# ADDENDUM # 01

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

Date: November 4, 2024

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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.

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**BID DEADLINE:**

The bid time shall not change.

**A. NEW SPECIFICATIONS**

**Item #1: 01 21 00 Allowances**
**Item #2: 01 23 00 Alternates and Unit Pricing**
**Item #3: 01 25 10 Product Options and Substitutions**
**Item #4: 01 26 10 Requests for Information**
**Item #5: 01 31 20 Cloud-Based PM Software MT 190806**
**Item #6: 01 32 16 Construction Schedule Network Analysis**
**Item #7: 01 45 29 Testing and Laboratory Services**
**Item #8: 01 50 00 Temporary Facilities and Controls**
**Item #9: 01 52 10 Site Standards**
**Item #10: 01 66 10 Delivery, Storage and Handling**
**Item #11: 01 78 23 Operation and Maintenance Data**
**Item #12: 01 78 36 Warranties**
**Item #13: 02 07 10 Lead Based Paint Abatement Specifications**
**Item #14: 02 08 50 Asbestos Abatement Specifications**
**Item #15: 09 65 19 Resilient Tile Flooring**
**Item #16: 09 68 13 Carpet Tile**
**Item #17: 23 08 00 Commissioning of HVAC Systems**
**Item #18: 26 08 00 Commissioning of Electrical Systems**

**B. NEW DRAWINGS –**

**Item #1: PW-1 STREET IMPROVEMENT PLAN**
**Item #2: PW-2 STREET IMPROVEMENT PLAN**
**Item #3: PW-3 STREET IMPROVEMENT PLAN**

**C. CHANGES TO SPECIFIATIONS**

**Item #1: 01 91 00 General Commissioning**

**D. CHANGES TO DRAWINGS**

**Item #1: 2A-251 – BLDG 3 & 4 FINISH & SIGNAGE PLAN** Provided updated flooring colors and options for LVT & Carpet Tile

**Item #2: 2A-252 – BLDG 6, 8 & 9 FINISH & SIGNAGE PLAN** Provided updated flooring colors and options for LVT & Carpet Tile

**Item #3: 2A-253 – BLDG 10, 11 & 12 FINISH & SIGNAGE PLAN** Provided updated flooring colors and options for LVT & Carpet Tile

**ATTACHMENTS**:
Rio Vista ES INC 02 – Phasing Plan

*SPECIFICATIONS*
01 21 00 Allowances
01 23 00 Alternates and Unit Pricing
01 25 10 Product Options and Substitutions
01 26 10 Requests for Information
01 31 20 Cloud-Based PM Software MT 190806
01 32 16 Construction Schedule Network Analysis
01 45 29 Testing and Laboratory Services
01 50 00 Temporary Facilities and Controls
01 52 10 Site Standards
01 66 10 Delivery, Storage and Handling
01 78 23 Operation and Maintenance Data
01 78 36 Warranties
01 91 00 General Commissioning
02 07 10 Lead Based Paint Abatement Specifications
02 08 50 Asbestos Abatement Specifications
09 65 19 Resilient Tile Flooring
09 68 13 Carpet Tile
23 08 00 Commissioning of HVAC Systems
26 08 00 Commissioning of Electrical Systems

*DRAWINGS*
2A-251 – BLDG 3 & 4 FINISH & SIGNAGE PLAN
2A-252 – BLDG 6, 8 & 9 FINISH & SIGNAGE PLAN
2A-253 – BLDG 10, 11 & 12 FINISH & SIGNAGE PLAN
PW-1 STREET IMPROVEMENT PLAN
PW-2 STREET IMPROVEMENT PLAN
PW-3 STREET IMPROVEMENT PLAN

Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt 10/23/2024 11:22:44 AM

PHASE 1

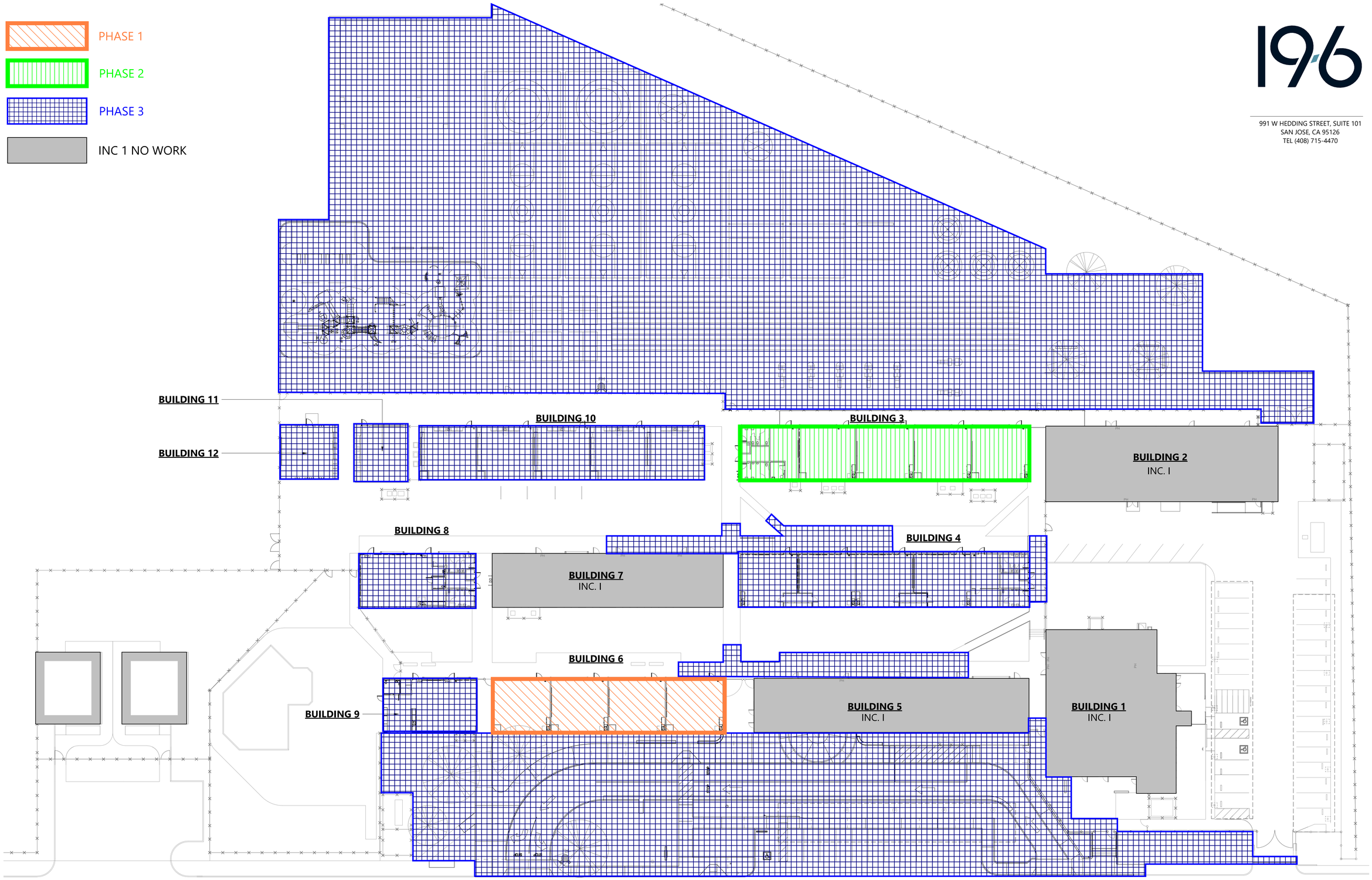
PHASE 2

PHASE 3

INC 1 NO WORK

19six

991 W HEDDING STREET, SUITE 101
SAN JOSE, CA 95126
TEL (408) 715-4470




# INC. II PHASING PLAN

## RIO VISTA ES MODERNIZATION & SITE IMPROVEMENTS

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

PROJECT NORTH

**DOCUMENT 01 21 00**

**ALLOWANCES**

## 1. GENERAL

### 1.1. RELATED DOCUMENTS AND PROVISION

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

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

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any).

1.1.4. Agreement;

1.1.5. Bid Form; and

### 1.2. SUMMARY

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

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

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

### 1.3. SELECTION AND PURCHASE

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

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

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

### 1.4. SUBMITTALS

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

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

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

### 1.5. COORDINATION

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

### 1.6. PAYMENT FOR ALLOWANCES

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

### 1.7. UNUSED MATERIALS

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

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

## 2. EXECUTION

### 2.1. EXAMINATION

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

### 2.2. PREPARATION

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

**END OF DOCUMENT**

**DOCUMENT 01 23 00**

**ALTERNATES AND UNIT PRICING**

## 1. ALTERNATES AND UNIT PRICES

### 1.1. RELATED DOCUMENTS AND PROVISIONS

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

1.1.1. General Conditions;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Bid Form and Proposal; and

1.1.5. Instruction to Bidders.

**END OF DOCUMENT**

# DOCUMENT 01 25 10

# PRODUCT OPTIONS AND SUBSTITUTIONS

## 1. GENERAL

### 1.1. RELATED DOCUMENTS AND PROVISIONS

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

1.1.1. General Conditions;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any); and

1.1.4. Instructions to Bidders.

### 1.2. DOCUMENT INCLUDES

1.2.1. Product options.

1.2.2. Limitations on Substitutions.

1.2.3. Regulatory Requirements.

1.2.4. Substitution Representation.

1.2.5. Submittal Procedure.

1.2.6. District's Review.

### 1.3. DEFINITIONS

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

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

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

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

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

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

1.3.2.2. When designated as a field test or experiment.

**1.4. PRODUCT OPTIONS**

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

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

**1.5. LIMITATIONS ON SUBSTITUTIONS**

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

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

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

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

**1.6. REGULATORY REQUIREMENTS**

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

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

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

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

**1.7. SUBSTITUTION REPRESENTATION**

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

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

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

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

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

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

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

**1.8. SUBMITTAL PROCEDURE**

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

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

1.8.3. Limit each request to one proposed substitution.

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

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

1.8.5.1. Statement of cause for substitution request.

1.8.5.2. Identify product by specification section and article number.

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

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

1.8.5.5. List availability of maintenance services and replacement materials.

1.8.5.6. Documented or confirmation of regulatory approval.

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

1.8.5.8. Fabrication and installation procedures.

1.8.5.9. Samples of proposed substitutions.

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

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

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

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

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

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

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

**1.9. DISTRICT'S REVIEW**

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

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

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

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

**END OF DOCUMENT**

SUBSTITUTION REQUEST FORM

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

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

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

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

Reason for not using specified item:

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

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

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

Supporting Data Attached:

☐ Product Data (indicate any options to be included)

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

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Undersigned certifies:

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

| | |
|---|---|
| Submitted by: | Firm: |
| Signature: | Date: |
| Comments: | |

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A/E Review:

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

| Signed by: | Date: |
|---|---|
| Comments: | |

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

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

| Signed by: | Date: |
|---|---|

| Comments: |
|---|

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End of Substitution Request Form

**END OF DOCUMENT**

# DOCUMENT 01 26 10

# REQUESTS FOR INFORMATION

## 1. GENERAL

### 1.1. RELATED DOCUMENTS AND PROVISIONS

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

1.1.1. General Conditions;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Documentation Requirements;

1.1.5. Electronic Data Transfer;

1.1.6. Submittals;

1.1.7. Contract Closeout and Final Cleaning;

1.1.8. Operation and Maintenance Data;

1.1.9. Warranties; and

1.1.10. Record Documents;

### 1.2. DESCRIPTION

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

### 1.3. PROCEDURES

1.3.1. Notification by Contractor:

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

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

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

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

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

1.3.1.6. Limit each RFI to one subject.

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

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

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

1.3.2. Contractor shall not:

1.3.2.1. Submit an RFI as a request for substitution.

1.3.2.2. Submit an RFI as a submittal.

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

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

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

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

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

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

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

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

1.3.3.4. Is not justified for any other reason.

**1.4. RESPONSE TIME**

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

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

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

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

**END OF DOCUMENT**

**SECTION 01 31 20**

**CLOUD-BASED PROJECT MANAGEMENT SOFTWARE**

## 1 GENERAL

### 1.1 GENERAL PROJECT MANAGEMENT OBJECTIVES:

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

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

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

### 1.2 SOFTWARE AND HARDWARE REQUIREMENTS:

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

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

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

### 1.3 SYSTEM MANAGEMENT AND USE:

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

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

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

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

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

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

**1.4 USE BY SUBCONTRACTORS:**

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

**1.5 COMMUNICATION PROCESS:**

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

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

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

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

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

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

**1.6 ARCHIVING:**

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

**ARTICLE 2 - PRODUCTS**

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

Procore® Project Management: www.procore.com

**ARTICLE 3 - EXECUTION**

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

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

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

END OF SECTION

# DOCUMENT 01 32 16

# CONSTRUCTION SCHEDULE – NETWORK ANALYSIS

## 1. GENERAL

### 1.1. RELATED DOCUMENTS AND PROVISION

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

1.1.1. General Conditions;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Coordination and Meetings; and

1.1.5. Submittals.

### 1.2. REFERENCES

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

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

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

### 1.3. PERFORMANCE REQUIREMENTS

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

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

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

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

1.3.5. Ensure coordination of jurisdictional reviews.

1.3.6. Prepare applications for payment.

1.3.7. Monitor progress of Work.

1.3.8. Prepare proper requests for changes to Contract Time.

1.3.9. Prepare proper requests for changes to Construction Schedule.

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

## 1.4. QUALITY ASSURANCE

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

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

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

## 1.5. QUALIFICATIONS

1.5.1. **Scheduler**:

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

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

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

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

## 1.6. SUBMITTALS

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

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

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

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

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

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

## 1.7. REVIEW AND EVALUATION

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

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

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

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

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

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

## 1.8. FORMAT

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

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

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

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

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

1.8.6. Illustrate complete sequence of construction by activity.

1.8.7. Provide legend of symbols and abbreviations used.

## 1.9. COST AND SCHEDULE REPORTS

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

1.9.1.1. Description.

1.9.1.2. Interface with outside contractors or agencies.

1.9.1.3. Number.

1.9.1.4. Preceding and following number.

1.9.1.5. Duration.

1.9.1.6. Earliest start date.

1.9.1.7. Earliest finish date.

1.9.1.8. Actual start date.

1.9.1.9. Actual finish date.

1.9.1.10. Latest start date.

1.9.1.11. Latest finish date.

1.9.1.12. Total and free float.

1.9.1.13. Identification of critical path activity.

1.9.1.14. Monetary value keyed to Schedule of Values.

1.9.1.15. Manpower requirements.

1.9.1.16. Responsibility.

1.9.1.17. Percentage complete.

1.9.1.18. Variance positive or negative.

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

1.9.2.1. Description.

1.9.2.2. Number.

1.9.2.3. Total cost.

1.9.2.4. Percentage complete.

1.9.2.5. Value prior to current period.

1.9.2.6. Value this period.

1.9.2.7. Value to date.

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

1.9.3.1. By activity number.

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

1.9.3.3. By responsibility in order of earliest start date.

1.9.3.4. In order of latest start dates.

1.9.3.5. In order of latest finish dates.

1.9.3.6. Application for payment sorted by Schedule of Values.

1.9.3.7. Listing of activities on critical path.

1.9.4. Listing of basic input data which generates schedule.

## 1.10. CONSTRUCTION SCHEDULE

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

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

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

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

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

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

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

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

1.10.6.2. Shall designate critical path or paths.

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

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

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

1.10.6.6. Approximate cost and duration of each activity.

1.10.6.7. Shall contain seasonal weather considerations.

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

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

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

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

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

1.10.6.13. Designate critical path or paths.

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

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

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

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

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

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

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

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

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

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

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

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

1.10.7.6. Each activity shall have manpower-loading assigned.

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

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

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

1.10.8.1. Preparation of shop drawings and sample submissions.

1.10.8.2. Review of shop drawings and samples.

1.10.8.3. Finish and color selection.

1.10.8.4. Fabrication and delivery.

1.10.8.5. Erection or installation.

1.10.8.6. Testing.

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

## 1.11. SHORT INTERVAL SCHEDULE

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

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

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

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

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

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

1.11.7. Show each activity in proper sequence.

1.11.8. Indicate graphically sequences necessary for related activities.

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

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

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

**1.12. REQUESTED TIME ADJUSTMENT SCHEDULE**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**1.13. RECOVERY SCHEDULE**

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

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

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

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

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

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

1.13.5.2. Construction Schedule will be resumed.

**1.14. UPDATING SCHEDULES**

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

for Payment.

1.14.2. Maintain schedules to record actual prosecution and progress.

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

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

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

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

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

1.14.6.2. Actual start dates for activities currently in progress.

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

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

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

1.14.6.6. Progress analysis describing problem areas.

1.14.6.7. Current and anticipated delay factors and their impact.

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

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

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

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

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

**1.15. DISTRIBUTION**

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

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

## 2. PRODUCTS

### 2.1. SCHEDULING SOFTWARE

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

### 2.2. ELECTRONIC DATA

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

**END OF DOCUMENT**

# DOCUMENT 01 45 29

# TESTING LABORATORY SERVICES

## 1. GENERAL

### 1.1. RELATED DOCUMENTS AND PROVISION

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

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

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any).

### 1.2. DOCUMENT INCLUDES

1.2.1. Observation and Supervision.

1.2.2. Testing Laboratories and Agencies

1.2.3. Tests and Inspections

1.2.4. Selection and Payment

1.2.5. District's Testing Laboratory Responsibilities

1.2.6. Laboratory reports.

1.2.7. Limits on testing laboratory authority.

1.2.8. Contractor responsibilities.

1.2.9. Schedule of inspections and tests.

1.2.10. Project Inspector’s Access to Site

### 1.3. REFERENCES

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

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

1.3.3. CBC - California Building Code.

1.3.4. UBC - Uniform Building Code.

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

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

**1.4. OBSERVATION AND SUPERVISION**

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

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

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

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

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

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

**1.5. TESTING LABORATORIES AND AGENCIES**

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

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

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

**1.6. TESTS AND INSPECTIONS**

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

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

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

1.6.3.1. Tests and observations for earthwork and pavings.

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

1.6.3.3. Tests and inspections for structural steel work.

1.6.3.4. Field tests for framing lumber moisture content.

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

1.6.3.6. Test and observation of welding and expansion anchors.

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

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

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

1.6.4.2. Uncovering of work in accordance with Contract Documents.

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

1.6.4.4. Testing done off site.

1.6.5. Testing and inspection reports and certifications:

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

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

**1.7. SELECTION AND PAYMENT**

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

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

**1.8. DISTRICT'S TESTING LABORATORY RESPONSIBILITIES**

1.8.1. Test samples of mixes submitted by Inspector.

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

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

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

**1.9. LABORATORY REPORTS**

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

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

**1.10. LIMITS ON TESTING LABORATORY AUTHORITY**

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

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

1.10.3. Laboratory may not assume any duties of Contractor.

1.10.4. Laboratory has no authority to stop the Work.

**1.11. CONTRACTOR RESPONSIBILITIES**

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

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

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

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

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

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

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

**1.12. SCHEDULE OF INSPECTIONS AND TESTS**

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

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

1.12.1. **Plumbing**

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

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

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

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

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

1.12.4. **Electrical**

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

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

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

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

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

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

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

**END OF DOCUMENT**

**DOCUMENT 01 50 00**

**TEMPORARY FACILITIES AND CONTROLS**

## 1. GENERAL

### 1.1. RELATED DOCUMENTS AND PROVISIONS

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

1.1.1. General Conditions;

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Site Standards; and

1.1.5. Temporary Tree and Plant Protection.

### 1.2. TEMPORARY UTILITIES

1.2.1. **Electric Power and Lighting**:

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

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

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

1.2.2. **Heat and Ventilation**:

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

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

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

required for the performance of the Work.

1.2.3. **Water**:

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

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

1.2.4. **Sanitary Facilities**:

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

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

1.2.5. **Telephone Service**:

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

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

1.2.6. **Fire Protection:**

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

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

1.2.7. **Trash Removal:**

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

1.2.8. **Temporary Facilities:**

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

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

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

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

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

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

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

**1.3. CONSTRUCTION AIDS**

1.3.1. **Plant and Equipment:**

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

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

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

**1.4. BARRIERS AND ENCLOSURES**

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

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

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

**1.5. SECURITY**

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

## 1.6. TEMPORARY CONTROLS

1.6.1. **Noise Control**:

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

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

1.6.2. **Noise and Vibration**:

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

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

1.6.3. **Dust and Dirt**:

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

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

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

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

1.6.4. **Surface and Subsurface Water:**

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

1.6.5. **Pollution**:

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

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

limitation, demolition, construction, and disposal operations.

1.6.6. **Lighting**

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

## 1.7. JOB SIGN(S)

1.7.1. **General:**

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

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

1.7.2. **Materials:**

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

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

1.7.2.3. Rough Hardware: Galvanized.

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

1.7.3. **Fabrication:**

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

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

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

1.7.3.4. Text and Graphics: As indicated.

## 1.8. PUBLICITY RELEASES

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

**END OF DOCUMENT**

**DOCUMENT 01 52 10**

**SITE STANDARDS**

## 1. GENERAL

### 1.1. RELATED DOCUMENTS AND PROVISIONS:

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

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

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Drug-Free Workplace Certification;

1.1.5. Tobacco-Free Environment Certification;

1.1.6. Criminal Background Investigation/Fingerprinting Certification; and

1.1.7. Temporary Facilities and Controls.

### 1.2. REQUIREMENTS OF THE DISTRICT

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

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

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

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

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

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

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

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

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

1.2.4. **Traffic**:

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

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

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

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

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

**END OF DOCUMENT**

# DOCUMENT 01 66 10

# DELIVERY, STORAGE AND HANDLING

## 1. GENERAL

### 1.1. RELATED DOCUMENTS AND PROVISIONS

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

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

1.1.2. Special Conditions.

### 1.2. PRODUCTS

1.2.1. Products are as defined in the General Conditions.

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

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

### 1.3. TRANSPORTATION AND HANDLING

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

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

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

### 1.4. STORAGE AND PROTECTION

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

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

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

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

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

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

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

**END OF DOCUMENT**

# DOCUMENT 01 78 23

# OPERATION AND MAINTENANCE DATA

## 1. GENERAL

### 1.1. RELATED DOCUMENTS AND PROVISIONS

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

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

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Submittals;

1.1.5. Contract Closeout and Final Cleaning;

1.1.6. Warranties;

1.1.7. Record Documents;

1.1.8. General Commissioning Requirements.

### 1.2. QUALITY ASSURANCE

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

### 1.3. FORMAT

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

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

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

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

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

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

**1.4. CONTENTS, EACH VOLUME**

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

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

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

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

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

**1.5. MANUAL FOR MATERIALS AND FINISHES**

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

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

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

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

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

**1.6. MANUAL FOR EQUIPMENT AND SYSTEMS**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**1.7. SUBMITTAL**

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

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

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

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

**END OF DOCUMENT**

# DOCUMENT 01 78 36

# WARRANTIES

## 1. GENERAL

### 1.1. RELATED DOCUMENTS AND PROVISIONS

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

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

1.1.2. Special Conditions (if any);

1.1.3. Supplemental Conditions (if any);

1.1.4. Submittals;

1.1.5. Contract Closeout and Final Cleaning;

1.1.6. Operation and Maintenance Data;

1.1.7. Record Documents;

1.1.8. General Commissioning Requirements.

### 1.2. FORMAT

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

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

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

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

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

### 1.3. PREPARATION

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

1.3.2. Contractor shall verify that Warranties.

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

1.3.4. Contractor shall co-execute submittals when required.

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

**1.4. TIME OF SUBMITTALS**

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

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

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

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

**END OF DOCUMENT**

# SECTION 01 91 00 - GENERAL COMMISSIONING

## PART 1 – GENERAL

### 1.1 RELATED SECTIONS

A. 23 08 00 Commissioning of HVAC Systems

B. 26 08 00 Commissioning of Electrical Systems

### 1.2 DESCRIPTION OF WORK

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

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

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

1. Verify that applicable equipment and systems are installed according to the manufacturer's recommendations and to industry accepted standards, that they meet design intent, and that they receive adequate operational checkout by installing contractors.

2. Verify and document proper performance of equipment and systems.

3. Verify that O&M documentation is provided to Owner.

4. Verify that the Owner's operating personnel are adequately trained.

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

1.3 ABBREVIATIONS

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

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

1.4 DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

1.5 COMMISSIONING PROCESS

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

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

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

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

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

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

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

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

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

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

1.6 SCOPE OF WORK

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

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

1.7 COMMISSIONING TEAM

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

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

1.8 COMMISSIONING AUTHORITY'S RESPONSIBILITIES

A. General

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

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

B. Construction and Acceptance Phase

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

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

## 1.9 DESIGN TEAM RESPONSIBILITIES

A. Construction and Acceptance Phase

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

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

1.10 OWNER'S REPRESENTATIVE (PM) RESPONSIBILITIES

A. Construction and Acceptance Phase

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

1.11 GENERAL CONTRACTOR (GC) RESPONSIBILITIES

A. Construction and Acceptance Phase

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

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

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

1.12 EQUIPMENT SUPPLIERS

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

B. Assist in equipment testing per agreements with Subs.

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

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

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

1.13 SYSTEMS TO BE COMMISSIONED

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

## 1.14 COMMISSIONING DOCUMENTATION

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

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

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

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

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

## 1.15 SUBMITTALS

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

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

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

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

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

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

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

PART 2 – PRODUCTS

2.1 TEST EQUIPMENT

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

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

2.2 RECORDING

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

1. HVAC and Controls
2. Lighting and Lighting Controls

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

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

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

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

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

PART 3 – EXECUTION

3.1 COMMISSIONING PROCESS

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

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

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

3.2 SYSTEM READINESS CHECKLIST

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

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

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

C. Execution of the SRC

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

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

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

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

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

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

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

## 3.3 FUNCTIONAL PERFORMANCE TESTING

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

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

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

D. Objectives and Scope.

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

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

E. Development of Test Procedures.

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

F. Test Methods.

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

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

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

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

G. Coordination and Scheduling

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

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

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

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

## 3.4 DEFICIENCY RESOLUTION

A. Documentation

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

B. Non-Conformance.

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

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

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

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

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

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

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

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

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

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

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

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

6. Cost of Retesting

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

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

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

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

C. Failure Due to Manufacturer Defect

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

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

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

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

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

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

D. Approval

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

## 3.5 OPERATIONS AND MAINTENANCE DOCUMENTATION

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

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

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

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

3.6 TRAINING OF OWNER PERSONNEL

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

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

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

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

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

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

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

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

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

3.7 DEFERRED TESTING

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

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

3.8 FINAL REPORT

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

END OF SECTION 01 91 00

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# SPECIFICATIONS

**FOR**

**LEAD-BASED PAINT (LBP) ABATEMENT / HAZARD CONTROL**

**APPLICABLE TO**

**RIO VISTA ELEMENTARY SCHOOL**
**611 PACIFIC AVE.**
**BAY POINT, CA 94565**

**FOR**

**MOUNT DIABLO UNIFIED SCHOOL DISTRICT**
**MS. MELANIE KOSLOW**
**DIRECTOR OF FACILITIES & BONDS**
**MAINTENANCE & OPERATIONS**
**1480 GASOLINE ALLEY**
**CONCORD, CA 94520**

**Prepared by:** _____

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**BS, IH, CDPH: I/A #4063, PM #4064**

**March 21, 2024**

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## 1.0 PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

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

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

C. The following Lead-Based Paint (LBP) Abatement / Hazard Control Specifications for Rio Vista Elementary School, 611 Pacifica Ave., Bay Point, CA 94565, shall be fully complied with by the Contractor.

### 1.2 SCOPE OF WORK

A. LBP Components:

LBP was identified on a number of exterior and interior window systems. A couple were identified as Lead-Containing Paint (LCP) one at "below the limit of detection". For the purposes of these specifications, assume all paint on the window systems as LBP.

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

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

D. This specification, and related documents, shall constitute the definition of the Lead-Based Paint abatement / hazard control project.

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

## 1.3 DESCRIPTION OF WORK

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

A. Baseline Assessments:

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

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

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

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

B. Work Area Preparation & Inspection:

1. Work Area Preparation

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

2. The Contractor shall request the Owner or his Representative to inspect the work area containment/enclosure.

C Worker Protection Overview:

1. LBP Abatement Work:

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

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

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

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

D. LBP Abatement & Visual Clearance:

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

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

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

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

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

## 1.4 EXISTING SITE CONDITIONS

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

## 1.5 DEFINITIONS AND ABBREVIATIONS

The following definitions apply to the work of this specification:

1. AA - Atomic absorption.

2. AC - Alternating current.

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

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

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

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

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

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

9. ANSI - American National Standards Institute.

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

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

12. ASME - American Society of Mechanical Engineers.

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

14. ASTM - American Society for Testing and Materials.

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

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

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

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

19. CDPH - California Department of Public Health

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

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

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

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

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

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

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

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

28. DF - Decontamination Facility.

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

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

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

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

33. DOT - Department of Transportation.

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

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

36. ENCLOSURE - See Containment Area and Barrier.

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

38. EP - Extraction procedure.

39. EPA - Environmental Protection Agency

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

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

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

43. EU - Exhaust Unit.

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

45. FACILITY - All contiguous land, structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units, e.g., one or more landfills, surface impoundments, or a

combination of them.

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

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

48. $ft^2$ - Square feet.

49. CF - Cubic feet.

50. CFM - Cubic feet per minute.

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

52. GFCI - Ground fault circuit interrupter.

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

54. $H_2O$- Water.

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

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

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

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

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

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

    * Is a mixture containing a listed hazardous waste and a nonhazardous solid

waste (unless the mixture is specifically excluded or no longer exhibits any of the characteristics of hazardous waste).

* Is not excluded from regulation as a hazardous waste.

56. HEPA - High efficiency particulate air.

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

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

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

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

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

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

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

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

65. kg - Kilogram(s).

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

67. LBP - Lead-Based Paint .

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

69. LBP ABATEMENT - A comprehensive process (removal, encapsulation,

enclosure, etc.) of eliminating exposure or potential exposure to lead paint and lead dust which must include monitoring, measures for worker protection, containment of dust and debris, cleanup and disposal of waste, and clearance testing.

70. LCP - Lead-Containing Paint

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

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

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

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

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

76. LND - Lead Not Detected

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

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

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

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

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

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

83. mil - Millimeter.

84. NAM - Negative air machine.

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

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

87. NEMA - National Electrical Manufacturers Association.

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

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

90. OSHA - Occupational Safety and Health Administration.

91. PAPR - Powered air purifying respirator.

92. PEL - Permissible exposure limit.

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

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

95. psi - Pounds per square inch.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

111. TWA - Time weighted average.

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

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

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

115. µg/g - Microgram/gram.

116. µm - Micrometer.

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

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

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

120. WORK PRACTICE CONTROL - See Engineering Controls.

## 1.6 STANDARDS AND GUIDELINES

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

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

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

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

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

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

E. OCCUPATIONAL SAFETY AND HEALTH ACT

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

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

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

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

Copies of these standards are available from OSHA.

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

F. STATE AND LOCAL REQUIREMENTS

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

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

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

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

G. OTHER REQUIREMENTS

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

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

## 1.7 SUBMITTALS AND NOTICES

**Post-Contract Award Submittals -**

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

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

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

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

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

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

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

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

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

3. Copies of all permits.

**C. Pre-Construction Submittals -**

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

1. The following documentation on individual Contractor employees:

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

2. Weekly work schedule.

3. Method of application and materials to be used.

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

**D. Weekly Submittals:**

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

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

2. Test results for area and personal air monitoring.

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

## 1.8 EXPERIENCE AND WORKMANSHIP

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

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

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

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

## 1.9 PERSONNEL TRAINING AND PROTECTION

A. <u>Personnel Training</u>

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

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

B. Biological Monitoring

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

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

C. Initial Determination

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

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

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

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

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

D. Respiratory Protection

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

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

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

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

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

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

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

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

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

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

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

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

E. Personal Protective Equipment

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

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

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

F. Personal Hygiene Practices

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

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

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

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

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

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

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

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

* All workers must shower upon leaving work area.

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

G. Periodic Exposure Monitoring

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

(10%) of the Contractor's employees.

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

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

H. Area Monitoring

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

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

## 1.10 STOPPING THE WORK

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

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

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

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

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

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

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

## 1.11 SITE SECURITY

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

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

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

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

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

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

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

## 1.12 EMERGENCY PLANNING

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

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

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

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

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

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

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

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

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

## 1.13 PRE-CONSTRUCTION MEETING

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

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

1. Preparation of work area.

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

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

4. Decontamination procedures for personnel, work area and equipment.

5. Lead abatement methods and procedures to be utilized.

6. Required air monitoring procedures.

7. Procedures for handling and disposing of waste materials.

8. Procedures for final decontamination and clean-up.

9. Detailed work and performance schedule.

10. Procedures for dealing with heat stress.

11. Emergency procedures.

## 2.0 PART 2 - PRODUCTS

### 2.1 SUBSTITUTION OF MATERIALS AND/OR METHODS

A. Any substitution in materials or methods to those specified shall be approved by the Consultant and Owner or his Representative prior to use. Any requests for substitution shall be provided in writing to the Consultant and the Owner or his Representative. The request shall clearly state the rationale for the substitution.

B. Submit to the Consultant and the Owner or his Representative product data and samples of all materials to be considered as an alternate.

C. Product data shall consist of manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, safety data sheets (SDS) and other standard descriptive data. SUBMITTALS data shall be clearly marked to identify pertinent materials, products or models and show performance characteristics and capacities. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product or material with integrally related parts and attachment devices.

D. No work shall begin which requires SUBMITTALS for approval until the Consultant has "approved" or "approved as noted" the SUBMITTALS.

### 2.2 MATERIALS AND SUPPLIES

A. All materials, tools, and equipment listed herein required shall be provided by the abatement contractor.

B. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name, and labeling as required by 29 CFR 1910.1200, Hazard Communication Standard.

C. Store all materials that are subject to damage off the ground, away from wet or

damp surfaces, and under cover sufficient to prevent damage or contamination.

D. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with lead shall be disposed of in accordance with the applicable regulations.

E. Polyethylene Sheeting - 6 mil thickness, unless otherwise specified, in sizes to minimize the frequency of joints.

F. Tape - Capable of sealing joints of adjacent sheets of plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under dry and wet conditions, including use of amended water, chemical removers, or removal encapsulates.

G. Chemical Remover - Suitable to aid in removal of lead, as necessary.

H. Warning Labels and Signs - As required by OSHA Regulations, 29 CFR 1910.1025. All warning signs provided for this project must be in both English and Spanish.

I. Encapsulant - Product shall have UL approval.

J. Other Materials - Provide all other materials as specified in drawings; also, other materials such as lumber, nails, and hardware, which may be required to construct and dismantle the decontamination area and the barriers that isolate the work area.

## 2.3 TOOLS AND EQUIPMENT

A. Provide suitable tools for removal, including a sufficient number of HEPA vacuums to assure proper and efficient clean-ups.

B. All HEPA vacuums, and as required, all negative air machines shall be DOP tested and certified on site by an trained/authorized, third-party testing firm.

C. Powered Air Purifying Respirator (PAPR) - A positive pressure device which employs a portable, rechargeable battery pack and blower to force contaminated air through a filter or cartridge, where the air is cleaned and supplied to the wearer's breathing zone. This respirator shall utilize HEPA filters and be either half-mask or full face piece units.

D. Half-face air purifying respirator with canisters containing HEPA filters.

E. Full-face air purifying respirator with canisters containing HEPA filters.

F. Temporary electrical cords and outlets shall be of an approved type and connected to a source of power outside of the work area and protected by a ground fault circuit interrupter (GFCI) as directed by Consultant or the Owner or his Representative.

G. Temporary Electrical Panels and Emergency Generator - Provide temporary electrical panels and emergency generator sized, properly grounded and equipped to accommodate all electrical equipment and lighting required for abatement work.

## 3.0 PART 3 - EXECUTION

### 3.1 WORK SCHEDULE

A. The work is to be carried out diligently to completion with utmost speed. The Contractor shall furnish to the Owner or his Representative for approval a schedule showing anticipated starting and completion dates for each removal phase, area, unit and/or building. This schedule shall be furnished to the Owner within five (5) calendar days from issuance of the Owner‘s written Notice to Proceed. The schedule shall be reviewed weekly and updated, as required.

B. If, in the opinion of the Owner or his Representative, it becomes necessary to work additional men for maintaining the schedule for the completion of any phase of the project within the specified time, the Contractor must immediately do so upon written request by the Owner or the Owner;s Representative.

C. Site work shall proceed immediately upon approval of the Contractor's LBP Work Plan by the Owner or his Representative.

D. During the project, work will be phased and coordinated with other projects concurrent with this project.

### 3.2 INSPECTIONS BY THE CONTRACTING OFFICER

A. Owner or his Representative shall inspect the site preparation work as outlined herein to ensure that:

1. The facility is adequately sealed off, and the decontamination enclosure system and waste storage area are in place.

2. Half-face and/or full-face respirators are on site and a sufficient number of HEPA filters are available.

3. The Contractor SHALL NOT PROCEED with the removal phase of work until such time as the Owner or his Representative has inspected the site preparation work and given the Contractor Notice to Proceed (AREA PREPARATION).

B. The Owner or his Representative shall inspect the removal work and work area upon its completion within the building or section thereof to ensure that all visible LBP has been removed. The Contractor SHALL NOT PROCEED with the next phase of the work, prime, seal or spray any encapsulant on the building systems until such time as the Owner or his Representative inspected the facility and given

the Contractor authorization to proceed.

C. After abatement, the Owner or his Representative shall inspect the adequacy of the work within the building or section thereof. The Contractor SHALL NOT PROCEED with final clean-up until an authorization has been issued.

D. All inspections by the Owner or his Representative shall be scheduled by the Contractor at least 8 working hours in advance. Reinspection may be scheduled 2 working hours in advance.

E. The Owner or his Representative will inspect the facilities daily, as necessary or as directed, to ensure compliance with these specifications. The Owner or his Representative will be on-site at all times during the performance of LBP stabilization work.

F. The Owner or his Representative is not limited by the inspection requirements as noted above; additional safety and health inspections by the Owner Representative will occur randomly.

## 3.3 PREPARATION OF WORK AREA

A. Remove Objects: The Contractor performing the LBP abatement and LBP Hazard Control work shall remove all movable objects from the work area. Cover all non-movable objects and furnishings with 6-mil plastic, sealing them with waterproof tape and industrial staples.

B. Pre-Clean Work Area: LBP Hazard Control work generally requires less pre-cleaning, although HEPA vacuuming the area is recommended.

C. Work Area Containments: Preparation of the work area is dependent upon the terrain and configuration of the individual buildings. Where there is a grade on the exterior ground, the protective 6-mil plastic shall be bermed to keep the paint chip / dust within the protective layer of plastic. The height of the berm shall be sufficient to prevent LBP debris from contaminating other clean areas.

1. The number and sequence of containments shall be identified in the work plan.

D. Signs: Except in emergency situations, at least three (3) days before removing or encapsulating lead paint, the Contractor shall post warning signs immediately outside all entrances and exits to the work area.

1. The Contractor shall keep the signs posted until the Owne0'sr Representative issues a notice of completion after final inspection and clearance testing have been performed and approved.

2. The Contractor shall insure that the warning signs meet the following description:

The sign is at least 20" by 14" and states the date and place of the lead abatement project;

The sign includes the phrase, "Caution Lead Hazard, Keep Out" in bold lettering at lease two inches high.

E. Exits: Maintain emergency and fire exits from the work areas, or establish adequately marked alternative exits satisfactory to the Owner or his Representative.

## 3.4 LBP DISTURBANCE SHALL NOT COMMENCE UNTIL:

A. The LBP Abatement Work Plan, and all required submittals and notices have been reviewed and approved by the Owner or his Representative.

B. Arrangements have been made for disposal of waste at acceptable sites.

C. Arrangements have been made for containing and/or disposal of waste water resulting from showering and other lead based paint stabilization activities.

D. Work areas, decontamination enclosure system, and waste load-out area are effectively segregated.

E. Dumpster or containers are leak tested.

F. Tools, equipment, and material waste receptacles are on-site.

G. All respirators are on-site and fully operative.

H. A visitor and employee log-in/log-out system is in place at the job site. All persons entering the site will be required to sign in and sign out. Bound, pre-paginated ledgers shall be employed for the sign-in, sign-out system.

## 3.5 ENCLOSURE AND WASTE LOAD-OUT AREA

1. All double-bagged waste shall be transported to dumpster by sealed, portable containers. The dumpster and portable container shall be fully lined (exclusive of ceiling) with one layer of 6 mil polyethylene sheeting. Dumpster and portable containers shall be leak tight and tested by the Contractor.

## 3.6 MAINTENANCE OF ENCLOSURE SYSTEM (when necessary)

A. Ensure that barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.

B. Use smoke methods to test effectiveness of barriers and the negative air pressure system when directed by the Owner or his Representative.

## 3.7 CLEAN-UP PROCEDURES

A. General: When active LBP abatement work is taking place, the work site shall be cleaned at the end of each day's activities. Disposable supplies such as mop heads, sponges, and rags shall be replaced regularly and disposed of according to the contract documents. Durable equipment, such as power and hand tools, generators, and vehicles shall be cleaned daily. All equipment shall be cleaned by HEPA vacuuming and wet wipe methods.

B. All clean-up procedures, as described herein, shall be completed before the removal of the six (6) mil plastic sheeting on vents, windows, etc.

C. Clean-Up Methods and Equipment: Areas in which LBP stabilization operations have been completed shall be cleaned, by using a high efficiency particulate air (HEPA) vacuum, followed by a wet cleaning with an approved cleaning agent.

D. High Efficiency Particulate Air (HEPA) Vacuum: The Contractor shall obtain HEPA vacuum attachments, such as various sized brushes, crevice tools, and angular tools to be used for varied application, and service the HEPA vacuum routinely to assure proper operation. Caution shall be taken any time the HEPA is opened for filter replacement or debris removal. Operators shall wear a full set of protective clothing and equipment, including respirators, when using the HEPA vacuuming equipment.

E. Wet Cleaning with approved cleaning agent. Detergent solutions should be replaced after each individual area has been washed unless the Contractor has used a garden spray application and vacuumed the surface. The waste water from cleanup shall be contained and disposed of according to the contract document.

F. Removal of Plastic Sheeting: The plastic sheeting covering the ground shall be HEPA-vacuumed and wet wiped prior to removal. The plastic sheeting shall be carefully folded from the corners and ends toward the middle and placed into a double four (4) mil or single six (6) mil plastic bag and sealed. Bags shall be stored in the designated area and disposed of according to the specifications.

G. Triple Clean: The entire area shall be HEPA-vacuumed, washed, and HEPA-vacuumed again. No dry sweeping is allowed. After this cleaning, any surfaces requiring painting such as wood windows/doors, wood trims, plaster walls, or plaster ceilings shall be sealed or primed with an approved product.

H. Final Cleanup and Inspection: The entire area shall be HEPA-vacuumed, washed with an approved cleaning agent, and HEPA-vacuumed, washed with an approved cleaning agent, and then HEPA-vacuumed again. No dry sweeping is allowed. Enviro-STAR will then visually inspect the entire area to ensure that all abated surfaces and floors have been properly cleaned. All disposal supplies used during cleanup, such as mop heads, sponges, etc., shall be disposed of according to the specifications.

J. No statements in this section are meant to relieve the Contractor of his responsibility to meet the final cleanup criteria as established by these contract documents or any other applicable laws or regulations.

## 3.8 FINAL CLEARANCE TESTING & STANDARDS

A. After the lead paint abatement, clean-up and waste removal, the Owner's Representative shall conduct periodic wipe tests for the completed work, in accordance with the requirements and procedures of the HUD LBP Guidelines and the U.S. Environmental Protection Agency.

B. Wipe samples will be taken in a randomly-selected window sills, as applicable, in each area. Samples will be submitted for analysis by a qualified laboratory utilizing ICP or AA spectroscopy.

C. The Contracting Officer's Representative shall compare the test results to the HUD guidelines for post-abatement clearances, as follows:

| | | |
|---|---|---|
| 1. | Interior Floors: | 10 micrograms per square foot. |
| 2. | Window Sills: | 100 micrograms per square foot. |
| 3. | Exterior Window Sills, Floors & Walkways: | 400 micrograms per square foot. |

D. If the test results indicate higher levels, the Contractor shall repeat the clean-up procedure and retest for dust until the area is tested and found to contain an acceptable level of lead dust.

## 3.9 WASTE STREAM SEGREGATION, TESTING & STORAGE

A. All wastes will be segregated into the follow categories:

1. Paint chips and dust,
2. Removed LBP components, parts, large debris;
3. Used cleaning materials (rags, mop) and small debris;
4. Used disposable protective clothing, plastic sheeting and tape.

B. All waste will be containerized or bagged in six (6) mil plastic bags or sealed in six (6) mil plastic, as appropriate, waste containers, bags, packages and labeled pending analysis with the following information:

1. Waste category
2. Date accumulated
3. Name, address of Contracting Officer or his Representative

The labeling of individual waste containers, bags and packages may be simplified by using A, B, C, and as applicable, D to identify waste categories 1 - 4,

respectively.

The above segregation and labeling system shall not exempt the Contractor from compliance with Federal, State and Local laws, regulations, and ordinances on hazardous waste storage and transportation. It is intended to facilitate waste segregation, handling and storage and to reduce the volume of hazardous waste.

C. Each category of potential lead waste shall be tested and interpreted, as follows:

1. Title 22 CCR - Total Threshold Limit Concentration (TTLC) <1,000 ppm = nonhazardous waste, if greater than 50 ppm, must be analyzed by STLC method.

2. Title 22 CCR - Soluble Threshold Limit Concentrations (STLC) <5 ppm = nonhazardous waste

3. USEPA - Toxicity Characteristic Leaching Procedure (TCLP) <5 ppm = nonhazardous waste

D. If the waste is determined to be hazardous by any of these tests, each such container represented by that result must be labeled as hazardous waste according to Title 2 Section 16508.

E. Storage, transportation, and disposal must be in accordance with local, state and federal requirements.

F. Temporary, secure storage of waste (on-site) shall be the responsibility of the abatement contractor. Storage of hazardous waste for greater than 90 days is prohibited without special permits. It is the responsibility of the Contractor to ensure that hazardous waste is not stored on-site more than 90 days from the date of accumulation.

DO NOT REMOVE WASTE FROM THE SITE
UNTIL IT HAS BEEN CHARACTERIZED BY LABORATORY ANALYSIS
AND RELEASED BY THE CONTRACTING OFFICER OR HIS REPRESENTATIVE

## 3.10 DISPOSAL OF WASTE MATERIAL

A. The Contractor shall contact the regional EPA, state, and local authorities to determine lead-based paint debris disposal requirements. RCRA requirements shall be complied with as well as applicable state solid waste plan requirements.

B. During the actual lead abatement project, the Contractor shall not leave debris in the yard or nearby property, incinerate debris, dump waste by the road or in an unauthorized dumpster, or introduce lead-contaminated water into storm water (will not be flushed down yard inlet or street drain) or sanitary sewers (will not be flushed down toilet or other household drain).

C. Testing of lead-based paint waste materials by use of the TCLP, STLC and TCLP test shall be completed by the Owner or his Representative and the results made available to the Contractor.

D. The following materials, at a minimum, shall be tested to determine whether or not they are hazardous:

1. Paint chips and large construction debris (having a lead concentration more than 1% is considered hazardous);

2. Waste water (if any);

3. Dust from HEPA filters and from damp sweeping;

4. Plastic sheets, duct tape, or tape used to cover floors and other services during the lead-based paint removal;

5. Liquid waste, such as wash water used to decontaminate wood after solvents have been used, and liquid waste from exterior water blasting;

6. Rags, sponges, mops, HEPA filters, respirator cartridges, scrapers, and other materials used for testing, lead control, and cleanup;

7. Disposal work clothes and respirator filters;

8. Any other items contaminated with lead-based paint.

E. Hazardous Solid Waste (as determined by testing): The Contractor shall place lead-based paint chips, debris, and lead dust in double (4-mil) or single (6-mil) polyethylene bags that are air-tight and puncture-resistant.

Pieces of wood or other types of substrates that do not fit into plastic bags will be wrapped and labeled "DANGER, LEAD DUST."

E. The Contractor will place all disposable cleaning materials, such as sponges, mop heads, filters, disposable clothing, and brooms in double (4-mil) or single (6-mil) plastic bags and seal.

F. The Contractor shall clean surfaces and equipment and remove large debris. The Contractor shall then remove plastic sheeting and tape from covered surfaces. Prior to removing the plastic sheeting, the Contractor shall lightly mist the sheeting in order to keep dust down and fold inward into tight small bundles to bag for disposal. The Contractor shall place all plastic sheeting in double (4-mil) or single (6-mil) thick plastic bags and seal.

G. The Contractor shall bag and seal vacuum bags and filters in double (4-mil) or single (6-mil) thick plastic bags.

H. The Contractor shall place all contaminated clothing or clothing covers used during lead abatement and cleanup in plastic bags for disposal prior to leaving equipment room.

I. The Contractor shall place solvent residues and residues from strippers in properly labeled drums made out of materials that cannot be dissolved or corroded by chemicals. Solvents will be tested by the Contractor to determine if they are hazardous. Solvents, caustics, and acid waste must be segregated and not stored in the same containers.

J. The Contractor shall contain and properly dispose of all liquid waste, including lead-dust contaminated wash water.

K. The Contractor shall HEPA-vacuum the exterior of all liquid waste containers prior to removing the waste containers from the work area and shall wet wipe the containers to ensure that there is no residual contamination. Containers should then be moved out of the work area into the designated storage area.

L. The Contractor shall carefully place the containers into the truck or dumpster used for disposal.

M. The Contractor shall ensure that all waste is transported in covered vehicles to a landfill, or lined landfill, if available.

N. If the Contractor subcontracts the removal of the lead-based paint waste, the Contractor shall ensure that the company removing the waste material adequately covers all loads so that no dust or debris is released.

O. Disposal of Hazardous Waste (as determined by testing). The Contractor will be required to comply with RCRA and applicable state and local laws and regulations governing hazardous waste disposal.

P. If more than 100 kg of hazardous waste will be generated from the lead control process during any calendar month, the Contractor shall apply for an EPA identification number from the appropriate Regional EPA office. If less than 100 kg, the Contractor shall obtain EPA generator numbers from each property address. The Owner or his Representative may assist the Contractor in contacting the appropriate EPA office to secure the identification.

Q. Waste Containers: The Contractor will comply with EPA and DOT regulations for containers. The Contractor shall contact the state and local authorities to determine their criteria for containers. The more stringent regulations shall apply.

R. Waste Transportation: If the Contractor is not a certified hazardous waste transporter, a contract shall be entered into with a certified transporter to move the waste. The Contractor shall require the certified hazardous waste transport to follow DOT regulations.

END OF SECTION

**Enviro-S.T.A.R., INC.**
**Environmental - Safety, Training And Resources, Inc.**
**246 30th Street Ste. 102 Oakland, CA 94611**
**Telephone: (510) 568-5996 Fax: (510) 568-7993 ENVIRO - S.T.A.R., Inc.**

# SPECIFICATIONS

# FOR

# ASBESTOS-CONTAINING MATERIALS (ACM) REMOVAL

**APPLICABLE TO**

**RIO VISTA ELEMENTARY SCHOOL**
**611 PACIFIC AVE.**
**BAY POINT, CA 94565**

**FOR**

**MOUNT DIABLO UNIFIED SCHOOL DISTRICT**
**MS. MELANIE KOSLOW**
**DIRECTOR OF FACILITIES & BONDS**
**MAINTENANCE & OPERATIONS**
**1480 GASOLINE ALLEY**
**CONCORD, CA 94520**

**Prepared by:** _____

**Ralph P. Guzman**
**BS, IH, CAC #93-0965**

**March 21, 2024**

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# 1.0 GENERAL

## 1.1 SCOPE OF WORK

1.1.1 The Specifications for Asbestos-Containing Materials (ACM) Removal are intended to apply to the abatement anc cleanup of the Asbestos- Containing Materials (ACM's) identified as drywall/taping mud, 9" x 9"vinyl floor tile & associated mastic, 12" x 12" vinyl floor tile, residual mastic as defined in Section 1.7 Definitions. Henceforth, the Specifications for Asbestos-Containing Materials (ACM) Removal are referred to as the Specifications.

1.1.2 The Contractor shall remove the drywall from as identified on the demolition drawings. The removal is limited in scope. This removal shall require a Negative Pressure Enclosure (NPE) with a two-stage personnel decontamination system

Abatement of the flooring materials shall be performed in all areas identified as containing asbestos vinyl floor tile & mastic and areas with residual mastic. This work shall be performed within a NPE with a two-stage personnel decontamination system

The casework anchored to the walls shall be removed. The removal may cause some disturbance to the drywall taping mud. The contractor shall plase critical barriers using 6-mil plastic on all openings in the area being worked on. A HEPA air filtration unit shall be employed, exhausting the filtered air to the exterior of the work area. . A full containment is not required, however, the work area flooring shall have a drop sheet to catch any drywall fallout.

The windows have putty that contains <1% chrysotile asbestos. This material has not been analyzed by "point count" and is considered RACM (Regulated Asbestos-Containing Material) by Bay Area Air Quality Management District. Prior to commencing the work, Enviro-STAR will submit a sample for point count analysis, Note; The windows are Lead-Based Paint and will be characterized to determine disposal means. Should the characterization, determine the windows are hazardous waste, it must de diposed as such regardless of the asbestos content.

1.1.3 The Contractor shall a negative pressure enclosure (NPE) with a two-stage personnel decontamination system for persoonel performing the ACM removal.

## 1.2 DESCRIPTION OF WORK

1.2.1 The work specified herein is the abatement of asbestos- containing material(s) to be performed by competent persons trained, knowledgeable, and qualified in the techniques of asbestos abatement, handling and disposal of asbestos and/or asbestos-contaminated materials, and the subsequent cleaning of

asbestos contaminated areas. Work shall be performed by Contractors who comply with all applicable federal, state and local regulations, and are capable of, and willing to, perform the work as per this specification.

1.2.2 All abatement work shall be performed under the strict work practices and procedures for this project defined in the Specifications. The MDUSD Representative (henceforth refered to as the Owner's representative) decision(s) will be final in all matters relating to the interpretation of these specifications and all applicable regulations. The Contractor shall abide by all directions and decisions of the Contracting Officer's Representative relative to asbestos removal and/or asbestos fiber control.

1.2.3 The Contractor shall supply all labor, materials, services, training, insurance, permits, and equipment necessary to successfully carry out the work in accordance with applicable federal, state and local regulations, and these specifications.

1.2.4 The Contractor shall comply with the MDUSD regulations regarding work hours, building access, and facility use.

1.2.5 The Contractor is responsible for performing any demolition necessary to complete the work specified herein, unless otherwise specified.

1.2.6 Repair and/or reconstruction of any demolition items to be performed by others unless otherwise specified.

## 1.3 CONTRACTOR QUALIFICATIONS/SUBMITTALS

1.3.1 Prior to commencing work, the Contractor shall provide evidence that he is duly licensed in the State of California in accordance with the provisions of Chapter 9 of Division 3 of the Business and Professions Code, as amended.

1.3.2 Prior to commencing work, the Contractor shall provide evidence that he is certified as an asbestos contractor by the California Contractor's State License Board.

1.3.3 Prior to commencing work, the Contractor shall provide evidence of registration with the Chief of the Division of Occupational Safety and Health, State of California (Cal/OSHA) as a contractor involved in the construction, repair, renovation, maintenance, demolition, and/or salvage activities in which any materials containing more than 1% asbestos are handled.

1.3.4 Prior to commencing work, the Contractor shall provide proof that all workers working within the asbestos removal area have been trained to meet the requirements of 8 CCR 5208 and 29 CFR Part 1926 and BAAQMD requirements. The training and fit testing shall be of quality and substance deemed to be satisfactory by the Contracting Officer's Representative.

1.3.5 Prior to commencing work, the Contractor shall provide proof that all workers working within the asbestos removal area are included in the medical surveillance program required by 8 CCR 5208 and 29 CFR Part 1926 requirements and that they have medical approval to work with asbestos and wear respirators. This proof shall be certified by a licensed physician.

1.3.6 Only persons certified pursuant to 1.3.4 and1.3.5 will be allowed to work on this job. A list of the trained and medically approved employees that will be allowed to work on this job shall be submitted to the Contracting Officer's Representative prior to commencing work.

1.3.7 Prior to commencing work, the Contractor shall provide proof of Hazardous Waste Hauler licensing from the State of California Department oF Toxic Substance Control (DTSC) including identification number, for the transporter that is to be used.

1.3.8 Prior to commencing work, the Contractor shall provide the name, location, and EPA/DTSC license of the hazardous waste site proposed to be used.

1.3.9 Prior to commencing work, the Contractor is to provide written proof that the owner of any rental equipment has been notified that it is to be utilized inside of an asbestos work area.

1.3.10 Prior to commencing work, the Contractor's air sampling plan is to be approved by the Owner's Representative.

## 1.4 APPLICABLE STANDARDS AND GUIDELINES

1.4.1 All work under this contract shall be performed in strict accordance with all applicable federal, state and local regulations, standards and codes governing asbestos related work and any other trade work done in conjunction with the abatement.

1.4.2 The most recent editions of any relevant regulations, standards, documents or codes shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall apply. Such documents include, but are not limited to, the following:

1.4.2.1.1 U.S. Department of Labor, Occupational Safety and Health Administration (OSHA)

1.4.2.1.2 Title 29 of the Code of Federal Regulation, Section 1926.1101-Construction Standard for Asbestos (29 CFR 1926.1101)

1.4.2.1.3 Respiratory Protection Standard (29 CFR 1910.134)

1.4.2.1.4 Hazard Communication (29 CFR 1910.1200)

1.4.2.1.5 Specifications for Accident Prevention, Signs and Tags (29 CFR 110.145)

1.4.2.2 California Division of Occupational Safety and Health (DOSH)

1.4.2.2.1 Title 8 of the California Code of Regulations, General Industry Safety Orders, Section 5208 - Asbestos Standard (8 CCR GISO 5208)

1.4.2.2.2 Respiratory Protective Equipment Standard (8 CCR GISO 5144)

1.4.2.2.3 Hazard Communication Standard (8 CCR GISO 5194)

1.4.2.2.4 Accident Prevention Program (8 CCR GISO 3203)

1.4.2.2.5 Access to Employees Exposure and Medical Records (8 CCR GISO 3204)

1.4.2.2.6 Accident Prevention Signs (8 CCR GISO 6003)

1.4.2.2.7 Emergency Action Plan (8 CCR GISO 3220)

1.4.2.2.8 Fire Prevention Plan (8 CCR GISO 3221)

1.4.2.2.9 Electrical Safety Orders (Chapter 4, Subchapter 5)

1.4.2.2.10 Construction Safety Orders (Chapter 4, Subchapter 4)

1.4.2.3 U.S. Environmental Protection Agency (USEPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulation (40 CFR 61, Subparts A, B and M)

1.4.2.4 Bay Area Air Quality Management District (BAAQMD).

1.4.2.5 American National Standards Institute (ANSI) Standard Z88.2-1980, Practices for Respiratory Protection.

1.4.2.6 ANSI Z9.2 - Fundamentals Governing the Design and Operation of Local Exhaust Systems

1.4.2.7 National Electric Code

1.4.2.8 California Code of Regulations Title 22 and Department of Health Services regulations pertaining to disposal and Transportation of Hazardous Waste

1.4.2.9 40 CFR 260-265: Resource Conservation and Recovery Act

1.4.2.10 Guidance for Controlling Asbestos-Containing Material in Buildings (EPA 560-5-85-024)

1.4.2.11 Asbestos Waste Management Guidance: Generation; Transport; Disposal (EPA 530-SW-85-007)

## 1.5 NOTIFICATIONS

1.5.1 The Contractor shall be responsible to perform all notifications of federal, state and local authorities and to obtain all necessary permits in accordance with applicable regulations, including but not limited to:

1.5.1.1 Notify the Federal Environmental Protection Agency (EPA) as required under the National Emission Standards for Hazardous Air Pollutants (NESHAPS) (40 CFR 61, Subpart M). Written notification to the district office is required 10 days prior to commencement of asbestos demolition/renovation activities if required.

1.5.1.2 Notification to BAAQMD. Written notification 10 days prior to commencement of asbestos demolition/renovation activities, if applicable.

1.5.1.3 Notify Cal/OSHA of this ACM-related job.

1.5.1.4 Notify the appropriate government agency to obtain permission to discharge waste water into the sewer system, if required.

1.5.1.5 Obtain appropriate permits required for construction activities and for equipment to be located on the street, if applicable.

1.5.1.6 A copy of all notices and permits must be provided to Enviro-STAR at least five (5) working days in advance of start of project.

## 1.6 GENERAL REQUIREMENTS

1.6.1 The Contractor shall comply with all specifications.

1.6.2 The Contractor shall submit a proposed schedule of the operations, with man power loading per work shift, a work plan and a procedures plan to Enviro-STAR for approval at least five (5) working days in advance of start of the project. The schedule shall consist of a time bar for each major category or unit of work indicating the time frames for all milestones and sequence/coordination of all elements of work. The Owner's representative shall be notified of any changes during the progress of the project.

1.6.3 The Contractor shall consult with the Owner's representative and adhere to all requirements as to time and method of material and equipment delivery and removal of debris and equipment.

1.6.4 The Contractor shall be allowed reasonable space at the site and access to the area. The Contractor shall confine his operations to the assigned space(s) and work site(s).

1.6.5 All drawings and material estimates are for information purposes only and may not reflect the actual as-built conditions. It is the Contractor's responsibility to verify all conditions at the site prior to bidding. After award of the contract the Contractor is responsible for the conditions as they exist.

1.6.6 The Contractor shall attend regularly scheduled meetings with MDUSD, project manage, Enviro-STAR. These meetings shall include review of overall project status and work schedules; and any coordination, submission, sampling results, et. al., issues that may arise.

1.6.7 There will be no extra work or additions to the contract chargeable to the Owner without prior written approval of the Owner.

1.6.7.1 MDUSD, after consultation with Owner's Representative, may make changes by altering, adding to or deducting from the work and negotiating a change to the contract sum. All work changes shall be executed in conformity with the terms and conditions of the contract documents unless otherwise provided in the change orders. Any change in the contract sum or time for completion shall be adjusted in the change order which will be effective when it is signed by both parties.

1.6.7.2 The change order shall describe or enumerate the work to be performed and state the price to be added to or deducted from the contract sum. If the extent or cost of the work is not determinable until after the change work is performed, the change order on contract shall specify the method for determining the cost and extent of the changed work when completed.

1.6.8 Emergency exits are to be kept clear at all times.

1.6.9 Do not allow open flames or smoking in the asbestos removal area. Place **"NO SMOKING"** signs at entrance and within the abatement area.

1.6.10 Main electrical power and water will be provided by MDUSD Distribution of electrical power and water for Contractor's equipment and work is the responsibility of the Contractor.

1.6.11 Any work stoppage of the Contractor by Owner's Representative and/or MDUSD supervisoty personnel for non-compliance to the specifications is the sole responsibility of the Contractor.

1.6.12 Any contamination or perceived contamination (air, bulk, etc.) is the total responsibility of the Contractor and all costs associated with the perceived

contamination decontamination is the total responsibility of the Contractor, including all industrial hygiene services by Owner's Representative.

1.6.13 There is no work or admittance to the work area once the work area containment has been approved for ACM related work without permission of the Owners Representative .

1.6.14 The Contractor shall be responsible for project site security. This shall include but not necessarily limited to equipment, materials, supplies and project security fencing.

## 1.7 DEFINITIONS AND ABBREVIATIONS

1.7.1 Aggressive Sampling: Refers to air sampling following the agitation of the air.

1.7.2 Amended Water: A water to which a surfactant has been added.

1.7.3 Area Monitoring: Sampling of asbestos fiber concentrations within the asbestos work area and outside the asbestos work area. Sampling shall represent airborne concentrations of asbestos fibers that may reach the breathing zone.

1.7.4 Asbestos Containing Material (ACM): Material composed of asbestos of any type and in an amount greater than 1% by weight, either alone or mixed with other fibrous or non-fibrous materials. **Note: Cal/OSHA (CCR 1529) defines ACCM as being greater than 0.1%. The Contractor shall adhere to this regulation for purposes of worker protection and work practices when removing material having greater than 0.1% asbestos.**

1.7.5 Asbestos Fibers: Refers to asbestos fibers having an aspect ratio of 3:1, and those fibers longer than five (5) micrometers.

1.7.6 Asbestos Permissible Exposure Limit (PEL): 0.1 fibers (those longer than five micrometers) per cubic centimeter as an eight hour time weighted average.

1.7.7 Authorized Visitor: Designated employees or consultants for the Contracting Officer, testing lab personnel, and representatives of any federal, state and local regulatory or other agency having authority over the project.

1.7.8 Baseline: Refers to the background level of asbestos monitored before abatement.

1.7.9 Breathing Zone: A hemisphere forward of the shoulders and head with a radius of approximately six to nine inches.

1.7.10 Bridging Encapsulant: An encapsulant that forms a discrete layer on the surface of an in-situ asbestos matrix.

1.7.11 Certified Asbestos Consultant (CAC): An individual demonstrating his/her compentency in asbestos related construction through experience, education and successfully passing a Cal/OSHA administered exam.

1.7.12 Change Rooms: Refers to the two chambers in the decontamination area used to change into and out of protective clothing.

1.7.13 CAC/Technician: Refers to the Contracting Officer's retained Certified Asbestos Consultant, or his designated technician.

1.7.14 Clean Room: An uncontaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of worker's street clothes and protective equipment.

1.7.15 Clearance Level: Refers to less than <0.01 fibers/cubic centimeter for each sample collected when analyzed via Phase Contrast Microscopy (PCM). Clearance level for samples analyzed via Transmission Electron Microscopy (TEM) will be less than 70 structures per square millimeter (<70 s/mm$^2$).

1.7.16 Contaminated: Shall mean all materials which either contain asbestos or are presumed to contain asbestos or have come into contact with the asbestos materials either through dispersion of debris or fiber contamination by airborne asbestos.

1.7.17 Critical Barrier: The outermost polyethylene seal of a work area. This includes the decontamination unit, but not the wall or floor polyethylene unless they form the boundary between the work area and the uncontaminated environment.

1.7.18 Decontamination Unit: A decontamination unit shall be set up for each containment area. Refers to system of airlocks used to decontaminate personnel, waste bags, equipment, etc. when exiting the work area.

1.7.19 Disposal Bag: Six millimeters thick leak-tight plastic bags used for transporting asbestos waste from the work place and to the disposal site. Label each as described in Section 29 CFR 1926.1101) and as follows:

**DANGER**
**CONTAINS ASBESTOS FIBERS**
**MAY CAUSE CANCER**
**CAUSES DAMAGE TO LUNGS**
**DO NOT BREATHE DUST**
**AVOID CREATING DUST**

1.7.20 Encapsulant: A liquid material which can be applied to asbestos containing material which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging) or by penetrating into the material and binding its components together

(penetrating encapsulant).

1.7.21 Equipment Decontamination Enclosure System: A decontamination enclosure system for materials and equipment, typically in a designated area of the work area, and including a washroom, a holding area, and an uncontaminated area.

1.7.22 Equipment Room: A contaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment.

1.7.23 Filter: A media component used in respirators to remove solid or liquid particles from the inspired area.

1.7.24 Foreman: An individual who fulfills the duties of "competent person" as defined in 29 CFR 1926.1101 (b) and 29 CFR 1926.1101 (e)(6)(ii)&(ii). This individual must supply documentation of a passing grade in an EPA accredited course in Practices and Procedures in Asbestos control. The foreman must supervise on-site.

1.7.25 HEPA Filter Vacuum Collection Equipment: High efficiency particulate air (absolute) filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 microns or larger. ***The HEPA equipment, including negative air machines and vacuums, shall be smoke challenged (DOP) tested on site***.

1.7.26 High-Efficiency Filter: A filter that removes from air 99.97% or more of monodisperse dioctyl phthalate (DOP) particles having a mean particle diameter of 0.3 micrometers.

1.7.27 MDUSD: Mount Diablo Unified School District..

1.7.28 Monitoring: Shall include visual inspection for the presence of visible contamination, air monitoring performed in accordance with accepted OSHA methods and observation of work areas and contractor performance of work.

1.7.29 Monitoring Technician: Conducts monitoring under the direction of a Certified Asbestos Consultant, certified by Cal/OSHA. The technician shall conduct monitoring according to 29 CFR 1910.1001 (d), 1926.1101, CAL/OSHA, and as otherwise specified in this contract.

1.7.30 Negative Pressure Respirator: A respirator in which the air pressure inside the respirator inlet covering is positive during exhalation in relation to the air of the outside atmosphere, and negative during inhalation in relation to the air pressure of the outside atmosphere.

1.7.31 Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).

1.7.32 NIOSH: National Institute for occupational Safety and Health.

1.7.33 Penetrating Encapsulant: An encapsulant absorbed by the in-situ asbestos matrix without leaving a discrete surface layer.

1.7.34 Personal Monitoring: Sampling of asbestos fiber concentrations within the breathing zone of an employee.

1.7.35 Phase Contrast Microscopy (PCM): Phase Contrast Microscopy (PCM) is a technique using a light microscope equipped to provide enhanced contrast between the fibers and the background. Filters are cleared with a chemical solution and viewed through the microscope at a magnification of approximately 400X.

This method does not distinguish between fiber types and only counts those fibers longer than 5 micrometers and wider than approximately 0.25 micrometers. Because of these limitations, fiber counts by PCM typically provide only an index of the total concentration of airborne asbestos in the environment monitored.

1.7.36 Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

1.7.37 Qualified Laboratory: A laboratory that has been judged proficient in the counting of asbestos fibers by successful participation in the National Institute for Occupational Safety and Health (NIOSH) Proficiency Analytical Testing (PAT) Program and is accredited by the American Industrial Hygiene Association (AIHA).

1.7.38 Removal: Procedures necessary to strip all asbestos containing materials from the designated areas and to properly dispose of these materials at an approved, acceptable site.

1.7.39 Shower Room: A room between the clean room and the equipment room in the worker decontamination enclosure system. This room contains hot and cold or warm running water and soap suitably arranged for complete showering during decontamination. The shower room comprises an air lock between contaminated and clean areas.

1.7.40 Surfactant (wetting agent): A chemical wetting agent added to water to improve penetration of the ACM, normally consisting of 50% polyoxyethylene ether and 50% of polyoxyethlene ester, or equivalent, mixed with water to provide a concentration of one ounce surfactant to 5

gallons of water.

1.7.41 Transmission Electron Microscopy: Transmission Electron Microscopy Level II (TEM) is a technique that focuses an electron beam onto a thin sample. As the beam transmits through certain areas of the sample, an image resulting from varying densities of the sample is projected onto a fluorescent screen.

Transmission electron microscopy is the state-of-the-art analytical method for identifying asbestos fibers collected in air samples in non-industrial settings. Transmission electron microscopes equipped with selected area electron diffraction (SAED) capabilities, also can provide information on the crystal structure of an individual particle.

1.7.42 Visible Emissions: Any emission containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

1.7.43 Water Filtration: The system shall be capable of filtering particulates with at least a 5.0 micron size collection capability. The system must contain a series of at least three (3) filters with progressively smaller pore sizes down to at least a 5.0 micron size to avoid rapid clogging.

1.7.44 Work Area: The area where asbestos-related work or removal is performed and that is defined or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel. Work area is a Regulated Area as defined by 29 CFR 1926.1101 and CAL/OSHA.

## 2.0 PRODUCTS

### 2.1 GENERAL REQUIREMENTS

2.1.1 All materials, tools, and equipment listed herein shall be provided by the Contractor.

### 2.2 MATERIALS

2.2.1 Plastic sheet: (Referred to as poly) Shall be clear polyethylene, sized in lengths and widths to minimize the frequency of joints. The minimum thickness, deemed necessary for protection of the building and personnel outside of the asbestos removal area(s), shall be:

| **Application** | **Thickness** |
|---|---|
| Critical barriers | 6 mil reinforced - 2 layers * |
| Wall Barriers | 6 mil - 1 layer* |

* Unless differently authorized by the Owners Representative.

2.2.2 Plastic bags: (Referred to as poly bags) Shall be **clear** 6 mil polyethylene minimum with proper asbestos warning label(s) in compliance with all applicable regulations.

2.2.3 Tape: Shall be capable of sealing joints of adjacent sheets of plastic to each other or to finished or unfinished surfaces of dissimilar materials and shall be capable of adhering under dry and wet conditions including the use of amended water; i.e. a good quality duct tape.

### 2.3 EQUIPMENT

2.3.1 Vacuum equipment and negative air filtration equipment shall be supplied with HEPA filtration. ***The HEPA equipment, including negative air machines and vacuums, shall be smoke challenged (DOP) tested on site***.

2.3.2 Scaffolding/staging/ladders/tools shall meet all applicable safety regulations.

## 3.0 EXECUTION

### 3.1 WORK AREA ISOLATION

3.1.1 The area involving the removal of asbestos containing materials will require isolation as determined and deemed necessary by the Owners Representative.

3.1.2 Seal off all doors, windows, vents etc. to adjacent area(s), with 6 mil clear poly sealed with tape. The work shall be phased to allow tenants at least one safe means of ingress and egress of their units .

3.1.3 Seal off all air plenum(s) and/or HVAC system opening(s) in controlled area(s) with 6 mil clear poly sealed with tape.

3.1.4 Prevent unauthorized personnel ingress and egress by appropriate warning signs and barriers.

3.1.5 Each exterior designated work area shall have two (2) layers of 6-mil poly on the ground. The poly shall be affixed to the base of the wall with duct tape.

3.1.6 Each exterior designated work area shall have plastic-construction fencing as a perimeter barrier.

3.1.7 Removal will not begin until the enclosure is inspected and approved by the Owners Representative.

## 3.2 WORK DECONTAMINATION SYSTEM (DECON)

3.2.1 The Contractor shall provide a worker decontamination enclosure system (Decon) at the entrance to the work area consisting of at least two (2) totally enclosed chambers: dressing area and dirty room. The dirty room shall be the only direct entry/exit to the actual work area.

3.2.2 Alternate Decon construction methods such as a metal or wood frame covered on all sides with two (2) layers of 6 mil clear reinforced poly and with a hard ceiling, may be used with the permission of the Owner's Representative.

3.2.3 Before the Decon is constructed, all walls the Decon will impact shall be isolated in the same manner as the work area walls with the poly preparation work extending four (4) feet minimum beyond the Decon itself and attached to the work area wall poly.

3.2.4 Before the Decon is constructed, the floor area the Decon will occupy shall be isolated in a manner that a good tight water proof seal is formed.

3.2.5 The wall poly on the outside of the Decon wall(s) itself shall be attached to the top (inner most) layer of the general work area floor poly with the first layer of the Decon wall poly extending out 12 inches minimum onto the floor. The next layer of Decon wall poly shall extend out 12 inches minimum past the first layer.

3.2.6 The wall poly on the inside of the Decon itself shall be attached to the Decon floor poly which shall be separate from the general work area floor poly and shall be installed on top of it.

3.2.7 The dressing room shall be located between the equipment/storage room and the shower room. At each end of the dressing room "Z" flaps (triple flaps) shall be constructed to separate the dressing room from the equipment/storage room and the shower room. With the permission of the Owners Representative the dressing room and equipment/storage room may be combined into one large room.

3.2.8 The shower room (if requried) shall be located between the dressing room and the dirty room. At each end of the shower room "Z" flaps (triple flaps) shall be constructed to separate the shower room from the dressing room and from the dirty room. The shower itself shall be placed within this room with the shower itself having a heavy curtain at both exits/entrances to the shower. There shall be an area large enough to stand in between the shower itself and the "Z" flaps to the dirty room and the shower itself and the "Z" flaps to the dressing room.

3.2.8.1 The shower room shall contain at least one shower for every ten asbestos abatement workers or fraction thereof with hot and cold or

warm running water. The Contractor is responsible for any required piping and water heating.

3.2.8.2 Gas water heaters are prohibited.

3.2.8.3 Careful attention shall be paid to the shower enclosure to ensure against leakage. The Contractor is responsible for any damage resulting from water leakage.

3.2.8.4 Drainage from the shower is the complete responsibility of the contractor, including any required material or plumbing work.

3.2.8.5 Shower waste water shall be drained, collected, and filtered through a system with at least a 5.0 micron particulate size collection capability. A system containing a series of at least three (3) filters with progressively smaller pore sizes down to at least 5.0 micron size is necessary to avoid rapid clogging of the filtration system by larger particles.

3.2.8.5.1 Prior to commencement of work, the design and specifications of the filtering system shall be furnished by the Contractor to the owner's representative for approval.

3.2.8.5.2 Two spare sets of filters shall be maintained at the site at all times to replace clogged or dirty filters.

3.2.8.5.3 The filters shall be replaced when they become clogged or at the direction of the owner's representative. Treat and discard the used filters as hazardous waste.

3.2.8.5.4 Provide a holding tank (or shower pan) to provide storage of excess shower water when the amount of water generated exceeds the flow capacity of the filters. This hold tank must be capable of containing the amount of water generated while running the shower at full capacity for three minutes.

3.2.8.5.5 The shower room and the shower itself shall be cleaned at the end of each work shift or at the direction of Enviro-STAR. The Contractor shall not leave the project until this has been accomplished to the satisfaction of the Owner's Representative.

3.2.8.5.6 The Contractor shall keep a minimum two day supply of clean disposable towels (for personnel drying after showering), body soap and shampoo (liquid soap may be substituted for both body soap and shampoo) on site at all times. If there is not an adequate supply of these items on site to shower out all personnel who may enter the work area then the Contractor may not physically enter the work area until he has actually brought sufficient and adequate amounts of these items to the job site.

3.2.8.5.7 If there is not sufficient hot and cold water or warm water actually operating at the shower the Contractor may not enter the work area until this has been corrected to the satisfaction of the Owner's Representative. The Owner's Representative may test the shower operation before any entry into the work area.

3.2.8.5.8 At the end of each work shift the entire Decon area shall be wet wiped and cleaned and all supplies, materials and equipment neatly stacked by the Contractor before he leaves the job site. This work must be done to the satisfaction of the Owner's Representative.

3.2.8.5.9 All seals and curtained doorways of the Decon shall be kept in proper condition. Repairs are to be made immediately as needed or at the direction of the Owner's Representative and shall be to the Owners Representative's satisfaction. Failure to comply to this will result in a STOP WORK ORDER being issued by the Owner's Representative .

## 3.3 MONITORING AND SURVEILLANCE

3.3.1 The owner will provide air monitoring and surveillance of the complete asbestos removal project by, under the direction of the Owner's Representative . Air sampling of Contractor personnel is not included. At his expense he shall perform his own OSHA and Cal/OSHA required personnel air monitoring.

3.3.1.1 Prior to the start of work the Contractor shall submit his air sampling plan to the Owner's Representative for approval.

3.3.1.2 The plan shall describe at least the following items:

3.3.1.3 The name(s) and qualifications of the person(s) who will perform the air sampling.

3.3.1.4 The sampling strategy to be used. For example, cover how 8-hour time-weighed average (TWA) and STEL exposures will be determined, selection of the employees to be sampled, the frequency of sampling, calibration procedures, et. al.

3.3.1.5 The name, location, and qualification of the laboratory that will be used to analyze the air samples.

3.3.2 Routine air sampling including work area and perimeter, will be performed pursuant to NIOSH 7400A by the Owner's Representative as follows:

3.3.2.1 All air sample analyses shall be performed by a qualified laboratory as defined in Section 1.7.37.

3.3.2.2 At work area perimeters outside the containment/work area during abatement work. Airborne concentrations at these area are not to exceed .01 fibers/cc.

3.3.2.3 Inside the work enclosure during abatement work shall not exceed 0.1 fibers/cc.

3.3.2.4 After removal of work area isolation, if sampling is deemed necessary concentrations are not at any time to exceed 0.01 fibers/cc.

3.3.2.5 The Contractor shall provide the Owner's Representative with the results of the air samples collected by the Contractor within 48 hours of collection. These air samples shall not be considered valid and acceptable unless they are performed by a qualified laboratory as defined in 1.7.37.

3.3.3 The Owner's Representative may issue a STOP WORK ORDER any time the Contractor's methods or protective measures are not in accordance with published regulations or these specifications.

3.3.4 If, at any time, any air sample inside the work area exceeds or is likely to exceed 0.1 fibers/cc, or any sample outside the work area exceeds or is likely to exceed 0.01 fibers/cc, the work methods will be reassessed by the Owner's Representative and recommendations made to correct possible work deficiencies. Non-cooperation by Contractor for correction of deficiencies will be cause for a STOP WORK ORDER.

## 3.4 ASBESTOS WORK PRACTICES

3.4.1 All Contractor and subcontractors who will be working in asbestos removal area(s) shall be trained to meet OSHA, CAL/OSHA, BAAQMD and any other pertinent requirements for asbestos and respirators.

3.4.2 Place OSHA and AB3713 approved warning signs at all entrances to asbestos removal area(s).

3.4.3 Ensure that ALL persons don appropriate personal protective equipment before entering the asbestos removal area and wear this protective equipment while within the abatement area. Personal protective equipment includes approved respirators, disposable coveralls, hoods, booties and gloves. Where safety hazards dictate, hard hats, safety glasses, safety shoes and/or rubber boots and rubber and/or work gloves shall also be worn. All of these items are to be furnished free of charge to all employees of the Contractor and/or his subcontractor(s), the industrial hygienist(s), site visitor(s) and governmental agency representative(s).

3.4.4 Respiratory protective equipment shall consist, at a minimum, of NIOSH approved half face dual cartridge negative pressure air purifying respirators

equipped with HEPA filters. If exposure concentrations warrant, as prescribed in the OSHA regulations, then higher protection factor NIOSH approved respiratory protection will be required by Enviro-STAR's Project Manager. For operations involving the use of spray glue, spraying of encapsulation material and/or other toxic materials the use of HEPA filtered/organic vapor combined respirator cartridges are required. The organic vapor respirator cartridge must meet the requirements of the MSDS for the substance(s) being used.

3.4.5 Outer work clothes shall consist of disposal full body coveralls, disposable head covers, and disposable shoe covers. Disposable clothing should be taped shut at wrists, ankles, and neck, as appropriate.

3.4.6 Upon egress of the asbestos work area, all persons are required to shower thoroughly and completely with body soap and hair shampoo, removing all possible asbestos contamination from themselves. They shall also wash off their respirator before exiting from the shower; no time limit shall be set by the Contractor for showering.

3.4.7 The Contractor shall provide disposable protective clothing for all authorized visitors to the work area, including the owner, the Industrial Hygienist, and pertinent government agency representatives. **The level of respiratory protection that is required of the Contractor personnel shall be the level also required for all visitors/** the **Owners Representative (i.e., PAPR, half face dual cartridge, etc.).** All visitors shall comply with the entry and exit requirements.

3.4.8 All items provided to visitor(s)/ personnel shall be new, clean, and furnished at no charge to the site visitor(s). The only exception is that the Owner's Representative personnel will furnish their own respirator.

## 3.5 WASTE BAG OUT

3.5.1 The Contractor shall notify the Owner's Representative in advance of bag out of both contaminated and non-contaminated waste. The Contractor and the Owners Representative shall then review the bag out procedures and pathway of the waste from the work area to the hazardous waste dumpster or the hazardous waste transportation vehicle. (Hazardous waste dumpster is defined to include the hazardous waste transportation vehicle throughout these specifications.)

3.5.2 All contaminated waste shall be removed from within the work area(s) by the double bagging method. Each bag shall be of at least 6 mil clear poly with both bags having all applicable warning signage on them. The first bag is to be clean and free of all dust, debris, etc., (by wet wiping or washing) on the outside. It is then passed from the dirty room to the shower room (if the personnel decon is used for bag out) or the center room (if a material/equipment air locked decon is used). This bag is to have been previously sealed. Once passed from the dirty room this first bag is

placed into a second bag that is then twisted closed, folded over and taped shut. The double bagged contaminated waste is then passed out of the Decon. Persons within the work area are to be under shower conditions. All personnel outside the work area may wear tyvek suits over their street clothes. They shall have a respirator readily accessible in case of a spill.

3.5.3 Once passed out of the Decon this bagged waste is to be placed into a heavy duty cart lined with one (1) layer of 6 mil clear poly. The poly is to be placed into the cart such that there are no seams. When fully loaded (bags are to be only loaded to the top edge of the cart) the cart is to be taken directly and immediately to the hazardous waste storage dumpster. The cart is to be covered with one (1) layer of black poly while the hazardous waste is being transported to the hazardous waste dumpster.

3.5.4 All persons outside the work area, the Decon or the hazardous waste dumpster itself involved in handling and transporting the bagged debris, are to be fully approved by the owner's representative to work in and around asbestos. While involved in this work they are to wear their respirators around their neck such that their respirator is immediately available in case of an incident.

3.5.5 The hazardous waste dumpster is to be fully lined on the bottom and all sides with 6 mil clear poly. Seams are to be taped such that they are watertight. It is to be properly labeled and capable of being locked/secured.

3.5.6 The bags are to be off-loaded from the cart into the hazardous waste dumpster in such a manner that they remain intact - **they are not to be thrown**.

3.5.7 Person(s) inside the hazardous waste dumpster are to be under respirator conditions with at least a tyvek suit, with head cover and booties, worn over their street clothes.

3.5.8 Non-contaminated debris from within the work area can be removed from the work area and disposed of without any special preparations as standard construction debris. As long as it is removed from the work area before abatement of the asbestos material starts, which includes pre-wetting.

3.5.9 Asbestos contaminated waste shall not remain within the work area. Prior to the end of the shift, the Contractor shall allocate plenty of time to remove the ACM and leave the work area free of loose ACM.

3.5.10 If contaminated waste contains material/debris, et. al., that is likely to cause cutting/breaking of the bags, then approved drums shall be used for containment, transport and disposal.

## 3.6 WASTE DISPOSAL

3.6.1 All asbestos-containing material in **FRIABLE** condition shall be disposed of as hazardous waste in accordance with all applicable regulations, with the exception of window putty if the paint on the windows is deemed hazardous waste.

3.6.2 Transportation of hazardous waste to the designated licensed hazardous waste site shall be by the designated licensed hazardous waste transporter in a DOHS licensed vehicle in accordance with all applicable regulations.

3.6.3 The Owner shall provide the Contractor with his EPA waste generator number. If the Owner does not have one he shall procure one.

3.6.4 The Contractor shall initiate and ensure completion of a Uniform Hazardous Waste Manifest (UHWM) for each shipment. The weight of each shipment shall be shown on the manifest. Bag counts are not sufficient.

3.6.5 The generator's copy of each UHWM shall be given to the Owner by the Contractor within 24 hours of its completion.

3.6.6 All dumpsters used to store or transport asbestos contaminated waste shall be fully and properly licensed and registered as per all applicable regulations.

3.6.7 The transporter used to transport all asbestos contaminated waste shall be fully and properly licensed and registered as per all applicable regulations.

3.6.8 The dump site to which the asbestos contaminated waste shall be delivered shall be fully and properly licensed and registered as per all applicable regulations.

3.6.9 The asbestos contaminated waste may be transported in a motor vehicle as long as it is fully and properly licensed and registered as per all applicable regulations.

3.6.10 The Contractor may transport asbestos contaminated waste from the building/project if he is a duly licensed and registered hazardous waste hauler and does so in fully licensed and registered vehicles/dumpsters and adheres to all applicable regulations.

3.6.11 Asbestos contaminated waste may not be transported between buildings (unless they are interconnected) without adhering to all applicable regulations for transporting asbestos contaminated waste.

3.6.12 Asbestos contaminated waste may not be removed from the building/job site by hand carrying to another building/job site.

3.6.13 All hazardous waste dumpsters used to store asbestos at the building/job site shall be posted with appropriate asbestos warning signs.

## 3.7 CLEANUP

3.7.1 Cleanup procedures are extremely important. If not performed well, elevated airborne levels, both inside and outside the work area, will occur during all phases of the removal work. Daily remove all visible accumulations of asbestos material and debris within the abatement/work area and place in appropriate container(s).

3.7.2 At all times the work area shall be kept neat and clean. When leaving the work area for lunch break all asbestos material(s) shall have been picked up and bagged or gathered into one pile, wet and completely covered with one (1) layer of 6 mil clear poly. Also, equipment shall have been washed down of accumulations of asbestos material and this material handled as waste. If accumulations are found elsewhere they shall also be handled as above.

3.7.3 At the end of each work shift all asbestos material(s) shall be cleaned up and bagged such that there is no loose asbestos to be found within the work area on the floor poly, wall poly, equipment, building items remaining inside the work area (such as HVAC duct, electrical conduit, etc.). If this requires a wash down and/or mopping of the complete work area and items within it, the Contractor shall be prepared to do so. The Contractor is responsible for starting the clean up process such that it can be finished by the end of the normal work shift. If the Contractor has not completed this clean up work by the end of the work shift he shall remain until it has been accomplished, at no extra charge to the owner. If at the beginning of any work shift it is found that the Contractor failed to adequately clean at the end of the last work shift then no abatement related work shall start until the work area has been cleaned as it should have been done. This is to be at no charge to the owner. The Owner's Representative shall be the final authority on the cleanliness of the work area.

## 3.8 CLEARANCES

3.8.1 When the Contractor believes that removal including detailing, wet wiping, general work area and decon clean up and equipment cleanliness is complete, then he shall request the Owner's Representative to evaluate the removal and initiate clearance procedures.

3.8.2 Clearance procedure shall consist of four (4) general phases, which will be evaluated separately by the Owner's Representative:

3.8.2.1 Visual evaluation of the degree of removal, including detailing of asbestos from the designated area.

3.8.2.2 Visual evaluation of the degree of cleanliness of the poly in the work area.

3.8.2.3 Visual evaluation of the degree of general cleanliness of the work area.

3.8.2.4 Final visual evaluation of the entire work area after all containment has been removed.

3.8.3 Upon the Contractor's request, the Owner's Representative will evaluate the thoroughness of asbestos removal and detailing of the asbestos areas, the cleanliness of all poly surfaces (including the Decon), cleanliness of all unprotected surfaces, cleanliness of all building systems items remaining within the work area and contractor equipment remaining within the work area.

3.8.4 Upon the approval of the work area by the Owner's Representative, the Contractor shall encapsulate all surfaces within the work area, including but not limited to, abated surfaces, poly, unprotected hard surfaces, building systems items, etc.

3.8.5 Once this coat of encapsulant has dried to a tacky non-liquid state then the Contractor shall remove the poly from the work area. He will also remove the poly around building systems items within the work area. Upon the approval of the Owners Representative, these surfaces are to be encapsulated.

3.8.6 At no time during the clearance procedures or during the abatement project are any HVAC duct openings, electrical conduit openings, building system items or equipment that can become internally contaminated be uncovered. The poly for these items can be removed only after clearance air levels have been achieved.

3.8.7 At no time during the clearance procedures are any items within the work area to be uncovered that can be damaged by encapsulant. The poly for these items can be removed after clearance air levels been achieved.

3.8.8 The clearance criterion shall be a visual inspection of the abated surfaces and the general work area.

END OF SECTION

# SECTION 09 65 19 - RESILIENT TILE FOORING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This section deals with resilient flooring found in the drawings and schedules of the contract that meet the requirements of this section.

### 1.2 RELATED SECTIONS

A. Section 3 – Cement: not covered in this section.

B. Section 6 – Wood and plastic: not covered in this section.

C. Section 7 – Thermal and humidity protection: not covered in this section.

D. Section 9 – Other sections containing information related to floor finishes: not covered in this section.

### 1.3 REFERENCES (INDUSTRY STANDARDS)

A. ASTM F 710: Practice for Preparing Concrete Floors to Receive Resilient Flooring.

B. ASTM E 648: Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

C. ASTM E 662: Test Method for Specific Optical Density of Smoke Generated by Solid Materials.

D. ASTM F 1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

E. ASTM F 2170: Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes.

### 1.4 ITEMS TO DELIVER

A. Provide the product’s Technical Specifications data sheet as well as all installation and maintenance instructions.

B. When required, supply floor drawings and installation plans.

C. Supply a set of samples measuring at least 3 in. (7.5 cm) by 6 in. (15 cm) of the complete range of colors and finishes chosen for the project.

D. When required, provide Manufacturer's attestation, certified by an independent laboratory, confirming that the flooring complies with the fire standards of the following tests:
   1. ASTM E 648; Critical Radiant Flux: 0.45 watts/cm2 or more.
   2. ASTM E 662; Smoke Density: 450 or less.

E. Provide Manufacturer's Warranty Certificate.

## 1.5 QUALITY ASSURANCE

A. Have flooring installed by an installer qualified in the installation of resilient flooring.

B. In accordance with the installation instructions, use all accessories recommended by Manufacturer when installing its flooring.

C. Follow the instructions specified in the most recent version of Manufacturer's installation instructions.

## 1.6 DELIVERY, HANDLING, STORAGE

A. Deliver the flooring to the installation site in Shaw Contract's original packaging. Indicate the project name and handling instructions on the outside of the boxes.

B. Advise the carrier of any damaged material and indicate it on the packing slip.

C. Store the flooring inside, sheltered from extreme hot or cold temperatures. Place the material on a smooth level floor or where there is uniform solid support in a clean, dry, well-ventilated area. The long-term storage temperature must be maintained between 65°F (18°C) and 85°F (29°C). Protect adhesive and flooring material from freezing, extreme heat and direct sun exposure.

D. Acclimate the subfloor, all flooring material and adhesive for 48 hours before, during and after the installation by maintaining the room temperature between 65°F (18°C) and 85°F (29°C). The pallets should be unstacked 24 hours prior to use.

E. Afterwards, maintain the room temperature between 65°F (18°C) and 85°F (29°C). Protect the material from direct sources of heat such as air vents and other types of heaters.

F. Install the flooring after all other finishing work, including painting, has been completed.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

A. Shaw Contract, 160 S. Industrial Blvd, Calhoun GA 30701 Telephone 800.241.4494.
Website: Commercial Flooring Solutions | ShawContract
Contact:

B. Substitutions or Equals:
1. Substitutions are allowed only if they meet the following criteria:
a. Acceptance of alternate product(s) that are accepted as equals must be approved by parties (including, but not limited to) that have material interest in the specifications including: Designer, Architect, End-User, and Flooring Contractor.

### 2.2 MATERIALS

A. DETAILED PRODUCT CONSTRUCTION SPECIFICATIONS

| | |
|---|---|
| Style Name | Joy Squared – 0993V |
| Collection | Joy Squared |
| Product Type | Direct Glue LVT |
| Overall Thickness | 2.5 mm (0.098”) |
| Wear Layer | 20 mil (0.02 mm) |
| Finish | ExoGuard+® |
| Size | 24” x 24” or 12” x 24” |
| Square Feet Per Carton | 68 sf/ctn |
| Pounds Per Carton | 57.79 lbs/ctn |
| Installation Method | Direct Glue |

Recommended Installation Methods

Brick or Ashlar

Sustainability

Floor Score Floor Score Certified

Country of Origin USA

Environmental Product Declaration 3rd Party Certified in Accordance with ISO 14025, EN 15804, & ISO 21930:2017

Class III, Type B

B. Refer to the product's Technical Specifications data sheet for detailed specifications.

C. Choose from any of ShawContract's complete line of 24 colors

D. All specifications are subject to normal manufacturing tolerances

## 2.3 ADHESIVE

A. Shaw Contract requires the use of the following adhesives to maintain the product warranty:
   1. S150-95 Resilient Tile Spray
   2. 4200 Resilient Tile 4 Gallon
   3. 4151 Multi-Use Premium 4 Gallon

## 2.4 OTHER MATERIAL

A. Subfloor repairs: use a good-quality Portland cement-based compound modified with latex that has a minimal resistance to compression of 3500 lbs/sq. in. (246 kg/cm2). to fill, smooth and/or level subfloor imperfections.

B. Self-levelling underlayment: use a Portland cement-based self-levelling underlayment modified with a polymer that has a minimal resistance to compression of 3500 lbs/sq. in. (246 kg/cm2).

PART 3 - EXECUTION

3.1 SITE INSPECTION

A. Examine the subfloor before installation to ensure that the surface is clean, dry, smooth, structurally sound and free from foreign substances that may adversely affect adhesion or cause discoloration. Furthermore, ensure that the subfloor is free of paint, varnish, adhesive, oil, grease, solvent and other foreign substances, including treatment compounds, sealers and curing compounds that may adversely affect adhesion or alter the appearance or durability of the resilient flooring.

B. Verify the surface to ensure there is no powder, scaling or mold. If found remove with a mechanical sander and level with a good-quality Portland cement-based self-levelling underlayment modified with a polymer that has a minimal resistance to compression of 3500 lbs/sq. in. (246 kg/cm2).

C. Slabs that have been either using a curing agent or a sealer will have to be treated to ensure that the adhesion has not been impaired.

D. Do not install on cement slabs that have been subjected to adhesive chemical abatement unless an approved remediation system was used afterwards.

E. Report and rectify all unsatisfactory conditions. Do not start flooring installation until all rectifications have been completed.

3.2 SUBFLOOR PREPARATION

A. Level all rough surfaces and fill cracks and marks with a Portland cement-based patching compound modified with latex.

B. Mechanically remove all surface contaminants such as paint, oil, grease, varnish, adhesive as well as various other products such as treatment compounds.

C. Measure the humidity and pH levels in the cement in compliance with the following standards before installation:
   1. ASTM F 2170, Relative Humidity (RH) test using in situ probes.
   2. ASTM F 710, pH levels (test procedure 5.3.1).
   3. The ASTM test frequency recommendation is 3 measures for the first 1,000 sq. ft. (92.9 sq. m) and one measure for each additional 1,000 sq. ft. (92.9 sq. m).

D. Ensure Moisture, Relative Humidity and pH tests have all been conducted and measurements meet manufacturer’s recommendations.

E. In case of doubt, test the adhesion on the cement subfloor or other surface that will be covered by the flooring. Do the test using the specified flooring and recommended adhesive.

## 3.3 RESILIENT FLOORING INSTALLATION

A. Install the flooring according to the latest version of Shaw Contract's installation instructions. Use the tools, adhesives, trowel types and procedures recommended in the instructions.

B. Acclimate the subfloor, all flooring material and adhesive for 48 hours before, during and after the installation by maintaining the room temperature between 65°F (18°C) and 85°F (29°C). Afterwards, maintain the temperature between 65°F (18°C) and 85°F (29°C).

## 3.4 CLEANING AND PROTECTION

A. Remove all excess adhesive immediately after installation as recommended in Shaw Contract's installation instructions.

B. Before allowing traffic after installation, consult and follow the recommendations in Shaw Contract's installation instructions.

C. Following installation and cleanup, if the work of all other trades has not yet been completed, protect the flooring by laying sheets of non-staining brown Kraft paper and then a layer of plywood sheets (rolls of non-staining heavy cardboard material could also be used for protection).

D. Follow the instructions in ShawContract's Maintenance Instructions when performing initial and regular maintenance procedures.

E. Please note that technical website documents prevail.

END OF SECTION 09 65 19

SECTION 09 68 13 – CARPET TILE

PART 1 – GENERAL

1.01 SUMMARY

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

1.02 SUBMITTALS

A. Shop Drawing: Show the following:
   1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
   2. Carpet tile type, color, and dye lot.
   3. Type of subfloor.
   4. Type of installation.
   5. Seam locations
   6. Pattern of installation.
   7. Pattern type, location, and direction.
   8. Installation method (monolithic, quarter turn, ashlar, brick random, interactive patterning).
   9. Type, color, and location of electrical insets and penetrations and borders.
   10. Type, color, and location of edge, transition, and other accessory strips.
   11. Transition details to other flooring materials.

B. Floor schedule using same room designations indicated on drawings.

C. Product Data: For each type of product

   1. Include manufacturer's written specifications and lab documents for any physical testing.
   2. Include installation recommendations for each type of substrate as specified in carpet manufacturer's installation guidelines and/or Carpet & Rug Institute Installation Standard, where applicable.
   3. Include carpet maintenance recommendations as outlined by the carpet manufacturer.
   4. Carpet Manufacturer shall also submit a plan for recycling the specified carpet at the end of the useful life of the carpet.

D. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

   1. Carpet Tile: Full-size Sample.
   2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch long Samples.

E. Manufacturer's Product Warranty.

F. Certifications: Manufacturer to submit copies of the following independent laboratory reports showing compliance with requirements per these methods outlined in Part 2 of this document. Submitted results shall represent average results for production goods of the specified style.
   1. ASTM E-648 Flooring Radiant Panel
   2. ASTM E-662: Smoke Density
   3. AATCC 134: Electrostatic Propensity
   4. ASTM D-3936: Delamination

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications

   1. Company specializing in manufacturing specified carpet with minimum 5 years documented experience.

   2. Upon request, manufacturer to provide representative to assist in project start-up and to inspect installation while in process and upon completion. Representative will notify designated contact if any installation instructions are not followed.

   3. Single Source Responsibility: Obtain each type of product from one source and by a single manufacturer.

B. Installer Qualifications

   1. Flooring contractor must be certified by the manufacturer prior to bid.
   2. An installer with a minimum of 5 years commercial carpet installation experience, and who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.
   3. Flooring contractor to be a specialty contractor normally engaged in this type of work and shall have prior experience in the installation of these types of materials.
   4. Certify payment of Prevailing Wage Rates to the installers.

   5. Flooring contractor possessing Contract for the product installation shall not sub-contract the labor without written approval of the Project Manager.

   6. Flooring contractor will be responsible for proper product installation, including floor testing and preparation as specified by the manufacturer and JOB CONDITIONS herein.

   7. Flooring contractor to provide Owner a written installation warranty that guarantees the completed installation to be free from defects in materials and workmanship for a period of one year after job completion.

1.04 DELIVERY, STORAGE, & HANDLING

A. Deliver materials to the site in manufacturer's original packaging listing manufacturer's name, product name, identification number, and related information.

B. Store in a dry location, between 65 degrees F and 90 degrees F and a relative humidity below 65%. Protect from damage and soiling. Store in pallet form as supplied by Manufacturer. Do not stack pallets.

C. Make stored materials available for inspection by the Owner's representative.

D. Store materials in area of installation for minimum period of 48 hours prior to installation.

1.05 PROJECT CONDITIONS

A. Sub-floor preparation is to include all required work to prepare the existing floor for installation of the product as specified in this document and Manufacturer's installation instructions.

B. Please see Modular Installation & Floor Preparation Instructions for specific requirements for moisture vapor emission rate, ambient conditions, and other requirements.

C. All material used in sub-floor preparation and repair shall be recommended by the carpet manufacturer and shall be chemically and physically compatible with the carpet system being bid.

D. Maintain minimum 65 degrees F ambient temperature and 65% Relative Humidity for 72 hours prior to, during, and 48 hours after installation.

E. Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

1.06 EXTRA MATERIALS

A. Provide additional 5% of each product for attic stock.

PART 2 - PRODUCTS

2.01 RECYCLED CONTENT

A. Product must contain a minimum of 45% recycled content by weight. This percentage is calculated by dividing the weight of recycled content in one square yard of finished product by the total weight of one square yard of finished product, and multiplying by

100. [(Recycle Content Weight) / (Total Product Weight) x 100].

B. Product must contain 28% post-consumer recycled content by weight from recycled post consumer carpet. This ensures that carpet is diverted from landfills for the production of the product and that virgin resource use in the product is reduced.

C. Recycled content must be certified by a neutral, independent, third party organization such as Scientific Certification Systems. Product must carry product label certifying overall recycled content (including post-industrial and post-consumer content). Report percentage of post-industrial and post-consumer recycled content as a percentage of total product weight.

D. Product must be available inclusive of 50% recycled content secondary backing.

1. Recycled content and post consumer content must not be subject to availability. Post industrial and post consumer recycled content of product installed must be the same as those required by Project requirements.
2. Also, Recycled content must be expressed as an exact percentage or a range. Statements such as "up to 60%" recycled content are not acceptable.
3. Manufacturer must fully comply with FTC Part 260 "Guides for the Use of Environmental Marketing Claims," with respect to advertising, labeling, product inserts, catalogs and sales presentations of all its flooring products submitted and sold.

2.02 PRODUCT RECYCLABILITY

A. Product must meet FTC guides for recyclability and Preference will be given to manufacturer's recycling 100 percent of reclaimed carpet tile back into carpet tile with recycled content

B. Recyclability of product installed must be the same as those required by Project requirements.

C. Carpet Disassembly and Recycling: Carpet capable of disassembly and recycling, with nylon being recycled into nylon and backing being recycled into backing.
D. Carpet product must meet guidelines of Presidential Executive Order 13101, and must meet the spirit of section 6002 of the Resource and Recovery Act (RCRA).

2.03 RECYCLING PROGRAM

A. Manufacturer must have a collection and recovery system for product and a fully established, currently operational recycling program at time of bid per FTC guides Section 260.7 (d).
    1. Manufacturer must be able to reclaim and recycle 100% of installed carpet. Like material as installed must be 100% recycled.
    2. Manufacturer must have written guarantee that 100% of the recovered vinyl backed carpet will be recycled and that no portion of the product will be landfilled or incinerated (including waste-to-energy).

2.04 NSF 140-2007 CERTIFICATION

A. Product must be certified at the Platinum level to ANSI standard NSF 140, the Sustainable Carpet Assessment Standard (SCAS). Product certification must be conducted by an independent, third party organization such as Scientific Certification Systems. Provide documentation.
B. Product must be Silver level Cradle to Cradle Certified™ v3.1. Cradle to Cradle Certified is a certification mark licensed by the Cradle-to-Cradle Products Innovation Institute.

2.05 PRODUCT WARRANTY

A. Warranty to be sole source responsibility of the Manufacturer. Second source warranties and warranties that involve parties other than the carpet manufacturer are unacceptable.

B. If the product fails to perform as warranted when properly installed and maintained, the affected area will be repaired or replaced at the discretion of the Manufacturer.

C. Chair pads are not required, but are recommended for optimum textural performance. Absent the use of chair pads, more intensive maintenance will be required for areas in direct contact with chair caster traffic, and some degree of appearance change is to be expected.

D. The non-prorated lifetime limited warranty shall specifically warranty against:
1. Excessive Surface Wear: More than 15% loss of pile fiber weight
2. Excessive Static Electricity: More than 3.0 kV per AATCC 134
3. Resiliency Loss of the Backing: More than 10% loss of backing resiliency
4. Delamination
5. Edge Ravel
6. Zippering

E. Tuft Bind warranty in lieu of edge ravel and zippering is not acceptable.

2.06 FIBER

A. Nylon Fiber: Bulked Continuous Filament (BCF) Nylon in a loop pile construction: TDX Nylon.

B. For yarn containing recycled content, report post consumer and post industrial recycled content of the pile face yarn based on total yarn weight i.e. [(Recycle Content in Pile Face Yarn) / (Total Weight of Pile Face Yarn) x 100]

C. Fiber to contain carbon-core filament for permanent static control. Topical treatments are not allowed.

D. Durable soil protection should be applied to the fiber during product manufacturing to resist fiber soiling.
Application Rate: 2% of Face Weight

2.07 BACKING CHARACTERISTICS

A. Primary Backing: Synthetic Non-Woven.

B. Secondary Backing: Ethos modular with Omnicoat Technology
1. Density (ASTM D-1667): 65 Min. lbs/cu ft +/- 5%
2. Standard Size: 24" x 24"
3. Recycled Content: 50% Recycled Content Secondary Backing
4. Fiberglass Reinforced
5. Face yarn fully fused to secondary backing system that will not delaminate.
6. Delamination: No delamination per ASTM D3936
7. Product must not contain pesticides (US EPA Registered Antimicrobials). Installation adhesives are exempt from this section.

2.08 PERFORMANCE CHARACTERISTICS

A. Test reports for the following performance assurance testing to be submitted upon request. Submitted results shall represent average results for production goods of the referenced style.

B. Requirements listed below must be met by all products.

1. Flooring Radiant Panel
ASTM E-648 / NFPA 253: Class 1 (CRF: 0.45 watts/sq cm or greater)

2. Federal Flammability
CPSC FF 1-70: Passes

3. Smoke Density
ASTM E-662 / NFPA 258: < 450 Flaming Mode

4. Electrostatic Propensity
AATCC 134 (Step & Scuff): 3.0 kV or less

5. Static Coefficient of Friction
ASTM C-1028: Passes ADA Requirements for Accessible Routes (minimum 0.60)

6. Delamination of Secondary Backing of Pile Floor Coverings
ASTM D-3936: No Delamination

7. Lightfastness
AATCC 16E: > 4 @ 100 hours

8. TARR
Severe Traffic: 3.5 minimum

9. Dimensional Stability
Aachen / ISO 2551: Maximum Change +/- 0.149%

11. Moisture Barrier

Moisture Penetration by Impact @ 10 psi: No Penetration of backing after 10,000 impacts

12. Other
As specified in 2.04, 2.05 and 2.06 of this document.

2.09 PRODUCT SPECIFICATIONS

A. Manufactured by Shaw Contract

1. Creative Zone or Set Up Carpet Lines, (Color: TBD)
   A. Construction: Multi-Level Pattern Loop
   B. Gauge: 24
   C. Stitch Rate: 8.0 pile units / inch
   D. Tuft Density: 96.0 tufts/sq inch
   E. Pile Height Average: .187 inch
   F. Pile Thickness: .115 inch
   G. Density Factor (UM44D): 7,513 oz/cu yd
   H. Fiber System: Solution Q Extreme® Nylon, Ecosolution Q100™ Nylon
   I. Dye Method:100% Solution Dyed
   J. R-Value: 0.51 Minimum Hr-ft2-ºF/Btu
   K. Static Coefficient of Friction: Passes ADA requirements.
   L. Static Propensity: AATCC 134: 3.5 kv or less
   M. Flooring Radiant Panel: ASTM E-648 or NFPA 253: Class 1
   N. Acoustic Requirements: Noise Reduction Coefficient (NRC): 0.15 Minimum
   O. Secondary Backing Density: 65 Min. lbs/cu ft +/- 5%
   P. Secondary Backing Recycled Content: 50%
   Q. Total Weight: 101.9 oz/sq yd +/- 5%
   R. Third Party Certification: NSF 140 Platinum rating
   S. Total Product Recycled Content (based on Total Weight): 54.7%
   T. Total Product Post Consumer Content (based on Total Weight): 32.4%
   U. Environmental Impact: No pesticides added to product (US EPA Registered Antimicrobials

B. Substitutes/Alternates

Subject to compliance with all requirements, “or equal” must match the selected colors, have similar aesthetic appearance and tuft density, factory-applied “dry” adhesive, equivalent NSF 140 certification, recycled content certification labels and recyclability. Substitution sample and submittals must be submitted for written approval of quality and color at least ten days prior to bid to be considered. Sample of proposed substitute must be inclusive of both the face and proposed backing (color-only sample not acceptable).

2.10 ACCESSORIES

A. Materials recommended by Manufacturer for patching, leveling, priming, etc.

B. Base, Carpet Edge, and Transition Strips: As specified in applicable sections.

PART 3 EXECUTION

3.01 EXAMINATION / PREPARATION

A. Prepare sub-floor to comply with criteria established in Manufacturer's installation instructions. Use only preparation materials that are acceptable to the Manufacturer.

1. Remove all deleterious substances from substrate(s) that would interfere with or be harmful to the installation.
2. Remove sub-floor ridges and bumps. Fill cracks, joints, holes, and other defects.

B. Verify that sub-floor is smooth and flat within specified tolerances and ready to receive carpet.

C. Verify that substrate surface is dust-free and free of substances that would impair bonding of product to the floor.

D. Verify that concrete surfaces are ready for installation by conducting moisture and pH testing. Results must be within limits recommended by Manufacturer.

E. There will be no exceptions to the provisions stated in the Manufacturer's installation instructions.

3.02 INSTALLATION - GENERAL

A. Install product in accordance with Manufacturer's installation instructions.

B. Product must meet the requirements of CRI's Green Label Plus (GLP) program for carpet. Provide documentation.

C. Adhesive must meet the requirements of CRI's Green Label Plus program for adhesive. Provide documentation.

D. Adhesives must be below the VOC content limits specified by the South Coast Air Quality Management District Rule #1168. Provide documentation.

E. No US EPA registered pesticides (antimicrobials) are to be added to the product. Antimicrobial treatments are registered with the EPA as preservatives of the products only, and no health benefit should be claimed or expected. If antimicrobials are added then third party documentation with a seal is required stating that the pesticides used will cause NO HARM to the occupants. Installation adhesives are exempt from this section.

F. Product as installed to be securely attached to the floor in compliance with Americans with Disabilities Act (ADA), Section 4.5.3.

G. Where demountable partitions or other items are indicated for installation on top of finished carpet tile floor, install carpet tile before installation of these items.

H. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.

I. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

J. Install pattern parallel to walls and borders.

K. Roll with appropriate roller for complete contact of product with adhesive to sub-floor.

L. Trim carpet neatly at walls and around interruptions.

M. Completed product is to be smooth and free of bubbles, puckers, and other defects.

3.03 PROTECTION & CLEANING

A. Perform the following operations immediately after installing carpet tile:
   1. Remove excess adhesive, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
   2. Remove yarns that protrude from carpet tile surface.
   3. Vacuum carpet tile using commercial machine with face-beater element.

B. Protect installed carpet tile to comply with Carpet & Rug Institute Installation Standard, "Protecting Indoor Installations."

C. When construction or move-in activities will continue where new carpet is installed, provide non-staining building material paper to protect carpet. Don’t use plastic sheeting as it can trap moisture, and self-sticking plastic sheeting can transfer adhesive residue to carpet that will attract soil.

D. When heavy objects are moved over carpet within 24 hours of installation, use plywood over carpet to prevent buckling and wrinkling.

E. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION

# SECTION 23 08 00 - COMMISSIONING OF HVAC SYSTEMS

## PART 1 – GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 23 Specification Sections, apply to this Section.

### 1.2 SCOPE OF WORK

A. Work includes performing commissioning process requirements for HVAC systems including mechanical controls, assemblies, and equipment.

B. Refer to Section 01 91 00 General Commissioning Requirements for general commissioning process requirements.

### 1.3 DEFINITIONS

A. See 01 91 00 General Commissioning Requirements for definitions.

### 1.4 CONTRACTOR'S RESPONSIBILITIES

A. See 01 91 00 General Commissioning Requirements for contractors' and subcontractors' responsibilities.

B. Provide training on each piece of commissioned equipment. See 01 91 00 for training details.

### 1.5 CA RESPONSIBILITIES

A. See 01 91 00 General Commissioning Requirements for CA responsibilities

### 1.6 COMMISSIONING DOCUMENTATION

A. Provide the following information to the CA for inclusion in the commissioning plan:

1. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase.
2. Schedule for completing construction checklists and manufacturer's prestart and startup checklists for HVAC systems, assemblies, equipment, and components to be commissioned.

B. Provide the following as discussed in Section 01 91 00, General Commissioning Requirements to General Contractor:

1. Completed system readiness checklist for each piece of commissioned equipment. Completion of system readiness checklist, O&M manual start-up checklist, and any manufacturer provided field start-up checklists.

2. Verification to GC readiness certifying that HVAC systems, subsystems, equipment, and associated controls are ready for functional testing.

3. Corrective action documents resulting from issues in the Commissioning Issues Log or deficiencies found from completing the start-up plan.

## 1.7 SUBMITTALS

A. Updated submittals: keep the CA informed of all changes to the control system documentation made during programming and setup.

B. Certificates of readiness (completion of the system readiness checklist) to General Contractor for review by CA.

C. Written training plan for review by A/E and CA prior to training. See Section 01 91 00 General Commissioning Requirements for specific items to be included in the training plan.

D. Provide O&M manuals to GC for submission to CA. These are required prior to development of the system readiness checklists.

# PART 2 – PRODUCTS

## 2.1 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup and initial checkout and required functional performance testing.

B. Equipment-specific tools: where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or functional testing, provide such equipment, tools, and instruments as part of the work at no extra cost to owner; such equipment, tools, and instruments are to become the property of owner.

PART 3 – EXECUTION

3.1 PARTICIPATION

A. The contractor shall provide skilled technicians to startup and debug all systems. These same technicians shall be made available to assist the Commissioning Authority in completing the commissioning program. Contractor(s) shall ensure that the qualified technician(s) are available and present during the agreed upon schedules to complete the necessary tests, adjustments, and/or problem resolutions.

B. System performance problems and discrepancies may require additional technician time, Commissioning Authority time, reconstruction of systems, and/or replacement of system components. The additional technician time shall be made available for subsequent commissioning periods until the required system performance is obtained.

3.2 TESTING PREPARATION

A. Cooperate with the CA in development of the functional test procedures.

B. Certify that HVAC systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents.

C. Certify that HVAC instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents, and that pretest set points have been recorded.

D. Certify that testing, adjusting, and balancing procedures have been completed and that testing, adjusting, and balancing reports have been submitted, discrepancies corrected, and corrective work approved.

E. Set systems, subsystems, and equipment into operating mode to be tested (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions) as required in functional testing.

F. Provide test holes in ducts and plenums where directed by testing and balance subcontractor to allow air measurements and air balancing. Provide approved plugs.

G. Provide temperature and pressure taps according to contract documents for testing and balance, and commissioning tests.

H. Provide input to GC on construction schedule to include division pipe and duct system testing, flushing, and cleaning. Provide input on equipment start-up and testing and balance schedule to GC. Notify the CA when these items are scheduled.

I. Check safety cutouts, alarms, and interlocks with smoke control and life-safety systems during each mode of operation.

J. Testing Instrumentation: Install measuring instruments and logging devices to record test data as directed by the CA.

K. Certify that all related A/E punch list items are complete prior to commencing functional tests.

L. Correct deficiencies found from completing the start-up plan prior to conducting functional tests.

M. Provide full points list and keep CA informed of changes in list during programming and setup.

3.3 TESTING AND BALANCE VERIFICATION

A. Prior to performance of testing and balancing work, provide copies of reports, sample forms, checklists, and certificates to the CA.

B. Notify the CA at least ten (10) days in advance of testing and balancing Work, and provide access for the CA to witness testing and balancing Work.

C. Provide technicians, instrumentation, and tools to verify testing and balancing of HVAC systems at the direction of the CA.

D. Provide a qualified control system technician to operate the controls to assist the TAB technicians or provide sufficient training for the TAB technicians to operate the system without assistance.

E. The CA will notify testing and balancing Subcontractor five (5) days in advance of the date of field verification.

F. The testing and balancing subcontractor shall use the same instruments (by model and serial number) that were used when original data were collected.

G. Failure of an item includes not meeting acceptance criteria as discussed in 23 05 93 Testing, Adjusting, and Balancing for HVAC. Failure of more than 10 percent of selected items shall result in rejection of final testing, adjusting, and balancing report.

H. Remedy the deficiency and notify the CA so verification of failed portions can be performed

## 3.4 GENERAL TESTING REQUIREMENTS

A. System readiness checklists and functional test forms will be provided by CA, and executed by installing subcontractors. System readiness checklists are part of the start-up plan that will be provided by the CA to the GC. The GC will distribute the forms and ensure their completion prior to submitting back to the CA for review.

B. CA will oversee execution of the functional tests. Functional tests are provided early to obtain any comments or suggestions.

C. Provide installing technicians, instrumentation, and tools to perform commissioning test at the direction of the CA.

D. Provide skilled technicians who are familiar with this building to execute the functional tests as directed by the CA.

E. Scope of HVAC testing shall include entire HVAC installation, from central equipment for heat generation and air conditioning through distribution systems to each conditioned space. Testing shall include measuring capacities and effectiveness of operational and control functions.

F. Test all operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of building automation system controllers and sensors.

G. Tests will be performed using design conditions whenever possible.

H. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by the CxA and document simulated conditions and methods of simulation. After tests, return settings to normal operating conditions.

I. The CA may direct that set points be altered when simulating conditions is not practical.

J. The CA may direct that sensor values be altered when design or simulating conditions and altering set points are not practical.

K. If tests cannot be completed because of a deficiency outside the scope of the HVAC system, document the deficiency and report it to the CM and GC. After deficiencies are resolved, coordinate with CA to reschedule tests.

L. Installing subcontractor shall be present during all functional tests, whether sub-contractor's equipment is directly involved with the test or not. This is to speed the process of problem resolution as they are discovered during the testing process.

## 3.5 HVAC SYSTEMS, SUBSYSTEMS, AND EQUIPMENT TESTING PROCEDURES

A. HVAC Instrumentation and Control System Testing: Field testing plans and testing requirements are specified in mechanical drawings and functional tests (provided by CA) during construction phase.

B. HVAC Distribution System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of air distribution systems; including HVAC terminal equipment and unitary equipment.

C. See 01 91 00 General Commissioning Requirements for contractor's retesting procedures.

3.6 CONTROL SYSTEM TESTING PROCEDURES

A. Provide a skilled technician who is familiar with this building to execute the functional tests as directed by the CA.

B. Demonstrate the following to the CA during testing of controlled equipment:

1. Setpoint changing features and functions
2. Sensor calibrations
3. Specified functions and features are set up, debugged, and fully operable
4. Graphic screens and value readouts are completed
5. Trend monitoring and data storage is completed
6. Alarms are active

3.7 TRAINING

A. Provide training on each piece of commissioned equipment. See 01 91 00 and Division 23 for training details.

B. Trainer must be familiar with this building and equipment. Have the technicians that performed work on this building available for answering questions.

END OF SECTION 23 08 00

# SECTION 26 08 00 - COMMISSIONING OF ELECTRICAL SYSTEMS

## PART 1 – GENERAL

### 1.1 RELATED DOCUMENTS

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

B. Sections 26 09 23 Lighting Control System, 26 51 19 Interior Lighting, and 26 56 19 Exterior Lighting.

### 1.2 SCOPE OF WORK

A. Work includes performing commissioning process requirements for Lighting Control systems including assemblies and equipment.

B. Refer to Section 01 91 00 General Commissioning Requirements for general commissioning process requirements.

### 1.3 DEFINITIONS

A. See 01 91 00 General Commissioning Requirements for definitions.

### 1.4 CONTRACTOR'S RESPONSIBILITIES

A. See 01 91 00 General Commissioning Requirements for contractors' and subcontractors' responsibilities.

B. Provide training on commissioned lighting control systems. See 01 91 00 for training details.

### 1.5 CA RESPONSIBILITIES

A. See 01 91 00 General Commissioning Requirements for CA responsibilities

### 1.6 COMMISSIONING DOCUMENTATION

A. Provide the following information to the CA for inclusion in the commissioning plan:

1. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase.
2. Schedule for completing construction checklists and manufacturer's prestart and startup checklists for all lighting control system components.

B. Provide the following as discussed in Section 01 91 00, General Commissioning Requirements to General Contractor:

1. Completed system readiness checklist for lighting control system, including completion of system readiness checklist, O&M manual start-up checklist, and any manufacturer provided field start-up checklists.
2. Verification to GC readiness certifying that all lighting controls are ready for functional testing.
3. Corrective action documents resulting from issues in the Commissioning Issues Log or deficiencies found from completing the start-up plan.

1.7 SUBMITTALS

A. Updated submittals: keep the CA informed of all changes to the control system documentation made during programming and setup.

B. Certificates of readiness (completion of the system readiness checklist) to General Contractor for review by CA.

C. Written training plan for review by A/E and CA prior to training. See Section 01 91 00 General Commissioning Requirements for specific items to be included in the training plan.

D. Provide O&M manuals to GC for submission to CA. These are required prior to development of the system readiness checklists.

PART 2 – PRODUCTS

2.1 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup and initial checkout and required functional performance testing.

B. Equipment-specific tools: where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or functional testing.

PART 3 – EXECUTION

3.1 PARTICIPATION

A. The contractor shall provide skilled technicians to startup and debug all systems. These same technicians shall be made available to assist the Commissioning Authority in completing the commissioning program. Contractor(s) shall ensure that the qualified technician(s) are available and present during the agreed upon schedules to complete the necessary tests, adjustments, and/or problem resolutions.

B. System performance problems and discrepancies may require additional technician time, Commissioning Authority time, reconstruction of systems, and/or replacement of system components. The additional technician time shall be made available for subsequent commissioning periods until the required system performance is obtained.

3.2 TESTING PREPARATION

A. Review and Complete System Readiness Checklists in accordance with Section 01 91 00.

B. Contractor's Commissioning Coordinator shall verify completion of all items, sign and return the checklist to the Commissioning Authority as an indication of final completion with all installation criteria as specified in the Project Contract Documents.

C. The initial System Readiness Checklists will be provided in the Commissioning Plan. The final checklists may be modifications of the initial checklists, and checklists may be added; modifications and additions to be made by the Commissioning Provider after equipment submittals have been accepted.

D. A separate completed checklist shall be submitted for each system and item of equipment within the commissioning scope of work, as specified in 01 91 00.

E. The Systems Readiness Checklists do not represent all the contract documents for the associated equipment. Completion of the items on this checklist does not release the contractor from requirements specified elsewhere.

3.3 STARTUP VERIFICATION

A. The Contractor shall provide a Startup Plan, which shall include the following:

1. System Readiness Checklists – provided by CxA and completed by the Contractor except as noted below.

2. Startup and testing procedures and data forms, in accordance with the project specifications, for all equipment and systems within the commissioning scope of work

B. Within 20 working days of Product Submittal approval, submit the Startup Plan with blank forms for CxA review.

C. Submit the completed Startup Plan at least ten business days prior to functional performance testing. When it is necessary to begin functional performance testing on a system (or systems) before the readiness of other systems can be documented, it may be acceptable to provide preliminary submittals of the Startup Plan that have been completed only for the system(s) that are ready for testing. Lighting and lighting control pre-functional checks include but are not limited to:

1. Ensure all labeling is affixed and accurate.

2. Verify quantity, type and location of fixtures.

3. Verify type and location of switches.

4. Check sensor placement is adequate for required duty.

5. Ensure adequate access is provided to all panels and that documentation of that panel is provided in it.

6. Ensure all circuits for the loads are energized and ready for testing.

3.4 GENERAL TESTING REQUIREMENTS

A. Before The Functional Performance Test (FPT) Procedures shall be developed, performed, and demonstrated in accordance with Section 01 91 00.

B. At a minimum, the electrical and lighting control contractors are required to participate in developing, performing, and demonstrating the indicated FPTs

C. The initial FPTs will be developed after review of the submittals. The final FPTs may be modifications of the initial FPTs, and FPTs may be added; modifications and additions to be made by the Commissioning Provider after equipment submittals have been accepted.

D. For the following systems the contractor shall provide a finalized draft of the startup and testing plan for CxA review, at least two weeks prior to system testing. The CxA shall review the contractors testing plan and results. The contractor shall submit completed testing documentation for inclusion in the final commissioning report.

E. The Contractor’s Commissioning Coordinator shall coordinate the subcontractors, with the Commissioning Provider's input, in developing, performing, and demonstrating the Working FPT.

1. Functional testing of the lighting control system shall, at a minimum, consist of the following:

2. Spot check the lighting systems Start-up and ensure that all lamps are operational and fixtures are clean.
3. Check all occupancy sensor placement and test reliability of activation/deactivation.
4. Test photocells for functionality and accuracy.
5. Check all switches to ensure proper operation and circuiting.
6. Individually check all lighting panel schedules to ensure that room numbers and areas are correctly listed and they are programmed per the Owner's direction.
7. Spot check lighting levels to ensure compliance with IES for the respective occupancy.
8. Test operation of circuits by changing system Date and Time to cause various circuits to switch modes. For rooms with occupancy sensors, validate the circuit energizes with occupancy in the space after the lights have been swept off. Test warning flicker prior to off sweep. Test cleaning and shed features.
9. Check schedules and lighting levels in all modes. Coordinate with Owner/Occupant for settings.
10. For exterior fixtures, simulate night mode to validate function. Measure and record light level to ensure they meet the requirements and are generally provide adequate security. Check for excessive light level fluctuations or dark spots

F. When an FPT applies to many similar components or systems that are not a part of a life-safety system, the contractor may demonstrate the function performance tests (FPTs) to the Commissioning Provider (CxA) as specified in Section 01 91 00. Demonstration Sampling will apply only in accordance with 01 91 00, and only for the components and systems listed in the accompanying Function Performance Test (FPT) Demonstration Sampling Table.

## 3.5 CONTROL SYSTEM TESTING PROCEDURES

A. Provide a skilled technician who is familiar with this building to execute the functional tests as directed by the CA.

B. Demonstrate the following to the CA during testing of controlled equipment. Interior & Exterior Lighting Controls including but not limited to:

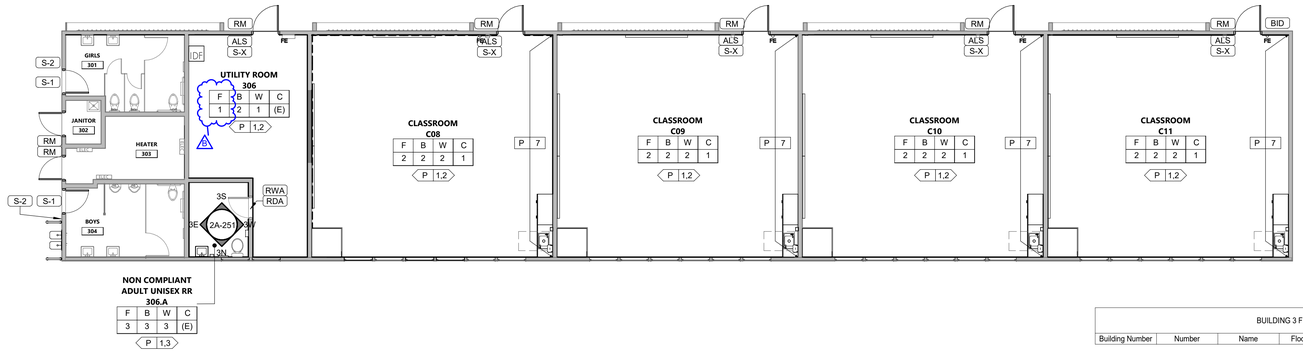
1. Manual On/Off Switches
2. Dimming Controls
3. Occupancy Sensors
4. Photocell Sensors
5. Astronomical Timeclock

## 3.6 TRAINING

A. Provide training on each piece of commissioned equipment. See 01 91 00 and Division 26 for training details.

B. Trainer must be familiar with this building and equipment. Have the technicians that performed work on this building available for answering questions.

END OF SECTION 26 08 00




PROJECT NORTH

**NOTE:**

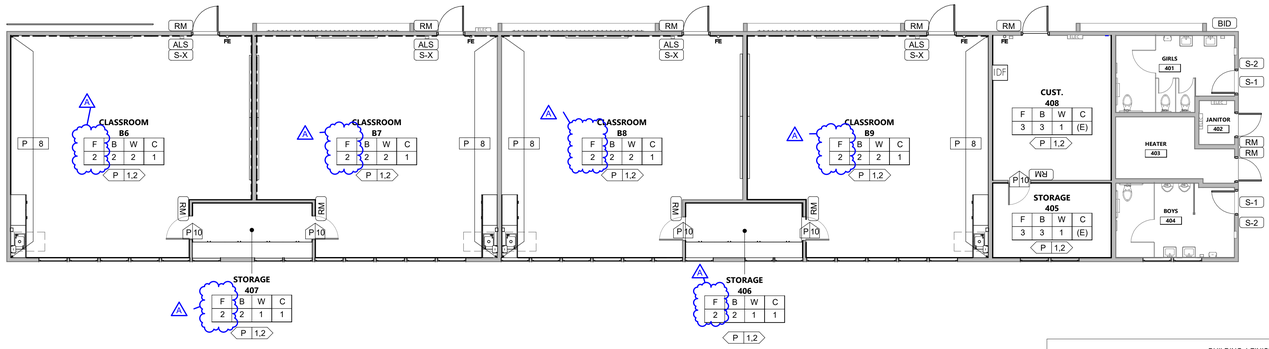
PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **2** RECEIVERS, FOR USE IN THE CLASSROOMS.

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 | NON COMPLIANT ADULT UNISEX RR | 3 | 3 | 3 | (E) |

**BLDG. 3 - FINISH KEY PLAN** | 1/8" = 1'-0" | **1**




PROJECT NORTH

**NOTE:**

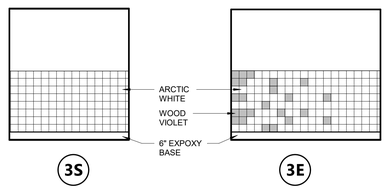
PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **2** RECEIVERS, FOR USE IN THE CLASSROOMS.

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 Ii7B.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 |

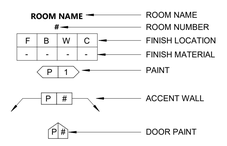
## CEILING FINISHES (C)

| (C) | DESCRIPTION | COLOR | SPECIFICATION SECTION | REMARK |
|---|---|---|---|---|
| (E#) | EXISTING CEILING | | | MATCH EXISTING ADJACENT |
| 1 | 5/8" GYP BOARD | P-2 (SEE PAINT SCHEDULE) | | |

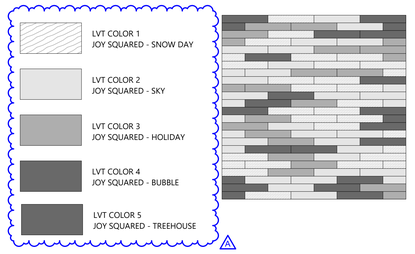
## PAINT (P)

| (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 |

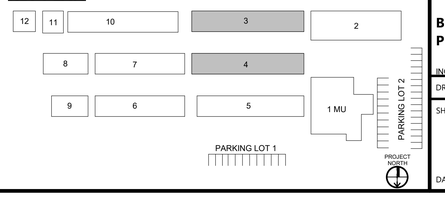
## FINISHES PLAN




## TYPICAL CLASSROOM LVT LAYOUT (F2)




## KEY PLAN




AGENCY APPROVAL DSA#


196
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1101 South Winchester Blvd., Suite H184
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MECHANICAL ENGINEER
CYPRESS ENGINEERING GROUP
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Monterey, CA 93940
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ELECTRICAL ENGINEER
ATIUM ENGINEERING
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San Ramon, CA 94582
TEL (913) 961-1658

STRUCTURAL ENGINEER
BASE Design Inc.
582 Market St. Ste 1402
San Francisco, CA 94104
TEL (415) 466-2997

TECHNOLOGY ENGINEER
KMM Services Inc.
5433 El Camino Ave. Ste 5
Carmichael, CA 95608
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LANDSCAPE ARCHITECT
YAMASAKI LANDSCAPE ARCHITECTURE
1223 High Street
Auburn, CA 95603
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PROFESSIONAL STAMP

LICENSED ARCHITECT · MARISHA ALVAREZ PARGA · C-36107 · REN. 01-31-25 · STATE OF CALIFORNIA

REVISIONS

| NO. | DATE | DESCRIPTION |
|---|---|---|
| A | 10/30/2024 | ADDENDUM |
| B | 10/31/2024 | Revision 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

**BLDG 3 & 4 - FINISH & SIGNAGE PLAN**

INC.2

DRAWN BY: Author JOB NUMBER: 23118.01

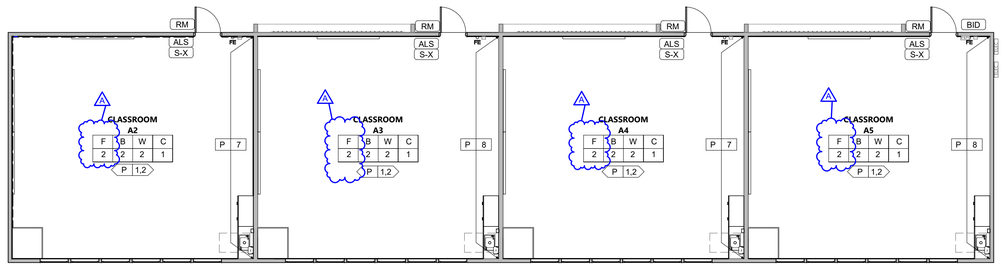
SHEET NO.

# 2A-251

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 10/31/2024 3:25:58 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_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.

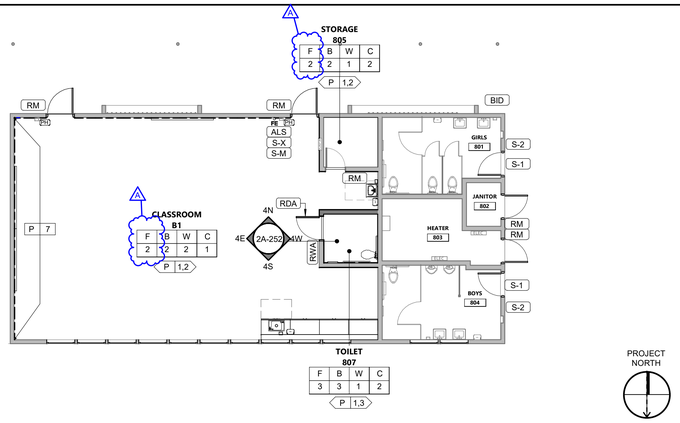
THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

BUILDING 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




PROJECT NORTH

**NOTE:**

PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **2** RECEIVERS, FOR USE IN THE CLASSROOMS.

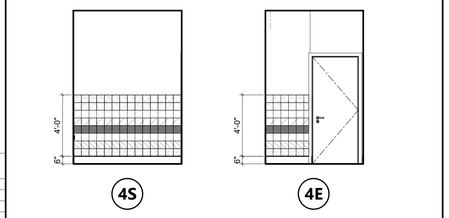
THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

BUILDING 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

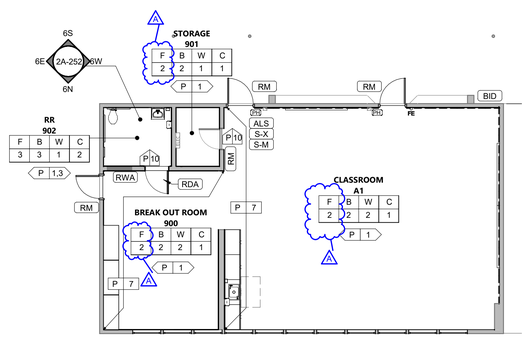
1/8" = 1'-0" | 2




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. 8 - 807 RR - WALL TILE LAYOUT

1/4" = 1'-0" | 4




PROJECT NORTH

**NOTE:**

PROVIDE **2** PORTABLE ASSISTIVE LISTENING SYSTEMS, EACH WITH A TRANSMITTER AND A MINIMUM OF **2** RECEIVERS, FOR USE IN THE CLASSROOMS.

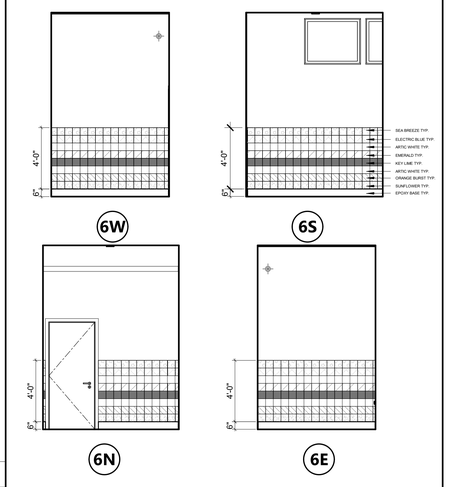
THE ASSISTIVE LISTENING RECEIVERS AND TRANSMITTER SHALL BE STORED IN THE SCHOOL SITE ADMINISTRATION OFFICE UNTIL REQUESTED, SEE SPECIFICATION SECTION 27 51 26

BUILDING 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 Ii17B.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 |

## 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

## 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 |

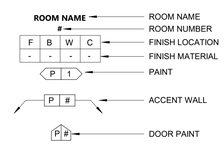
## CEILING FINISHES (C)

| (C) | DESCRIPTION | COLOR | SPECIFICATION SECTION | REMARK |
|---|---|---|---|---|
| (E#) | EXISTING CEILING | | | MATCH EXISTING ADJACENT |
| 1 | 5/8" GYP BOARD | P-2 (SEE PAINT SCHEDULE) | | |

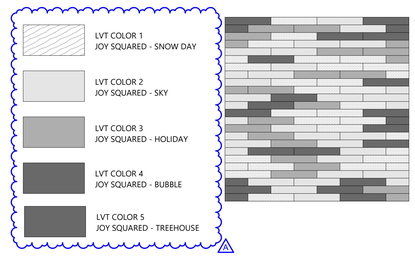
## PAINT (P)

| (P) | DESCRIPTION | COLOR | 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 |

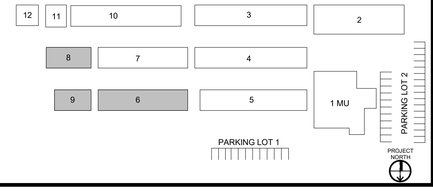
## FINISHES PLAN




## TYPICAL CLASSROOM LVT LAYOUT (F2)




## KEY PLAN




AGENCY APPROVAL DSA#


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PROFESSIONAL STAMP

LICENSED ARCHITECT MARINA ALVAREZ PARGA C-36107 REN. 01-31-25 STATE OF CALIFORNIA

REVISIONS

| NO. | DATE | DESCRIPTION |
|---|---|---|
| A | 10/30/2024 | ADDENDUM |


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 6, 8 & 9 - FINISH & SIGNAGE PLAN**

INC 2

DRAWN BY: DV JOB NUMBER: 23118.01

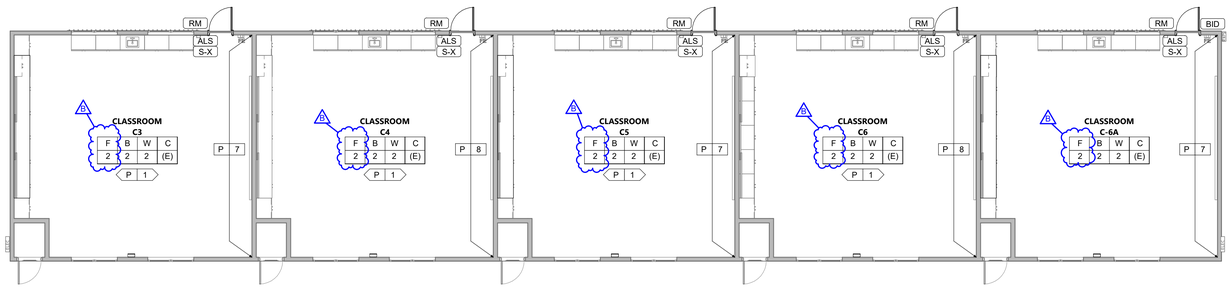
SHEET NO.

**2A-252**

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 10/31/2024 3:25:59 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_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 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 Ii17B.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 |

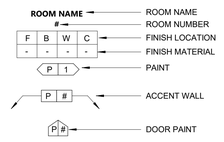
## CEILING FINISHES (C)

| (C) | DESCRIPTION | COLOR | SPECIFICATION SECTION | REMARK |
|---|---|---|---|---|
| (E#) | EXISTING CEILING | | | MATCH EXISTING ADJACENT |
| 1 | 5/8" GYP BOARD | P-2 (SEE PAINT SCHEDULE) | | |

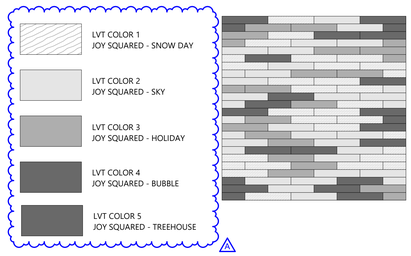
## PAINT (P)

| (P) | DESCRIPTION | COLOR | 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 |

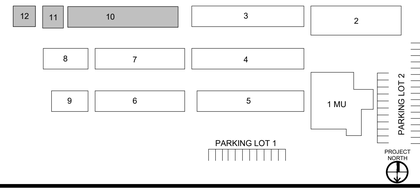
## FINISHES PLAN




## TYPICAL CLASSROOM LVT LAYOUT (F2)




## KEY PLAN




AGENCY APPROVAL DSA#


196

991 W HEDDING ST., SUITE 101
SAN JOSE, CA 95126
TEL (408) 715-4470

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MARINA ALVAREZ PARGA
C-36107
REN. 01-31-25
STATE OF CALIFORNIA

REVISIONS

| NO. | DATE | DESCRIPTION |
|---|---|---|
| B | 10/31/2024 | Revision 1 |


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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 10, 11 & 12 - FINISH & SIGNAGE PLAN**

INC 2

DRAWN BY: Author JOB NUMBER: 23118.01

SHEET NO.

# 2A-253

DATE: OCTOBER 23, 2024

CONSTRUCTION DOCUMENT

DATE PLOTTED: 10/31/2024 3:26:05 PM FILE LOCATION: Autodesk Docs://Mt. Diablo USD - Modernization Projects 2023/23118_MTDUSD_RIO VISTA ES MOD_INC02_A22.rvt

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.

M:\3054 - Rio Vista ES_DWG\3054-C21-PW.dwg 11-01-24 03:25:45 PM MilanKC

## GRADING CONSTRUCTION DETAIL REFERENCES , SEE SHEET PW-2 AND PW-3

1. TYPICAL HMA CONFORM DETAILS FOR OVERLAYS SECTION PER DETAIL CA51 ON SHEET PW-2
2. CURB RAMP (TYPE A) TYPICAL LAYOUT SECTION PER DETAIL CA75 ON SHEET PW-2
3. STANDARD SIDEWALK SECTION PER DETAIL CA70 ON SHEET PW-2
4. STANDARD S1-6 CURB & GUTTER SECTION PER DETAIL CA71 ON SHEET PW-2
5. STANDARD DRIVEWAY RAMP PER DETAIL CA72 ON SHEET PW-3
6. DOWELING DETAILS FOR CURB AND SIDEWALK PER DETAIL CA74 ON SHEET PW-3

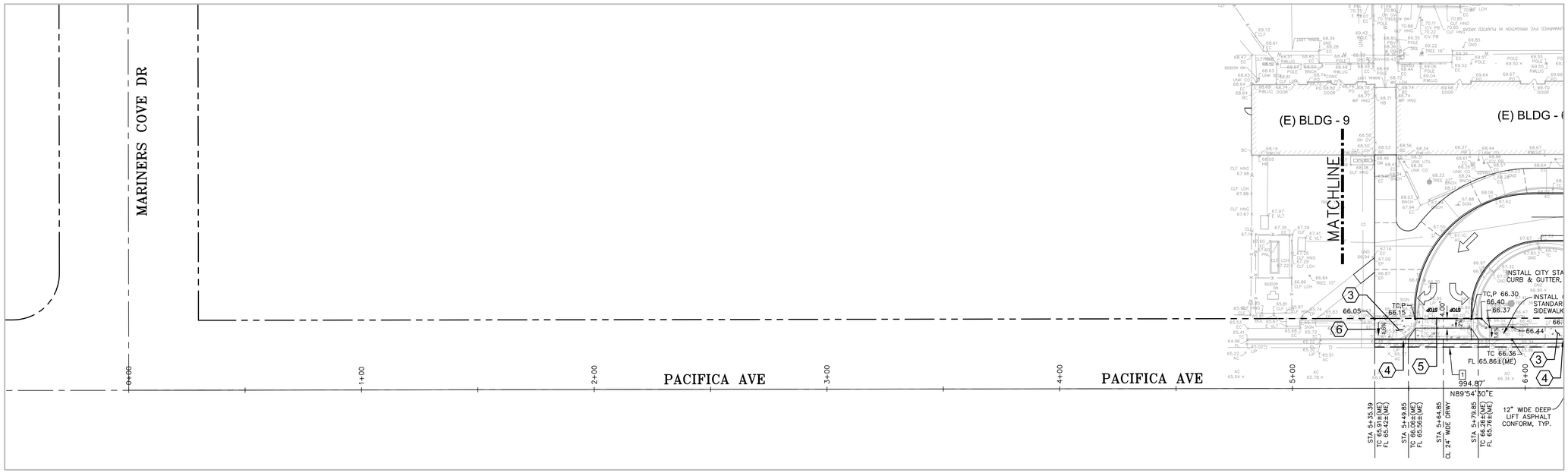
## GRADING PLAN NOTES:

1. SAWCUT & CONFORM TO (E) ASPHALT

N

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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REGISTERED PROFESSIONAL ENGINEER
MATTHEW PAUL MARTIN
No. C 68770
Exp. 12/31/25
STATE OF CALIFORNIA
CIVIL

REVISIONS

| | | |
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| 1 | | |

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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

**STREET IMPROVEMENT PLAN**

INC.2

DRAWN BY: MPM JOB NUMBER: 23118.01

SHEET NO.

# PW-1

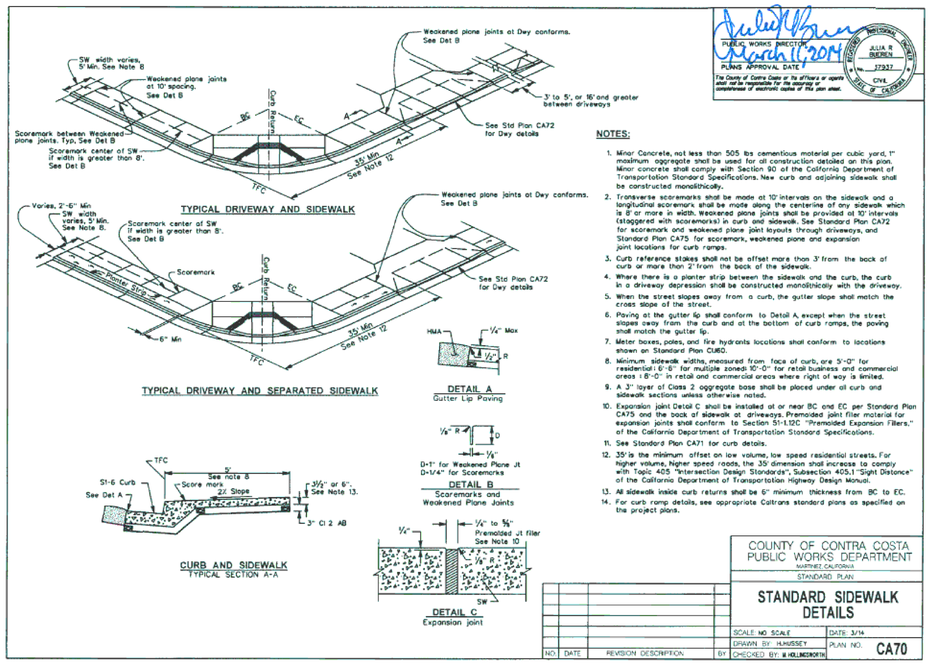
DATE: SEPTEMBER 19, 2024

CONSTRUCTION DOCUMENTS


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Construction Contractor agrees that in accordance with generally accepted construction practices, construction contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property; that this requirement shall be made to apply continuously and not be limited to normal working hours, and construction contractor further agrees to defend, indemnify and hold design professional harmless from any and all liability, real or alleged in connection with the performance of work on this project, excepting liability arising from the sole negligence of design professional.






NOTES:

1. Minor Concrete, not less than 505 lbs cementious material per cubic yard, 1" maximum aggregate shall be used for all construction detailed on this plan. Minor concrete shall comply with Section 90 of the California Department of Transportation Standard Specifications. New curb and adjoining sidewalk shall be constructed monolithically.
2. Transverse scoremarks shall be made at 10' intervals on the sidewalk and a longitudinal scoremark shall be made along the centerline of any sidewalk which is 8' or more in width. Weakened plane joints shall be provided at 10' intervals (staggered with scoremarks) in curb and sidewalk. See Standard Plan CA72 for scoremark and weakened plane joint layouts through driveways, and Standard Plan CA73 for scoremarks, weakened plane and expansion joint locations for curb ramps.
3. Curb reference stakes shall not be offset more than 3' from the back of curb or more than 2' from the back of the sidewalk.
4. Where there is a planter strip between the sidewalk and the curb, the curb in a driveway depression shall be constructed monolithically with the driveway.
5. When the street slopes away from a curb, the gutter slope shall match the cross slope of the street.
6. Paving at the gutter lip shall conform to Detail A, except when the street slopes away from the curb and at the bottom of curb ramps, the paving shall match the gutter lip.
7. Meter boxes, poles, and fire hydrants locations shall conform to locations shown on Standard Plan CU60.
8. Minimum sidewalk widths, measured from face of curb, are 5'-0" for residential; 6'-6" for multiple zoned; 10'-0" for retail business and commercial areas; 15'-0" in retail and commercial areas where right of way is limited.
9. A 3" layer of Class 2 aggregate base shall be placed under all curb and sidewalk sections unless otherwise noted.
10. Expansion joint Detail C shall be installed at or near BC and EC per Standard Plan CA75 and the back of sidewalk at driveways. Premolded joint filler material for expansion joints shall conform to Section 51-1.12C "Premolded Expansion Fillers," of the California Department of Transportation Standard Specifications.
11. See Standard Plan CA71 for curb details.
12. 35' is the minimum offset on low volume, low speed residential streets. For higher volume, higher speed roads, the 35' dimension shall increase to comply with Topic 405 "Intersection Design Standards", Subsection 405.1 "Sight Distance" of the California Department of Transportation Highway Design Manual.
13. All sidewalk inside curb returns shall be 6" minimum thickness from BC to EC.
14. For curb ramp details, see appropriate Caltrans standard plans as specified on the project plans.

PUBLIC WORKS DIRECTOR
PLANS APPROVAL DATE March 11, 2014
JULIA R BUREN — No. 37937 — CIVIL — STATE OF CALIFORNIA
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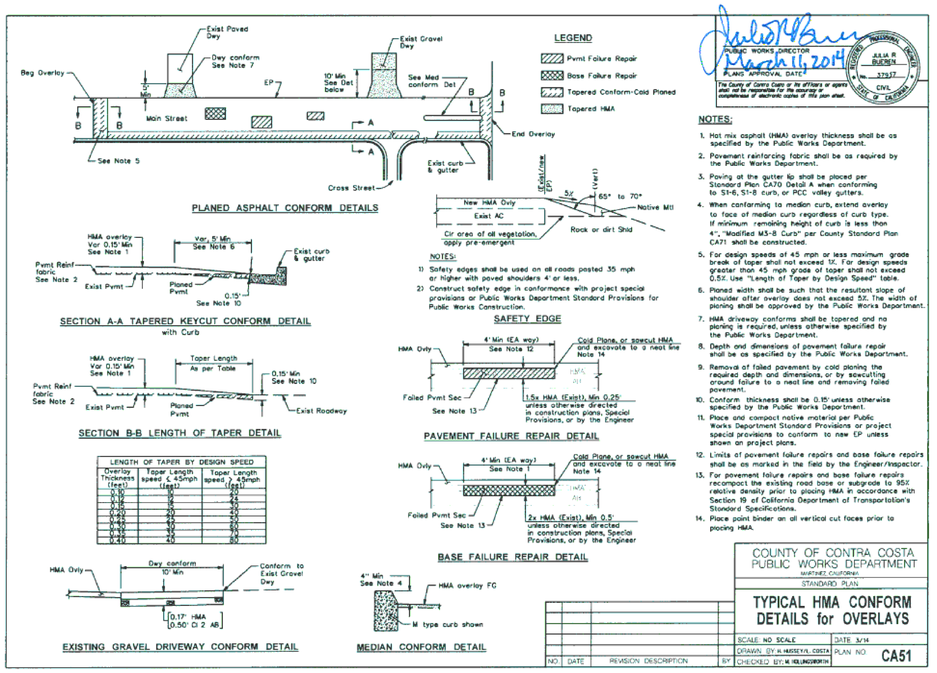
COUNTY OF CONTRA COSTA
PUBLIC WORKS DEPARTMENT
MARTINEZ, CALIFORNIA
STANDARD PLAN
**STANDARD SIDEWALK DETAILS**

| NO. | DATE | REVISION DESCRIPTION | BY |
|---|---|---|---|

SCALE: NO SCALE | DATE: 3/14
DRAWN BY: H.HUSSEY | PLAN NO. CA70
CHECKED BY: R.HOLLINGSWORTH

STD. PLAN CA70






NOTES:

1. Hot mix asphalt (HMA) overlay thickness shall be as specified by the Public Works Department.
2. Pavement reinforcing fabric shall be as required by the Public Works Department.
3. Paving at the gutter lip shall be placed per Standard Plan CA70 Detail A when conforming to S1-6, S1-8 curb, or PCC valley gutters.
4. When conforming to median curb, extend overlay to face of median curb regardless of curb type. If minimum remaining height of curb is less than 4", "Modified MS-8 Curb" per County Standard Plan CA71 shall be constructed.
5. For design speeds of 45 mph or less maximum grade break of taper shall not exceed 1%. For design speeds greater than 45 mph grade of taper shall not exceed 0.5%. Use "Length of Taper by Design Speed" table.
6. Planed width shall be such that the resultant slope of shoulder after overlay does not exceed 5%. The width of planing shall be approved by the Public Works Department.
7. HMA driveway conforms shall be tapered and no planing is required, unless otherwise specified by the Public Works Department.
8. Depth and dimensions of pavement failure repair shall be as specified by the Public Works Department.
9. Removal of failed pavement by cold planing the required depth and dimensions, or by sawcutting around failure to a neat line and removing failed pavement.
10. Conform thickness shall be 0.15' unless otherwise specified by the Public Works Department.
11. Place and compact native material per Public Works Department Standard Provisions or project special provisions to conform to new EP unless shown on project plans.
12. Limits of pavement failure repairs and base failure repairs shall be as marked in the field by the Engineer/Inspector.
13. For pavement failure repairs and base failure repairs recompact the existing road base or subgrade to 95% relative density prior to placing HMA in accordance with Section 19 of California Department of Transportation's Standard Specifications.
14. Place paint binder on all vertical cut faces prior to placing HMA.

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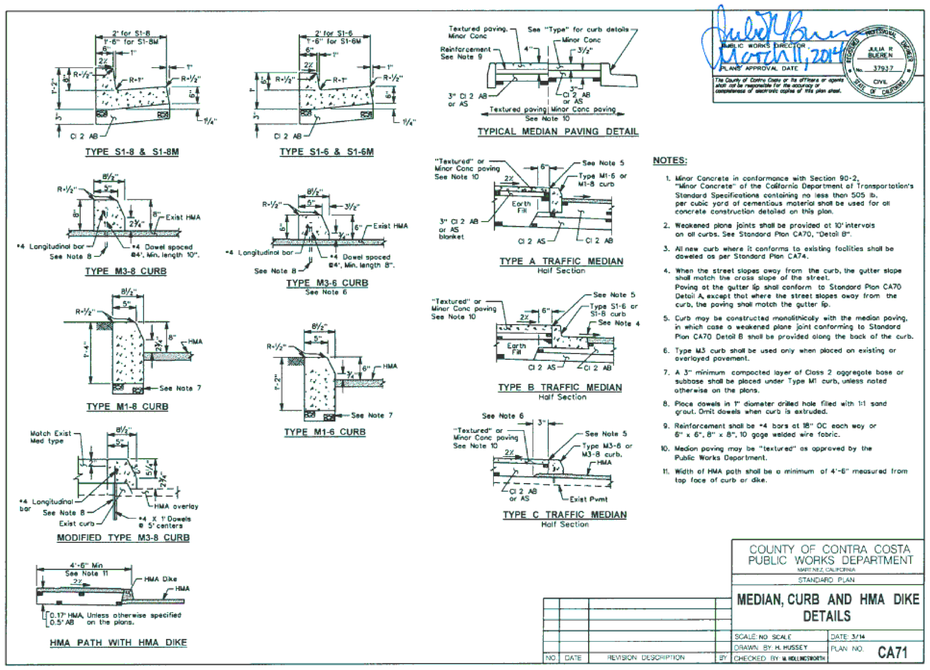
COUNTY OF CONTRA COSTA
PUBLIC WORKS DEPARTMENT
MARTINEZ, CALIFORNIA
STANDARD PLAN
**TYPICAL HMA CONFORM DETAILS for OVERLAYS**

| NO. | DATE | REVISION DESCRIPTION | BY |
|---|---|---|---|

SCALE: NO SCALE | DATE: 3/14
DRAWN BY: H.HUSSEY/L.COSTA | PLAN NO. CA51
CHECKED BY: R.HOLLINGSWORTH

STD. PLAN CA51






NOTES:

1. Minor Concrete in conformance with Section 90-2, "Minor Concrete" of the California Department of Transportation's Standard Specifications containing no less than 505 lb. per cubic yard of cementious material shall be used for all concrete construction detailed on this plan.
2. Weakened plane joints shall be provided at 10' intervals on all curbs. See Standard Plan CA70, "Detail B".
3. All new curb where it conforms to existing facilities shall be doweled as per Standard Plan CA74.
4. When the street slopes away from the curb, the gutter slope shall match the cross slope of the street. Paving at the gutter lip shall conform to Standard Plan CA70 Detail A, except that where the street slopes away from the curb, the paving shall match the gutter lip.
5. Curb may be constructed monolithically with the median paving, in which case a weakened plane joint conforming to Standard Plan CA70 Detail B shall be provided along the back of the curb.
6. Type M3 curb shall be used only when placed on existing or overlayed pavement.
7. A 3" minimum compacted layer of Class 2 aggregate base or subbase shall be placed under Type M1 curb, unless noted otherwise on the plans.
8. Place dowels in 1" diameter drilled hole filled with 1:1 sand grout. Omit dowels when curb is extruded.
9. Reinforcement shall be *4 bars at 18" OC each way or 6" x 6", 8" x 8", 10 gage welded wire fabric.
10. Median paving may be "textured" as approved by the Public Works Department.
11. Width of HMA path shall be a minimum of 4'-6" measured from top face of curb or dike.

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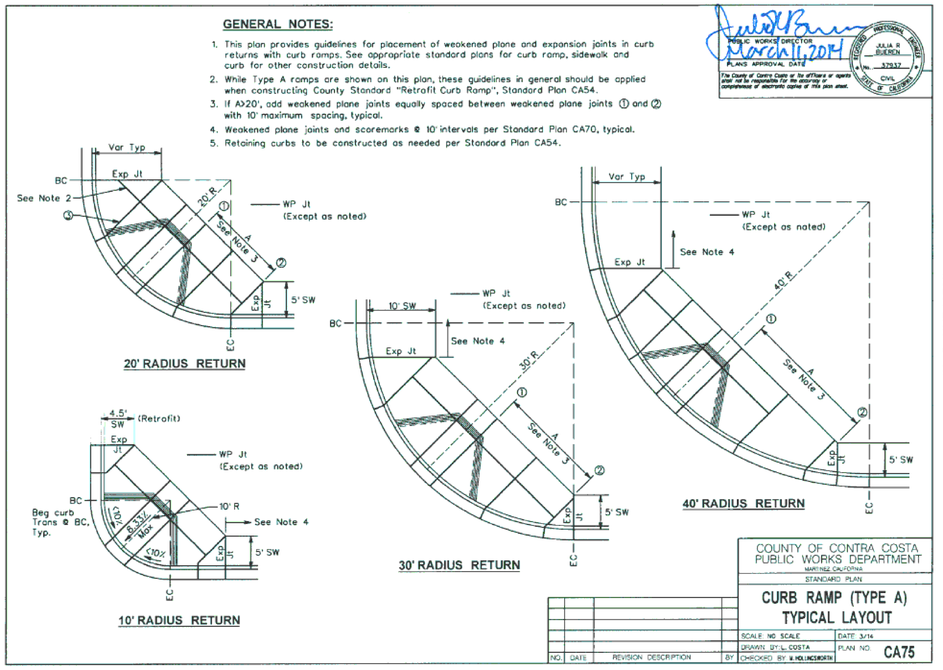
COUNTY OF CONTRA COSTA
PUBLIC WORKS DEPARTMENT
MARTINEZ, CALIFORNIA
STANDARD PLAN
**MEDIAN, CURB AND HMA DIKE DETAILS**

| NO. | DATE | REVISION DESCRIPTION | BY |
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SCALE: NO SCALE | DATE: 3/14
DRAWN BY: H.HUSSEY | PLAN NO. CA71
CHECKED BY: R.HOLLINGSWORTH

STD. PLAN CA71






GENERAL NOTES:

1. This plan provides guidelines for placement of weakened plane and expansion joints in curb returns with curb ramps. See appropriate standard plans for curb ramp, sidewalk and curb for other construction details.
2. While Type A ramps are shown on this plan, these guidelines in general should be applied when constructing County Standard "Retrofit Curb Ramp", Standard Plan CA54.
3. If A>20', add weakened plane joints equally spaced between weakened plane joints ① and ② with 10' maximum spacing, typical.
4. Weakened plane joints and scoremarks @ 10' intervals per Standard Plan CA70, typical.
5. Retaining curbs to be constructed as needed per Standard Plan CA54.

PUBLIC WORKS DIRECTOR
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COUNTY OF CONTRA COSTA
PUBLIC WORKS DEPARTMENT
MARTINEZ, CALIFORNIA
STANDARD PLAN
**CURB RAMP (TYPE A) TYPICAL LAYOUT**

| NO. | DATE | REVISION DESCRIPTION | BY |
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SCALE: NO SCALE | DATE: 3/14
DRAWN BY: L.COSTA | PLAN NO. CA75
CHECKED BY: R.HOLLINGSWORTH

STD. PLAN CA75

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AGENCY APPROVAL DSA# 01-121440

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PROFESSIONAL STAMP

REGISTERED PROFESSIONAL ENGINEER — MATHEW PAUL MARKUS — No. C 68770 — Exp 12/31/25 — STATE OF CALIFORNIA

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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
**STREET IMPROVEMENT PLAN**

INC.2

DRAWN BY: MPM JOB NUMBER: 23118.01

SHEET NO.
# PW-2

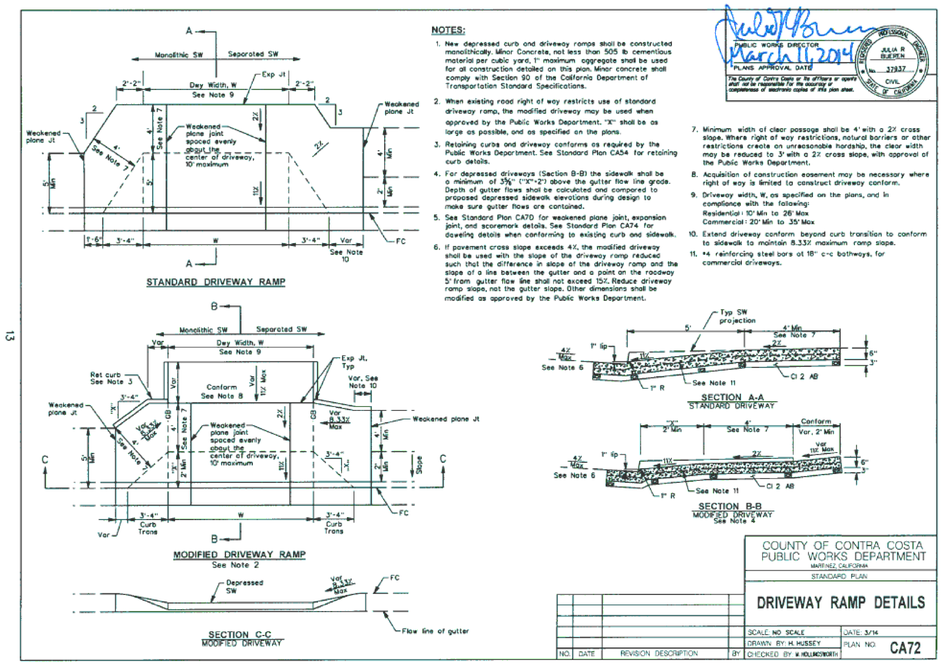
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NOTES:

1. New depressed curb and driveway ramps shall be constructed monolithically. Minor Concrete, not less than 505 lb cementious material per cubic yard, 1" maximum aggregate shall be used for all construction detailed on this plan. Minor concrete shall comply with Section 90 of the California Department of Transportation Standard Specifications.
2. When existing road right of way restricts use of standard driveway ramp, the modified driveway may be used when approved by the Public Works Department. "X" shall be as large as possible, and as specified on the plans.
3. Retaining curbs and driveway conforms as required by the Public Works Department. See Standard Plan CA54 for retaining curb details.
4. For depressed driveways (Section B-B) the sidewalk shall be a minimum of 3⅝" (7"X"-2") above the gutter flow line grade. Depth of gutter flows shall be calculated and compared to proposed depressed sidewalk elevations during design to make sure gutter flows are contained.
5. See Standard Plan CA70 for weakened plane joint, expansion joint, and scoremark details. See Standard Plan CA74 for doweling details when conforming to existing curb and sidewalk.
6. If pavement cross slope exceeds 4%, the modified driveway shall be used with the slope of the driveway ramp reduced such that the difference in slope of the driveway ramp and the slope of a line between the gutter and a point on the roadway 5' from gutter flow line shall not exceed 15%. Reduce driveway ramp slope, not the gutter slope. Other dimensions shall be modified as approved by the Public Works Department.
7. Minimum width of clear passage shall be 4' with a 2% cross slope. Where right of way restrictions, natural barriers or other restrictions create an unreasonable hardship, the clear width may be reduced to 3' with a 2% cross slope, with approval of the Public Works Department.
8. Acquisition of construction easement may be necessary where right of way is limited to construct driveway conform.
9. Driveway width, W, as specified on the plans, and in compliance with the following:
   Residential: 10' Min to 26' Max
   Commercial: 20' Min to 35' Max
10. Extend driveway conform beyond curb transition to conform to sidewalk to maintain 8.33% maximum ramp slope.
11. #4 reinforcing steel bars at 18" c-c bothways, for commercial driveways.

PUBLIC WORKS DIRECTOR
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REGISTERED PROFESSIONAL ENGINEER JULIA R BUEREN No. 37927 CIVIL STATE OF CALIFORNIA




SECTION A-A
STANDARD DRIVEWAY




SECTION B-B
MODIFIED DRIVEWAY
See Note 4

COUNTY OF CONTRA COSTA
PUBLIC WORKS DEPARTMENT
MARTINEZ, CALIFORNIA
STANDARD PLAN

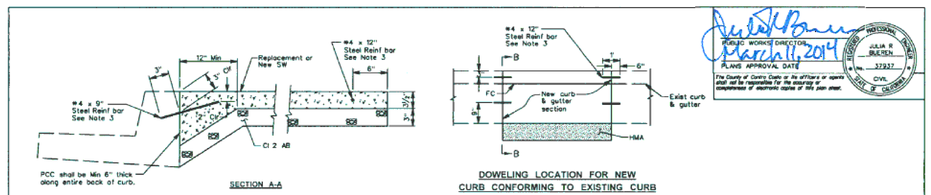
# DRIVEWAY RAMP DETAILS

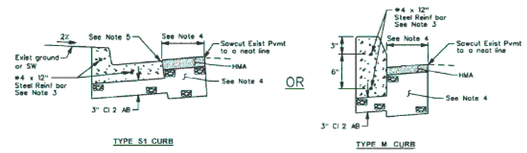
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SCALE: NO SCALE | DATE: 3/14
DRAWN BY: M. HUSSEY | PLAN NO. CA72
CHECKED BY: M. HOLLINGSWORTH

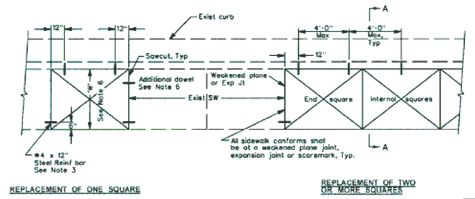
STD. PLAN CA72

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SECTION B-B




LOCATIONS FOR REPLACEMENT SIDEWALK

NOTES:

1. All curb, gutter, and sidewalk shall conform to Standard Plans CA70 and CA71.
2. Concrete sidewalk removed for replacement construction shall be sawcut to a neat line at the nearest weakened plane joint, expansion joint or scoremark.
3. Dowels shall be placed in a ¾" diameter drilled hole filled with 1:1 sand cement grout.
4. When replacing existing curb on existing alignment and grade, sawcut existing pavement 6" from gutter lip (or face of curb for Type 'B' curb replacement). Remove existing HMA and base to minimum 6" depth, compact subgrade and replace with full depth HMA. If placing new curb, sawcut pavement minimum of 12" inside existing edge of pavement, EP, unless otherwise directed on project plans. New pavement structural section shall be 0.5' HMA, 0.0' AB minimum unless otherwise specified on the plans or as required by the Public Works Department.
5. Paving at the gutter lip shall conform to Detail A of Standard Plan CA70. When the street slopes away from the curb, the paving shall match the gutter lip.
6. If W>5' add additional doweling, 4' maximum spacing between dowels.

COUNTY OF CONTRA COSTA
PUBLIC WORKS DEPARTMENT
MARTINEZ, CALIFORNIA
STANDARD PLAN

# DOWELING DETAILS FOR CURB AND SIDEWALK

| NO. | DATE | REVISION DESCRIPTION | BY |
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SCALE: NO SCALE | DATE: 3/14
DRAWN BY: M. HUSSEY | PLAN NO. CA74
CHECKED BY: M. HOLLINGSWORTH

STD. PLAN CA74

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DATE: SEPTEMBER 19, 2024

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