGRAMMING TO REMOVE DEMOED DEVICES FROM THE SYSTEM AND INTEGRATE NEW DEVICES WITH THE SYSTEM. CONTRACTOR SHALL VERIFY ALL DEVICE NAMES, IDS, AND ROOM NUMBERS SITE WIDE AND UPDATE AS REQUIRED TO MATCH THE CURRENT PLAN SET.

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 (2018 INTERNATIONAL BUILDING CODE WITH CALIFORNIA AMENDMENTS)
2022 CALIFORNIA ELECTRICAL CODE (CEC), CCR, TITLE 24, PART 3 (2017 NATIONAL ELECTRICAL CODE WITH CALIFORNIA AMENDMENTS)
2022 CALIFORNIA MECHANICAL CODE (CMC), CCR, TITLE 24, PART 4 (2018 UNIFORM MECHANICAL CODE, WITH CALIFORNIA AMENDMENTS)
2022 CALIFORNIA PLUMBING CODE (CPC), CCR, TITLE 24, PART 5 (2018 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 (2018 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, INTRUSION 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 PLANS NEW
2T-301	TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLANS NEW
2T-700	TECHNOLOGY INFRASTRUCTURE SINGLE LINES
2T-701	TECHNOLOGY INFRASTRUCTURE SINGLE LINES
2T-800	TECHNOLOGY INFRASTRUCTURE DETAILS
2T-801	TECHNOLOGY INFRASTRUCTURE DETAILS
2T-802	TECHNOLOGY INFRASTRUCTURE DETAILS
2T-803	TECHNOLOGY INFRASTRUCTURE DETAILS

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NO.	DATE	DESCRIPTION
1	11/18/2024	ADDENDUM #2

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SHEET TITLE
TECHNOLOGY INFRASTRUCTURE COVER SHEET

INC.2

DRAWN BY: CS/SD JOB NUMBER: 23118.01

SHEET NO.
2T-000

DATE: NOVEMBER 07, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 9/24/2024 8:49:58 AM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



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. CONTRACTOR TO REMOVE AND DISPOSE OF ALL CABLE OPEN-RUN AND STAPLED TO BUILDING EXTERIOR. REMOVE CABLE FROM ENDPOINT TO ENDPOINT. PATCH PENETRATIONS AND PREP FOR PAINT. SEE PICTURE DETAIL.
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 ALL ANALOG INTERCOM FEEDERS, 66-BLOCKS, AND BACKBOARDS AT THIS LOCATION AFTER (N) IP INTERCOM SYSTEM IS FULLY OPERATIONAL. CABLING TO BE REMOVED FROM ENDPOINT TO ENDPOINT INCLUDING WITHIN CONDUITS AND PULL BOXES. PATCH AND PAINT CONDUIT ACCESS WALL OPENING.
2. DEMO ABANDONED INTERCOM CONDUIT ABOVE ACCESSIBLE CEILING AND PENETRATION TO EXTERIOR. PATCH, PAINT, AND MAKE WATERPROOF.
3. DEMO ABANDONED INTERCOM CONDUIT AND J-BOXES ON ROOF AND WALL. PATCH AND PAINT.
4. DEMO BOGEN INTERCOM HEADEND AND RETURN TO DISTRICT AFTER (N) IP INTERCOM SYSTEM IS FULLY OPERATIONAL. DEMO ALL ANALOG INTERCOM FEEDERS AND 66-BLOCKS.
5. DEMO ANALOG PHONE PBX, FEEDER, AND STATION CABLING. COORDINATE WITH DISTRICT REPRESENTATIVE PRIOR TO DEMO. DO NOT DEMO MPOE OR ACTIVE ANALOG LINES TO MDF/FACP/IACP.
6. DEMO ABANDONED CONDUITS AND PULL BOXES, ON ROOF OR WALL, AS OCCURS. PATCH AND PREP FOR PAINT. NO DEMO IS TO OCCUR UNTIL NEW PATHWAY AND SYSTEMS ARE FULLY OPERATIONAL. COORDINATE WITH DISTRICT REPRESENTATIVE PRIOR TO DEMO.



OPEN-RUN EXTERIOR CABLE PICTURE DETAIL

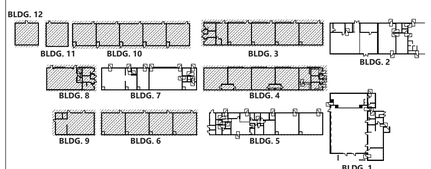
SCALE: NONE

TECHNOLOGY INFRASTRUCTURE SITE PLAN DEMO

SCALE: 1"=20'

0 20 40

KEY PLAN



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REVISIONS

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INC 2

DRAWN BY: CS/SD JOB NUMBER: 23118.01

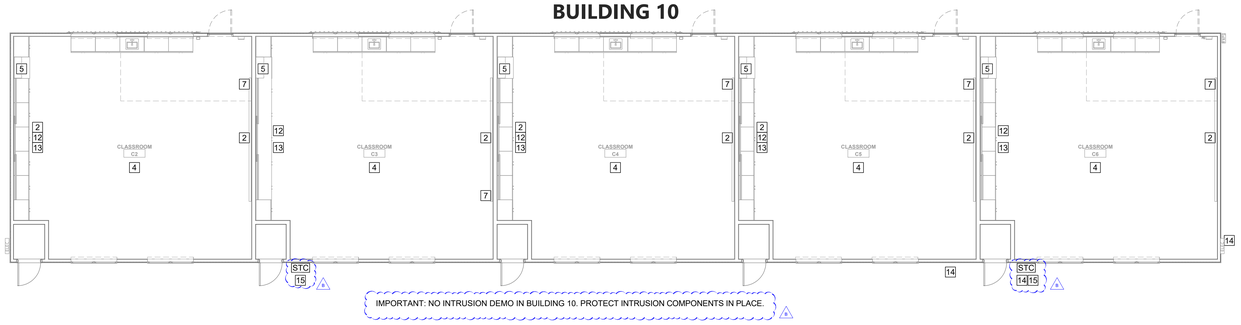
SHEET NO.
2T-010

DATE: NOVEMBER 07, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 9/24/2024 8:49:58 AM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt

BUILDING 10

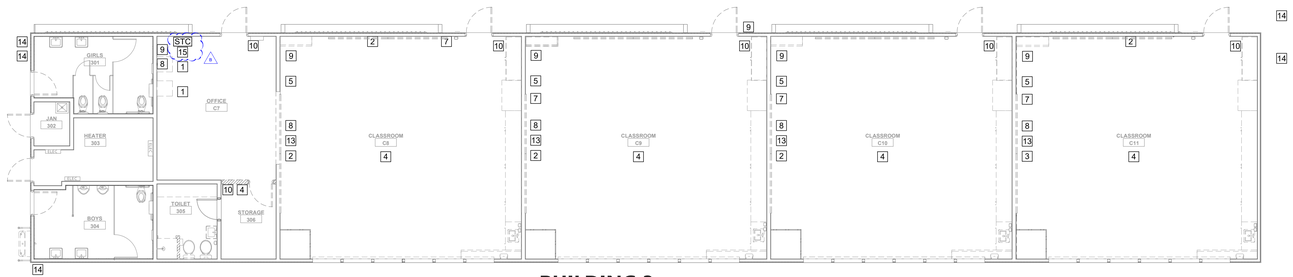


TECHNOLOGY INFRA. FLOOR PLAN DEMO - BUILDING 10

SCALE: 1/8"=1'

0 4 8 12 16

BUILDING 3

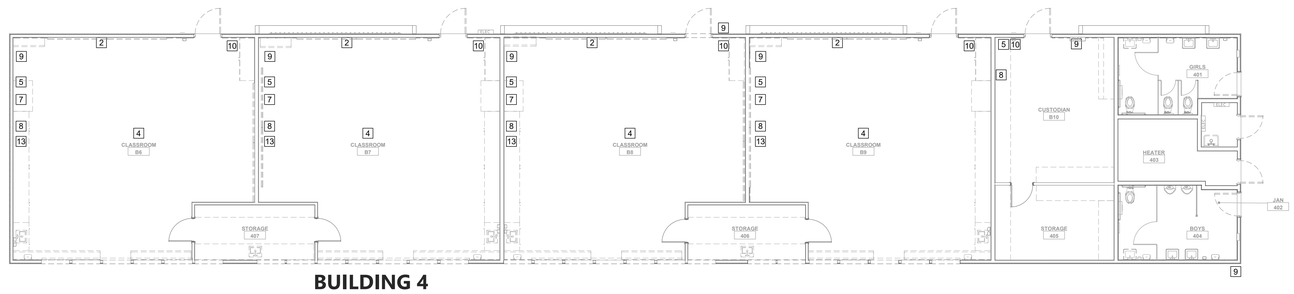


TECHNOLOGY INFRA. FLOOR PLAN DEMO - BUILDING 3

SCALE: 1/8"=1'

0 4 8 12 16

BUILDING 4



TECHNOLOGY INFRA. FLOOR PLAN DEMO - BUILDING 4

SCALE: 1/8"=1'

0 4 8 12 16

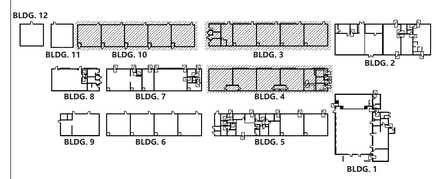
GENERAL NOTES:

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. CONTRACTOR TO REMOVE AND DISPOSE OF ALL CABLE OPEN-RUN AND STAPLED TO BUILDING EXTERIOR. REMOVE CABLE FROM ENDPOINT TO ENDPOINT. PATCH PENETRATIONS AND PREP FOR PAINT. SEE PICTURE DETAIL. △
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 VOLTAGE 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.
6. DEMO (E) NETWORK SWITCH ON SHELF OR WALL BRACKET, AS OCCURS. DEMO ALL (E) DATA DROPS TERMINATING AT THIS NETWORK SWITCH.
7. DEMO (E) LAPTOP DESK WALL UNIT.
8. DEMO (E) CLOCK, BACKBOX, CONDUIT, AND CABLE TO HEADEND. PATCH AND PREP FOR PAINT.
9. DEMO (E) SPEAKER. DEMO INTERCOM CABLE TO HEADEND. REMOVE BACKBOX FROM WALL. PATCH AND PREP FOR PAINT.
10. DEMO (E) MOTION DETECTOR, BACKBOX, CONDUIT, AND CABLING TO SOURCE.
11. DEMO (E) DOOR CONTACT, JUNCTION BOX, CONDUIT, AND CABLING TO SOURCE.
12. DEMO (E) CLOCK/SPEAKER COMBO, BACKBOX, AND CABLE TO SOURCE. PATCH AND PREP FOR PAINT.
13. DEMO (E) ATOMIC BATTERY CLOCK. RETURN TO DISTRICT.
14. DEMO (E) CCTV CAMERA, MOUNT, CONDUIT OR RACEWAY, AND CABLING TO SOURCE.
15. 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. △

KEY PLAN



AGENCY APPROVAL DSA# 01-121440

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JOHNNY KARSTROM
EXPIRES 12/31/24
Regis. No.163629

PROFESSIONAL STAMP

LICENSED ARCHITECT MARIANA ALVAREZ PARGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
△	11/18/2024	ADDENDUM #2

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE
TECHNOLOGY INFRASTRUCTURE FLOOR PLAN DEMO

INC.2

DRAWN BY: CS/SD JOB NUMBER: 23118.01

SHEET NO.
2T-020

DATE: NOVEMBER 07, 2024

CONSTRUCTION DOCUMENT

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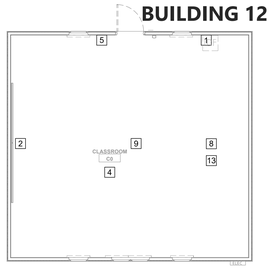
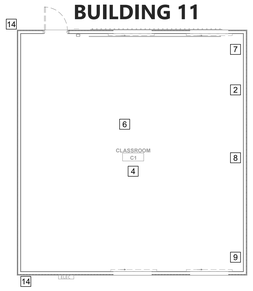
BUILDING 12



BUILDING 11



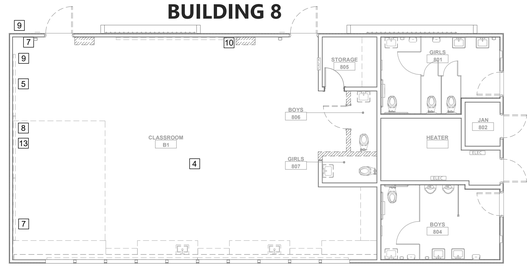
IMPORTANT: NO INTRUSION DEMO IN BUILDINGS 11 AND 12. PROTECT INTRUSION COMPONENTS IN PLACE. ⚠1

TECHNOLOGY INFRA. FLOOR PLAN DEMO - BUILDINGS 11 AND 12

SCALE: 1/8"=1'

0 4 8 12 16

BUILDING 8

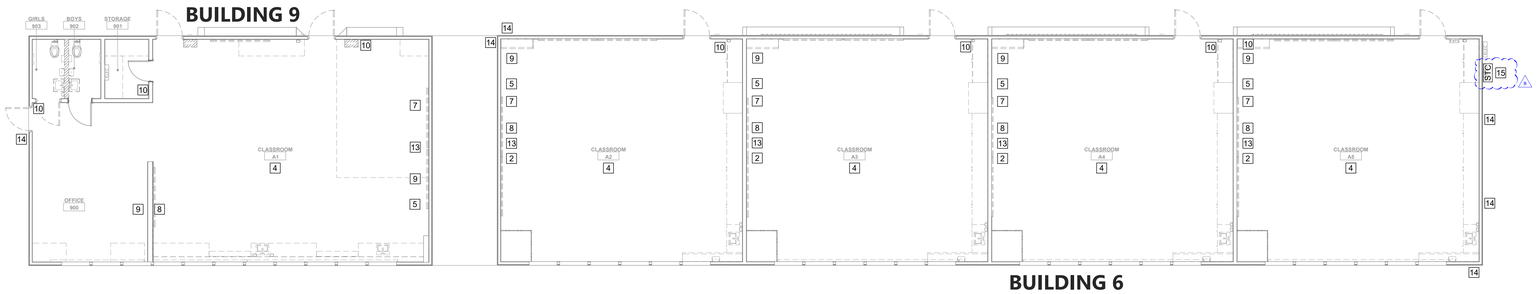


TECHNOLOGY INFRA. FLOOR PLAN DEMO - BUILDING 8

SCALE: 1/8"=1'

0 4 8 12 16

BUILDING 9



BUILDING 6

TECHNOLOGY INFRA. FLOOR PLAN DEMO - BUILDINGS 6 AND 9

SCALE: 1/8"=1'

0 4 8 12 16

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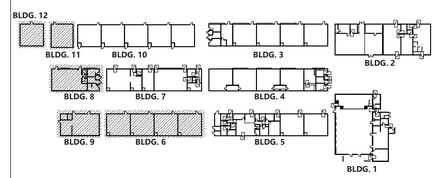
KEY PLAN



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AGENCY APPROVAL DSA# 01-121440

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REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

#

NO.	DATE	DESCRIPTION
⚠1	11/18/2024	ADDENDUM #2

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PROJECT OWNER & TITLE

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Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

TECHNOLOGY INFRASTRUCTURE FLOOR PLANS DEMO

INC.2

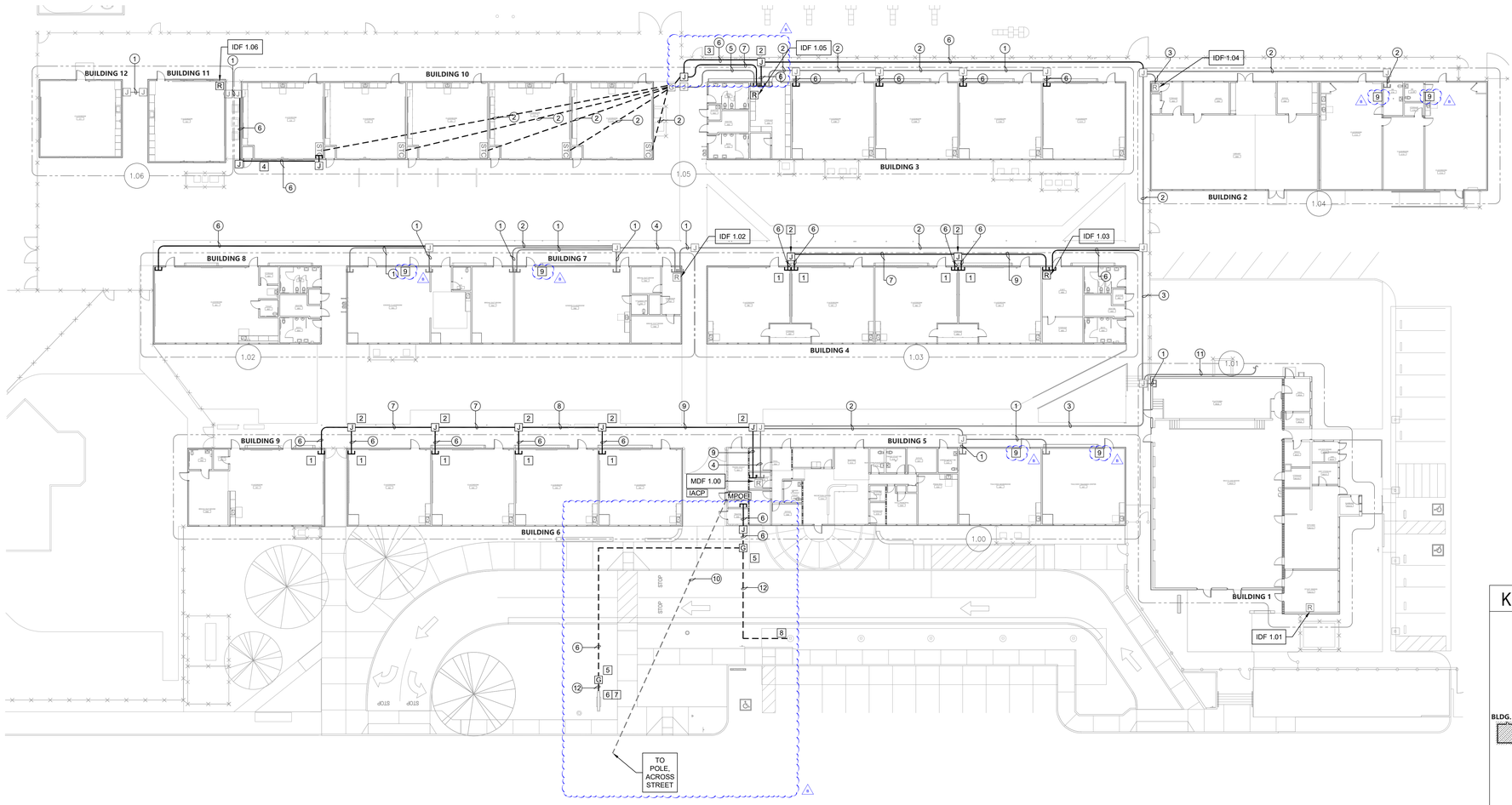
DRAWN BY: CS/SD JOB NUMBER: 23118.01

SHEET NO.

2T-021

DATE: NOVEMBER 07, 2024

CONSTRUCTION DOCUMENT



TECHNOLOGY INFRASTRUCTURE SITE PLAN NEW

SCALE: 1"=20'

0 20 40

CONDUIT QTY. AND SIZE:

1. (E) 1 EA. 2" CONDUITS.
2. (E) 2 EA. 2" CONDUITS.
3. (E) 3 EA. 2" CONDUITS.
4. (E) 4 EA. 2" CONDUITS.
5. (E) 2 EA. 3" CONDUITS.
6. (N) 1 EA. 2" CONDUITS.
7. (N) 2 EA. 2" CONDUITS.
8. (N) 3 EA. 2" CONDUITS.
9. (N) 4 EA. 2" CONDUITS.
10. (E) 1 EA. 1-1/2" CONDUITS (AT&T) TO POLE.
11. (E) 1 EA. 1" CONDUITS.
12. (N) 1 EA. 1" CONDUITS. 2

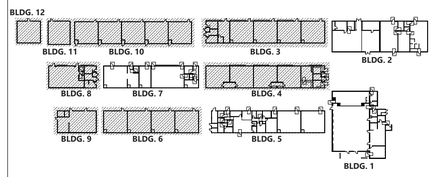
GENERAL NOTES:

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.
4. EXTERIOR BACKBONE CONDUIT WALL PENETRATIONS ARE EXISTING OR NEW AT 110', TYP. NO STRUCTURAL BEAMS SHALL BE ALTERED OR PENETRATED.

SHEET NOTES:

1. REUSE (E) J-BOX AND WALL PENETRATION. PROVIDE (N) 2" CONDUIT TO J-BOX.
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) CONDUIT PATHWAY AND J-BOXES BETWEEN IDF LOCATION AND (E) GROUND BOX, AS NOTED.
4. PROVIDE (N) CONDUIT PATHWAY AND J-BOXES BETWEEN ROOM C-3 STC AND (E) J-BOX TO ROOM C-2, AS NOTED.
5. PROVIDE (N) TRAFFIC RATED GROUND BOX, JENSEN HT1730 OR EQUAL, WITH COVER LABELED "COMMUNICATIONS".
6. PROVIDE 1" CONDUIT STUB FROM GROUND BOX TO MARQUEE SIGN.
7. PROVIDE 1 EA. OSP CAT6A DATA DROP AT MARQUEE SIGN. COORD. WITH SIGN INSTALLER.
8. PROVIDE 1" CONDUIT STUB TO BASE OF SOLAR ARRAY COLUMN. PROVIDE BELL BOX AT 18" AFG AND PULL STRING FOR FUTURE USE.
9. RETERMINATE AND RECERTIFY (E) DATA DROP AT WALL PHONE LOCATION WITH (N) PANDUIT NETKEY JACK. MOUNT (E) VOIP PHONE AT WALL PHONE LOCATION WITH OWNER-FURNISHED MOUNTING BRACKET AND PATCH CORD. UTILIZE 4 EA. PAN HEAD SCREWS AND WALL ANCHORS TO SECURE MOUNTING PLATE TO WALL.

KEY PLAN



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REVISIONS

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NO.	DATE	DESCRIPTION
2	2024-11-18	ADDENDUM B

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INC.2

DRAWN BY: CS/SD JOB NUMBER: 23118.01

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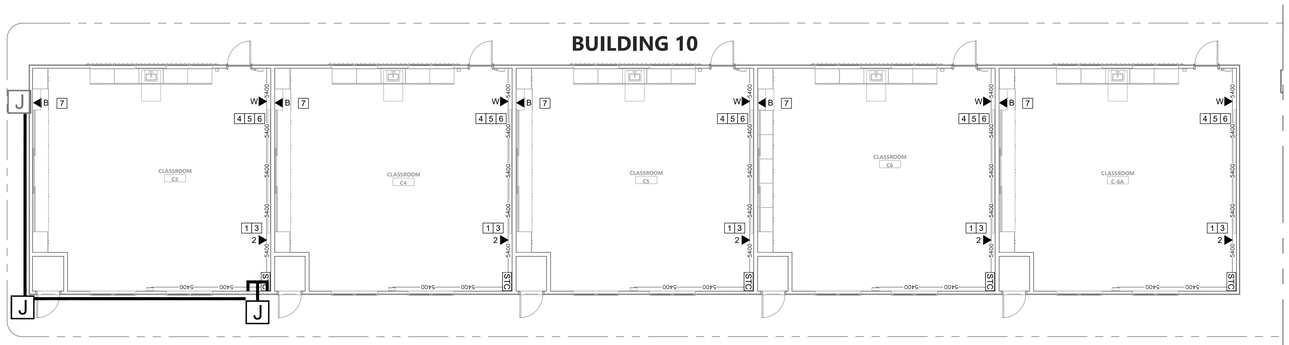
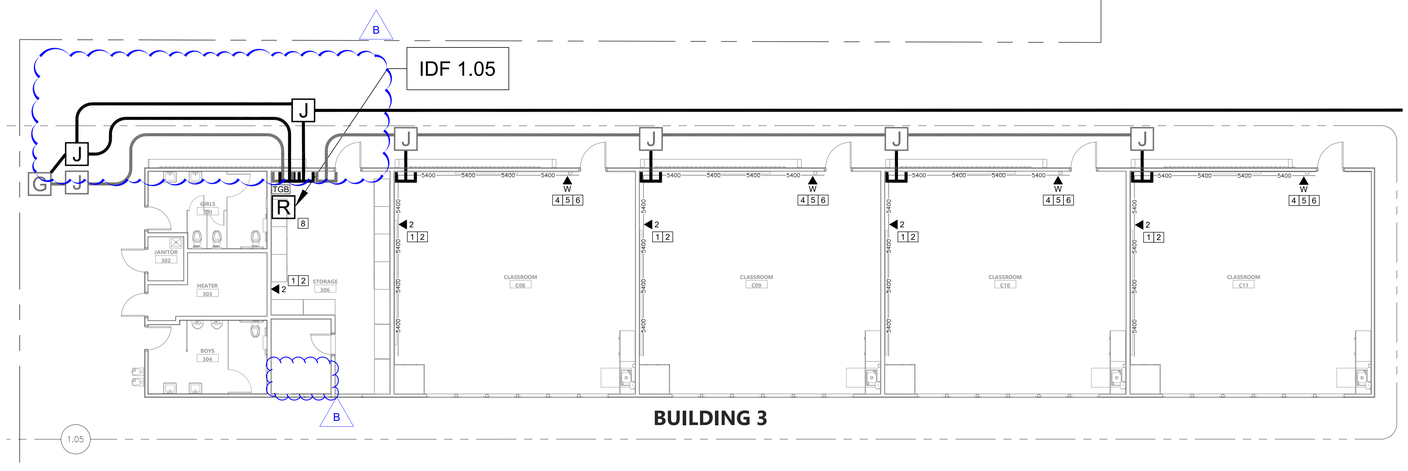


TECHNOLOGY INFRA. FLOOR PLAN NEW - BUILDING 10

SCALE: 1/8"=1'

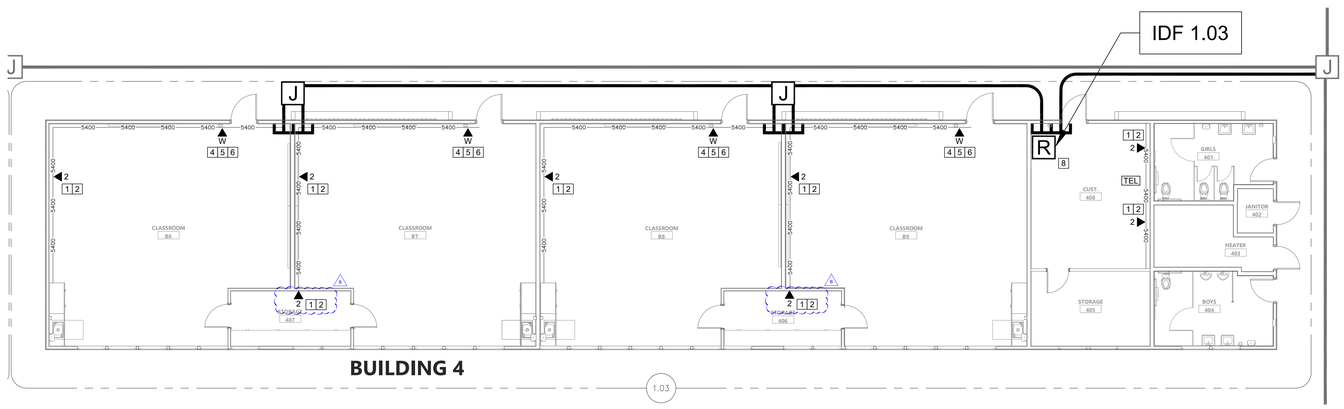
0 4 8 12 16



TECHNOLOGY INFRA. FLOOR PLAN NEW - BUILDING 3

SCALE: 1/8"=1'

0 4 8 12 16



TECHNOLOGY INFRA. FLOOR PLAN NEW - BUILDING 4

SCALE: 1/8"=1'

0 4 8 12 16

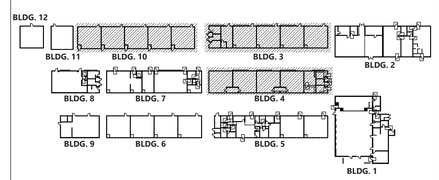
GENERAL NOTES:

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.
4. EXTERIOR BACKBONE CONDUIT WALL PENETRATIONS ARE EXISTING OR NEW AT 11' 0". TYP. NO STRUCTURAL BEAMS SHALL BE ALTERED OR PENETRATED.

SHEET NOTES:

1. PROVIDE (N) CAT6A 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. ROUTE (N) CABLING VIA (E) SURFACE RACEWAY TO ROOM STC. PROVIDE (N) DATA PLATES AND DATA PLATE RACEWAY ADAPTERS.
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) BLANK COVER AT (E) DATA WALL LOCATION.
8. PROVIDE (N) IDF ENCLOSURE. SEE SINGLE LINE FOR DETAILS.
9. ROUTE (N) CABLING VIA (E) CONDUIT STUB TO ACCESSIBLE CEILING.

KEY PLAN



N

AGENCY APPROVAL DSA# 01-121440

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LICENSED ARCHITECT
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C-36107
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STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	11/18/2024	ADDENDUM #2

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE
TECHNOLOGY INFRASTRUCTURE FLOOR PLANS NEW

INC.2

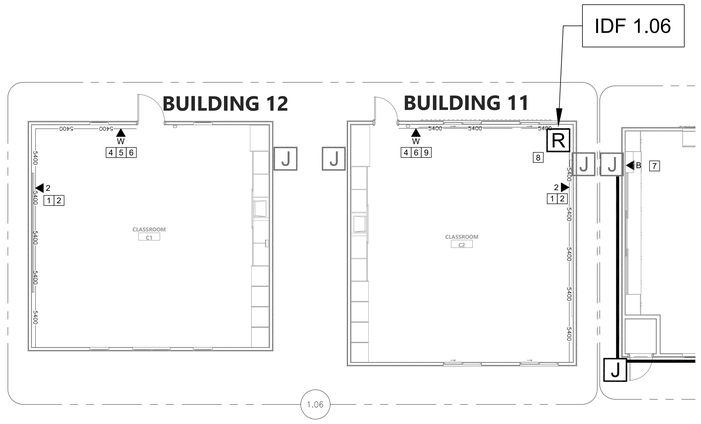
DRAWN BY: CS/SD JOB NUMBER: 23118.01

SHEET NO.
2T-200

DATE: NOVEMBER 07, 2024

CONSTRUCTION DOCUMENT

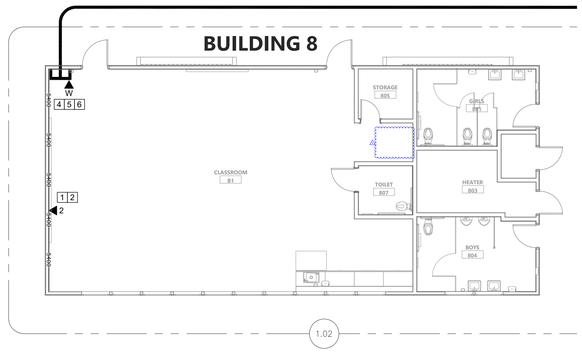
DATE PLOTTED: 9/24/2024 8:49:58 AM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



TECHNOLOGY INFRA. FLOOR PLAN NEW - BUILDINGS 11 AND 12

SCALE: 1/8"=1'

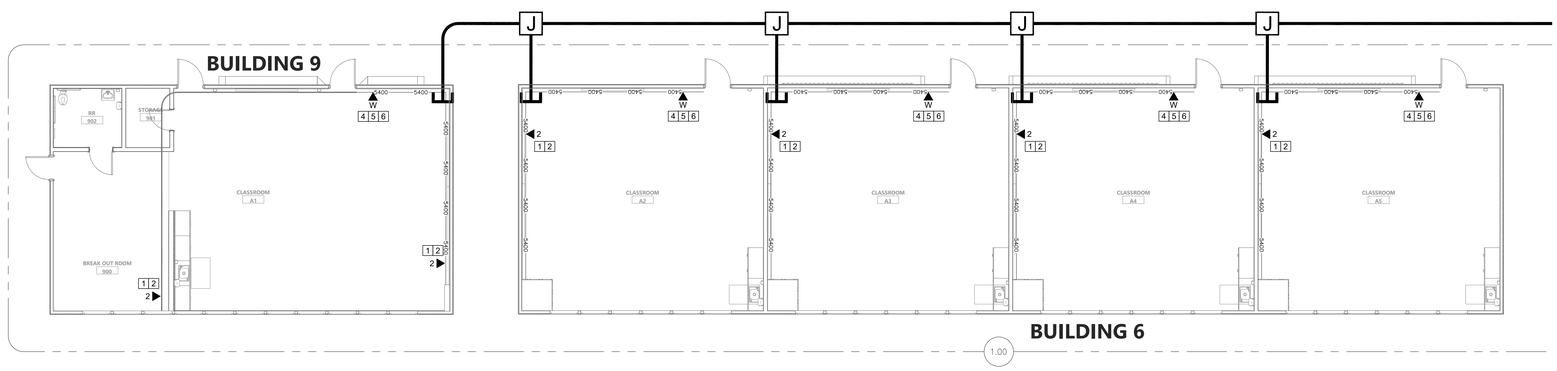
0 4 8 12 16



TECHNOLOGY INFRA. FLOOR PLAN NEW - BUILDING 8

SCALE: 1/8"=1'

0 4 8 12 16



TECHNOLOGY INFRA. FLOOR PLAN NEW - BUILDINGS 6 AND 9

SCALE: 1/8"=1'

0 4 8 12 16

GENERAL NOTES:

1. CONTRACTOR TO FURNISH AND INSTALL ALL PATHWAY, CABLING, ENCLOSURES, MOUNTS, TERMINATIONS, AND ACCESSORIES REQUIRED FOR COMPLETE AND FULLY OPERATIONAL TECHNOLOGY SYSTEMS.
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SHEET NOTES:

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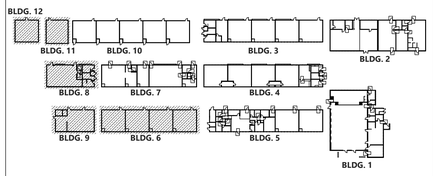
2. ROUTE (N) CABLING VIA (N) SURFACE RACEWAY (BY ELEC.) TO EXTERIOR BACKBONE. PROVIDE (N) DATA PLATES AND DATA PLATE RACEWAY ADAPTERS.
3. ROUTE (N) CABLING VIA (E) SURFACE RACEWAY TO ROOM STC. PROVIDE (N) DATA PLATES AND DATA PLATE RACEWAY ADAPTERS.
4. PROVIDE (N) 1 EA. CAT6A DATA DROP FOR WALL MOUNTED 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) BLANK COVER AT (E) DATA WALL LOCATION.
8. PROVIDE (N) IDF ENCLOSURE. SEE SINGLE LINE FOR DETAILS.
9. ROUTE (N) CABLING VIA (E) CONDUIT STUB TO ACCESSIBLE CEILING.

KEY PLAN



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REVISIONS

#	NO.	DATE	DESCRIPTION
	1	11/18/2024	ADDENDUM #2

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1936 Carlotta Dr. Concord
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RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS
611 Pacifica Ave
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SHEET TITLE
TECHNOLOGY INFRASTRUCTURE FLOOR PLANS NEW

INC.2

DRAWN BY: CS/SD JOB NUMBER: 23118.01

SHEET NO.
2T-201

DATE: NOVEMBER 07, 2024

CONSTRUCTION DOCUMENT

FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt
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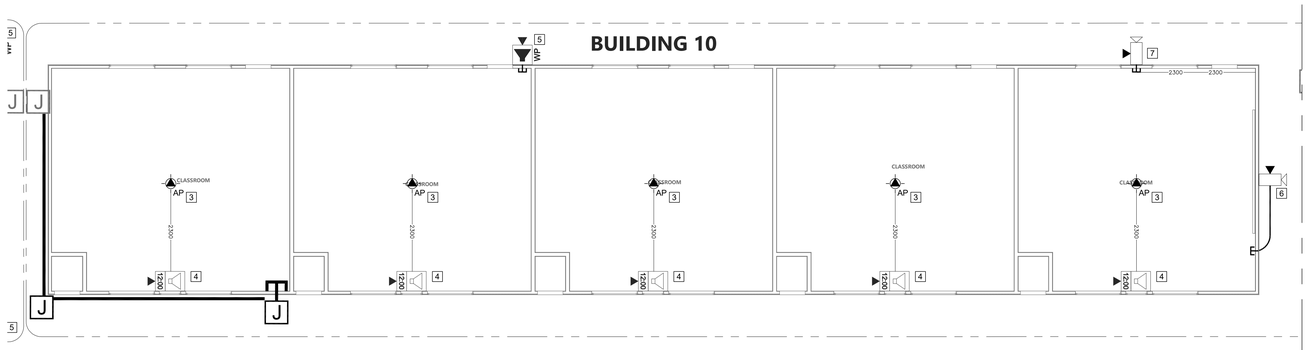
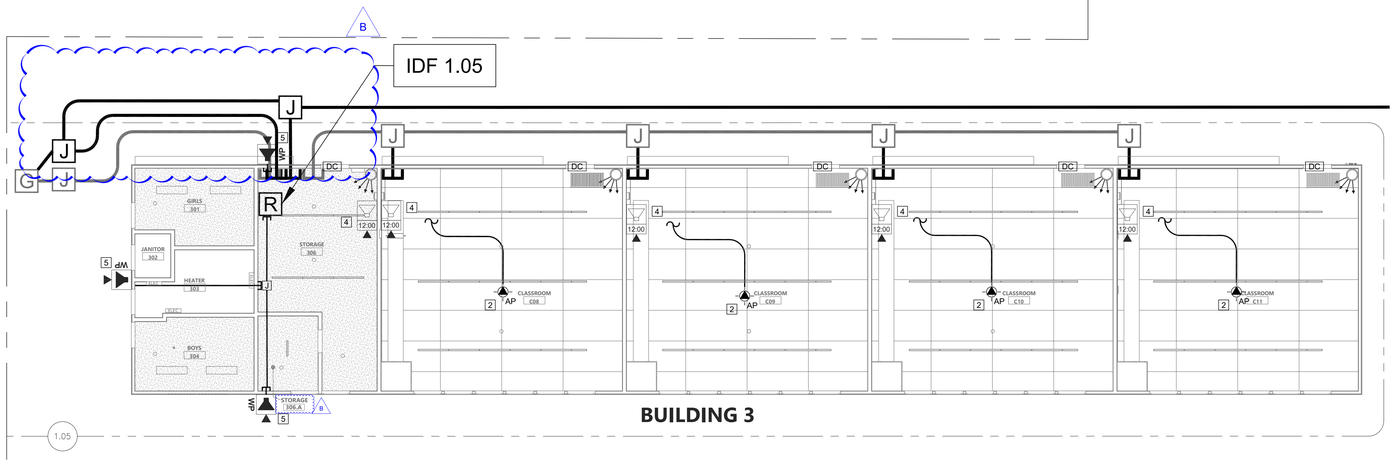


TECHNOLOGY INFRA. RCP NEW - BUILDING 10

SCALE: 1/8"=1'

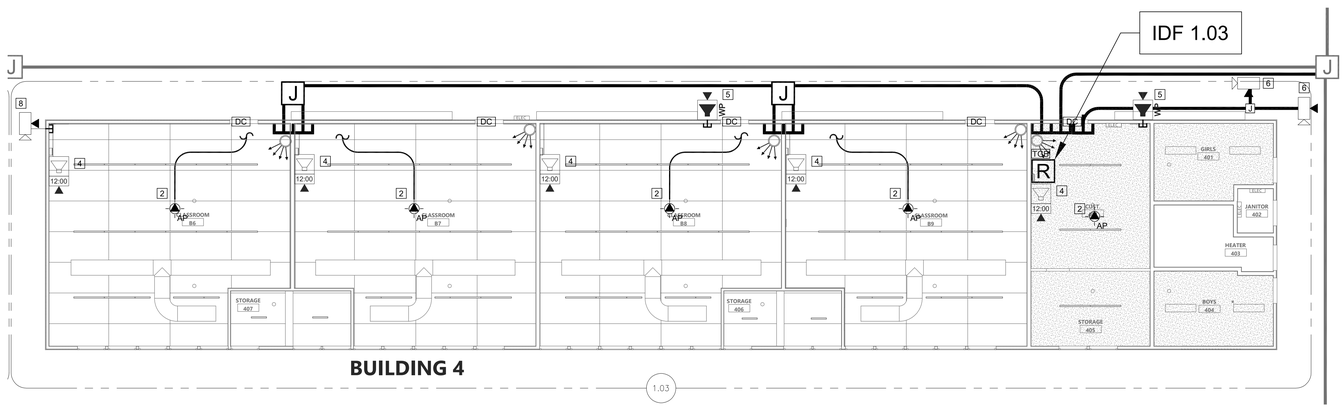
0 4 8 12 16



TECHNOLOGY INFRA. RCP NEW - BUILDING 3

SCALE: 1/8"=1'

0 4 8 12 16



TECHNOLOGY INFRA. RCP NEW - BUILDING 4

SCALE: 1/8"=1'

0 4 8 12 16

GENERAL NOTES:

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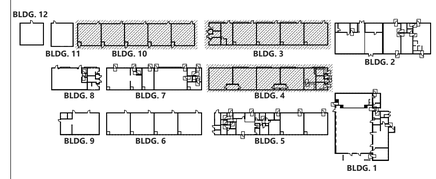
4. EXTERIOR BACKBONE CONDUIT WALL PENETRATIONS ARE EXISTING OR NEW AT 11' 0". TYP. NO STRUCTURAL BEAMS SHALL BE ALTERED OR PENETRATED.

SHEET NOTES:

1. PROVIDE (N) 2 EA. CAT6A DATA DROP FOR WIRELESS AP AT ACCESSIBLE CEILING. PROVIDE (N) MOUNT. INSTALL OWNER-PROVIDED AP. SEE DETAIL 5/2T-801.
2. PROVIDE (N) 2 EA. CAT6A DATA DROP FOR WIRELESS AP AT HARD LID CEILING. PROVIDE (N) EMT CONDUIT FROM NEAREST DATA J-BOX. PROVIDE (N) MOUNT. INSTALL OWNER-PROVIDED AP. SEE DETAIL 6/2T-801.
3. PROVIDE (N) 2 EA. CAT6A DATA DROP FOR WIRELESS AP AT HARD LID CEILING. PROVIDE (N) WM2300 FROM CLOCK LOCATION. PROVIDE (N) MOUNT. INSTALL OWNER-PROVIDED AP. SEE DETAIL 9/2T-801.
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. REMOVE (E) CAMERA PRIOR TO EXTERIOR PAINTING. PROVIDE (N) CAT6A DATA DROP VIA (N) PATHWAY. RE-MOUNT CAMERA AND MAKE WATERPROOF. RE-AIM CAMERA IN PRESENCE OF DISTRICT REPRESENTATIVE.
7. PROVIDE (N) CAT6A DATA DROP AND (N) WALL MOUNT FOR OWNER-PROVIDED PANORAMIC NETWORK CAMERA. CONTRACTOR TO CONFIRM WITH DISTRICT REPRESENTATIVE THAT CAMERA VIEWS ARE NOT OBSTRUCTED PRIOR TO INSTALLATION.
8. PROVIDE (N) CAT6A DATA DROP AND (N) CANOPY FLUSH MOUNT BACKBOX FOR OWNER-PROVIDED MULTIDIRECTIONAL NETWORK CAMERA. CONTRACTOR TO VERIFY MOUNTING LOCATION WITH DISTRICT PRIOR TO INSTALLATION. CONTRACTOR TO CONFIRM WITH DISTRICT REPRESENTATIVE THAT CAMERA VIEWS ARE NOT OBSTRUCTED PRIOR TO INSTALLATION.
9. PROVIDE (N) CAT6A DATA DROP AND (N) CORNER MOUNT FOR OWNER-PROVIDED MULTIDIRECTIONAL NETWORK CAMERA. CONTRACTOR TO CONFIRM WITH DISTRICT REPRESENTATIVE THAT CAMERA VIEWS ARE NOT OBSTRUCTED PRIOR TO INSTALLATION.
10. PROVIDE (N) CAT6A DATA DROP AND (N) CORNER MOUNT FOR OWNER-PROVIDED DOME NETWORK CAMERA. CONTRACTOR TO CONFIRM WITH DISTRICT REPRESENTATIVE THAT CAMERA VIEWS ARE NOT OBSTRUCTED PRIOR TO INSTALLATION.
11. PROVIDE (N) CAT6A DATA DROP AND (N) CEILING MOUNT UNDER CORNER OF EVE FOR OWNER-PROVIDED MULTIDIRECTIONAL NETWORK CAMERA. CONTRACTOR TO CONFIRM WITH DISTRICT REPRESENTATIVE THAT CAMERA VIEWS ARE NOT OBSTRUCTED PRIOR TO INSTALLATION.
12. PROVIDE (N) CUT IN BACKBOX BEHIND DEVICE LOCATION AND FISH CABLE TO ACCESSIBLE CEILING.
13. PROVIDE (N) 2 EA. CAT6A DATA DROP FOR EXTERIOR WIRELESS AP. PROVIDE (N) MOUNT. INSTALL OWNER-PROVIDED AP. SEE DETAIL 10/2T-801.
14. INSTALL ON PARAPET WALL ABOVE CANOPY.

KEY PLAN



AGENCY APPROVAL DSA# 01-121440

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LICENSED ARCHITECT MARIANA ALVAREZ PARGA
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REVISIONS

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PROJECT OWNER & TITLE

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1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

611 Pacifica Ave
Bay Point, CA 94565

SHEET TITLE

TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLANS NEW

INC.2

DRAWN BY: CS/SD JOB NUMBER: 23118.01

SHEET NO.

2T-300

DATE: NOVEMBER 07, 2024

CONSTRUCTION DOCUMENT

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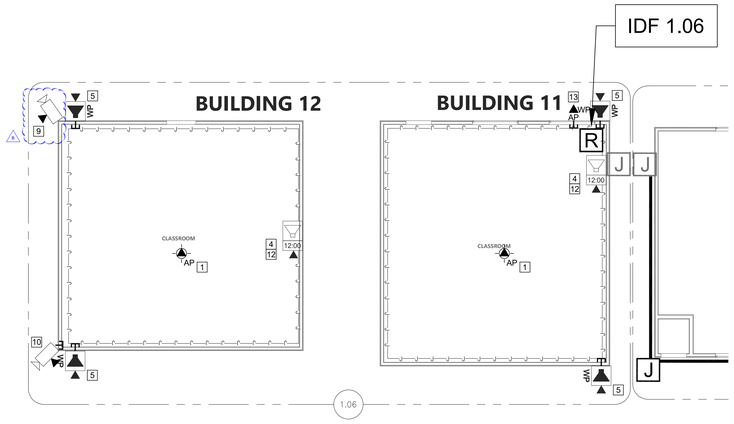
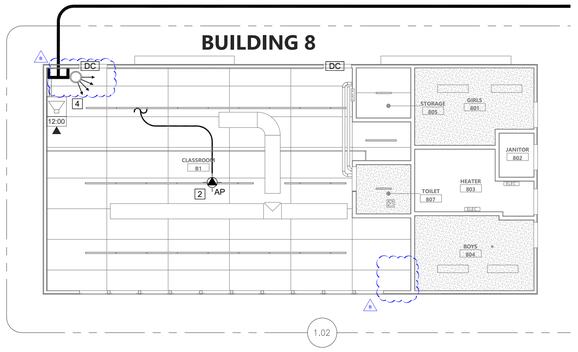


TECHNOLOGY INFRA. RCP NEW - BUILDINGS 11 AND 12

SCALE: 1/8"=1'

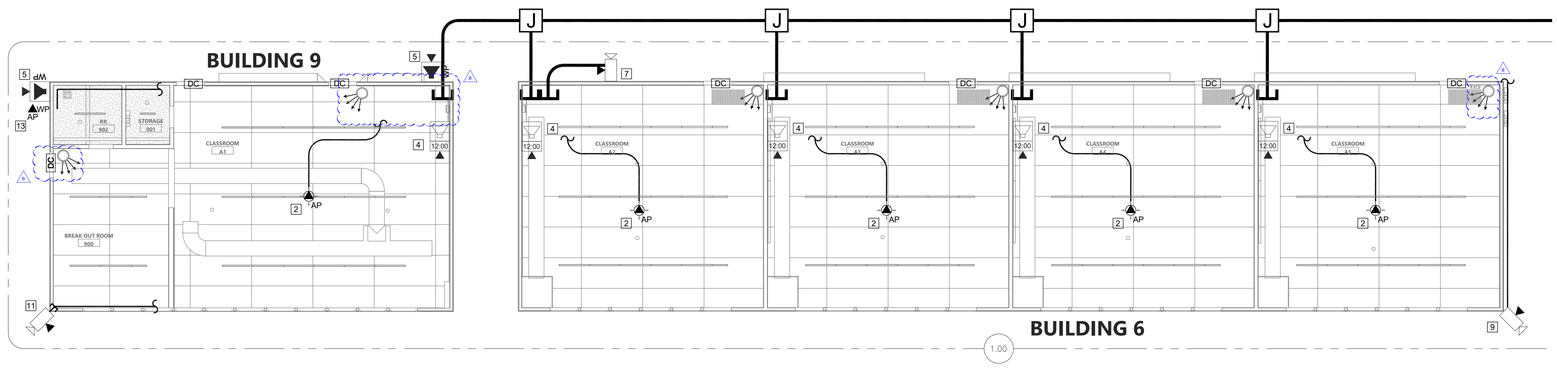
0 4 8 12 16



TECHNOLOGY INFRA. RCP NEW - BUILDING 8

SCALE: 1/8"=1'

0 4 8 12 16



TECHNOLOGY INFRA. RCP NEW - BUILDINGS 6 AND 9

SCALE: 1/8"=1'

0 4 8 12 16

GENERAL NOTES:

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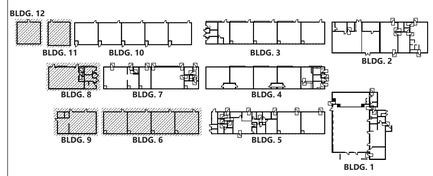
3. PROVIDE (N) 2 EA. CAT6A DATA DROP FOR WIRELESS AP AT HARD LID CEILING. PROVIDE (N) WM2300 FROM CLOCK LOCATION. PROVIDE (N) MOUNT. INSTALL OWNER-PROVIDED AP. SEE DETAIL 9/2T-801.
4. PROVIDE (N) 1 EA. CAT6A DATA DROP FOR IP CLOCK/SPEAKER COMBO. PROVIDE (N) COMBO SURFACE BACKBOX. TERMINATE DATA DROP 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. REMOVE (E) CAMERA PRIOR TO EXTERIOR PAINTING. PROVIDE (N) CAT6A DATA DROP VIA (N) PATHWAY. RE-MOUNT CAMERA AND MAKE WATERPROOF. RE-AIM CAMERA IN PRESENCE OF DISTRICT REPRESENTATIVE.
7. PROVIDE (N) CAT6A DATA DROP AND (N) WALL MOUNT FOR OWNER-PROVIDED PANORAMIC NETWORK CAMERA. CONTRACTOR TO CONFIRM WITH DISTRICT REPRESENTATIVE THAT CAMERA VIEWS ARE NOT OBSTRUCTED PRIOR TO INSTALLATION.
8. PROVIDE (N) CAT6A DATA DROP AND (N) CANOPY FLUSH MOUNT BACKBOX FOR OWNER-PROVIDED MULTIDIRECTIONAL NETWORK CAMERA. CONTRACTOR TO VERIFY MOUNTING LOCATION WITH DISTRICT PRIOR TO INSTALLATION. CONTRACTOR TO CONFIRM WITH DISTRICT REPRESENTATIVE THAT CAMERA VIEWS ARE NOT OBSTRUCTED PRIOR TO INSTALLATION.
9. PROVIDE (N) CAT6A DATA DROP AND (N) CORNER MOUNT FOR OWNER-PROVIDED MULTIDIRECTIONAL NETWORK CAMERA. CONTRACTOR TO CONFIRM WITH DISTRICT REPRESENTATIVE THAT CAMERA VIEWS ARE NOT OBSTRUCTED PRIOR TO INSTALLATION.
10. PROVIDE (N) CAT6A DATA DROP AND (N) CORNER MOUNT FOR OWNER-PROVIDED DOME NETWORK CAMERA. CONTRACTOR TO CONFIRM WITH DISTRICT REPRESENTATIVE THAT CAMERA VIEWS ARE NOT OBSTRUCTED PRIOR TO INSTALLATION.
11. PROVIDE (N) CAT6A DATA DROP AND (N) CEILING MOUNT UNDER CORNER OF EVE FOR OWNER-PROVIDED MULTIDIRECTIONAL NETWORK CAMERA. CONTRACTOR TO CONFIRM WITH DISTRICT REPRESENTATIVE THAT CAMERA VIEWS ARE NOT OBSTRUCTED PRIOR TO INSTALLATION.
12. PROVIDE (N) CUT IN BACKBOX BEHIND DEVICE LOCATION AND FISH CABLE TO ACCESSIBLE CEILING.
13. PROVIDE (N) 2 EA. CAT6A DATA DROP FOR EXTERIOR WIRELESS AP. PROVIDE (N) MOUNT. INSTALL OWNER-PROVIDED AP. SEE DETAIL 10/2T-801.
14. INSTALL ON PARAPET WALL ABOVE CANOPY.

KEY PLAN



AGENCY APPROVAL DSA# 01-121440

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MARIANA ALVAREZ PARGA
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REVISIONS

NO.	DATE	DESCRIPTION
1	11/18/2024	ADDENDUM #2

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PROJECT OWNER & TITLE
MOUNT DIABLO UNIFIED SCHOOL DISTRICT
1936 Carlotta Dr. Concord
Concord, CA 94519

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SHEET TITLE
TECHNOLOGY INFRASTRUCTURE REFLECTED CEILING PLANS NEW

INC.2

DRAWN BY: CS/SD JOB NUMBER: 23118.01

SHEET NO.
2T-301

DATE: NOVEMBER 07, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 9/24/2024 8:49:58 AM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt

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.

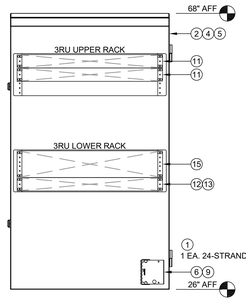
MDF GENERAL NOTES:

1. 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 OPERATONS WILL NOT BE AFFECTED.
2. PROVIDE ALL (N) EQUIPMENT CALLED FOR IN THE ELEVATION.
3. INSTALL ALL OWNER-FURNISHED EQUIPMENT CALLED FOR IN THE ELEVATION.
4. ROUTE POWER FOR ALL EQUIPMENT SO THAT IS EVENLY DISTRIBUTED BETWEEN AND FULLY PROTECTED BY THE UNINTERRUPTIBLE POWER SUPPLIES.
5. REMOVE ALL (E) EQUIPMENT NOT NOTED FOR REUSE AND DELIVER TO DISTRICT WAREHOUSE IN GOOD CONDITION.
6. PROVIDE (N) 6" SLIMLINE CAT6A PATCH CABLES FOR ALL (N) DATA DROPS.
7. PROVIDE (N) LC/LC FIBER PATCH CABLES AS REQUIRED.

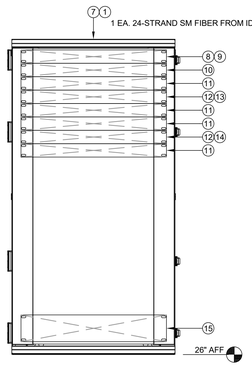
EQUIPMENT SCHEDULE:

ALL EQUIPMENT AND MATERIALS ARE CONTRACTOR FURNISHED, INSTALLED AND CONFIGURED (UNO)

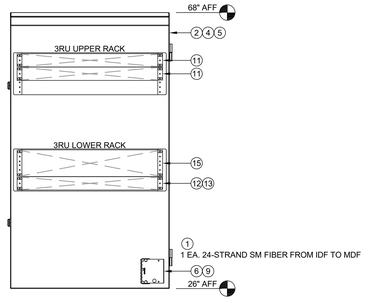
SYMBOL	DESCRIPTION	MFG/MODEL	PART NUMBER	NOTES / DETAIL REFERENCES
1	24-STRAND SINGLE MODE FIBER, ARMORED	PANDUIT	FSLP924	N/A
2	TELECOMMUNICATIONS RACK, WALL VERTICAL 3U/3U	PANDUIT	WME3BL	N/A
3	NOT USED	N/A	N/A	N/A
4	FAN KIT FOR WALL VERTICAL RACK	PANDUIT	PZAEFAN	N/A
5	GROUND KIT FOR WALL VERTICAL RACK	PANDUIT	WMEGK	N/A
6	FIBER ENCLOSURE BRACKET FOR VERTICAL RACK	PANDUIT	FWME1BL	N/A
7	TELECOMMUNICATIONS RACK, WALL, 26U	PANDUIT	PZWMC2630P	N/A
	FAN KIT FOR WALL RACK		PZCFK	N/A
	GROUND KIT FOR WALL RACK		PZWMCGK	N/A
8	FIBER TRAY LIU, 1U	PANDUIT	FRME1U	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	EXISTING	N/A
17	AP CONTROLLER	ARUBA	EXISTING	N/A
18	SERVICE PROVIDER EQUIPMENT	CIENA	EXISTING	N/A
19	2U NVR SERVER	EXISTING	EXISTING	N/A
20	4U NVR SERVER	EXISTING	EXISTING	N/A
21	1U RACK MOUNT MONITOR	EXISTING	EXISTING	N/A
22	2U LIU	EXISTING	EXISTING	N/A
23	1U 24 PORT PATCH PANEL	EXISTING	EXISTING	N/A
24	1U HORIZONTAL CABLE MANAGER	EXISTING	EXISTING	N/A
25	UNINTERRUPTIBLE POWER SUPPLY	EXISTING	EXISTING	N/A
26	DAC CABLE	ARUBA	J9281D	OFCI



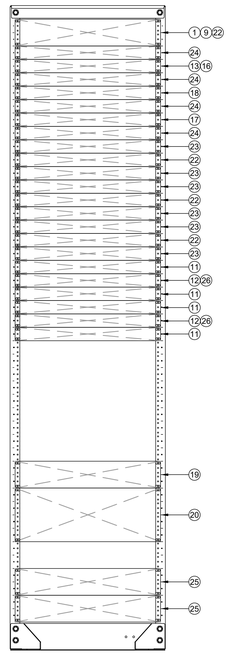
5 (N) IDF 1.06 - BUILDING 11 CLASSROOM C2
SCALE: NONE



3 (N) IDF 1.05 - BUILDING 3 STORAGE 306
SCALE: NONE



2 (N) IDF 1.03 - BUILDING 4 ROOM B10
SCALE: NONE



1 (E) MDF 1.00 - BUILDING 5 ROOM 510

AGENCY APPROVAL DSA# 01-121440

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REN. 01-31-25

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1936 Carlotta Dr. Concord
Concord, CA 94519

RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

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SHEET TITLE

TECHNOLOGY INFRASTRUCTURE SINGLE LINES

INC.2

DRAWN BY: CS/SD JOB NUMBER: 23118.01

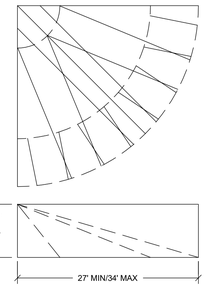
SHEET NO.

2T-700

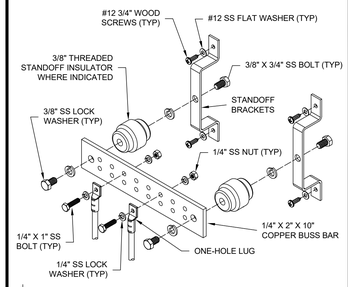
DATE: NOVEMBER 07, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 9/24/2024 8:49:58 AM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt



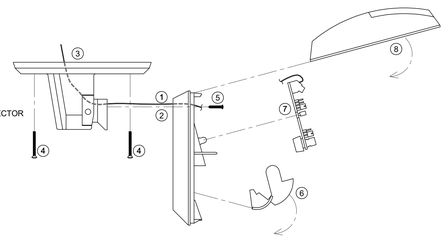
14 INTRUSION DETECTOR COVERAGE DETAIL
SCALE: NONE



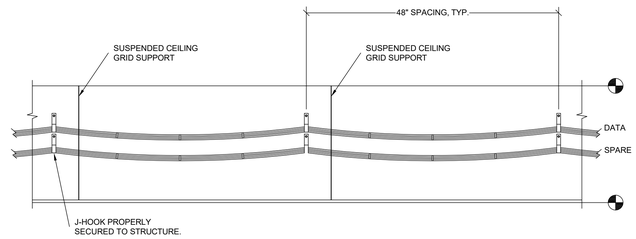
11 MAIN GROUND BAR DETAIL
SCALE: NONE

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

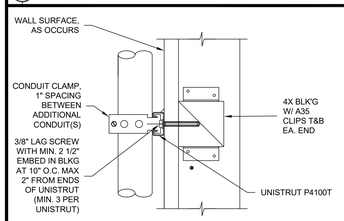
NOTE: ASSEMBLY WEIGHT LESS THAN 5LBS



7 INTRUSION DETECTION SENSOR INSTALLATION ADJUSTABLE CEILING MOUNTING DETAIL
SCALE: NONE

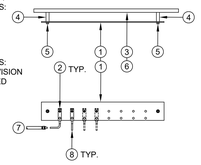


3 J-HOOK PATHWAY ABOVE CEILING DETAIL
SCALE: NONE

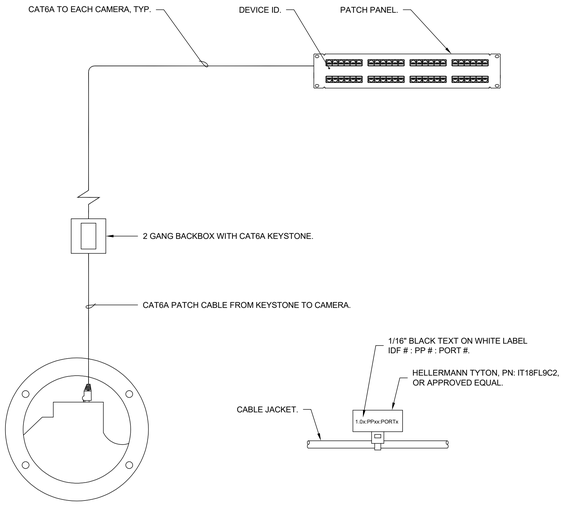


13 CONDUIT SUPPORT DETAIL - VERTICAL
SCALE: NONE

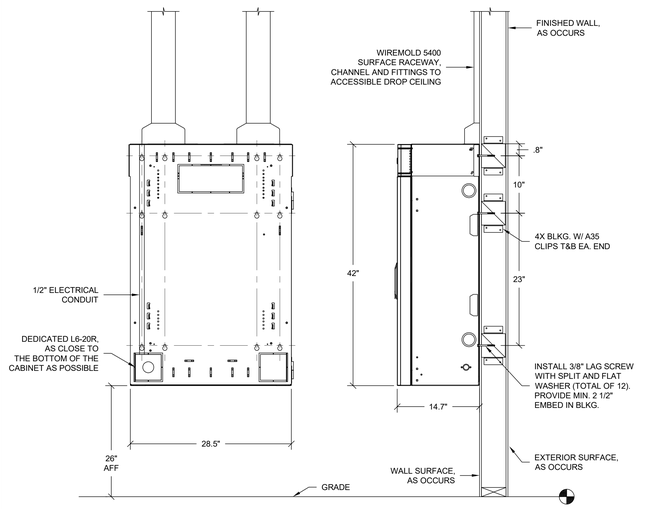
1. BARE COPPER GROUND BUS BAR
2. TYPICAL 2 HOLE LUGS, SECURE TO BAR WITH 2-5/6" BOLTS,WITH NAMEPLATES MOUNTED ABOVE. PROVIDE NUMBER OF LUGS AS REQUIRED
3. 1" FIRE RATED PLYWOOD BACKBOARD
4. PROVIDE ISOLATION SUPPORT SPACERS AS REQUIRED
5. 3/8" WOOD LAG SCREW, 1" MIN. EMBED
6. MOUNTING LOCATION PER PLAN
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



10 GROUND BUS BAR DETAIL
SCALE: NONE



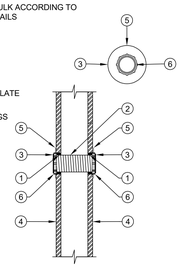
6 CCTV NETWORK SEGMENT DETAIL
SCALE: NONE



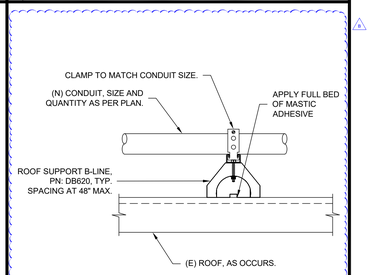
NOTES:
1. 3RU TOTAL LOAD CAPACITY = 200 LBS.

2 TELECOMMUNICATIONS WALL CABINET, 3RU
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.)

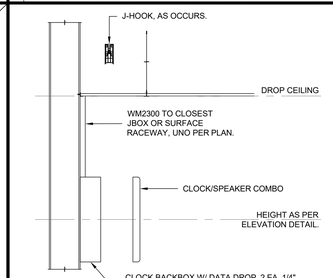


12 CONDUIT SLEEVE PENETRATION DETAIL
SCALE: NONE

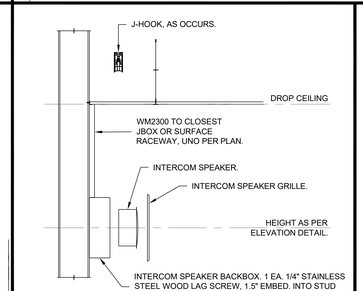


9 CONDUIT ON ROOF DETAIL
SCALE: NONE

NOT USED

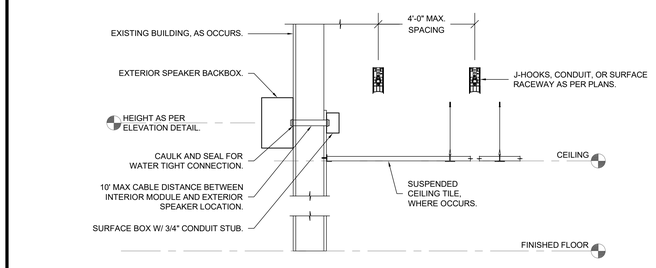


8 SURFACE MOUNTED CLOCK/SPEAKER COMBO DETAIL
SCALE: NONE



5 SURFACE MOUNTED INTERIOR INTERCOM SPEAKER DETAIL
SCALE: NONE

NOT USED



4 EXTERIOR INTERCOM SPEAKER MOUNTING DETAIL
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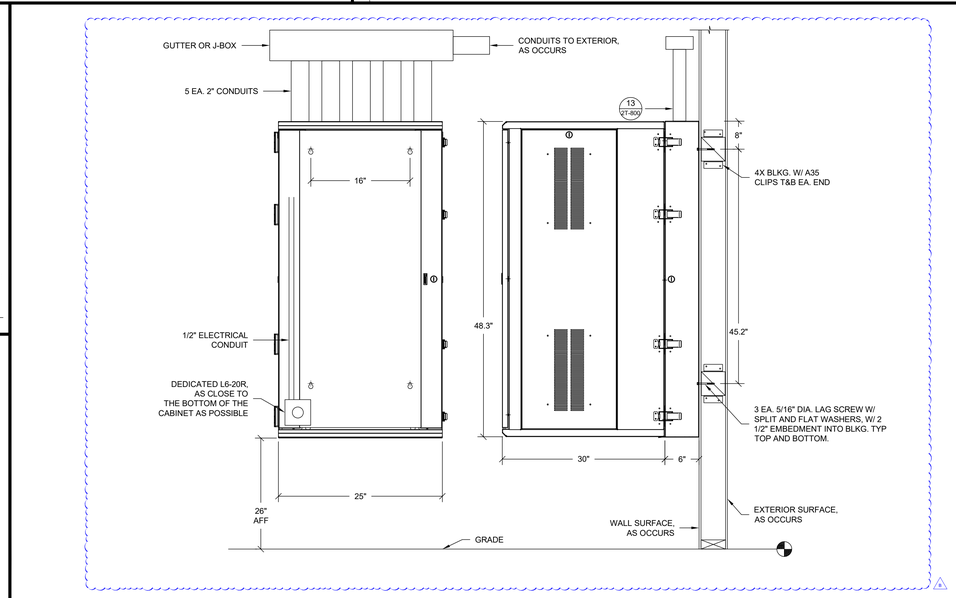

NOTES:
1. TOTAL LOAD CAPACITY = 350.09 LBS.

1 TELECOMMUNICATIONS WALL CABINET, 26RU
SCALE: NONE

AGENCY APPROVAL DSA# 01-121440

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LICENSED ARCHITECT MARIMA ALVAREZ PARGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

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SHEET TITLE

TECHNOLOGY INFRASTRUCTURE DETAILS

INC.2

DRAWN BY: CS/SD JOB NUMBER: 23118.01

SHEET NO.

2T-800

DATE: NOVEMBER 07, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 9/24/2024 8:49:58 AM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt

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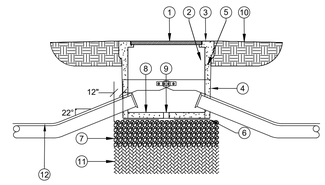
NOT USED

1. LID PER, TYPE PER GROUND BOX DETAIL
2. BELL ENDS TYP.
3. PRE CAST REINFORCED CONCRETE BOX, SIZE PER PLANS
4. PRE CAST REINFORCED CONCRETE EXTENSIONS AS REQUIRED
5. SEAL AROUND CONDUIT, BOX & JUNCTION OF EXTENSION(S) WITH MORTAR
6. VAPOR RETARDER
7. 12" CRUSHED ROCK
8. REINFORCED CONCRETE BOTTOM
9. 1" DRAIN HOLE
10. FINISHED GRADE, SLOPE 1/8" OVER 12" EXTEND 4'-0"
11. COMPACTED SOIL
12. 10 AWG WIRE OR METAL TRACING TAPE PLACED ON TOP OF CONDUITS AND CONTINUOUS THROUGH OUT ENTIRE TRENCH LENGTH AND TERMINATING ON RISER UNISTRUT OR GROUNDING BAR IN GROUNDBOX



NOTE:
1. ALL SERVICE LOOPS AND PULL STRINGS TO BE SECURELY AND NEATLY ATTACHED TO WALLS OF GROUND BOX AS PER DETAIL 7/1.T-501.

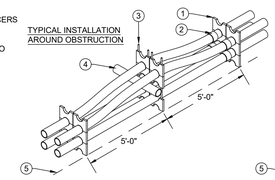
5 GROUND PULL BOX DETAIL
SCALE: NONE

1. BOTTOM & MIDDLE PLASTIC SPACERS EVERY 5' SHALL BE USED WHERE CONDUITS HAVE TO BE STACKED ON TOP OF ONE ANOTHER DUE TO SPACE LIMITATIONS.
2. COUPLING
3. REINFORCING STEEL RODS
4. OBSTRUCTION
5. TRENCH BOTTOM

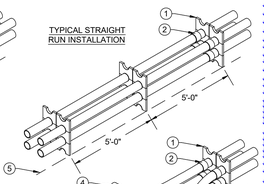
NOTES:
1. USE THESE DETAILS TO AVOID CONFLICTS WITH EXISTING OR NEW OBSTRUCTIONS.

2. SPACE SIGNAL AND COMMUNICATION CONDUIT 12" FROM POWER CONDUIT (ABOVE 120V)

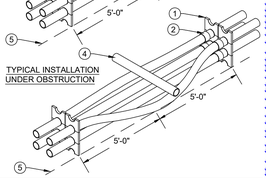
TYPICAL INSTALLATION AROUND OBSTRUCTION



TYPICAL STRAIGHT RUN INSTALLATION



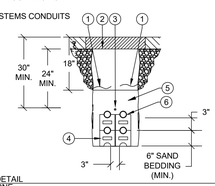
TYPICAL INSTALLATION UNDER OBSTRUCTION



4 CONDUIT TRANSITION DETAIL
SCALE: NONE

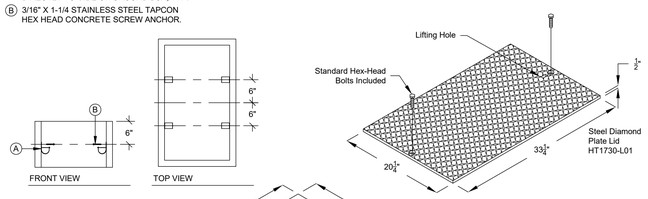
NOT USED

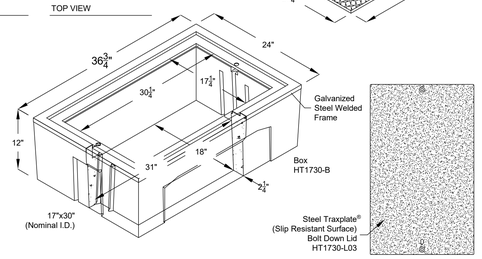
1. PLASTIC WARNING TAPE
2. LAST 12" AB MATERIAL AT 95% COMPACTION FOR ASPHALT AND CONCRETE, 90% FOR PLANTED AREAS
3. 10 AWG WIRE OR METAL TRACING TAPE PLACED ON TOP OF CONDUITS AND CONTINUOUS THROUGHOUT ENTIRE TRENCH LENGTH AND TERMINATING ON RISER UNISTRUT OR GROUNDING BAR IN GROUND BOX.
4. BOTTOM AND MIDDLE PLASTIC SPACERS EVERY 5'-0" SHALL BE USED WHERE CONDUITS HAVE TO BE STACKED ON TOP OF ONE ANOTHER DUE TO SPACE LIMITATIONS.
5. SAND AT 90% COMPACTION
6. SIGNAL SYSTEMS CONDUITS



7 TRENCH DETAIL
SCALE: NONE

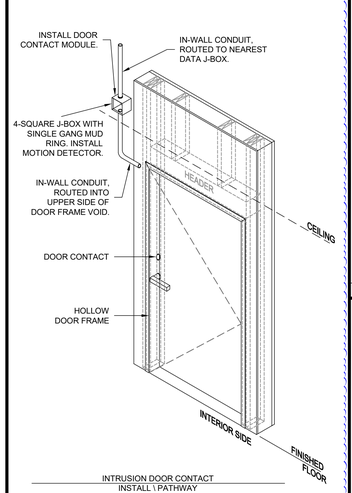
A J-HOOK, 2" CADDY (P/N CAT32), MOUNT DIRECTLY TO SIDE OF GROUND BOX, TYP.
B 3/16" X 1-1/4 STAINLESS STEEL TAPCON HEX HEAD CONCRETE SCREW ANCHOR.





MFG.	PART NO.	PRODUCT	DESCRIPTION	APPROX. WEIGHT	QTY. PER PALLET
JENSEN*	HT1730-B	BOX	17"x30"x12" Concrete Traffic Rated Box (Comes Standard With Hex Bolts)	290	6
JENSEN*	HT1730-E	EXTENSION	17"x30"x12" Concrete Extension	288	6
JENSEN*	HT1730-L01	LID	Steel Diamond Plate Bolt Down Lid	105	
JENSEN*	HT1730-L03	LID	Steel Traxplate® Bolt Down Slip Resistant Traffic Rated Lid	105	
* OR APPROVED EQUAL					

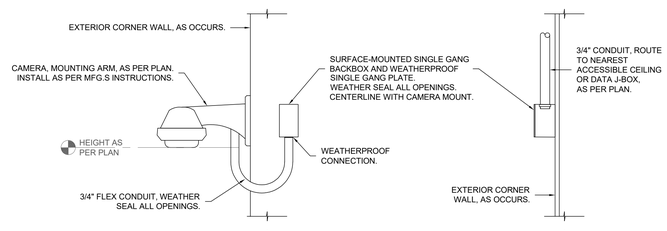
6 IN-GROUND PULL BOX DETAIL - HT1730
SCALE: NONE



INTRUSION DOOR CONTACT
INSTALL \ PATHWAY

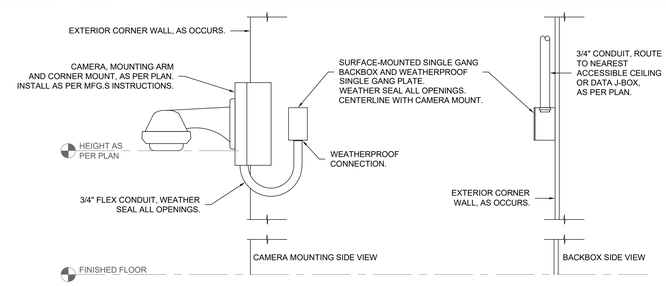
NOTE:
1) ALL CONDUIT TO BE 3/4" U.N.O.
2) STUBS CONDUIT FLUSH TO FRAMING AND WITH PLASTIC BUSHING
3) MOTION DETECTOR HEIGHT TO BE 6.5' (MINIMUM) TO 8' (MAXIMUM).

3 INTRUSION AND FUTURE ACCESS CONTROL DETAIL - WOOD STUD
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

DATE PLOTTED: 9/24/2024 8:49:58 AM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt

CONSTRUCTION DOCUMENT

AGENCY APPROVAL DSA# 01-121440

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REVISIONS

NO.	DATE	DESCRIPTION
1	11/18/2024	ADDENDUM #2

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TECHNOLOGY INFRASTRUCTURE DETAILS

INC.2

DRAWN BY: CS/SD JOB NUMBER: 23118.01

SHEET NO.
2T-802

DATE: NOVEMBER 07, 2024