Project Manual

for

FAÇADE PAINTING PROJECT

at

VARIOUS SCHOOLS

FOR THE

LENNOX SCHOOL DISTRICT
10319 Firmona Ave, Lennos, CA 90304

# BID SPECS

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Prepared by

Architects ***McDonald, Soutar & Paz,*** Inc.
3575 Long Beach Boulevard
Long Beach, CA 90807
562/427-5007  Fax 562/427-3007
MSP#21-1239

BIDDING DOCUMENTS

TABLE OF CONTENTS


**DIVISION 00 - BIDDING REQUIREMENTS** **Number of Pages**

00 0001 Cover Sheet ..... 01
00 0010 Table of Contents ..... 03

**DIVISION 01 - GENERAL REQUIREMENTS**

01 1100 Summary of the Work ..... 03
01 1110 Phasing of the Work ..... 03
01 1115 Contractor Use of the Premises ..... 04
01 1200 Coordination ..... 03
01 1250 Cutting and Patching ..... 07
01 2000 Project Meetings ..... 05
01 3229 Project Forms ..... 04
01 3300 Submittal Procedures ..... 08
01 3600 Construction Schedule ..... 14
01 4523 Testing and Inspection ..... 03
01 5000 Construction Facilities and Temporary Controls ..... 13
01 5055 Temporary Storm Water Pollution Control ..... 04
01 5500 Vehicular Access and Parking ..... 01
01 5600 Temporary Barriers Enclosures and Controls ..... 01
01 6000 Materials and Equipment ..... 06
01 6400 Substitutions ..... 03
01 7000 Contract Closeout ..... 06
01 7400 Warranties ..... 03
01 7900 Cleaning ..... 05

**DIVISION 02 – NOT USED**

**DIVISION 03 – CONCRETE**

03 0130 Restoration and Cleaning of Concrete ..... 05

**DIVISION 04 – MASONRY**

04 0120 Masonry Restoration and Cleaning ..... 05

**DIVISION 05 – NOT USED**

**DIVISION 06 – WOOD PLASTIC AND COMPOSITES**

06 1000 Rough Carpentry ..... 07

**DIVISION 07 – THERMAL MOISTURE PROTECTION**

07 6000 Flashing and Sheet Metal ..... 06
07 6200 Sheet Metal Flashing and Trim ..... 11
07 8413 Penetration Firestopping ..... 13
07 9200 Joint Sealant ..... 07

**DIVISION 08 – OPENINGS Not Used**

**DIVISION 09 - FINISHES**

09 9000 Painting and Coating ..... 12
09 9013 Painting of Existing Facilities ..... 22
09 9623 Graffiti-Resistant Coatings ..... 04

**DIVISION 10 – SPECIALTIES Not Used**

**DIVISION 11 – 28 Not Used**

**DIVISION 31 - EARTHWORK**

31 1000 Site Concrete Clearing ..... 05

**DIVISION 32 – EXTERIOR IMPROVEMENTS**

32 0117 Asphalt Pavement Repair ..... 04
32 0190 Landscape Maintenance ..... 05
32 1723 Pavement Markings ..... 02
32 1811 Performance Pad ..... 02
32 1813 Synthetic Turf Systems ..... 06
32 8400 Irrigation ..... 17
32 8416 Irrigation Controls ..... 06
32 9000 Planting ..... 06
32 9113 Soil Preparation ..... 07

**ATTACHMENTS (DESIGN REFERENCE)**

EXHIBIT 1 COLOR EXHIBITS ..... 31

END OF TABLE OF CONTENTS

SECTION 01 1100

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. The furnishing of all labor, materials, equipment, services, and incidentals necessary for: **School Façade Painting and Beautification Project at Various Sites for Lennox School District** as set forth in the Specifications at the following sites:

1. **Buford Elementary School**

   4919 W 109th St, Inglewood, CA 90304

**2. Felton Elementary School**

   10417 Felton Ave, Lennox, CA 90304

**3. Huerta Elementary School**

   4125 W. 105th St., Lennox, CA 90304

**4. Jefferson Elementary School**

   10322 Condon Ave., Lennox, CA 90304

**5. Moffet Elementary School**

   11050 Larch Ave., Lennox, CA 90304

**6. Lennox Middle School**

   11033 Buford Ave, Lennox, CA 90304

1.02 RELATED REQUIREMENTS:

A. Section 01 4523: Testing and Inspection

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 USE OF PREMISES

A. CONTRACTOR shall coordinate Work of all trades, Subcontractors, utility service providers, with OWNER and/or Separate Work Contract. CONTRACTOR shall sequence, coordinate, and perform the Work to impose minimum hardship on the operation and use of the existing facilities and/or Project site. CONTRACTOR shall install all necessary protection for existing improvements, Project site, property, and new Work against dust, dirt, weather, damage, vandalism, and maintain and relocate all protection to accommodate progression of the Work.

B. CONTRACTOR shall confine entrance and exiting to the Project site and/or facilities to routes designated by the OAR.

C. Within existing facilities, OWNER will remove portable equipment, furniture, and supplies from Work areas prior to the start of Work. CONTRACTOR shall cover and protect remaining items in areas of the Work.

D. CONTRACTOR is advised school may be in session during performance of the Work. CONTRACTOR shall utilize all available means to prevent generation of unnecessary noise and maintain noise levels to a minimum. When required by the OAR, CONTRACTOR shall immediately discontinue noise-generating activities and/or provide alternative methods to minimize noise generation. CONTRACTOR shall install and maintain air compressors, tractors, cranes, hoists, vehicles, and other internal combustion engine equipment with mufflers, including unloading cycle of compressors. CONTRACTOR shall discontinue operation of equipment producing objectionable noise as required by the OAR.

E. CONTRACTOR shall furnish, install, and maintain adequate supports, shoring, and bracing to preserve structural integrity and prevent collapse of existing improvements and/or Work modified and/or altered as part of the Work.

F. CONTRACTOR shall secure building entrances, exits, and Work areas with locking devices as required by the OAR.

G. CONTRACTOR assumes custody and control of OWNER property, both fixed and portable, remaining in existing facilities vacated during the Work.

H CONTRACTOR shall cover and protect surfaces of rooms and spaces in existing facilities turned over for the Work, including OWNER property remaining within as required to prevent soiling or damage from dust, dirt, water, and/or fumes. CONTRACTOR shall protect areas adjacent to the Work in a similar manner. Prior to OWNER occupancy, CONTRACTOR shall clean all surfaces including OWNER property.

I. CONTRACTOR shall not use or allow anyone other than OWNER employees to use facility telephones and/or other equipment, except in an emergency. CONTRACTOR shall reimburse OWNER for telephone toll charges originating from the facility except those arising from emergencies or use by OWNER employees.

J. CONTRACTOR shall protect all surfaces, coverings, materials, and finished Work from damage. Mobile equipment shall be provided with pneumatic tires.

K. CONTRACTOR is advised OWNER will award Separate Work Contracts at this Project site.

L. CONTRACTOR shall not permit the use of portable and/or fixed radio's or other types of sound producing devices.

3.02 PROPERTY INVENTORY

A. Property, OWNER intends to remove; will be removed by OWNER before a room or space is vacated for the Work. Before performing Work in each room or space, OAR and CONTRACTOR shall prepare a detailed initial written inventory of OWNER property remaining within, including equipment and telephone instruments and the condition thereof. OAR and CONTRACTOR shall retain a signed copy of the inventory dated and signed by both parties. Prior to subsequent OWNER occupancy of each such room or space, OAR and CONTRACTOR shall perform a final inventory of OWNER property and all discrepancies between the initial inventory and final inventory shall be the responsibility of CONTRACTOR.

END OF SECTION

SECTION 01 1110

PHASING OF THE WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for phasing of the Work include logistics, phasing, and completion of designated phases prior to commencement of subsequent phases.

1.02 RELATED SECTIONS

A. Section 01 1100: Summary of the Work

B. Section 01 1200: Coordination

C. Section 01 3300: Submittal Procedures

D. Section 01 3600: Construction Schedule

E. Section 01 5000: Construction Facilities and Temporary Controls

F. Section 01 7000: Contract Closeout

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SUBMITTALS

A. CONTRACTOR shall submit a Project site logistics plans in accordance with and as required by this Section.

3.02 LOGISTICS

A. Prior to commencement of the Work, CONTRACTOR shall prepare and submit to OAR, a detailed Project site logistic plan, in the same size and scale of the Drawings, setting forth CONTRACTOR plan of the Work relative to the following, but not limited to, items:

1. In accordance with local ordinances a truck access route to and from the Project site.

2. The identification of any overhead wire restrictions for power, street lighting, signal, and/or cable.

3. Project site fencing and access gate locations.

4. Construction parking.

5. Material staging and/or delivery areas.

6. Material storage areas.

7. Temporary trailer locations.

8. Temporary service location and proposed routing of all temporary utilities.

9. Location of temporary and/or accessible fire protection

10. Trash removal and location of dumpsters.

11. Concrete pumping locations.

12. Location of portable sanitary facilities.

13. Mixer truck wash out locations.

14. Traffic control signage.

15. Perimeter and site lighting.

16. Stockpile and/or lay down areas.

B. A revised Project site logistic plan may be required by the OAR for separately identified phases of the Work as set forth in this Section.

C. Unless specifically required elsewhere in the Contract Documents, CONTRACTOR is responsible for securing and/or obtaining all approvals of authorities having jurisdiction relative to logistic plan activities.

3.03 PHASING OF THE WORK

A. Project will be constructed in separate Milestone increments, as identified or as described in this Section and/or the Contract Documents. Phasing will also delineate Work to be completed in each designated phase. Each phase may be required to be completed according to the approved Construction Schedule prior to the commencement of the next subsequent phase. CONTRACTOR shall

incorporate and coordinate the Work of Separate Work Contracts relative to this Project.

B. CONTRACTOR shall install all necessary Work for, but not limited to, power, lighting, signal, HVAC, drainage, and plumbing systems in phased Work before completion of the designated phase. All valves, pull boxes, stub outs, temporary capping, and other Work necessary for phased completion and operation of all necessary systems shall be provided whether or not such Work is specifically identified in the Contract Documents.

3.04 PHASING OF THE WORK – GENERAL

A. CONTRACTOR shall prepare the Construction Schedule in order to complete the Work and related activities in accordance with the phasing plan. CONTRACTOR shall include all costs to complete all Work within the Milestones and/or Contract Time.

B. OWNER will be seriously damaged by not having all Work completed within the Milestones and/or Contract Time. It is mandatory the Work be complete within the Milestones and/or Contract Time.

3.05 PHASING OF THE WORK – SPECIFIC

A. CONTRACTOR shall prepare the Construction Schedule, and shall complete the following, but not limited to Milestones, within the designated phases in accordance with the phasing indicated in the Supplementary General Conditions.

END OF SECTION

SECTION 01 1115

CONTRACTOR'S USE OF THE PREMISES

PART 1 - GENERAL

Requirements of all other Sections of this package apply to this Section.

1.01 SUMMARY

This Section applies to all situations in which the Contractor or his representatives including, but not necessarily limited to, suppliers, subcontractors, employees, and field engineers, who enter the school campus.

A. Related Work: Documents affecting work of this Contract include, but are not necessarily limited to the General Conditions, and Sections in Division 1 of these Specifications.

1.02 QUALITY ASSURANCE

A. Promptly upon award of the Contract, notify all pertinent personnel regarding requirements of this Section.

B. Require that all personnel who will enter the school campus certify their awareness of and familiarity with the requirements of this Section.

1.03 SITE INVESTIGATION

A. The Contractor shall investigate the job site to ascertain all conditions affecting necessary procedures and sequencing of the work operations in the execution of the contracted work.

1. The Contractor shall report to the District any adverse conditions which would affect the proper execution of the contracted work, and shall not proceed until instructed by the District.

2. Start of the contracted work at the job site shall imply the Contractor's acceptance of job conditions.

3. Work Determination: Contractor shall satisfy himself regarding job conditions, the nature and types of work to be performed and shall be responsible for the determination of all classes of work to be accomplished at the job site.

4. Allotted Working Space: Contractor shall limit work operations to be the "working site" and areas immediately adjacent thereto, or as specified or

authorized by the District. Accumulation of materials shall be kept to a minimum and only for the portion of work scheduled at the time.

1.04 ACCESS TO THE JOB SITE

A. As instructed by the District, Contractor shall restrict the Contractor's employees to the immediate work areas on the job site and in no way go beyond the work limits, or as otherwise directed by the District.

1. Deliver materials, tools and equipment to the site as directed by the District.

2. Contractor and his employees shall enter the work area as directed by the District, and shall not go beyond the work area limits.

B. Contractor shall in no way block such entrances to the job site.

C. Use of such accesses to the job site will only be for the purpose of parking, delivery and/or removal of materials, equipment, tools, vehicles and removal of rubbish and debris, and shall be kept free of obstructions and in a safe condition at all times during extent of contracted work.

1.05 PARKING

A. Limited parking of the Contractor's vehicles will be allowed on the job site for the purposes of unloading, and labor.

1.06 SECURITY AND WORKERS CONDUCT

A. Restrict the access of all personnel in connection with the work to the access route and to the actual site of the work.

B. All employees of the Contractor who will be engaged in the construction of the project will be screened by the Contractor for proper identification and good behavior. Any reports of misbehavior by the Contractor's personnel will result in having such persons removed from campus grounds by the Contractor.

C. In accordance with general District policy, Contractor's personnel are not permitted to smoke in any area of the school grounds, and they are requested to observe appropriate dress and language.

1.07 PROTECTION

A. Where necessary for the safety of the public, provide and maintain adequate protection, fences and/or barricades to separate work areas from other public areas, as directed by the District or other authorities having jurisdiction. All such

protection shall remain in place during the extent of this Contract or as otherwise directed by the District.

1.08 REPAIR OF DAMAGES

A. Repair or replace any damage to existing construction, including damage to walls, as caused by this Contractor's operations, at his expense.

B. Repair or replace damaged work with new materials as necessary to restore the damaged areas or surfaces to a condition equal to and matching such conditions existing prior to damage or start of work of this Contract, to the full satisfaction of the District.

1.09 INTERRUPTION OF SERVICE

A. Contractor shall make all provisions to accomplish contracted work without undue interference with the Owner's operations of the adjacent facilities. Any necessary interruptions to existing facilities shall be done only after consultations with the District, and at such time and duration as instructed by the District.

1.10 NON-INTERFERENCE WITH OTHERS

A. Contractor shall confine contracted work operations to the immediate boundaries of the job site and shall execute work operations in a manner to minimize interference with District operations of other contractors working on the premises, as directed by the District.

1.11 JOB SAFETY

A. Contractor shall observe all safety rules and regulations of Title 24 and CAL/OSHA as applicable to the safety of the Contractor, Contractor's personnel, and the student/faculty during contracted work operations.

1.12 HAZARDOUS WORK CONDITIONS

A. If hazardous materials are encountered during demolition portion of the Contract, stop work and notify the District immediately.

B. Contractor shall provide adequate fire extinguishers on the premises during the Contract period. Type and sizes as recommended by the National Board of Fire Extinguishers as necessary to control a particular kind of fire and instruct his employees as to the use of such fire extinguishers. Place all such fire extinguishers ready for use in the immediate area where the hazardous work operations will occur. Contractor shall take special precautions in the use of acetylene torches, welding equipment, etc. when working in a hazardous area.

C. All contract work that is performed for the District by outside contractors or workers must meet all of the regulations that have been set forth in the Asbestos Hazard Emergency Response Act (AHERA) rule. This means that all work which could disturb the integrity of any Asbestos Containing Building Material (A.C.B.M.) needs to be approved by the District. This refers to the sawing, grinding, cutting, or drilling of any A.C.B.M. in occupied areas of District buildings.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 1200

COORDINATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section specifies administrative and procedural requirements necessary for coordinating Work operations including, but not necessarily limited to, the following:

1. General coordination procedures.
2. Coordination drawings.

1.02 RELATED SECTIONS

A. Section 01 1110: Phasing of the Work

B. Section 01 3300: Submittal Procedures

C. Section 01 3600: Construction Schedule

D. Section 01 4523: Testing and Inspection

E. Section 01 7000: Contract Closeout

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 COORDINATION

A. CONTRACTOR shall coordinate operations included in various sections of the Contract Documents to assure efficient and orderly installation of each part of the Work. Coordinate Work operations included under related sections of the Contract Documents that depend on each other for proper installation, connection, and operation of the Work including but limited to:

1. Schedule construction operations in the sequence required where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
3. Make provisions to accommodate items scheduled for later installation.

4. Prepare and administer provisions for coordination drawings.

B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required in notices, reports, attendance at meetings and:

1. Prepare similar memoranda for OWNER and Separate Work Contract where coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of schedules.
2. Installation, relocation and removal of temporary facilities.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Project closeout activities.

D. Conservation: Coordinate Work operations to assure operations are carried out with consideration given to conservation of energy, water, materials and:

1. Salvage materials and equipment involved in performance of, but not actually incorporated into the Work.

3.02 SUBMITTALS

A. Coordination Drawings: CONTRACTOR shall prepare coordination drawings for coordination of installation of products and materials fabricated by separate entities. Prepare coordination drawings for those areas where limited space availability necessitates maximum utilization of space for efficient installation of different components.

B. Prepare coordination drawings in the following manner:

1. CONTRACTOR will perform the last coordination review. As each coordination drawing is completed, CONTRACTOR will meet with ARCHITECT and OWNER to review and resolve all conflicts on the coordination drawings.

2. All coordination meetings will be held in the Project field office of CONTRACTOR. CONTRACTOR is required to distribute shop drawings,

cut sheets and submittals to Subcontractors where appropriate. Reviewed coordination drawings will be maintained in the Project field office of CONTRACTOR.

END OF SECTION

SECTION 01 1250

CUTTING AND PATCHING

PART `1 - GENERAL

1.01 SECTION INCLUDES

A. This Section specifies administrative and procedural requirements for cutting and patching.

1.02 RELATED SECTIONS

A. Section 01 3300: Submittal Procedures

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 SUBMITTALS

A. The word “cutting” as used in the Contract Documents includes but is not limited to cutting, drilling, chopping, and other similar operations and the word “patching” includes but is not limited to patching, rebuilding, reinforcing, repairing, refurbishing, restoring, replacing, any other similar operations.

B. Cutting and Patching Proposal: CONTRACTOR shall submit a proposal describing procedures well in advance of the time cutting and patching will be performed if the Contract Documents requires approval of these procedures before proceeding. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required. Denote how it will be performed and indicate why it cannot be avoided.

2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building’s appearance and other significant visual elements.

3. List products to be used and firms or entities that will perform this Work.

4. Indicate dates when cutting and patching will be performed.

5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.

6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.

7. Review by ARCHITECT prior to proceeding with cutting and patching does not waive ARCHITECT right to later require complete removal and replacement of defective Work.

## 3.02 QUALITY ASSURANCE

A. Requirements for structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.

1. Obtain review of the cutting and patching proposal before cutting and patching the following structural elements:

a. Foundation construction.

b. Bearing and retaining walls.

c. Structural concrete.

d. Structural steel.

e. Lintels.

f. Timber and primary wood framing.

g. Structural decking.

h. Stair systems.

i. Miscellaneous structural metals.

j. Exterior curtain-wall construction.

k. Equipment supports.

l. Piping, ductwork, vessels, and equipment.

B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.

1. Obtain review of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:

a. Primary operational systems and equipment.

b. Air or smoke barriers.

c. Water, moisture, or vapor barriers.

d. Membranes and flashings.

e. Fire protection systems.

f. Noise and vibration control elements and systems.

g. Control systems.

h. Communication systems.

i. Conveying systems.

j. Electrical wiring systems.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the opinion of ARCHITECT, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

1. If possible, retain the original install or fabricator to cut and patch the exposed Work listed below. If it is impossible to engage the original installer or fabricator, engage another recognized experienced and specialized firm.

a. Firestopping.

b. Acoustical ceilings.

c. Acoustical panels.

d. Finished wood flooring.

e. Synthetic sports flooring.

f. Carpeting.

g. HVAC enclosures, cabinets, or covers.

h. Ceramic and quarry tile.

i. Gypsum board.

j. Masonry (exterior and interior where exposed).

k. Tack boards.

l. Casework.

m. Finish carpentry.

3.03 WARRANTY

A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

3.04 INSPECTION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

1. Before proceeding, meet at the Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.05 PREPARATION

A. Temporary support: Provide adequate temporary support of Work to be cut.

B. Protection: Protect existing improvements and Work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of existing improvements or Work that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Where the Work requires sandblasting of existing surfaces in order to receive new materials secured by cementitious, adhesive or chemical bond, completely remove existing finishes, stains, oil, grease, bitumen, mastic and adhesives or other substances deleterious to the new bonding and or fastening of new Work. Utilize wet sand blasting for interior surfaces and for exterior surfaces where necessary to prevent objectionable production of dust.

3.06 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay. Carefully remove existing Work to be salvaged and or reinstalled. Protect and store for reuse into the Work. Verify compatibility and suitability of existing substrates before starting the Work.

B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining Work. Where possible, review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

3. Cut through concrete and masonry using a cutting machine, such as a carborundum saw or a diamond-core drill. Saw cut reinforcing bars and paint ends with bituminous paint except where bonded into new concrete or masonry.

4. Comply with requirements of applicable Division 2 Sections where cutting and patching requires excavating, backfill and re-compaction.

5. Woodwork: Cut and or remove to a panel or joint line.

6. Sheet Metal: Remove back to joint, lap or connection. Secure loose or unfastened ends or edges and make watertight.

7. Glass: Remove cracked, broken or damaged glass and clean rebates and stops of setting materials.

8. Plaster: Cut back to sound plaster on straight lines, and back bevel edges of remaining plaster. Trim existing lath and prepare for new lath.

9. Gypsum Wallboard: Cut back on straight lines to undamaged surfaces with at least two opposite cut edges centered on supports.

10. Acoustical ceilings: Remove hanger wires and related appurtenances where ceilings are not scheduled to be installed.

11. Tile: Cut back to sound tile and backing on joint lines.

12. Flooring: Completely remove flooring and clean backing of prior adhesive. Carefully remove wood flooring for patching and repairing of existing wood flooring scheduled to remain.

B. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation. Verify conditions of existing substrates prior to executing new Work.

2. Restore exposed finishes of patched areas and extend finish restoration into retaining adjoining construction in a manner that will eliminate all evidence of patching and refinishing.

3. Concrete: Maintain the cut edges in a moist condition for twenty four (24) hours prior to the placement of new concrete. In lieu of this an epoxy adhesive may be provided. Finish placed concrete to match existing unless noted otherwise. Concrete shall have a compressive strength 3,000 psi where used to repair and or match existing Work, unless noted otherwise.

4. Metal Fabrications: Items to remain exposed shall have their edges cut and ground smooth and rounded.

5. Sheet Metal: Replace removed and or damaged sheet metal items as required for new Work.

6. Glass: Install matching glass and re-seal exterior window assemblies.

7. Lath and Plaster: Install new lath materials to match existing and fasten to supports at 6” centers. Provide a 6” lap where new lath to adjoins existing lath. Fasten new lath as required for new Work. Restore paper backings as required. Apply a bonding agent on cut edges of existing plaster. Apply three coat plaster of type, thickness, finish, texture and color to match existing.

8. Gypsum Wallboard: Fasten cut edges of wallboard. Install patches with at least two opposite edges centered on supports and secure at 6” centers. Tape and finish joints and fastener heads. Patching shall be non-apparent when painted and or finished.

9. Acoustical Ceilings: Comply with the requirements for new Work specified in related sections of the Contract Documents.

10. Resilient Flooring: Completely remove flooring and prepare substrate for new material.

11. Painting: Prepare areas to be patched, patch and paint as specified under related sections of the Contract Documents.

3.07 CLEANING

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01 2000

PROJECT MEETINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section specifies administrative and procedural requirements for Project meetings, including, but not limited to, the following:

1. Job start meeting.
2. Pre-installation conferences.
3. Progress meetings.
4. Meetings as requested by OWNER.

1.02 RELATED SECTIONS

A. Section 01 1110: Phasing of the Work

B. Section 01 1200: Coordination

C. Section 01 3300: Submittal Procedures

D. Section 01 3600: Construction Schedule

PART 2 – PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 JOB START MEETING

A. In accordance with General Conditions, OWNER will schedule a job start meeting before starting the Work, at a time determined by OWNER. Meeting shall be held at the Project site or another location as determined by OWNER. Meeting will be held in order to review responsibilities, procedures, and other administrative requirements contained within the Contract Documents.

B. Authorized representatives of OWNER, IOR, ARCHITECT, CONTRACTOR and other parties shall attend the meeting. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda items shall include significant items which could affect progress of the Work, including, but not limited to the following:

1. Preliminary Construction Schedule
2. Critical work sequencing
3. Designation of responsible personnel
4. Identification of OAR
5. Procedures for processing field decisions
6. Request for Proposal
7. Construction Directive and Change Order
8. Procedures for processing Applications for Payment
9. Prevailing wages
10. Submittal of Shop Drawings, Product Data, material lists and Samples
11. Preparation of project record documents
12. Use of the Project site and/or premises
13. Parking availability
14. Office, work, and storage areas
15. Equipment deliveries and priorities
16. Safety procedures
17. First Aid
18. Security
19. Housekeeping
20. Working hours
21. Contract Compliance Officer
22. Insurance Services
23. Environmental Health & Safety

D. ARCHITECT shall prepare and issue meeting minutes to attendees and interested parties no later than five (5) calendar days after the meeting date.

3.02 PRE-INSTALLATION CONFERENCES

A. CONTRACTOR shall coordinate and conduct pre-installation conferences at the Project site as required by related Sections of the Contract Documents.

B. CONTRACTOR, manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other pre-ceding and or subsequent installations of Work shall attend the meeting. CONTRACTOR shall advise OWNER, IOR and ARCHITECT of scheduled meeting dates in order to secure their attendance.

1. CONTRACTOR shall review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for the following:

a. Contract Documents
b. Options
c. Related Construction Directives and Change Orders
d. Purchases
e. Deliveries
f. Shop Drawings, Product Data, and quality-control samples
g. Review of mockups
h. Possible conflicts
i. Compatibility problems
j. Time schedules
k. Weather limitations
l. Manufacturer’s recommendations
m. Warranty requirements
n. Compatibility of materials
o. Acceptability of substrates
p. Temporary facilities
q. Space and access limitations
r. Governing regulations
s. Safety
t. Inspecting and testing requirements

u. Required performance results

v. Recording requirements

w. Protection

2. CONTRACTOR shall record significant discussions and directives received from each conference. CONTRACTOR shall, within three (3) calendar days after the meeting date, distribute the minutes of the meeting to all concerned parties, including, but not limited to, OWNER, IOR and ARCHITECT.

3.03 PROGRESS MEETINGS

A. Progress meetings will be held at the Project site at regular intervals, typically weekly, as determined by OWNER and ARCHITECT.

B. In addition to representatives of CONTRACTOR, OWNER and ARCHITECT, each Subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of the Work shall, if requested by OWNER, be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude all matters relating to the Work.

C. Failure of the CONTRACTOR to be so represented at any job meeting which is held at a mutually agreed time or for which a written notice is given, shall not relieve CONTRACTOR from abiding by any and all OWNER or ARCHITECT determinations or directives issued at such meeting.

D. OWNER will review and correct or approve minutes of the previous progress meeting and will review other significant items affecting progress. Topics for discussion as appropriate to the status of the Project include but are not limited to:

1. Interface requirements
2. Construction Schedule
3. Sequence and coordination
4. Status of submittals / RFC’s
5. Deliveries
6. Off-site fabrication
7. Access
8. Site utilization
9. Temporary Construction Facilities and Controls
10. Hours of work

11. Hazards and risks
12. Housekeeping
13. Quality and workmanship
14. Unforeseen conditions
15. Testing and Inspection
16. defective Work
17. Construction Directive
18. Request for Proposal
19. Change Order Proposals and Change Orders
20. Documentation of information for payment requests
21. Application for Payment
22. Other items as required or as brought forth.

E. No later than seven (5) calendar days after each meeting, ARCHITECT will prepare and distribute minutes of the meeting to each present and absent party. Include a brief summary, in narrative form, of progress, decisions, directives, actions taken and all other issues since the previous meeting and report.

1. Schedule Updating: If required, CONTRACTOR shall revise the Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the next scheduled meeting.

3.04 ADDITIONAL MEETINGS

A. OWNER, upon giving notice to the intended parties and without further obligation, may require additional meetings to discuss Work and/or Project related activities.

END OF SECTION

SECTION 01 3229

PROJECT FORMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. The following, but not limited to, administrative forms and documents listed in this Section are to be utilized in the administration of the Work. Upon CONTRACTOR request, OAR may approve the use of alternate forms.

B. From time to time, OWNER may release new revisions and new Project Forms. At any time during the Project, if requested by OAR, CONTRACTOR shall use the newly released Project Forms.

1.02 RELATED REQUIREMENTS

A. Division 01: General Requirements.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 FORMS

A. The following examples of forms are contained within this Section:

1. Allowance Disbursement Authorization.

2. Application for Payment (2 pages)[1].

3. Change Order.

4. Change Order Proposal.

5. Change Order Proposal – Compensable Delay Costs.

6. Change Order Proposal Detail Sheet.

7. Change Order Proposal Guidelines.

8. Change Order Proposal – Labor Rate Calculation Form (Request for Rate Higher Than Fully Burdened Labor Rates).

[1] Application for Payment (Multiple Projects Form) is available from the OAR.

9. Conditional Waiver and Release – Final Payment.

10. Construction Directive.

11. Correction Notice.

12. Daily Construction Report.

13. Daily Time and Material Record.

14. List of Subcontractors.

15. Notice of Completion.

16. Notice of Partial Occupancy or. Use

17. Notice to Proceed.

18. "Or Equal" Request.

19. OWNER Assessment Summary.

20. Property Inventory.

21. Request for Clarification.

22. Request for Proposal.

23. Schedule of Values.

24. Submittal Log.

25. Substitution Request.

26. Survey of Existing Site Conditions.

27. Transmittal.

3.02 PROCEDURES

A. Allowance Disbursement Authorization: This form is used for the request and approval of Contract allowances.

B. Application for Payment: This form is used in requesting a progress payment.

C. Application for Payment (Multiple Projects): Alternate progress payment request form for contracts comprising more than one project.

D. Change Order: This form is used to adjust the Contract Amount, Milestones or Contract Time.

E. Change Order Proposal: This form is used to communicate proposed adjustments to the Contract Amount, Milestones or Contract Time.

F. Construction Directive: This form is used to issue a Construction Directive.

G. Correction Notice: This form is used to provide notice of defective Work.

H. Daily Construction Report: This form is used to report daily Work activities and manpower levels of CONTRACTOR or Subcontractor.

I. Daily Time and Material Record: This form is used to provide daily records as set forth in Article 3.16 of the General Conditions.

J. List of Subcontractors: This form is used according to Article 9.9 of the General Conditions.

K. Notice of Completion: This form is used according to Article 9.11 of the General Conditions.

L. Notice of Partial Occupancy or Use: This form is used according to Article 9.10 of General Conditions.

M. Notice To Proceed: This form is used to establish the date of Contract Time commencement and the date Contractor is authorized to commence performance of Contractor obligations.

N. "Or Equal" Request: This form is used to submit a list of proposed "or equal" substitutions.

O. Owner Assessment Summary: This form is used for all assessments or withholds by the Owner, permitted under the Contract or required by law, including without limitation, stop notices, prevailing wage violations, liquidated damages, additional consultant services, OCIP premiums, etc.

P. Property Inventory: This form is used to establish Owner property in a space.

Q. Request for Clarification: This form is to be used for clarification of the intent of the Contract Documents.

R. Request for Proposal: This form is used to request a proposed adjustment in the Contract Amount, Milestones or Contract Time in response to the Work contained within the Request for Proposal.

S. Schedule of Values: This form is used to establish the basis of the certified Application for Payment.

T. Submittal Log: This form is a format for the listing of the required submittals.

U. Substitution Request: This form is used to submit proposed substitutions of materials or equipment no longer manufactured or which cannot be acquired from existing inventories.

V. Transmittal: This form is used for transmission of items related to the Contract.

END OF SECTION

SECTION 01 3300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements for submittals required for the Work, including but not limited to; Shop Drawings, Product Data, Samples, material lists, and quality control items.

B. Throughout the Contract Documents, the minimum acceptable quality of materials, fabrication, and execution have been defined by the name and catalog number of a manufacturer and by reference of recognized industry standards.

C. To ensure that specified products are furnished and installed in accordance with the design intent, procedures have been established for submittal of design data and for its review by ARCHITECT, OAR and others.

1.02 RELATED REQUIREMENTS

A. Section 01 4523: Testing and Inspection. (As Applicable)

PART 2 – PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 PROCEDURES

A. CONTRACTOR is required to review and approve every submittal and shop drawing prior to transmittal and delivery to ARCHITECT. Should CONTRACTOR determine a submittal contains errors, or does not meet the requirements of the contract, CONTRACTOR shall immediately return the submittals and shop drawings to the producer and expedite the corrections prior to transmitting the submittal to ARCHITECT. Submittals shall not be used by CONTRACTOR to request clarifications or submit questions. CONTRACTOR will affix stamp to each submittal certifying CONTRACTOR has performed, at minimum, the following:

1. Verified the submittal is complete in all respects and follows the requirements of the Contract Documents without variance.

2. Confirmed that no substitutions have been included. If substitutions are included, CONTRACTOR shall eliminate them from the submittal and

process any product substitution in accordance with Section 01 6400: Substitutions.

3. Identified any variances from the requirements of the Contract Documents and confirmed that the identified variance meets, but does not exceed the allowable limitations or tolerances as defined in these specifications.

4. Verified that all submitted materials, dimensions and tolerances are compatible with existing or planned conditions of the Work in order to erect, fabricate, or install the submitted assembly in conformance with the requirements of the Contract Documents.

5. Coordinated and verified that the dimensions match CONTRACTOR measured field or installation conditions.

6. Coordinated and verified that the products of separate manufacturers required within any field produced assembly are compatible in all respects for such assembly.

7. Packaged together all related submittals or shop drawings where such is necessary for a comprehensive ARCHITECT review and approval.

B. CONTRACTOR shall package each submittal appropriately for transmittal and handling. Transmittal format shall be as required by OWNER. CONTRACTOR shall transmit and deliver six sets of each submittal or re-submittal to ARCHITECT, two of which shall be returned to CONTRACTOR. Some specifications may require additional copies be provided. CONTRACTOR shall provide the OWNER additional copies as specified or as requested by OAR. ARCHITECT will not accept submittals received from sources other than from CONTRACTOR.

C. After ARCHITECT'S review, ARCHITECT will transmit submittals to OAR and OAR shall further distribute to CONTRACTOR, INSPECTOR and others as required. Work shall not commence, unless otherwise approved by OAR, until approved submittals are transmitted to CONTRACTOR.

D. CONTRACTOR shall clearly identify any deviations from the Contract Documents on each submittal. Any deviation not so noted even though stamped reviewed is not acceptable.

E. CONTRACTOR shall coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities requiring sequential activity.

F. Timing of Submittals:

1. In accordance with General Conditions, CONTRACTOR shall submit to ARCHITECT, with copy of transmittal to the OAR, those Shop Drawings,

Product Data, diagrams, materials lists, Samples and other submittals required by the Contract Documents.

2. The scheduling of submittals shall be sequenced to support the progress of the Work, and shall be:

   a. Submitted sufficiently in advance of construction, fabrication or installation in order to allow time for transmittal, review, modification, correction, (and resubmission and re-review when required.)

   b. Phased with adequate time between submittals in order to allow for proper review by the ARCHITECT without negative impact to the Milestones Schedule.

3. CONTRACTOR shall coordinate submittal of related items and ARCHITECT reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received by ARCHITECT.

4. CONTRACTOR shall revise, update and submit submittal schedule to ARCHITECT and OAR on the first of each month, or as required by OAR.

5. CONTRACTOR shall allow in the Construction Schedule, at least sixteen days for ARCHITECT review following ARCHITECT receipt of submittal.

6. No adjustments to the Contract Time or Milestones will be authorized because of a failure to transmit submittals to ARCHITECT sufficiently in advance of the Work to permit review and processing or where CONTRACTOR fails to provide ARCHITECT submittals on related items.

7. In case of product substitution, Shop Drawing preparation shall not commence until such time as OWNER accepts or rejects the proposed substitution in accordance with the procedures described in the General Conditions.

G. If required, resubmit submittals in a timely manner. Resubmit as specified for initial submittal but identify as such. Review times for re-submitted items shall be as per the time frames for initial submittal review.

H. Shop Drawing preparation shall not commence until such time as CONTRACTOR receives Product Data acceptance.

I. ARCHITECT will stamp each submittal with a uniform, action stamp. ARCHITECT will mark the stamp appropriately to indicate the action taken, as follows:

1. Final Unrestricted Release: When ARCHITECT marks a submittal "Reviewed" the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.

2. Final-But-Restricted Release: When ARCHITECT, or authorized agent, marks a submittal "Reviewed as Noted," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.

3. Returned for Re-submittal: When ARCHITECT, or authorized agent, marks a submittal "Rejected, Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat as necessary to obtain different action mark. In case of multiple submittals covering same items of Work, CONTRACTOR is responsible for any time delays, schedule disruptions, out of sequence Work, or additional costs due to multiple submissions of the same submittal item. Do not use, or allow others to use, submittals marked "Rejected, Revise and Resubmit" at the Project site or elsewhere where Work is in progress.

4. Other Action: Where a submittal is for information or record purposes or special processing or other activity, ARCHITECT, or authorized agent, will return the submittal marked "Action Not Required ".

3.02 SHOP DRAWINGS

A. Shop Drawings are original drawings prepared by CONTRACTOR, Sub-contractor, supplier, or distributor illustrating some portion of Work by showing fabrication, layout, setting, or erection and shall not be based on reproduced Contract Documents or copied standard information.

B. Produce Shop Drawings to an accurate scale that is large enough to indicate all pertinent features and methods. Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches.

C. Shop Drawings shall include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings. Include the following information:

1. Dimensions.

2. Identification of products and materials included by sheet and detail number.

3. Compliance with specified standards.

4. Notation of coordination requirements.

5. Notation of dimensions established by field measurement.

D. Provide a space of approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record CONTRACTOR and ARCHITECT review, and the action taken. Include the following information on the label for processing and recording action taken:

1. Project name.

2. Date.

3. Name and address of ARCHITECT.

4. Name and address of CONTRACTOR.

5. Name and address of Subcontractor.

6. Name and address of supplier.

7. Name and address of manufacturer.

8. Name and title of appropriate Specification section.

9. Drawing number and detail references, as appropriate.

E. Unless otherwise agreed to or indicated in individual Specification sections, submit a sufficient number of sets to allow for adequate distribution to CONTRACTOR, Sub-Contractor, supplier, manufacturer and fabricators plus four (4) sets (two sets to be retained by ARCHITECT, one set to the INSPECTOR and one set to OAR).

3.03 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of Work or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, wiring diagrams, schedules, illustrations, or performance curves.

1. Mark each copy to show or delineate pertinent materials, products, models, applicable choices, or options. Where Product Data includes information on several products that are not required, clearly mark copies to indicate the applicable information. Include the following information:

a. Manufacturer's printed recommendations.

b. Compliance with trade association standards.

c. Compliance with recognized testing agency standards.

d. Application of testing agency labels and seals.

e. Notation of dimensions verified by field measurement.

f. Notation of coordination requirements.

g. Notation of dimensions and required clearances.

h. Indicate performance characteristics and capacities.

i. Indicate wiring diagrams and controls.

2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed by CONTRACTOR.

B. Required Copies and Distribution: Same as denoted in Article 3.02.E.

3.04 SAMPLES

A. Procedure:

1. Submit Samples of sufficient size, quantity, cured and finished and physically identical to the proposed product or material. Samples include partial or full sections or range of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches denoting color, texture, and/or pattern.

a. Mount or display Samples in the manner to facilitate review of qualities indicated. Include the following:

1) Specification section number and reference.

2) Generic description of the Sample.

3) Sampling source.

4) Product name or name of manufacturer.

5) Compliance with recognized standards.

6) Availability and delivery time.

2. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

a. Where variations in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least three (3) multiple units that show the approximate limits of the variations.

b. Refer to other Specification sections for requirements for Samples that illustrate materials, fabrication techniques, assembly details, connections, operation, and similar construction characteristics.

c. Refer to other sections for Samples to be returned to CONTRACTOR for incorporation into the Work. Such Samples must be undamaged at time of installation. On the transmittal indicate special requests regarding disposition of Sample submittals.

d. Samples not incorporated into the Work, or otherwise not designated as Owner property, remain the property of CONTRACTOR and shall be removed from the Project site prior to Substantial Completion.

3. Color and Pattern: Whenever a choice of color or pattern is available in a specified product, submit accurate color chips and pattern charts to OAR for review and selection.

4. Number Required: Submit six, minimum, of each. Two will be returned to CONTRACTOR.

B. When specified, erect field Samples and mock-ups at the Project site to illustrate products, materials, fabrications, or execution and to establish standards by which completed Work shall be judged.

C. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of the Work. Sample sets may be used to obtain final acceptance of the Work associated with each set.

3.05 QUALITY CONTROL SUBMITTALS

A. Submit quality control submittals, including design data, certifications, manufacturer's field reports, and other quality control submittals as required under other sections of the Contract Documents.

B. When other sections of the Contract Documents require manufacturer's certification of a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.

C. Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the represented company.

D. Requirements for submittal of inspection and test reports are specified in other sections of the Contract Documents.

END OF SECTION

SECTION 01 3600

CONSTRUCTION SCHEDULE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Required procedures, preparation, submittals, reviews, updates, and revisions to the construction schedule.

1.02 RELATED SECTIONS

A. Section 01 1100: Summary of the Work

B. Section 01 1110: Phasing of the Work

C. Section 01 3300: Submittal Procedures

D. Section 01 4523: Testing and Inspection

E. Section 01 5000: Construction Facilities and Temporary Controls

F. Section 01 7000: Contract Closeout

PART 2 – PRODUCTS

2.01 SCHEDULING SOFTWARE

A. CONTRACTOR shall utilize *Primavera Project Planner™ for Windows®* (P3) software (latest version) by Primavera Systems, Inc., or equivalent scheduling software and employ the Critical Path Method (CPM) in the development and maintenance of the Milestones Schedule network in Precedence Diagram Mode (PDM). 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. OWNER will consider accepting *SureTrak Project Manager™* software (latest version) by Primavera Systems, Inc. in lieu of P3 upon written request by CONTRACTOR and OWNER acceptance in writing.

B. In utilizing Primavera Project Planner, the schedule calculation rules, auto cost rules and resource calculation rules shall be in a format acceptable to OWNER.

PART 3 – EXECUTION

3.01 SUBMITTALS

A. CONTRACTOR shall submit six (6) 11”x17” colored copies and two (2) 3.5” computer disks of all Milestones Schedules. CONTRACTOR shall submit three (3) copies of all bar charts, reports and/or other required data.

B. CONTRACTOR shall submit a resume of the proposed scheduler for review and acceptance prior to the preparation of any Milestones Schedule. CONTRACTOR shall retain at least one full time scheduler with a minimum of five (5) years direct experience using automated scheduling systems of the types set forth in this Section. Scheduler will cooperate with ARCHITECT and OWNER and shall be available on a full-time basis for continuously monitoring, maintaining and updating the detailed Milestones Schedule. OWNER has the right to refuse to accept the scheduler based upon lack of experience as required by this Section. If OWNER refuses to accept the proposed scheduler, CONTRACTOR shall propose another scheduler meeting the stated experience requirements.

C. Preliminary Milestones Schedule.

D. Initial Milestones Schedule.

E. Weekly, monthly, rolling and recovery schedules as required.

3.02 PRELIMINARY AND INITIAL SCHEDULE

A. Within ten (10) days after the Effective Date of the Contract, CONTRACTOR shall develop and submit the preliminary Milestones Schedule as required by Sections 2.5.4 and 2.5.5 of the General Conditions. Submittal activities as set forth in Section 2.5.5 shall be incorporated into the schedule as set forth in Section 2.5.4. ARCHITECT and/or OWNER review of the preliminary Milestones Schedule shall not confirm and/ or represent it as being a complete listing of all submittals required by the Contract Documents.

B. Within ten (10) days after the commencement of the Contract Time, CONTRACTOR shall submit the initial Milestones Schedule as required by Section 2.8 of the General Conditions. The initial Milestones Schedule shall include all of the detailed activities for the first 60 calendar days of the Contract Time. CONTRACTOR shall update the initial Milestones Schedule as specified and submit until it is accepted. Since updates to the initial Milestones Schedule are basis for payment to CONTRACTOR during first four-month period, submittal and acceptance of such updates shall be a condition precedent to making of monthly payment. Upon final acceptance of the initial Milestones Schedule it shall become the Milestones Schedule against which all subsequent schedule updates shall be made; against which CONTRACTOR shall report progress to and/or variances

from, and by which OWNER shall measure CONTRACTOR performance and progress.

3.03 CPM NETWORK

A. CPM network shall incorporate activity descriptions, sequence, logic relationships, duration estimates, resource loading and other information as set forth in this Section including but not limited to:

1. The CPM network shall include all Milestones as well as all engineering, fabrication and delivery dates required to support the Milestones.

2. Activities to be integrated and shown in the CPM network shall include in addition to all construction activities: Milestones representing CONTRACTOR submittal dates of all critical submittals; activities representing ARCHITECT and/or OWNER review period of each submittal with each review period scheduled for no less than fourteen (14) days; procurement of materials and equipment; manufacture and/or fabrication; testing and delivery to the Project site of special material and major equipment; equipment installation and preliminary, final and performance testing of equipment or systems installed under the Contract Documents.

3. Indicate start and completion dates for all temporary facilities; construction of mock-ups, prototypes and/or samples; punch list; OWNER interfaces and furnishing of items; interfaces with Separate Work Contracts and regulatory agency approvals; securing of approvals and permits required for performance of the Work.

4. Shall take into account all foreseeable factors or risks affecting or which may affect; performance of the Work including historical and predicted weather conditions; applicable laws, regulations or collective bargaining agreements pertaining to labor, transportation, traffic, air quality, noise and any other applicable regulatory requirements.

5. CONTRACTOR shall not use any float suppression techniques such as preferential sequencing or logic, special lead/lag constraints or unjustifiably over-estimating activity durations in preparing the construction schedule except that finish no later than constraints for Milestones will be permissible.

6. CONTRACTOR will include with the CPM network a written narrative report sufficiently comprehensive to explain basis and determinations of CONTRACTOR approach to the Work including but not limited to: activity durations; manpower flow; average crew sizes; equipment requirements; production rates and long-lead items; restraints: critical path activities that contain time contingencies for impacts to be expected from normal rainfall; holidays and other non-work days; potential problem areas; permits; required coordination with authorities, utilities, Separate Work Contracts

and other parties; and long lead delivery items requiring more than thirty (30) days from the date of order to delivery on the Project site.

B. ARCHITECT and/or OWNER will notify CONTRACTOR of any recommended adjustments to the CPM network. CONTRACTOR shall perform any required adjustments to the CPM network and resubmit it for acceptance certifying in writing all information contained therein complies with the Contract Documents.

C. Upon notification by OWNER of acceptance of the CPM network, CONTRACTOR shall prepare computer plots and printouts, and complete submission of the Milestones Schedule, which shall include the following, as a minimum:

1. Bar charts, generated separately using the format template provided by OWNER for:

   a. Milestones only;

   b. Summary level sorted by craft/trade and area;

   c. Detail sorted by date;

   d. Detail sorted by responsibility.

2. Reports, generated separately using the format template provided by OWNER for:

   a. Float sorted low to high;

   b. Resource histogram.

3. Activities must be coded to OWNER Activity Code Structure, which will be defined and provided to CONTRACTOR.

## 3.04 MILESTONES

A. Milestones are designated dates as set forth in the Milestones Schedule in which Work or portions thereof are required to be started and/or completed in accordance with the Contract Documents including but not limited to:

1. Where the term completion or similar terms are used in the designation of a Milestone, it shall be construed to mean all portions of the Work in the indicated phase, area and/or zone are complete and acceptable to OWNER. Where the term starts or similar terms are used in the designation of a Milestone, it shall be construed to mean a portion of the Work in the indicated phase, area and/or zone is required to be commenced.

2. CONTRACTOR shall identify all OWNER defined Milestones in the Milestones Schedule. OWNER defined Milestones shall serve as an essential instrument of measurement by ARCHITECT and OWNER of CONTRACTOR compliance with the Milestones Schedule.

3.05 MILESTONES SCHEDULE

A. Milestones Schedule shall represent CONTRACTOR plan to complete the Work within the Milestones and/or Contract Time however:

1. A schedule extending beyond the Milestones and/or Contract Time will not be acceptable.

2. A schedule indicating Work completed in less than the Milestones and/or Contract Time will not be acceptable. CONTRACTOR shall indicate any available float.

3. A schedule found unacceptable by the OWNER and/or ARCHITECT shall be revised by CONTRACTOR and resubmitted within five (5) days.

B. Milestones Schedule shall clearly indicate sequence of construction activities and specifically indicate:

1. Start and completion of all items of Work and their major components, the Project and all Milestones identified by OWNER.

2. Activities for procurement, delivery, installation of equipment, materials and other supplies, including:

a. Time for submittals, re-submittal, and reviews. Include decision dates for selection of finishes.

b. Time for fabrication and delivery of manufactured products for the Work.

c. Interdependence of procurement and construction activities.

d. Dates for mobilization, test and balance of equipment, Substantial Completion, and Final Completion.

C. Milestones Schedule shall be in sufficient detail to assure adequate planning and execution of Work including but not limited to:

1. Each activity shall range in duration from 1 to 15 workdays, with exception of fabrication and procurement activities, unless directed otherwise by OWNER. Activity durations shall be total of actual days required to perform and complete that activity and shall not include consideration of weather impact on the activity.

2. Shall be cost and resource-loaded with the resulting total equal to the Contract Amount and shall include all associated interface activities contained within the Contract Documents including, but not limited to, OWNER maintenance and operations activities and/or interim housing schedules, which will be provided by OWNER.

3. Shall be designed, in judgment of the ARCHITECT and/or OWNER to allow monitoring and evaluation of progress in performance of the Work and it shall be calendar time-scaled in precedence diagramming method (PDM).

4. Activities shall include:

   a. A description of what is to be accomplished and where.

   b. Workday duration.

   c. Responsibility code identifying the performing party for each individual activity.

   d. Area of Work shall be coded on each Work activity.

   e. Phase of Work shall be coded on each Work activity.

5. Network shall show continuous flow from left to right.

6. Identify days per week and shifts per day worked; also, non-work days and holidays.

7. Identify activities that constitute controlling operations, i.e., Milestones or critical path.

8. ARCHITECT and/or OWNER may require additional coding of activities.

D. Notwithstanding acceptance of the Milestones Schedule, failure to identify and/or include any element of the Contract into the Milestones Schedule shall not release CONTRACTOR from obligation of completing all required Work in accordance with any Milestones.

E. Submittal of the Milestones Schedule shall constitute CONTRACTOR confirmation the schedule meets the requirements of the Contract Documents, and the Work will be executed in the sequence indicated in the Milestones Schedule.

F. CONTRACTOR shall allocate the following number of days within the indicated calendar month wherein rainfall in excess of 0.01 inches can be normally anticipated to occur at the Project site based on 50-year data 1947-1997 compiled from National Climate Data Cooperative network by National Climate Data center

of the National Weather Service of the National Oceanographic and Atmospheric Administration:

| | | | | | |
|---|---|---|---|---|---|
| January | 6 | May | 1 | September | 1 |
| February | 5 | June | 0 | October | 1 |
| March | 5 | July | 0 | November | 3 |
| April | 4 | August | 0 | December | 5 |

These days are to be accounted for in the Milestones Schedule and are to be considered as cumulative from commencement of the Contract Time to Substantial Completion. During a month where the actual rain days are less than the allotted rain days, the remaining days shall be used to offset rain days exceeding those given for other months. Unusually severe weather shall be defined as any month where actual rain days exceed the allotted amount.

3.06 REQUIREMENTS FOR WEEKLY/MONTHLY REVIEW AND UPDATING

A. Prepare updated Milestones Schedule by one of following two methods:

1. When updating current Milestones Schedule with actual Work progress only (non logic changes), status current Milestones Schedule with actual start and finish dates, remaining durations, and percent completion of cost and resource loaded activities and submit to OWNER and ARCHITECT for review as specified.

2. When updating current Milestones Schedule with logic changes, Construction Directives, Change Orders, delay / disruption activities, or recovery plans, prepare a fragnet as set forth in Section 3.07 and submit to OWNER and ARCHITECT for review. Incorporate changes into current Milestones Schedule prior to data date.

B. When Work is associated with a Change Order, incorporate adjustments to the schedule. The adjustments shall be resource-loaded with material unit quantities and the corresponding cost account, resources account codes, activity description, accepted costs and time adjustments. The activity ID number shall identify the number of the Change Order.

C. Float is not for exclusive use or benefit of either OWNER or CONTRACTOR but is an expiring resource available to both parties on a non-discriminatory basis. If required to meet specified Milestones, either party may utilize float. Adjustments to the Milestones and/or Contract Time will be only be authorized by Change Order and only to the extent the claimed adjustment exceed total float along the most critical path of the current Milestones Schedule in effect at the time of the claimed adjustment. The claimed adjustments to the Milestones and/or Contract Time must also cause the Final Completion date to exceed that currently indicated in the Milestones Schedule. CONTRACTOR claimed adjustments to an existing negative float path will not receive consideration until the activity with the highest negative float is driven even further negative. Claimed adjustments to the Milestones and/or

Contract Time will be administered in conjunction with those set forth in the General Conditions.

D. Pursuant to the float sharing requirements of this Section, the use of float suppression techniques such as preferential sequencing or logic, special lead / lag logic restraints, and extended activity times or durations are prohibited and the use of float time disclosed or implied by the use of alternate float suppression techniques shall be proportionally shared to benefit OWNER and CONTRACTOR. The use of any network technique solely for purpose of suppressing float will be cause for rejection of the submitted Milestone Schedule.

E. CONTRACTOR shall attend weekly and monthly Milestones Schedule review meetings in order to accomplish the following:

1. Reflect current Work progress in updates.
2. Provide all specified reporting.
3. Take remedial action to mitigate schedule variances.

F. ARCHITECT, OWNER and CONTRACTOR shall conduct weekly reviews of the progress of the Work and compare such progress to the Milestones Schedule, the schedule of submittals and the four-week rolling schedule. The weekly schedule review shall include, at a minimum:

1. CONTRACTOR shall update and status the Milestones Schedule databases weekly prior to review. Utilizing the "Project Groups/Project" feature of P3, CONTRACTOR shall include submittal schedule and material procurement schedule information linked to the Milestones Schedule activity information in each update and or status.
2. When expanding activities to reduce maximum durations from twenty (20) days to five (5) days, CONTRACTOR shall identify expanded activities so the baseline activity they originate from is readily apparent. CONTRACTOR shall not allow the aggregate duration of the expanded activities to exceed the duration assigned to their parent activity in the baseline Milestones Schedule unless specifically permitted by OWNER in writing.
3. CONTRACTOR shall prepare a four-week rolling schedule immediately following the weekly update/status of and from the Milestones Schedule database and shall ensure it accurately reflects progress of the Work. CONTRACTOR shall provide ARCHITECT and OWNER with printed copies as well as electronic files on disk.
4. CONTRACTOR shall review of all submissions, submittal reviews, fabrication/delivery status, Work started and/or completed in the preceding

week, all Work in progress, and scheduled Work for the upcoming twenty-one (21) days.

5. CONTRACTOR shall review all revisions, added and/or deleted Work, and shall determine and incorporate these into CONTRACTOR plan of the Work.

6. CONTRACTOR shall review all interfacing and coordination with Separate Work Contracts.

7. CONTRACTOR shall review progress and allocation of Work forces. Each report shall indicate a planned curve and an actual curve plotted on the same graph, where the planned curve derived from the accepted resource-loaded baseline Milestones Schedule.

8. CONTRACTOR shall provide variance reports including all activities in excess of two (2) days behind schedule and proposed mitigation measures for each item on the variance report.

9. CONTRACTOR shall, at a minimum, attend review meetings prepared to discuss actual activity start and/or completion dates and any applicable variances, forecast activity start and/or completion dates and any applicable variances and progress of all activities underway at the time of the review.

10. During reviews, CONTRACTOR shall alert ARCHITECT and OWNER of all activities behind schedule and further identify all activities and/or Milestones impacted by such variances. CONTRACTOR shall prepare and transmit to ARCHITECT and OWNER proposed recovery plans to regain time lost due to variances.

11. Following review of the recovery plan and all other information relevant to the progress of the Work, CONTRACTOR shall adjust its Work plan as required to assure compliance with the Milestones Schedule. If the latest calculated completion date for any critical activity (total float less than or equal to 2 work days) does not fall within the time allowed by the Milestones Schedule, the sequence of Work and or performance of the Work shall be revised by CONTRACTOR. CONTRACTOR shall, by means of utilizing concurrent operations, additional Work force allocations, additional shifts, overtime, etc., provide all such means until a subsequent Milestones Schedule indicates all Milestones will be met. The requirement for such additional Work force allocations, additional shifts, overtime, etc., does not entitle CONTRACTOR to an adjustment in the Contract Amount.

12. CONTRACTOR shall derive from the Milestones Schedule database and provide a weekly four-week rolling schedule (1-week back, 3 weeks ahead) in printed form and with electronic files on disk. At the next Project meeting review, CONTRACTOR shall submit an updated four-week rolling schedule indicating any remedial measures necessary to maintain compliance with the Milestones Schedule.

G. Simultaneously with each submittal of an Application for Payment, CONTRACTOR shall deliver to ARCHITECT and OWNER an updated Milestones Schedule reflecting progress of the Work up until the end of the previous reporting period. Each such Milestones Schedule shall indicate actual Work progress to date together with a projected schedule for completion of the Work. No changes in logic will be permitted unless agreed upon with OWNER.

H. ARCHITECT, OWNER and CONTRACTOR shall conduct monthly reviews to determine: planned versus actual progress to date; compliance with submittal requirements, Milestones and accepted Milestones Schedule; determination of any changes to the Work plan or implementation which must be made by CONTRACTOR to comply with the Milestones Schedule. The monthly schedule review shall include, at a minimum:

1. All requirements of weekly reviews listed above. Monthly update/status of electronic database shall include recording of all actual start dates and actual finish dates and status of activities in progress.
2. Review of planned versus actual Work force allocations and progress for the preceding month.
3. Review of revisions, added and/or deleted Work and how those are being integrated into CONTRACTOR Work plan.
4. Review of CONTRACTOR interface and coordination with Separate Work Contracts.
5. Review of all impacts to the WORK during the preceding month and to date, CONTRACTOR evaluation of those impacts and any recovery plans or remedial actions required in order to meet the Milestones Schedule.
6. Submission of a standalone fragmented network if current progress reflects negative float of minus ten (10) days or more for any Milestone activity. Detail activities affected, date delay and/or disruption occurred or productivity rates which were impacted and unmitigated impacts to schedule caused by such events. Submit similar fragnet detailing CONTRACTOR plan to mitigate delay and/or disruption and subsequent impacts to schedule. Provide written narrative describing circumstances that caused delay and/or disruption and methodology used to determine delay and/or disruption. Submission of such fragnets does not constitute permission to proceed with the plan.

Following review of the above and all other information relevant to the progress of the Work, CONTRACTOR shall adjust the Work plan and submit a revised Milestones Schedule for acceptance. CONTRACTOR shall, by means of utilizing concurrent operations, additional Work force allocations, additional shifts, overtime, etc., provide all such means until a subsequent Milestones Schedule indicates all Milestones will be met. The requirement for additional Work force allocations, additional shifts, overtime, etc., does not entitle CONTRACTOR to an adjustment in the Contract Amount.

I. The Milestones Schedule shall be updated by CONTRACTOR on a weekly basis and submitted to ARCHITECT and OWNER on a monthly basis for concurrent review with each payment application submitted by CONTRACTOR. The update shall incorporate actual status to date and shall include the following:

1. Computer plotted time-scaled CPM network
2. Bar Charts, generated separately using the format template provided by OWNER for:
    a. Milestones only (Baseline vs. forecast)
    b. Summary Level (sorted by craft/trade and area);
    c. Detail (sorted by Dates);
    d. Detail (sorted by Responsibility);
    e. Detail (sorted by phase).
3. Reports, generated separately using the format template provided by OWNER for:
    a. Variance (Baseline vs. forecast);
    b. Progress Curves (baseline vs. earned/forecast);
    c. Float (sorted low to high), and;
    d. Resource Histogram.
4. Provide all data files electronically by USB.

J. Written Narrative Report: CONTRACTOR shall include a stand-alone narrative of sufficient detail to explain the basis of the Milestones Schedule with each monthly submittal as follows:

1. CONTRACTOR shall explain determination of activity duration and describe approach for meeting required Milestones. Include as a minimum: basis and assumptions used in preparing submittal including crew sizes; equipment requirements; verified delivery dates; and restraints: critical path activities that contain time contingencies for impacts from normal rainfall; holidays and other non-work days; potential problem areas; permits; required coordination; utilities; Separate Work Contracts and other parties; and long lead items requiring more than thirty (30) days delivery time from the date of order to the date of delivery on the Project site.
2. CONTRACTOR shall state in a narrative format all Work actually started and/or completed and reflect progress along critical path in terms of days ahead of and/or behind allowable dates. Specific requirements of narrative are as follows:
    a. If updated Milestones Schedule indicates an actual or potential impact to the Contract Time and or Milestones, identify causes of impacts and provide proposed corrective action to meet Milestones

and/or Contract Time. Document and log in matrix format all activities with non-mitigated float until the negative float is mitigated. Identify any deviation from previous month's critical path. The matrix will include applicable activity number, description, approved planned start and finish dates, current start and finish dates and float quantity.

b. Identify activities in progress and scheduled to be completed by activity number and description.

c. Identify by activity number and description, activities to be started during month following report period. Indicate CONTRACTOR forecast early and late start and finish dates.

d. Discuss Construction Directive and/or Change Order items.

3. Implementation of revised schedule logic and/or activity duration estimates for updating the Milestones Schedule whether furnished by CONTRACTOR or OWNER does not constitute an adjustment to the Contract Amount, Milestones and/or Contract Time. Such revisions are for the purpose of maintaining the accuracy of the Milestones Schedule. A detailed time-impact analysis with a narrative shall be submitted explaining the means and methods, basis and assumptions for same. The process used to develop the time impact and fragnets shall be detailed as set forth in Section 3.07.

4. In updating status of the Milestones Schedule, CONTRACTOR shall make no modifications to Activity ID numbers in the accepted Milestones Schedule, schedule calculation rules/criteria or the Activity Coding Structure provided by OWNER without the explicit written permission of OWNER.

5. As Built Schedule Submittals: CONTRACTOR shall describe basis for any logic or activity duration changes from the initial Milestones Schedule.

## 3.07 FRAGNETS

A. In order to consider the purported impact of events predicated by Sections 10 and 12 of the General Conditions, CONTRACTOR shall prepare and submit fragnet schedules in order to determine the impacts of the event. The submitted format shall compare the current approved Milestones Schedule minus the event under consideration, to a revised Milestones Schedule including the event under consideration. Include a detailed written narrative setting forth the basis and assumptions made in preparing the fragnet schedule.

B. The fragnet shall properly connect to, and be constrained by, pre-event predecessor and successor activities and post-event event predecessor and successor activities. The submitted fragnet shall band impacted activities in separate networks indicating the specific impact of the event.

C. CONTRACTOR shall submit two computer file copies of the fragnet, computer generated tabular reports and time scaled logic diagrams.

3.08 PAYMENT FOR SCHEDULING

A. Preparation, revising, maintenance, and compliance with the Milestones Schedule is an integral part of the Contract Documents and is specified to have a minimum value equal to 5% of the original Contract Amount or $50,000, whichever is less. This amount shall be included as a line item in the Application for Payment. Payment will be made against that line item as follows:

1. An initial payment of fifteen percent (15%) of the total line item value upon submission and OWNER acceptance of the initial Milestones Schedule.

2. The remaining eighty-five percent (85%) will be paid in equal monthly payments determined by dividing the remainder of the line item value divided by the total number of months in the Contract Time. Payments are contingent upon acceptance of the Milestones Schedule and submission of acceptable monthly updates as specified.

B. All costs associated with meeting the requirements of this Section 01360 shall be included in the Contract Amount.

3.09 FAILURE TO COMPLY WITH REQUIREMENTS

A. If CONTRACTOR fails to comply with the specified requirements, OWNER reserves the right, but will not be required, to engage an independent scheduling consultant and/or provide its own expertise to fulfill these requirements. Upon notice to CONTRACTOR, OWNER shall retain additional professional services and shall be entitled to recover by assessment all incurred costs for the additional services.

B. In such an event, OWNER will require, and CONTRACTOR shall participate and provide all requested and/or required information to ensure the resulting Milestones Schedule accurately reflects CONTRACTOR plan to execute the Work in compliance with the Contract Documents. If it becomes necessary for ARCHITECT and/or OWNER to recommend logic and/or duration revisions as a result of CONTRACTOR failure to furnish acceptable data, and if CONTRACTOR has objections to the recommendations, CONTRACTOR shall provide notice to ARCHITECT and OWNER within three (3) days and CONTRACTOR shall provide an acceptable alternate plan. If CONTRACTOR fails to so note any objections and provide an acceptable alternate plan, or if CONTRACTOR implements the recommendations of ARCHITECT and/or OWNER without so noting any objections, CONTRACTOR will be deemed to have waived all objections and concurred with the recommended logic/duration revisions provided by ARCHITECT and/or OWNER.

C. Submittal of any Milestones Schedule is subject to review and acceptance by ARCHITECT and/or OWNER. OWNER retains the right, including, but not

limited to Section 14.13.9 of the General Conditions, to withhold progress payments in whole or part until CONTRACTOR submits a Milestones Schedule acceptable to OWNER.

3.10 CONTRACTOR RESPONSIBILITY

A. Nothing in this Section shall be construed to be a usurpation of CONTRACTOR authority, responsibility and obligation to plan and schedule Work as CONTRACTOR deems, subject to all other requirements of the Contract Documents.

3.11 RECORD DOCUMENTS

A. Prior to Final Completion of the Work, CONTRACTOR shall submit as-built report and time-scaled network diagram reflecting as-built Project critical paths. Comply with requirements of Section 01 7000 – Contract Closeout.

END OF SECTION

SECTION 01 4523

TESTING AND INSPECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Testing and inspection services to meet requirements of the California Building Code (CBC).

B. Tests of materials are required by a testing agency as set forth in Section 4-335 of the California Building Standards Commission's, California Administrative Code.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION

3.01 TESTS

A. OWNER will select and provide an independent testing agency to conduct tests, sampling, and testing of materials. Selection of material to be tested shall be by the agency and not by CONTRACTOR.

1. All tests shall be performed by a testing facility acceptable to the architect and IOR. The testing facility shall be directly employed by the school district and no other entity or individual. See Title 24, Part 1, Section 4-335(b).

2. Test reports shall be addressed to, and sent to, the school district by the testing facility. Copies of all test reports shall be sent to the architect, the structural engineer, and the project inspector by the testing facility. All reports shall be sent within 14 days of the date of the test. See Title 24, Part 1, Section 4-335(g).

B. Any material shipped from the source of supply prior to having satisfactorily passed such testing and inspection, or prior to the receipt of notice from PI such testing and inspection is not required, shall not be incorporated into the Work.

C. OWNER will select, and directly reimburse, the agency for costs of all required tests and inspections; however, the agency but may be reimbursed by CONTRACTOR for such costs as specified or noted in related sections of the Contract Documents.

D. The independent testing agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.

E. The agency shall not perform any duties of CONTRACTOR.

F. CONTRACTOR shall provide an insulated curing box with the capacity for twenty concrete cylinders and will relocate said box and cylinders as rapidly as required in order to provide for progress of the Work.

3.02 TEST REPORTS

A. Test reports shall include all tests performed, regardless of whether such tests indicate the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations, when and as required, shall also be reported. Reports shall indicate the material (or materials) was sampled and tested in accordance with requirements of CBC, Title 24, Parts 1 and 2, as indicated on the Drawings. Test reports shall indicate specified design strength and specifically state whether or not the material (or materials) tested comply with the specified requirements.

3.03 VERIFICATION OF TEST REPORTS

A. Each testing agency shall submit to the Architect, OWNER and IOR in duplicate, a verified report covering all tests required to be performed by that agency during the progress of the Work. Such report, covering all required tests, shall be furnished prior to Substantial Completion and/or, when construction on the Work is suspended, covering all tests up to the time of Work suspension.

B. A Verified Report, signed by the California licensed civil engineer in charge of the testing facility which conducted the tests, shall be submitted to Architects and IOR upon completion of the project. The verified report shall state that all tests and inspections were made as required by the approved documents. If the tests or inspections indicate that materials or workmanship did not meet the requirements of the approved documents, the Verified Report shall list all non-compliant work. A copy of all test reports involving unresolved non-compliant work shall be attached to the Verified Report. In the event that not all required tests or inspections were made by the testing facility making this verified report, those tests and inspections not made shall be listed on the Verified Report.

3.04 INSPECTION BY OWNER

A. OWNER, and its representatives, shall have access, for purposes of inspection, at all times to all parts of the Work and to all shops wherein the Work is in preparation. CONTRACTOR shall, at all times, maintain proper facilities and provide safe access for such inspection.

B. OAR shall have the right to reject materials and/or workmanship deemed defective Work and to require correction. Defective workmanship shall be corrected in a satisfactory manner and defective materials shall be removed from the premises and legally disposed of without charge to OWNER. If CONTRACTOR does not correct such defective Work within a reasonable time, fixed by written notice and in accordance with the terms and conditions of the Contract Documents, OWNER may correct such defective Work and proceed in accordance with related Articles of the Contract Documents.

C. CONTRACTOR is responsible for compliance to all applicable local, state, and federal regulations regarding codes, regulations, ordinances, restrictions, and requirements.

3.05 PROJECT INSPECTOR

A. A Project Inspector shall be employed by OWNER in accordance with requirements of Title 24 of the California Code of Regulations with their duties specifically defined therein. Additional certified inspectors may be employed and assigned to the Work by OWNER in accordance with the requirements of California Building Standards Commission's, California Administrative Code with their duties as specifically defined in Section 4-333(b).

B. Inspection of Work shall not relieve CONTRACTOR from any obligation to fulfill all terms and conditions of the Contract Documents.

C. CONTRACTOR shall be responsible for scheduling times of inspection, tests, sample taking, and similar activities of the Work.

D. Project Inspector and testing lab must be employed by the owner and approved by all of the following:

1. A/E of Record.

2. OAR.

3.06 TESTS AND INSPECTIONS

A. The following tests and inspections do not limit inspection of the Work but are required by other agencies, or are required in related Sections of the Contract Documents.

1. Abatement

END OF SECTION

SECTION 01 5000

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary utilities, construction facilities and controls to be provided and maintained during the Work.

1.02 RELATED SECTIONS

A. Section 01 1100: Summary of the Work

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 QUALITY ASSURANCE

A. CONTRACTOR shall comply with industry standards and with applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:

1. Building Code requirements
2. Health and safety regulations
3. Utility company regulations
4. Police, fire department and rescue squad requirements
5. Environmental protection regulations

B. CONTRACTOR shall arrange for the inspection and testing of each temporary utility prior to use. Obtain required certifications and permits and transmit to OWNER.

3.02 TEMPORARY UTILITIES

A. CONTRACTOR shall submit to OWNER reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.

B. CONTRACTOR shall coordinate with the appropriate utility company to install temporary services. Where the utility company provides only partial service,

CONTRACTOR shall provide and install the remainder with matching compatible materials and equipment.

C. Temporary Water:

1. CONTRACTOR shall furnish, install and pay for all necessary permits, inspections, move ins/out, temporary water lines, connections & fees, extensions and distribution, metering devices and use charges, deliveries/pickups, rentals, storage, transportation, taxes, labor, insurance, bonds, material, equipment and all other miscellaneous items for the temporary water system, and upon Substantial Completion of the Work, removal of all such temporary water system devices and appurtenances.

2. CONTRACTOR shall provide and maintain temporary water service, including water distribution piping and outlet devices of the size and required flow rates in order to provide service to all areas of the Project site.

3. CONTRACTOR shall provide and pay for all potable water needed for construction and all other uses associated with the Work.

4. CONTRACTOR shall at their expense and without limitation, remove, extend and/or relocate temporary water systems as rapidly as required in order to provide for progress of the Work.

D. Temporary Electric:

1. CONTRACTOR shall furnish, install, maintain and pay for all necessary permits, inspections, temporary wiring, metering devices and use charges, move ins/outs, connections & fees, service, extension and distribution, deliveries/pickups, rentals, storage, transportation, taxes, labor, insurance, bonds, materials, equipment and all other required miscellaneous items for the temporary electric systems and upon Substantial Completion of Work, removal of all such temporary electric systems and appurtenances.

2. CONTRACTOR shall furnish, install, maintain, extend and distribute temporary electric area distribution boxes, so located that individual trades can obtain adequate power and artificial lighting, at all points required for the Work, for inspection and for safety.

3. CONTRACTOR shall provide temporary electric for construction, temporary facilities, and connections for construction equipment requiring power or lighting, at all points required for the Work, for inspection and safety.

4. CONTRACTOR shall provide 20-foot candles minimum lighting levels inside building(s) and 5-foot candles outside for safety and security.

5. CONTRACTOR shall ensure welding equipment is supplied by electrical generators.

6. CONTRACTOR shall at their expense and without limitation remove, extend and/or relocate temporary electric systems as rapidly as required in order to provide for progress of the Work.

E. Temporary Gas:

1. CONTRACTOR shall furnish, install, maintain and pay for all necessary permits, inspections, metering devices and use charges, move ins/out, extension and distribution, deliveries/pickups, rentals, storage, transportation, equipment and piping, rentals, taxes, labor, material, insurance, bonds, and all other required miscellaneous items for the temporary gas systems necessary to perform the Work, and upon Substantial Completion of the Work, removal of all such temporary gas system devices and appurtenances.

2. CONTRACTOR shall at their expense and without limitation remove, extend and/or relocate temporary gas systems as rapidly as required in order to provide for progress of the Work.

F. Temporary Heating, Ventilation and Air Conditioning:

1. CONTRACTOR shall furnish, install, maintain, and pay for all necessary permits, inspections, move ins/out, extensions and distribution, connections and fees, use charges, metering devices and use charges, equipment, rentals, deliveries/pickups, storage, transportation, taxes, labor, insurance, bonds, material, equipment and all other required miscellaneous items for temporary heat and ventilation needed for proper installation of the Work and to protect materials and finishes from damage due to weather. Upon Substantial Completion of the Work, CONTRACTOR shall remove all such temporary heating and ventilating system devices and appurtenances.

2. CONTRACTOR shall provide, maintain and pay for all temporary ventilation of enclosed Work areas to cure materials, disperse humidity, remove fumes, and to prevent accumulation of dust, irritants, or gases.

3. OWNER will not accept utilization of the permanent HVAC system for temporary HVAC until Substantial Completion.

4. CONTRACTOR shall maintain required manufacturer levels of room and/or space temperature, humidity and ventilation necessary to install products, materials and/or systems of the Work.

5. CONTRACTOR shall at their expense and without limitation, remove, extend and/or relocate temporary heating and ventilating systems as rapidly as required in order to provide for progress of the Work.

G. Temporary Telephone:

1. CONTRACTOR shall furnish, install, maintain and pay for all necessary permits, inspections, move ins/outs, extensions and distribution, devices, connections and fees, use charges, rentals, deliveries/pickups, storage, transportation, taxes, labor, insurance, bonds, material, equipment and all other required miscellaneous items for temporary phone service and distribution to the onsite temporary office.

2. CONTRACTOR shall furnish, install and maintain a minimum of five (5) temporary phone/data lines, and one (1) dedicated fax line for use by OWNER, ARCHITECT and IOR.

3. CONTRACTOR shall at their expense and without limitation, remove, extend and/or relocate temporary phone service and distribution as rapidly as required in order to provide for progress of the Work.

4. Upon Substantial Completion of the Work, CONTRACTOR shall remove all such temporary phone service, distribution, devices and appurtenances.

3.03 CONTRACTOR FACILITIES

A. CONTRACTOR shall provide temporary storage units, fencing, barricades, chutes, elevators, hoists, scaffolds, railings and other facilities or services as required. CONTRACTOR shall be responsible for providing, installation, maintenance, supplying and all use charges for the items provided.

B. Temporary Offices: **(As required – Coordinate with District's Representative)**

1. CONTRACTOR shall provide and maintain a minimum of one (1) construction trailer on the Project site for duration of the Work. Trailer shall be of sufficient size to house a conference room with a table and adequate seating for twelve (12) in addition to two (2) separate offices: one for CONTRACTOR personnel and operations, and one for OWNER. Construction trailer shall be accessible by OWNER and/or IOR on a 7 day a week 24-hour basis.

2. Trailer shall have two (2) exterior entrance doors with one located in the OWNER office. Each door shall be equipped with both a dead bolt and cylinder lock with 6 keys. Exterior doors and windows shall be provided with exterior mounted burglar bars. Security of trailer and contents is a continuous obligation of CONTRACTOR.

3. Trailer shall have ample headroom; it shall be properly lighted, heated and ventilated. CONTRACTOR shall provide an electric drinking fountain or potable bottled water. CONTRACTOR shall provide a copy machine useable by IOR, OWNER and ARCHITECT. Copy machine features shall include auto-feed, collation and be capable of copying 11”x17” size paper stock. CONTRACTOR shall provide a fax machine useable by IOR, OWNER and ARCHITECT. Fax machine features shall include plain paper, auto-redial, broadcast and be capable of faxing 11”x14” size paper stock. CONTRACTOR shall be responsible for providing; installing, maintaining, supplying and all use charges for all the provided items.

4. OWNER office shall be approximately 180 sq. ft. in size and shall be equipped with a minimum of four (4) 120-volt single phase convenience outlets, a 3'-0" deep by 6’-0’ wide counter, and four (4) 1’-0” deep by 6'-0" wide shelves. Provide coat hooks, three (3) desks, three (3) chairs and three (3) four (4) drawer legal size file cabinet. Provide, install and maintain five (5) telephone/data outlets and one (1) dedicated fax outlet device. Provide three (3) telephone devices. Provide and install two wall-mounted 42“ wide plan racks with 36 individual plan holders.

5. CONTRACTOR shall provide data processing and transmission equipment for use by OWNER as specified below: None

6. CONTRACTOR shall be responsible for maintaining all described equipment and if equipment becomes inoperable and downtime exceeds two (2) days, CONTRACTOR shall replace and/or provide equivalent interim equipment.

7. Trailer, furniture and related ancillary devices shall remain property of CONTRACTOR. CONTRACTOR shall remove such property upon Final Completion of Work or as otherwise determined by OWNER in writing.

8. At CONTRACTOR expense and without limitation remove and/or relocate temporary office(s) and related facilities as rapidly as required in order to provide for progress of the Work.

C. Temporary Storage Units:

1. CONTRACTOR shall provide secure and waterproof storage units for the temporary storage of furniture, equipment and other items requiring protection.

2. Walls, roof and doors shall be a minimum of 16-gage steel with floors of 1" tongue and groove hardwood or 3/4" minimum exterior type plywood. The undercarriage shall be designed to accommodate forklift blades 42" to 60"

long. There shall be doublewide swing out lockable doors at one end equipped with waterproof gaskets.

3. CONTRACTOR shall be responsible for all delivery charges and will place the storage unit in an appropriate area.

4. CONTRACTOR shall remove storage unit from the Project site when the storage unit is no longer required for the Work or upon Substantial Completion of the Work.

5. CONTRACTOR shall at their expense and without limitation remove and/ or relocate storage units as rapidly as required in order to provide for progress of the Work.

D. Temporary Sanitary Facilities:

1. CONTRACTOR shall provide portable chemical toilet facilities. Quantity of portable chemical toilet facilities shall be based on total number of workers and shall be in accordance with CAL/OSHA standards.

2. Portable chemical toilet facilities shall be kept supplied with adequate supplies and shall be maintained in a clean and sanitary condition and shall be removed from the Project site upon Substantial Completion of the Work.

3. CONTRACTOR employees shall not use school toilet facilities.

4. At CONTRACTOR expense and without limitation remove and/or relocate portable chemical toilet facilities as rapidly as required in order to provide for progress of the Work.

5. CONTRACTOR will contain their breaks and lunch periods to the areas designated by OWNER or any public area outside the Project site. CONTRACTOR shall provide a suitable container within the break/lunch area for the placement of trash. Areas used for break/lunch must be kept clean and orderly. Once finish flooring has been installed in a particular area, no food or beverages will be permitted in that area.

E. Temporary Security Fence/Barricade:

1. CONTRACTOR shall erect temporary site security barricade(s) indicated on Drawings or as required for safety and as specified herein. New or used material may be used. Security of Project site and contents is a continuous obligation of CONTRACTOR.

2. Unless otherwise indicated or specified, fence shall be constructed of 8'-0" high chain link fencing with an 8’-0” high windscreen. Space posts not to

exceed 10'-0" on centers. Posts shall be of following nominal pipe dimensions: terminal, corner, and gatepost 2-1/2", line posts 2". Chain link fence shall be not less than #13 gage, 2" mesh, and in one width. Posts, fence and accessories shall be galvanized and as follows:

a. Shall be set in the earth a depth of 30" with soil firmly compacted around post, unless directed otherwise in writing by OWNER.

b. Fence fabric shall be attached to posts with #14 gage tie wire at 16" on centers. A #6 gage steel tension wire with turnbuckles shall be installed at top and bottom of barricade fencing. Wire tie fabric to tension wires at 18" centers.

c. Windscreen shall be attached to fence fabric and steel tension wires at 18" centers with a minimum of #14 gage tie wire. Windscreen shall be maintained and all rips, tears, missing sections shall be corrected upon notification by OWNER.

d. Chain link fencing shall be free from barbs, icicles or other projections resulting from galvanizing process. Fence having such defects will be rejected even though it has been installed.

e. Gates shall be fabricated of steel pipe with welded corners, and bracing as required. Fence and fabric to be attached to frame at 12" centers. Provide all gate hardware of a strength and quality to perform satisfactorily until barricade is removed upon Substantial Completion of the Work. Each gate shall have a chain and padlock. Provide two (2) gate keys to OWNER. At Substantial Completion of the Work, remove barricade from Project site, backfill and compact fence footing holes. Existing surface paving that is cut into or removed shall be patched and sealed to match surrounding areas.

f. At CONTRACTOR expense and without limitation remove and/or relocate fencing, fabric and barricades or other security and protection facilities as rapidly as required in order to provide for progress of the Work.

F. Other Temporary Enclosures & Barricades:

1. Provide lockable, temporary weather-tight enclosures at openings in exterior walls to create acceptable working conditions, to allow for temporary heating and for security.

2. Provide protective barriers around trees, plants and other improvements designated to remain.

3. Temporary partitions shall be installed at all openings where additions connect to existing buildings, and where to protect areas, spaces, property, personnel, students and faculty and to separate and control dust, debris, noise, access, sight, fire areas, safety and security. Temporary partitions shall be as designated on the drawings or as specified by ARCHITECT. At CONTRACTOR expense and without limitation remove and/or relocate enclosures, barriers and temporary partitions as rapidly as required in order to provide for progress of the Work.

4. Since the Work of this Project may be immediately adjacent to existing occupied structures and vehicular and pedestrian right of ways, CONTRACTOR shall in his sole judgment and in accordance with applicable safety standards, provide all temporary facilities, additional barricades, protection and care to protect existing structures, occupants, property, pedestrians and vehicular traffic. CONTRACTOR is responsible for any damage, which may occur to the property and occupants of the property of OWNER or adjacent private or public properties which in any way results from the acts or neglect of CONTRACTOR.

G. Temporary Storage Yards:

1. CONTRACTOR shall fence and maintain storage yards in an orderly manner.

2. Provide storage units for materials that cannot be stored outside.

3. At CONTRACTOR expense and without limitation remove and/or relocate storage yards and units as rapidly as required in order to provide for progress of the Work.

H. Temporary De-Watering Facilities & Drainage:

1. For temporary drainage and de-watering facilities and operations not directly associated with construction activities included under individual sections, comply with de-watering requirements of applicable Division 01 sections. CONTRACTOR shall maintain the Work, Project site and related areas free of water.

2. For temporary drainage and de-watering facilities and operations directly associated with new buildings, additions or other construction activities, comply with Division 01 & 02 Sections. CONTRACTOR shall be responsible for, but not limited to, de-watering of excavations, trenches & below grade areas of buildings, structures, the Project site and related areas.

I. Temporary Protection Facilities Installation:

1. CONTRACTOR shall not change over from using temporary facilities and controls to permanent facilities until Substantial Completion, except as permitted by OWNER.

2. Until permanent fire protection needs are supplied and approved by authorities having jurisdiction, CONTRACTOR shall provide, install and maintain temporary fire protection facilities of the types needed in order to adequately protect against fire loss. CONTRACTOR shall adequately supervise welding operations, combustion type temporary heating and similar sources of fire ignition.

3. CONTRACTOR shall provide, install and maintain substantial temporary enclosures of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security. Where materials, tools and equipment are stored within the Work area, CONTRACTOR shall provide secure lock up to protect against vandalism, theft and similar violations of security. OWNER accepts no financial responsibility for loss, damage, vandalism or theft.

4. CONTRACTOR operations shall not block, hinder, impede or otherwise inhibit the use of required exits during an emergency. CONTACTOR shall maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fire fighting equipment and/or personnel.

5. With approval of OWNER and at the earliest feasible date in each area of the Work, complete installation of the permanent fire protection facilities including connected services and place into operation and use. Instruct OWNER personnel in use of permanent fire protection facilities.

6. In the event of an emergency drill or an actual emergency, designated by the sounding of the fire alarm and/or other sounding device, all construction activities must cease. CONTRACTOR shall evacuate the Work area and remain outside the Work area until permitted to return. No Work shall be conducted during the evacuation of a building or during an emergency.

J. Temporary Security and Safety Measures:

1. During performance of the Work in existing facilities CONTRACTOR shall provide, install and maintain substantial temporary barriers and/or partitions separating all Work areas from areas occupied by students, faculty and/or administrative staff.

2. During performance of the Work in existing facilities and/or on a Project site occupied by students and where temporary barriers and/or partitions are

not physically feasible, CONTRACTOR shall provide an employee meeting the requirements of Education Code Section 45125.2.(2) to continually supervise and monitor all employees of the CONTRACTOR and Subcontractor. For the purposes of this Section, the CONTRACTOR's employee shall be someone whom the Department of Justice has ascertained has not been convicted of a violent or serious felony as listed in Penal Code Section 667.5(c) and/or Penal Code Section 1192.7(c). To comply with this Section, the CONTRACTOR shall have his employee submit his or her fingerprints to the Department of Justice pursuant to Education Code Section 45125.1(a).

3. Penal Code Sections 290 and 290.4 commonly known as "Megan's Law", require, among other things, individuals convicted of sexually oriented crimes, to register with the chief of police where the convicted individual resides or with a county sheriff or other law enforcement officials. The CONTRACTOR shall check its own employees and require each Subcontractor to check its employees and report to the CONTRACTOR if any such employees are registered sex offenders. The CONTRACTOR shall check monthly during the life of the Contract to ascertain this information and report same to OWNER. Before starting the Work, and monthly thereafter during the life of Contract, CONTRACTOR shall notify the OWNER in writing if any of its employees and/or if any Subcontractor's employees is a registered sex offender. If so, CONTRACTOR shall proceed in accordance with Section 3.03 J.2 above.

K. Temporary Access Roads and Staging Areas:

1. Due to the limited amount of on and off Project site space for the parking of staff and school visitor's vehicles there will be no parking of CONTRACTOR vehicles in areas designated for school use only. CONTRACTOR shall provide legal access to and maintain CONTRACTOR designated areas for the legal parking, loading, off-loading & delivery of all vehicles associated with the Work. CONTRACTOR shall be solely responsible for providing and maintaining these requirements whether on or off the Project site.

2. Temporary access roads are to be installed and maintained by CONTRACTOR to all areas of the Project site.

3. CONTRACTOR will be permitted to utilize existing facility campus roads as designated by OWNER. CONTRACTOR shall only utilize those entrances and exits as designated by OWNER and CONTRACTOR shall observe all traffic regulations of OWNER.

4. CONTRACTOR shall maintain roads and walkways in a clean condition including removal of debris and/or other deleterious material on a daily basis.

5. CONTRACTOR shall maintain ALL ADA access within site clear at ALL times as required.

3.04 PROJECT SIGNAGE. **(As required – Coordinate with District's Rep.)**

A. CONTRACTOR shall furnish and erect a Project sign on the Project site at a location established by ARCHITECT. A graphical layout of the proposed sign shall be submitted to ARCHITECT and OWNER for approval prior to its construction.

B. Sign construction shall be 10'-0" wide by 6'-0" high with 6" x 6" posts and 1" exterior grade plywood, bolted to posts.

C. Sign lettering shall be painted white with exhibit lettering by a professional sign painter, in accordance with details approved by ARCHITECT. The following shall be listed on sign:

1. OWNER

2. Name of School.

3. Names of the Architect/Engineer and Consultants.

4. Contractor.

5. Other Principal Contractors.

6. In 5" high upper and lower case letters add the following: (Wording to be provided by Architect prior to installation).

D. No other signs shall be displayed without approval of OWNER. At CONTRACTOR expense and without limitation remove and/or relocate Project sign and related facilities as rapidly as required in order to provide for progress of the Work.

E. CONTRACTOR shall remove Project sign at Substantial Completion of the Work.

F. CONTRACTOR shall provide and install signage to provide directional information to construction personnel and visitors as follows and as approved by OWNER:

1. For construction traffic control/flow at Entrances/Exits, and as designated by OWNER.

2. To direct visitors.

3. For construction parking.

4. To direct deliveries.

5. For Warning Signs as required.

6. Per CAL/OSHA standards as necessary.

7. For trailer identification and Project site address.

8. For “No Smoking” safe work site at designated locations.

3.05 TRENCHES

A. Open trenches for installation of utility lines (water, gas, electrical and similar utilities) and open pits outside barricaded working areas shall be barricaded at all times in a legal manner determined by CONTRACTOR. Trenches shall be backfilled and patch-paved within seventy-two (72) hours after approval of installation by authorities having jurisdiction or shall have "trench plates" installed. CONTRACTOR shall comply with all applicable statutes, codes & regulations regarding trenching and trenching operations. Open trenches deeper than 3'-6", and not located within a public street access, shall be enclosed within an 8'-0" high chain-link fence.

3.06 DUST CONTROL

A. CONTRACTOR is responsible for dust control on and off the Project site. When Work operations produce dust the Project site and/or streets shall be sprinkled with water to minimize the generation of dust. CONTRACTOR shall clean all soils and debris from construction vehicles and cover both earth and debris loads prior to leaving the Project site. CONTRACTOR shall, on a daily basis, clean all streets and/or public improvements within the right of way of any and all debris, dirt, mud and/or other materials attributable to operations of CONTRACTOR.

3.07 WASH OUT

A. CONTRACTOR shall provide and maintain a minimum of four (4) wash out boxes of sufficient size and strength to provide for concrete mixer wash out. CONTRACTOR shall locate and relocate both the wash out boxes and wash out area in order to accommodate the progression of the Work. The wash out area shall be located as to minimize the amount of potential run off onto adjacent private and/or public property. CONTRACTOR shall legally dispose of the contents of the wash out boxes and area on an as needed basis or as directed by OWNER.

3.08 WASTE DISPOSAL

A. CONTRACTOR shall provide and maintain trash bins on the Project site. Trash bins shall be serviced on an as needed basis and CONTRACTOR is responsible for transportation of and the legal disposal of all contents.

3.09 ADVERSE WEATHER CONDITIONS

A. Should warnings of adverse weather conditions such as heavy rain and/or high winds be noted, CONTRACTOR shall take every practical precaution to prevent damage to the Work, Project site and adjacent property. CONTRACTOR precautions shall include, but not be limited to, enclosing all openings, removing and/or securing loose materials, tools, equipment and scaffolding.

B. CONTRACTOR shall provide and maintain drainage away from buildings and structures.

C. CONTRACTOR shall implement all required storm water mitigation measures as required under related Division 01 Sections.

3.10 DAILY REPORTS

A. CONTRACTOR shall provide and maintain in the Project site office of CONTRACTOR, a daily sign in sheet for use by all employees of CONTRACTOR and all Subcontractors at whatever tier. At the beginning of each work day, the foreman, project manager, superintendent and/or lead person of CONTRACTOR and/or Subcontractors shall visit the site office of the CONTRACTOR and shall enter onto the daily sign in sheet: all employee names; trade classification; and represented company. The completed sign in sheet shall serve as the basis of and shall be submitted with the daily construction report as set forth in Section 3.10 B.

B. By the end of each workday, CONTRACTOR shall submit to OWNER and IOR a daily construction report denoting the daily manpower counts and a brief description/location of the workday activities. Manpower shall be broken down by trade classification such as foreman, journeyman or apprentice. The report shall also note the date, day of the week, weather conditions, deliveries, equipment on the Project site whether active and/or idle, visitors, inspections, accidents and unusual events, meetings, stoppages, losses, delays, shortages, strikes, orders and requests of governing agencies, Construction Directive, Construction Change Documents (CCD's) and/or Change Orders received and implemented, services disconnected and/or connected, equipment start up or tests and partial use and/or occupancies. CONTRACTOR shall also include on the daily construction report the above information for all Subcontractors.

END OF SECTION

SECTION 01 5055

TEMPORARY STORM WATER POLLUTION CONTROL

PART 1 - GENERAL

1.1 The Contractor shall exercise every reasonable precaution to protect channels, storm drains, and bodies of water from pollution.

A. Conduct and schedule operations to minimize or avoid muddying and silting channels, drains, and waters.

B. As required, obtain permits for erosion and water pollution control from the appropriate jurisdictional agency before starting Work.

C. Provide any necessary water pollution control devices to prevent, control, and abate water pollution, and implement good housekeeping pollution control measures to reduce the discharge of pollutants from work sites to the maximum extent practicable. These water pollution control devices include drains, gutters, slope protection blankets and retention basins and shall be constructed concurrently with other Work at the earliest practicable time.

D. Exercise care in preserving vegetation and protecting property, to avoid disturbing areas beyond the limits of the Work. Promptly repair any damage caused by Contractor operations.

E. Comply with the specific requirements based on acreage of disturbed soil.

F. Penalties: Failure to comply with this Section may result in significant fines and possible imprisonment. The RWQCB or other prosecuting authority may assess fines of up to $32,500 per day for each violation. Should the Owner be fined or penalized as a result of the Contractor failing to comply with this Section, the Contractor shall reimburse the Owner for any and all fines, penalties and all related costs.

G. Notification and Report: If pollution occurs in the work area for any reason or when the Contractor becomes aware of any violation of this Section, correct the problem and immediately notify the Inspector. In addition, submit a written report to the Engineer within seven (7) calendar days describing the incident and the corrective actions taken. If either the Inspector or Engineer is first to observe pollution or a violation, the Contractor shall also explain in the written report why the Work was inadequately monitored.

H. The provisions of this Section describe minimum compliance and do not preclude other more stringent stormwater pollution control measures that may be required in the Contract.

1.2 DEFINITIONS

A. “Construction activity": Operations such as clearing, grading, disturbances to the ground such as stockpiling, or excavation that results in soil disturbances. If construction activity is part of a larger common plan of development, the amount of disturbed soil is the total land area of disturbed soil that results under the common plan.

1.3 LIABILITIES & PENALTIES:

A. Payment of penalties for non-compliance by CONTRACTOR shall be the sole responsibility of CONTRACTOR.

B. Compliance with the Clean Water Act pertaining is the sole responsibility of CONTRACTOR. Any fine against OWNER due to non-compliance by CONTRACTOR, OWNER shall recover all costs of the fine by appropriate OWNER Assessment.

PART 2 - EXECUTION

2.1 Construction activity: Comply with the following minimum water quality protection requirements.

A. Retain eroded sediments and other pollutants on-site and do not allow transportation from the site by sheet flow, swales, area drains, natural drainage, or wind. Control slope and channel erosion by implementing an effective combination of best management practices (BMPs). Such BMPs include scheduling grading during non-rainy seasons, planting and maintaining vegetation on slopes and covering erosion-susceptible slopes.

B. Protect stockpiles of earth and other construction-related materials from being transported from the site by wind or water.

C. Properly store and handle fuels, oils, solvents, and other toxic materials to not contaminate the soil or surface waters, enter the groundwater, or be placed where they may enter a live stream, channel, drain, or other water conveyance facility. Protect all approved toxic storage containers from weather. Clean spills immediately and properly dispose of cleanup materials. Spills shall not be washed into live streams, channels, drains, or other water conveyance facilities. IF RAIN OR STORM WATER RUN OFF COMES IN CONTACT WITH POLLUTANTS (SUCH AS SOIL STABILIZERS, PAINT OR FLUID FROM VEHICLES)

REPORT TO INSPECTOR IMMEDIATELY. CONTRACTOR WILL BE REQUIRED TO SAMPLE AND REMEDIATE CONTAMINATED WATER.

D. Do not wash excess or waste concrete into the public way or any drainage system. Retain concrete wastes on-site until they can be appropriately disposed of or recycled.

E. Deposit trash and construction-related solid wastes in covered receptacles to prevent contamination of rainwater and dispersal by wind.

F. Do not allow sediments and other materials to be tracked from the site by vehicle traffic. Stabilize construction entrance roadways to inhibit sediments from being deposited onto public ways. Immediately sweep up accidental depositions. Do not allow depositions to be washed away by rain or by any other means.

G. Contain non-stormwater runoff from equipment or vehicle washing and any other activity at the work site.

H. At completion of the Work, clear the worksite of debris and restore to a condition at least equal to or better than prior to construction.

## PART 3 – MAINTENANCE

3.1 To ensure the proper implementation and functioning of control measures, the Contractor shall regularly inspect and maintain the construction site. The Contractor shall identify corrective actions and time needed to address any deficient measures or reinitiate any measures that have been discontinued. Inspections of the construction site shall be conducted by the Contractor to identify deficient measures, as follows:

A. Prior to a forecast storm;

B. At 24-hour intervals during extended precipitation events;

C. After all precipitation, which causes runoff capable of carrying sediment from the construction site; and;

D. Routinely, at a minimum of once every week during the rainy season (OCTOBER 1$^{ST}$ – APRIL 30$^{TH}$) AND ONCE EVERY MONTH DURING NON-RAINY SEASON (MAY 1$^{ST}$ – SEPTEMBER 30$^{TH}$).

3.2 All temporary and/or permanent post-construction control measures shall be maintained and regularly inspected by the Contractor after all improvements are in place and accepted by the Owner. Temporary and/or permanent post-construction landscaping maintenance shall include but not limited to, watering, seeding, hydro-seeding, matting, slope

stabilization, re-vegetation, and any other maintenance control measures recommended by the Owner to insure proper erosion control and plant growth.

END OF SECTION

SECTION 01 5500

VEHICULAR ACCESS AND PARKING

PART 1 GENERAL

1.01 ACCESS ROADS AND HAUL ROUTES

A. Hauling routes shall be in accordance with the General Conditions.

B. All roads on Campus used by the contractor shall be cleaned of any debris after each use or as directed by the Campus. If roads are damaged due to traffic within scope of work, it is the CONTRACTOR's responsibility to repair / replace all damaged areas accordingly at NO cost to OWNER.

1.02 ON- CAMPUS TEMPORARY ROADS AND/OR TRAFFIC CONTROL

A. The Contractor shall use only established roadways, or construct and use such temporary roadways as may be permitted by the District.

B. Work shall be conducted so as to minimize obstruction of traffic, and traffic shall be maintained on at least one half of any roadway width at all times. Approval shall be obtained prior to starting any activity that will obstruct traffic.

C. "Contractor will avoid using access roads or other paths of travel for students when students are changing classes or taking lunch breaks"

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 5600

TEMPORARY BARRIERS ENCLOSURES AND CONTROLS

PART 1 – GENERAL

1.01 FENCES AND BARRICADES

A. The Contractor shall provide fencing in accordance with the General Conditions.

B. The Contractor shall maintain ADA access with in site CLEAR at ALL TIMES as required. Coordinate with Architect and District's Representative.

1.02 NOISE BARRIERS

A. The Contractor shall provide all noise control and barriers as required and as necessary so as to not increase the ambient noise level of the surrounding community.

1.03 SECURITY MEASURES

A. Neither the District nor the school will provide security for the Contractor's work areas. The Contractor shall provide all necessary lighting and/or other security as necessary to protect persons within the site, and prevent unauthorized persons outside the site from entering.

1.04 EROSION AND SEDIMENT CONTROL

A. Temporary erosion and drainage control shall be provided as required to prevent any damage to existing facilities and the new work. The Contractor shall provide and maintain all dewatering facilities necessary to protect all of the Work, and the surrounding site.

1.05 WATER POLLUTION CONTROL

A. The Contractor shall exercise every reasonable precaution to protect channels, storm drains, and bodies of water from pollution. It shall conduct and schedule operations so as to minimize or avoid muddying and silting of said channels, drains, and waters. Water pollution control work shall consist of construction those facilities which may be required to provide prevention, control, and abatement of water pollution. Water Pollution Control shall comply with Section 01 5055: Temporary Storm Water Pollution Control.

END OF SECTION

SECTION 01 6000

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This Section includes administrative and procedural requirements governing selection of products for incorporation into the Work.

1.2 RELATED SECTIONS

A. Section 01 1200: Coordination

B. Section 01 3300: Submittal Procedures

C. Section 01 3600: Construction Schedule

D. Section 01 4523: Testing and Inspection

E. Section 01 6400: Substitutions

F. Section 01 7400: Warranties

1.3 DEFINITIONS

A. Definitions used in this Section are not intended to change the meaning of other terms used in the Contract Documents, such as “specialties”, “systems”, “structure”, “finishes”, “accessories”, and other similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. “Products” are items purchased for incorporation into the Work, whether purchased for the Work or taken from previously purchased stock. The term “product” includes the terms “material” and “equipment”, and terms of similar intent.

a. “Named Products” are items identified by the manufacturer’s product name, including make or model number or other designation, shown or listed in the manufacturer’s published product literature, that is current as of the date of the Contract Documents.

b. “Foreign Products”, as distinguished from “domestic products”, are items substantially manufactured (50 percent or more of value) outside the United States and its possessions. Products produced or supplied by entities substantially owned (more than 50 percent) by persons who are

not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.

2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.4 SUBMITTALS

A. Material list: Prepare a list in tabular form acceptable to ARCHITECT showing proposed products. Include generic names. Include the manufacturer's name and proprietary names for each item listed.

1. Coordinate material list with the Construction Schedule and the submittal schedule.

2. Form: Prepare material list with information on each item tabulated under the following column headings.

a. Related Specification Section number

b. Generic name used in Contract Documents

c. Proprietary name, model number, and similar designations

d. Manufacturer's name and address

e. Supplier's name and address

f. Installer's name and address

g. Projected delivery date or time span of delivery period

3. Initial Submittal: Within ten (10) days after execution of each subcontract agreement, as set forth in General Condition Section 6.25, submit three (3) copies of an initial material list. Provide a written explanation for omissions of data and for known variations from the Contract Documents.

4. ARCHITECT Action: ARCHITECT will respond in writing to CONTRACTOR within fourteen (14) days of receipt of the completed material list. No response outside this period constitutes no objection to listed items but does not constitute a waiver of the requirement that selected items comply with the Contract Documents. ARCHITECT response will include a list of unacceptable item selections, containing a brief explanation of reasons for this action.

## 1.5 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

1. CONTRACTOR is to verify necessary lead times for all materials; however, when specified products are available only from sources that do not, or cannot, produce a quality adequate to complete Work in a timely manner, consult with the ARCHITECT to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing these qualities, to the fullest extent possible.

B. Compatibility of Options: When the CONTRACTOR is given the option of selecting between two or more products for use in the Work, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

C. Foreign Product Limitations: Except under one or more of the following conditions, provide domestic products, not foreign products, for inclusion into the Work:

1. No available domestic product complies with the Contract Documents.

2. Domestic products that comply with the Contract Documents are available only at prices or terms substantially higher than foreign products that comply with the Contract Documents.

D. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer’s or producer's nameplates or trademarks on exposed surfaces of products that will be exposed in view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer

b. Model and serial number

c. Capacity

d. Speed

e. Ratings

## 1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage at the Project site and to prevent overcrowding of Work spaces.

2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to the Project site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

5. Store products at the Project site in a manner that will facilitate inspection and measurement of quantity or counting of units.

6. Store heavy materials away from structures in a manner that will not endanger the structure's supporting construction.

7. Store products subject to damage by the elements above ground, under cover in a weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

# PART 2 - PRODUCTS

## 2.1 MATERIAL SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other Projects.

B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:

1. Proprietary Specification Requirements: Where Specifications name only a single material or manufacturer, provide the product indicated. No substitutions will be permitted.

2. Semi-proprietary Specification Requirements: Where Specifications name two or more products or manufacturers, provide one of the products indicated. No substitutions will be permitted.

   a. Where Specifications specify products or manufacturers by name, accompanied by the term "or equal" or "or approved equal", comply with General Condition Section 6.14 to obtain approval for use of an unnamed product.

3. Descriptive Specification Requirements: Where Specifications describe a product or assembly, list exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with the Contract Documents.

4. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.

   a. Manufacturer's recommendations may be contained in published material literature or by the manufacturer's certification of performance.

5. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard or regulation select a product that complies with the standards, codes, or regulations specified.

6. Visual Matching: Where Specifications require matching an established Sample, decision of the ARCHITECT will be final on whether a proposed product matches satisfactorily.

7. Visual Selection: Where specified product requirements include the phrase "… as selected from manufacturer's standard or premium colors, patterns, textures…" or a similar phrase, select a product and manufacturer that complies with other specified requirements. The ARCHITECT will select the color, pattern, and texture from the product line selected.

## PART 3 - EXECUTION

### 3.1 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01 6400

SUBSTITUTIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for handling requests for substitutions made after the Effective Date of the Contract. Refer to Bid Documents for restrictions on Substitutions prior to bid.

1.2 RELATED SECTIONS

A. Section 01 3300: Submittal Procedures

B. Section 01 6000: Materials and Equipment

C. Section 01 7400: Warranties

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.1 APPLICATION

A. CONTRACTOR proposed changes in products required by the Contract Documents after the Effective Date of the Contract are considered to be requests for substitutions. OWNER will consider requests for substitution if a product is no longer manufactured and/or cannot be acquired from existing inventories. The following are not considered to be requests for substitutions:

1. Substitutions requested during the bidding period, and accepted by Addenda prior to bid date, are included in the Contract Documents.

2. Revisions to the Contract Documents requested by OWNER or ARCHITECT.

3. Specified options of products included in the Contract Documents.

4. Substitutions requested after bid opening and prior to the Effective Date of the Contract.

3.2 SUBMITTALS

A. Transmit submittals as described in related Sections for each request for substitution.

1. Identify the product to be replaced in each request. Include related Specification Section and Drawing number.

2. Provide complete documentation denoting compliance with the requirements for substitutions, and the following information, as appropriate.

a. A detailed comparison of significant qualities of the proposed substitution with those specified in the Contract Documents. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.

b. Product Data, including Drawings and descriptions of products and fabrication and installation procedures.

c. Samples, where applicable or requested.

d. CONTRACTOR certification the proposed substitution conforms to requirements of the Contract Documents in every respect and is appropriate for the applications indicated.

e. CONTRACTOR waiver of rights to an increase in the Contract Amount, Milestones and/or Contract Time that may subsequently become necessary because of the failure of the substitution to adequately perform.

3. If required, ARCHITECT will request additional information or documentation for evaluation. OWNER will notify CONTRACTOR of acceptance or rejection of the substitution.

4. ARCHITECT will review and consider request for substitution and make a recommendation to OWNER.

5. Where a proposed substitution involves and/or effects more than one Subcontractor, CONTRACTOR shall ensure each Subcontractor cooperates with the other Subcontractor involved to coordinate the Work, provide uniformity and consistency, and assure compatibility of all products.

6. CONTRACTOR submittal and ARCHITECT review of Shop Drawings, Product Data, or Samples do not constitute an acceptable or valid request for substitution.

END OF SECTION

SECTION 01 7000

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for Contract closeout including, but not limited to, the following:

1. Inspection procedures.
2. Project record documents submittal.
3. Operation and maintenance manual submittal.
4. OWNER orientation and instruction.
5. Final cleaning.
6. Pest control.

B. Closeout requirements for specific Work activities are included in the appropriate Sections in Divisions 02 through 33.

1.2 RELATED SECTIONS

A. Section 01 3300: Submittal Procedures

B. Section 01 3600: Construction Schedule

C. Section 01 5000: Construction Facilities and Temporary Controls

D. Section 01 7400: Warranties

PART 2 – PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.1 SUBSTANTIAL COMPLETION

A. Inspection Procedures: On receipt of a request for a certificate of Substantial Completion, OWNER will either authorize commencement of inspection or advise CONTRACTOR of unfilled requirements. IOR, OWNER, CONTRACTOR and

ARCHITECT will inspect the Work and prepare a comprehensive punch list of items to be completed.

1. IOR will repeat inspection when requested and assured the Work is complete.

2. Results of the completed inspection will form the basis of the requirements for final inspection and Final Completion.

B. Re-inspection Procedures: IOR, OWNER, CONTRACTOR and ARCHITECT will inspect the Work upon notice the Work, including final inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to OWNER.

1. Upon completion of inspection, ARCHITECT will recommend Final Completion. If the Work is incomplete, ARCHITECT will advise CONTRACTOR of Work that is incomplete or of obligations that have not been fulfilled but are required for Final Completion.

2. If necessary, re-inspection will be repeated, but may be assessed against CONTRACTOR if OWNER is subject to additional professional service and or additional costs of inspection.

## 3.2 PROJECT RECORD DOCUMENT SUBMITTAL

A. General: Do not use project record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for ARCHITECT, IOR and OWNER reference during normal working hours. Project record document shall be updated on a weekly basis. Prior to submitting each application for payment, secure IOR and ARCHITECT approval of project record documents.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white prints of Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which Drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work. Date and number entries in the same format as submitted. Call attention to entry by a “cloud “around the affected areas.

2. Mark new information important to OWNER but was not shown on Drawings or Shop Drawings.

3. Utility location and depth below finished grade and or above ceilings and attic spaces shall be fully dimensioned and indicated on record drawings. Dimensions shall be measured from building lines or permanent landmarks and shall be triangulated.

4. Note related Change Order or Construction Directive numbers where applicable. RFI submissions shall be referenced on each affected sheet, plan and/or Shop Drawing.

5. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

6. Prior to Final Completion of the Work, and review of the project record drawings by ARCHITECT, Submit final set of Red-Lines to ARCHITECT with an electric copy of RECORD DRAWINGS in a USB.

C. Record Specifications: Maintain two complete copies of the Specifications, including Addenda. Include with the Specifications two copies of other written Contract Documents, such as Change Orders, and/or Construction Directives issued during construction.

1. Mark these record documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.

2. Give particular attention to substitutions and selection of options and information on concealed Work that cannot otherwise be readily discerned later by direct observation.

3. Note related record document information with Product Data.

4. Prior to Final Completion of the Work, submit record Specifications to ARCHITECT for OWNER records.

D. Record Product Data: Maintain two copies of each Product Data submittal. Note related Change Orders and Construction Directives and mark-up of record drawings and Specifications.

1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the Project site and from the manufacturer's installation instructions and recommendations.

2. Giver particular attention to concealed products and portions of Work that cannot otherwise be readily discerned later by direct observation.

3. Prior to Final Completion of the Work, submit complete set of record Product Data to the ARCHITECT for OWNER records.

E. Record Samples: Immediately prior to Substantial Completion, CONTRACTOR shall meet with ARCHITECT and OWNER personnel at the Project site to determine which Samples are to be transmitted to OWNER for record purposes. Comply with OWNER instructions regarding delivery to OWNER storage area.

F. Miscellaneous Records: Refer to other Specification sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date of Final Completion, complete and compile miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to ARCHITECT for OWNER records.

G. Maintenance Manuals: Prior to Final Completion, organize operation and maintenance data into suitable two sets of manageable size. Bind properly indexed data in individual, heavy-duty, 2-3", 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Submit to ARCHITECT for OWNER records. Include the following types of information.

1. Emergency instructions
2. Spare parts list
3. Copies of warranties
4. Wiring diagrams
5. Recommended "turn-around" cycles
6. Inspection procedures
7. Shop Drawings and Product Data
8. Fixture lamping schedule

## 3.3 CLOSEOUT PROCEDURES:

A. Operation and Maintenance Instructions: Prior to Substantial Completion, arrange for each installer of equipment that requires regular operation and maintenance to meet with OWNER personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are

not experienced in operation and maintenance procedures. Include a detailed review of the following items:

1. Maintenance manuals
2. Record documents
3. Spare parts and materials
4. Tools
5. Lubricants
6. Fuels
7. Identification systems
8. Control sequences
9. Hazards
10. Cleaning
11. Warranties and bonds
12. Maintenance agreements and similar continuing commitments

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Start-up
2. Shutdown
3. Emergency operations
4. Noise and vibration adjustments
5. Safety procedures
6. Economy and efficiency adjustments
7. Effective energy utilization

## 3.4 FINAL CLEANING

A. General: The General Conditions specify general cleaning during the Work. General cleaning is included in Division 01 Section “Construction Facilities and Temporary Controls”.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer’s instructions.

1. Complete the following cleaning operations before requesting inspection for a certificate of Substantial Completion.

   a. Remove labels that are not permanent labels.

   b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

   c. Clean exposed exterior and interior hard-surfaced finished to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

   d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

   e. Clean the Project site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.

3.5 PEST CONTROL (Coordinate with District's Representative)

A. Prior to Substantial Completion, engage an experienced, licensed exterminator to make a final inspection and rid the Project site of rodents, insects, and other pests.

END OF SECTION

SECTION 01 7400

WARRANTIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers' standard warranties on products and special product warranties.

1. Refer to the General Conditions for terms of the guarantee period for the Work.

1.2 RELATED SECTIONS

A. Section 01 1250: Cutting and Patching

B. Section 01 6000: Materials and Equipment

C. Section 01 7000: Contract Closeout

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.1 WARRANTY REQUIREMENTS

A. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties shall not relieve CONTACTOR of the warranty of the Work incorporating such materials, products and/or equipment. Manufacturer's disclaimers and limitations on warranties do not relieve suppliers, manufacturers, and Subcontractors required to countersign special warranties with CONTRACTOR.

B. Standard warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to OWNER.

C. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for OWNER.

D. Related Damages and Losses: When correcting failed or defective warranted Work, remove and replace Work that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted Work.

E. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement with the reinstated warranty equal to the original warranty.

F. Replacement Cost: Upon determination the Work covered by a warranty has failed and/or is defective, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. CONTRACTOR is responsible for the cost of replacing or rebuilding defective Work regardless of whether OWNER has benefited from use of the Work through a portion of its anticipated useful service life.

G. OWNER Recourse: Expressed warranties made to OWNER are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which OWNER can enforce such other duties, obligations, rights, or remedies.

H. Rejection of Warranties: OWNER reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

I. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, OWNER reserves the right to refuse to accept the Work until CONTRACTOR presents evidence the entities required to countersign such commitments have done so.

## 3.2 SUBMITTALS

A. Submit written warranties to ARCHITECT prior to Final Completion of the Work. If the certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, submit written warranties as set forth in the certificate of Substantial Completion.

1. When a designated portion of the Work is partially used and or occupied by OWNER, submit properly executed warranties to ARCHITECT within fifteen (15) days of the Partial Use or Occupancy of the designated portion of the Work.

B. When the Contract Documents require CONTRACTOR, or CONTRACTOR and a Subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document containing appropriate terms and identification, ready for execution by the required parties. Submit a draft to OWNER, through the ARCHITECT, for approval prior to final execution.

1. Refer to Divisions 02 through 16 for specific content requirements and particular requirements for submitting special warranties.

C. Form of Submittal: Prior to Final Completion of the Work, compile two copies of each required warranty properly executed by CONTRACTOR, or by CONTRACTOR and Sub contractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the Specifications.

D. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8½ by 11" (115 by 280 mm) paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the item or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the installer.

2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES", Project title and/or name, and name of CONTRACTOR.

3. When warranted Work requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

END OF SECTION

SECTION 01 7900

CLEANING

## PART 1 GENERAL

### 1.01 SUMMARY

A. Required: throughout the entire Contracted Work period, Contractor shall maintain the building and the job-site in a standard of cleanliness, as described in this Section, including all necessary final cleaning prior to District's acceptance of Contracted Work.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to the GENERAL CONDITIONS and sections in DIVISION 1 of these Specifications.

2. In addition to standards described in this Section, comply with requirements for cleaning as described in pertinent other Sections of these Specifications.

3. Contractor's Use of the Premises in Section 01 1115.

4. Project Closeout in Section 01 7000.

### 1.02 QUALITY ASSURANCE

A. Conduct daily inspection, and more often if necessary, to verify that requirements for cleanliness are being met.

B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction.

C. Provide skilled personnel experienced in the operations of maintaining the specified standards of cleanliness during the Contracted Work operations until final acceptance of the Project by the District.

## PART 2 PRODUCTS

### 2.01 CLEANING MATERIALS AND EQUIPMENT

A. Provide commercial quality building maintenance equipment and materials to achieve the cleanliness desired by the District.

2.02 COMPATIBILITY

A. Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

PART 3 - EXECUTION

3.01 PROGRESS CLEANING

A. General:

1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.

2. Do not allow accumulation of scrap, debris, waste materials, and other items not required for construction of this Work.

3. Provide adequate storage for all items, materials, waste and debris awaiting removal from the job-site where directed by the Architect/Owner, observing requirements for fire protection and protection of the ecology. Do not obstruct exits at any time.

B. Disposal:

1. At least twice each month or more often as necessary or directed by the Owner completely remove all scrap, debris and waste materials from the job-site at an approved and licensed dump yard or disposal facility.

2. Contractor shall be responsible for removing from school and City Street any excavated materials, demolished materials or equipment and debris falling off the Contractor's trucks and other equipment during transporting from the job-site to an approved and licensed dump yard or disposal facility.

C. The Job-site:

1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage by the OWNER.

2. Weekly, and more often if necessary, inspect all arrangements of materials stored on the job-site. Restack, tidy, or otherwise service arrangements to meet the requirements of subparagraph 3.01-A-1 above.

3. Maintain the job-site in a neat, safe and orderly condition at all times and not interfering or delaying Contracted Work operations.
4. During demolition, site clearing and/or earth moving operations control the dust on the job-site at all times by watering or sprinkling at such intervals as will reduce the dust during all hours that work is being performed.

D. Structures:

1. Weekly, and more often if necessary, inspect the structures and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.

2. Do not at any time, throw rubbish from the windows of the buildings.

3. Daily, and more often if necessary, sweep interior spaces clean.

a. "Clean", for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and a hand-held broom.

4. Besides the general broom cleaning of the interior of the structure, the Contractor shall be responsible for seeing that the following special cleaning for all trades shall be done at the completion of the work:

a. Remove putty stains from all glass, then wash and polish glass.

b. Remove all marks, stains, fingerprints, and other soil or dirt from all painted, stained or decorated work.

c. Remove all temporary protections, clean and polish all floors and waxed surfaces.

d. Clean and polish all hardware and plumbing trim; remove stains, dust, dirt, plaster, paint, etc.

e. Clean all spots, soil, plaster and paint from all tile work, and wash tile.

f. Clean all fixtures and equipment.

5. Any anticipated delay in removal of materials, rubbish and debris shall be subject to the approval of the Owner.

6. As required preparatory to installation of succeeding materials, clean the structures or pertinent portions thereof to the degree of cleanliness

recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.

7. Following the installation of finish floor materials, clean the finish floor daily (and more often if necessary) at all times while work is being performed in the space in which finish materials are installed.

   a. "Clean", for the purpose of this subparagraph, shall be interpreted as meaning free from foreign material which, in the opinion of the Architect, may be injurious to the finish floor material.

3.02 FINAL CLEANING

A. Required: Upon the completion of the Contracted Work, the Contractor shall remove all of Contractor's plant tools, materials and other articles from the property of the District. Should the Contractor fail to take prompt action to this end, the Owner at its option and without waiver of such other rights as it may have, on 30 day's notice, treat them as abandoned property. The District (Owner) may remove such items at the Contractor's cost.

B. The term "Clean" shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.

C. Prior to completion of the Contracted Work, remove from the job-site all tools, surplus materials, equipment, scrap, debris and waste. Conduct final progress cleaning as described in Subsection 3.01 above.

D. Site:

   1. Unless otherwise specifically directed by the Architect or Owner, broom clean paved areas on the site and public paved areas adjacent to the site.

   2. Completely remove resultant debris.

E. Structures.

   1. Exterior:

      a. Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.

      b. Remove all traces of splashed materials from adjacent surfaces.

      c. If necessary, to achieve a uniform degree of cleanliness, hose down the exterior of the structure.

d. In the event of stubborn stains not removable with water, the Architect or the Owner may require light sandblasting or other cleaning method at no additional cost to the Owner.

e. Remove paint droppings, spots, stains, and dirt from finished surfaces.

2. Interior:

a. Visually inspect interior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.

b. Remove all traces of splashed materials from adjacent surfaces.

c. Remove paint droppings, spots, stains, and dirt from finished surfaces.

3. Glass: Clean inside and outside.

4. Polished Surfaces: To surface requiring routine application of buffed polish, apply the polish recommended by the manufacturer of the material being polished.

F. Schedule final cleaning as approved by the Owner to enable the Owner to accept a completely clean work.

3.03 CLEANING DURING DISTRICT'S OCCUPANCY

A. Should the District choose to occupy the Contracted Work or any portion thereof prior to completion of Contracted Work and acceptance by the District, responsibilities for interim and final cleaning shall be as determined by the Architect in accordance with the GENERAL CONDITIONS of the Contract.

3.04 USE OF THE STRUCTURE BEFORE DISTRICT'S ACCEPTANCE.

A. See the subject specified in the GENERAL CONDITIONS of this Project.

END OF SECTION

SECTION 03 0130

RESTORATION AND CLEANING OF CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes epoxy resin adhesive for:

1. Epoxy injection of cracks.

2. Grouting of cracks by gravity flow.

3. Repair of spalling concrete.

B. Related Requirements

1. Division 01 - General Requirements.

1.02 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating areas to receive restoration.

B. Product Data:

1. Submit manufacturer's product literature and installation procedures.

2. Submit laboratory test reports indicating compliance with the Specifications.

1.03 QUALITY ASSURANCE

A. Continuous inspection of epoxy repair procedures shall be performed by the Project Inspector in accordance with CBC.

B. Inspection shall be performed by a representative of a testing laboratory selected by the Owner. The Owner will pay for inspection costs. Notify the laboratory 24 hours in advance of time concrete is to be mixed and notify the laboratory within 24 hours of postponement or cancellation of mixing.

C. Installer of epoxy resin adhesive and concrete repair shall be certified by the manufacturer.

D. Manufacturer: Regularly engaged in manufacture of epoxy resin products for at least 10 years. Provide references of at least five projects for which epoxy resin adhesive treatment was installed.

1.04 PROJECT CONDITIONS

A. Materials shall not be installed during existing or forecasted freezing or inclement weather.

B. Protect adjacent surfaces from damage by equipment, tools, or materials.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project site in manufacturer's unopened containers bearing manufacturer's name and product identification.

B. Store and condition materials as recommended by product manufacturer.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Provide products by one of the following manufacturers:

1. Sika Corporation.

2. Fosroc Inc.

3. The Euclid Chemical Co.

4. Or Approved Equal.

2.02 PERFORMANCE COMPLIANCE

A. Core drill at least one test hole for every 100 feet of cracks, in accordance with CBC requirements. Refer to related Section 01 4523 - Testing and Inspection. Patch holes after core drilling samples.

2.03 MATERIALS

A. Epoxy Resin Adhesive for Pressure Injection and Gravity Flow Grouting of Cracks:

1. Modified epoxy resin containing suitable viscosity control agents and accelerators.

2. Material shall not contain asbestos.

3. Material shall be approved by the United States Department of Agriculture.

B. Epoxy Resin Adhesives:

1. Sikadur 35, Hi-Mod LV, by Sika Corporation.

2. Nitofil LV, by Fosroc Inc.

3. Euco #452 LV System, Euclid Chemical Company.

4. E-396 Series, by Micro Capsule Engineering.

5. Or Approved Equal.

C. Materials for Repairing Spalling Concrete:

1. Surface Seal Paste: Sika Top/110 Armatec; Nitoprime Zincrich; Euco Zinc Prime, or approved equal.

2. Patching Material: Sika Top 123 PLUS; Renderoc HB; Euco Verticoat, or approved equal.

D. Materials for Patching Test Core Holes: One part Portland cement and three parts sand.

## PART 3 - EXECUTION

### 3.01 PREPARATION

A. Surfaces adjacent to cracks and spalled concrete shall be cleaned with all dust, grease, foreign particles and disintegrated materials removed by sandblasting, high-pressure water blasting, grinding, chipping or abrasive wheel. Cracks shall be free of standing water and/or frost.

B. Installation of gravity flow grouting shall be performed by removing a V-notch portion of the crack to a maximum width of 1/4 inch and for the required length. Remove dust and loose debris. Where the underside of the concrete slab is accessible, seal visible cracks with epoxy resin adhesive paste or Portland cement based quick-setting compound to retain installed adhesive until cured.

C. Remove broken and spalled concrete down to sound material and to a minimum depth of one inch around steel reinforcing bars. Clean steel bars by sand blasting.

### 3.02 APPLICATION OF EPOXY

A. Manual application of epoxy resin shall be performed by mixing only that quantity of material that can be installed in 20 to 30 minutes at 73 degrees F. Automated application of high pressure injection shall be performed with a portable unit, equipped with positive displacement type pumps, air-powered or electric, with

interlock for positive ratio control of exact material proportioning at the nozzle. Pumps shall provide in-line mixing and metering system and contain drain-back plugs.

B. Placement Procedure:

1. High Pressure Injection:

a. Provide porting devices as required by manufacturer, do not exceed maximum spacing. Spacing shall not exceed thickness of substrate and shall be calibrated to provide travel of material for grouting between ports. Fill cracks to maximum.

b. On structures where both sides are accessible, provide porting devices on both sides at staggered elevations. Install mixed epoxy resin sealing adhesive over cracks and around each porting device, to provide an adequate adhesive seal during injection grouting.

c. Where required, install sealing adhesive to provide minimal defacing or discoloration of substrate.

d. Inject epoxy from bottom-most port. Install until epoxy appears out of next higher port. Plug lower port and start injecting into the port above. Repeat procedure until crack is grouted.

2. Low Pressure Injection: Material installation shall be performed by a manufacturer certified applicator in accordance with the manufacturer's written recommendations.

3. Gravity Flow Grouting: Furnish mixed material into V-notches and install until cracks are completely filled.

C. If penetration of a crack is not feasible, notify the Architect before discontinuing injection or grouting procedures. If modification of procedure is required to fill cracks, submit proposed modification to the Architect for review before proceeding.

D. Install materials for repair of spalling concrete in accordance with the manufacturer's written recommendations.

3.03 FILLING TEST HOLES

A. Fill holes with mixture of sand, Portland cement, and water. Finish to match existing adjacent surface.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.05 CLEANING

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 04 0120

MASONRY RESTORATION AND CLEANING

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of Division 01 apply to this section

B. Section Includes:

1. Cleaning, restoration and repointing and caulking of cracks as noted on the drawings.

2. Removal of plant growth.

C. Related Sections:

1. Section 09 9000: Painting and Coating.

1.02 SYSTEM DESCRIPTION

A. Regulatory Requirements:

1. State or municipal regulations governing sandblasting, cleaning, scaffolding, and protection of adjacent properties.

2. Drawings detailing temporary support of structure shall be prepared, signed, and sealed by a structural engineer registered in the State of California.

1.03 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating areas to receive restoration.

B. Product Data:

1. Submit manufacturer's product literature and application procedures.

2. Submit laboratory test reports or approvals indicating conformance with the Specifications.

1.04 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:

1. ASTM D 638 - Tensile Properties for Plastics.

1.05 PROJECT CONDITIONS

A. Materials shall not be applied during existing or forecasted freezing or inclement weather.

B. Adjacent surfaces, to the areas receiving treatment, shall be protected from damage from equipment, tools or materials.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project site in manufacturer's unopened containers bearing manufacturer's name and product identification.

B. Store and condition materials as recommended by product manufacturer.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. For purpose of establishing acceptable criteria for treatment of cracks and restoration of masonry walls, submit a product of the following manufacturers:

1. Sika Corporation, Santa Fe Springs, CA.

2. Fosroc Inc., Woodland, CA.

3. The Euclid Chemical Company, Trabuco Canyon, CA.

4. Or Approved Equal.

2.02 MATERIALS

A. Epoxy Resin Adhesive:

1. New material within the shelf life recommended by manufacturer.

2. Two-part material made from 100 percent solids of modified epoxy resin containing suitable viscosity control agents and accelerators.

3. Mix components in ratio recommended by product manufacturer.

4. Material shall not contain butyl glycidyl ether or asbestos.

B. Materials For Masonry Restoration:

1. Sikadur 35, Hi-Mod LV, by Sika Corporation.

2. Nitobond ULV, by Fosroc Inc.

3. Euco #452 LV System, by the Euclid Chemical Company.

C. Materials For Cleaning Masonry:

1. Acid Solution: Clean, stain free, commercial hydrochloric (muriatic) acid mixed with potable water:

a. Use 10 parts water for dark colored brick.

b. Use 15 parts water for light colored brick.

D. Mortar: ASTM C 387, using gray or white cement, commercially prepared type, to match existing.

E. Hydrated Lime: ASTM C 207.

F. Quicklime: ASTM C 5, non-hydraulic type.

G. Sand (for sandblasting): Quartz type, sharp edged.

H. Masonry Anchors: DA 213 Seismic as fabricated by DUR-O-WAL, when brick is removed and installed. Masonry anchors shall be D 5300 series for brick veneer around wood framing when brick is left in place.

## PART 3 - EXECUTION

### 3.01 GENERAL

A. Sample Test Area for Cleaning: Before commencement of Work, cleaning procedures and solutions shall be applied to a sample test area of approximately 20 square feet. The effectiveness of the cleaning method will be determined by inspection of the test area at least one week after application.

### 3.02 PREPARATION

A. Remove and store items such as finish hardware, fixtures, fittings, and accessories.

B. Construct dustproof partitions to close off occupied areas from this Work. Protect adjacent materials from damage by the Work of this section.

C. Surface adjacent to cracks must be clean and sound; cracks shall be free of standing water and frost. Remove dust, grease, foreign particles, and disintegrated materials on surface adjacent to cracks by sandblasting, high-pressure water blasting or high-pressure steam cleaning.

D. For gravity flow grouting, V-notch surface of crack, to a maximum width of 1/4 inch and remove loose debris.

3.03 APPLICATION

A. Placement Procedures:

1. Remove existing mortar which is loose or does not match adjacent brick to a depth of ¾" minimum and re-point mortar.

2. Gravity Flow Grouting: Place mixed material into V-notches and replenish reservoir with material until cracks are completely filled.

B. Provide masonry restoration materials in accordance with manufacturer's written recommendations.

3.04 CLEANING EXISTING MASONRY

A. Where serious staining is indicated, provide the following:

1. Apply high pressure (700 psi or greater) steam cleaning to masonry surfaces with detergent in accordance with manufacturer's directions.

2. If existing coating is lead-based paint, notify the Architect before proceeding.

B. Sandblasting: Do not sandblast brick or mortar.

3.05 RESTORATION CLEANING

A. Clean surfaces and remove large particles of excess mortar with wood scrapers or wire brush.

B. Apply masonry restoration cleaner, mixed into solution in strict accordance with manufacturer's instructions.

C. Apply a second coat if required by preliminary test of a sample area.

D. Allow sufficient time for solution to remain on masonry, agitate with soft fiber brush or sponge.

E. Rinse from bottom up with potable water at high pressure.

3.06 TUCK POINTING

A. Cut out loose or disintegrated mortar in joints and also mortar that does not match existing adjacent mortar, without damage to masonry units.

B. Tuck pointing mortar shall not be denser than original mortar. In absence of information on the original mortar, provide pre-hydrated mortar.

3.07 AGING MASONRY

A. Perform an aging process, if required to match existing Work by rubbing and then removing excess carbon black into mortar surface. Repeat process until new Work matches existing. Prepare a Sample panel for Architect review before performing the Work.

1. Rub carbon black with burlap rags or medium bristle brush.

2. After each installation, dust off surplus and wash down with medium pressure hose. Allow to thoroughly dry before proceeding with succeeding installations.

3.08 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.09 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 06 1000

ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Rough carpentry Work.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 01 4523: Testing and Inspection.

1.02 SYSTEM DESCRIPTION

A. Regulatory Requirements:

1. Work of this Section shall comply with CBC Chapter 23A.

1.03 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:

1. Douglas fir, larch or hemlock structural and framing lumber shall be graded in accordance with the Standard Grading Rules of the West Coast Lumber Inspection Bureau (WCLIB) or the Western Lumber Grading Rules of the Western Wood Products Association (WWPA).

2. Plywood shall conform to requirements of Product Standard PS 1, and shall be grade marked by a recognized grading agency (APA and PTL).

B. Lumber shall bear official grade mark of the association under whose rules it was graded or official grade mark of another recognized grading agency.

C. Structural and framing members 2-inch thick (nominal) and larger shall be air-dried to moisture content not to exceed 19 percent before installation.

D. Each piece of preservative treated lumber shall be identified by the Quality Mark of an approved inspection agency in accordance with CBC Chapter 23A; refer to Section 01 4523: Testing and Inspection.

E. Lumber showing visible signs of mold growth:

1. Lumber showing visible signs of mold growth shall be removed from the project site or cleaned as outlined below.

2. The contractor is responsible for all costs associated with cleaning, post-cleaning testing, and reporting for lumber with mold.

a. Lumber that shows visible signs of mold growth prior to, or after installation, shall be cleaned pursuant to USEPA's guidance publication "Mold Remediation in Schools and Commercial Buildings dated March 2001 (EPA 402-K-01-001).

b. A minimum of 10 percent of the total locations cleaned must be sampled (tape lift method) post cleaning to ensure cleaning effort was successful. Cleaning will be considered acceptable when tape lift sample results evaluated by direct microscopic examination determine that the general abundance of mold is non-detect or rare (normal trapping to 1+).

c. A report prepared by a Certified Industrial Hygienist (CIH) that details the sampling and cleaning results shall be prepared and submitted to the OAR for review and approval of the LAUSD Office of Environmental Health and Safety.

d. Cleaned lumber shall not be installed or enclosed by finish materials until approval of test results. Cleaned lumber must meet moisture content requirements as required elsewhere in this specification prior to installation or application of finishes.

1.04 STORAGE, HANDLING AND PROTECTION

A. The materials supplied as part of the Work of this section shall be protected from exposure to inclement weather before being covered by other Work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Lumber: Structural and framing lumber shall be of following species and grades:

| | INSTALLATION | SPECIES | GRADE |
|---|---|---|---|
| 1. | Subfloor, wall sheathing, roof sheathing and ceiling furring | Douglas fir and larch | Construction Board, WCLIB; WWPA |

| | | | |
|---|---|---|---|
| 2. | Joists, rafters, lintels, posts, mullions and members (2 to 4-inch thick, 2 to 4-inch wide) | Douglas fir and larch | No. 1 or better; Structural Light Framing, WCLIB; |
| 3. | Framing lumber (2 to 4-inch thick, 5-inch and wider). | Douglas fir and Larch | # 1 or better Structural Joists and Planks, WCLIB; WWPA. |
| 4. | Sills or plates installed on concrete or masonry surfaces 6 inches or less above earth or finish grade. | Douglas fir and Larch Treated | Same as subparagraphs 5 and 6. |
| 5. | Miscellaneous nailing strips and blocks embedded in concrete or masonry. | Douglas fir and Larch treated | Same as subparagraphs 5 and 6. |

B. Plywood: Plywood furnished for structural purposes, when exposed outdoors, shall be exterior type plywood. Other plywood furnished for structural purposes shall be exterior type, or Exposure 1.

C. OSB Board or Panels:

1. Oriented strand board or panels shall not be furnished as part of the Work of this section.

D. Preservative Treated Wood:

1. Wood and plywood specified; as treated wood shall be pressure treated wood in accordance with CBC requirements.

2. Seasoning: Treated lumber shall be air seasoned after treatment, for a minimum of two weeks before installation. Moisture content shall be 15 percent maximum.

3. Creosote or arsenic is not permitted for treating wood.

4. When treated wood member have been notched, dapped, drilled, or cut, such newly cut surfaces shall be painted with a heavy coat of the same preservative material originally provided for treatment of wood member.

E. Adhesive: Tec, Inc. Sturdi-Bond TA-175, Top Industrial Inc., Rainbuster 345, Liquid Nails LN-940, or equal elastomeric adhesive conforming to ASTM D 3498 and APA-AFG-01.

PART 3 - EXECUTION

3.01 FASTENINGS

A. Nails and Spikes:

1. Furnish only common wire nails or spikes whenever indicated, specified or required.

2. Whenever necessary to prevent splitting, holes shall be pre-drilled for nails and spikes.

3. Nails in plywood shall not be overdriven.

4. Machine Applied Nailing: Use of machine nailing is subject to a satisfactory Project site demonstration for each Project and approval by the Architect or structural engineer retained by the Architect as an Architect and Consultant. Installation is subject to continued satisfactory performance. Machine nailing is not permitted for 5/16 inch plywood. Do not permit nail heads to penetrate outer ply. Maintain minimum allowable edge distances when installing nails.

B. Bolts:

1. Lumber and timber to be fastened together with bolts shall be clamped together with holes for bolts bored true to line.

2. Bolts shall be fitted with steel plates or standard cut washers under heads and nuts. Bolts shall be tightened when installed and again before completion of the Work of this section.

C. Metal Framing Devices: Framing anchors, joist hangers, ties, and other mechanical fastenings shall be galvanized or furnished with a rust inhibitive coating. Nails and fastenings shall be of the type recommended by manufacturer.

3.02 INSTALLATION

A. Stud Walls, Partitions and Furring:

1. Wood stud walls, partitions and vertical furring shall be constructed of members of size and spacing indicated. Provide single treated plate at bottom and double plate at top unless otherwise indicated. Interior, nonbearing non-shear partitions may be framed with a single top plate, installed to provide overlapping at corners and at intersections with other wall and partitions or by metal ties as detailed.

2. Walls and partitions shall be provided with horizontal staggered blocking at least 2 inch nominal thickness and same width as studs, fitted snugly, and nailed into studs. Blocking shall be installed at mid-height of partition or not more than 7 feet on center vertically. Install wood backing on top of top plate wherever necessary for nailing of lath or gypsum board.

3. Walls, partitions and furred spaces shall be provided with 2-inch nominal thickness wood firestops, same width as space to be firestopped, at ceiling line, mid-height of partition and at floor line. Firestops at floor line are not required when floor is concrete. If width of opening is such that more than one piece of lumber is necessary, provide two thicknesses of one inch nominal material installed with staggered joints.

4. Firestops shall be installed in stud walls and partitions, including furred spaces, so the maximum dimension of any concealed space is not over 10 feet.

5. Corners, and where wood stud walls and wood vertical furring meet, shall be constructed of triple studs. Openings in stud walls and partitions shall be provided with headers as indicated and a minimum of 2 studs at jambs, one stud of which may be cut to support header in bearing.

B. Floor Joists, Roof and Ceiling Framing:

1. Wood joists shall be of the size and spacing indicated, installed with crown edge up, and shall have at least 4-inch bearing at supports. Provide 2-inch solid blocking, cut in between joists, same depth as joists, at ends and bearings, unless otherwise indicated.

2. Floor joists of more than 4 inches in depth and roof joists of more than 8 inches in depth shall be provided with bridging. Floor joists shall be bridged every 8 feet with solid blocking or metal cross bridging. Roof joists shall be bridged every 10 feet.

3. Trimmer and header joists shall be doubled, when span of header exceeds 4 feet. Ends of header joists more than 6 feet long shall be supported by framing anchors or joist hangers unless bearing on a beam, partition, or wall. Tail joists over 12 feet long shall be supported at header by framing anchors or on ledger strips at least 2 by 4.

4. Provide solid blocking between rafters and ceiling joists over partitions and at end supports where indicated.

C. Roof and Wall Sheathing:

1. Plywood roof sheathing shall be Structural I, Grade C-D, Exposure 1, thickness as indicated.

2. Where exposed roof sheathing is indicated, area shall be sheathed solid with dressed and center matched, V-jointed boards of sizes indicated. Boards shall be installed perpendicular to supports.

D. Furring:

1. Rafters or ceiling joists indicated to be furred for support of materials other than acoustical tile shall be furred with 2 by 4 wood members installed at right angles to supports, spaced as indicated and nailed in place. Furring shall be aligned, and bottoms shall be leveled by installing wood shims as required, and nailed as indicated.

2. Furring for protective wall padding in gymnasium shall be 1 by 3 Douglas fir, Construction Boards, S1S1E; applied horizontally to concrete walls at top and bottom of padding panels; and at uniform intermediate spacing not more than 18 inches on center. Stripping shall be shimmed where required, aligned to a true plane, and secured to concrete walls with concrete nails at not more than 18 inches on center.

E. Furring: Where metal furring is not indicated or specified, provide wood furring at points indicated and required for concealing conduit, piping, structural framing or other unfinished materials. Wood furring shall be 2-by studs of required width. Vertical members contacting concrete or masonry shall be attached as specified for anchoring interior wood stud partitions.

F. Nailing Strips and Plates:

1. Provide wood nailing strips, plates and blocking indicated or required. Nailing strips in connection with metal work shall be bolted to metal. Wood nailing blocks for securing grounds shall be built into concrete, or masonry.

2. Nailing schedule shall comply with CBC requirements.

3. Treated wood nailing strips for lightweight insulated concrete roof decks at eaves, ridges, rakes, base of curbs and wherever else indicated, shall be provided and installed. Strips shall be treated Douglas fir, 4 inches (nominal) width by thickness of insulated concrete.

G. Wood Backing: Provide wood backing as indicated and as required to receive plumbing, electrical fixtures and equipment, cabinets, door stop plates and other fixed equipment.

3.03 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 07 6000

FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Sheet metal flashings in connection with roofing.
2. Reglet and counter flashing assemblies.
3. Miscellaneous metal flashing and counter flashing as required.
4. Coping caps.
5. Gravel stops and metal edging.
6. Gutters and downspouts.
7. Splash pans where downspouts empty onto roofing.
8. Conductor heads.
9. Drip flashings.
10. Sheet metal covering at outside storage units.
11. Sheet metal wall coverings.
12. Roof pipe flashings.
13. Roof expansion joint covers.
14. Other sheet metal items not necessarily specified herein or in other sections but required to prevent penetration of water into building.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 07 9200 - Joint Sealants.
3. Section 09 2423 - Cement Plaster and Metal Lath

1.02 SUBMITTALS

A. Shop Drawings: Submit for fabricated sheet metal indicating shapes, details, methods of joining, anchoring and fastening, thicknesses and gages of metals, concealed reinforcement, expansion joint details, sections, and profiles.

B. Samples: Submit Samples for materials or assemblies as requested.

C. Product Data: Submit brochures of manufactured items.

1.03 QUALITY ASSURANCE

A. Drawings and requirements specified govern. Provide the Work of this section in conformance with the Architectural Sheet Metal Manual published by SMACNA for conditions not indicated or specified and for general fabrication of sheet metal items.

B. Materials shall conform to following standards:

1. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.

2. ASTM A653 - Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

3. ASTM B370 - Copper Sheet and Strip for Building Construction.

C. Pre-installation Meetings: Refer to Division 07 roofing sections as appropriate. Attend the pre-installation and inspection meetings for roofing Work.

1.04 DELIVERY, STORAGE AND HANDLING

A. Do not install bent or otherwise damaged materials.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Galvanized Sheet Steel: ASTM A653, coating designation G90, hot-dip galvanized.

B. Copper Plate, Sheet and Strip: ASTM B370, cold-rolled, tempered. Copper sheet and strip shall be cold-rolled-temper.

C. Stainless Steel: Plate, sheet and strip shall conform to ASTM A167, Type 304 or Type 316, No. 4 finish on exposed surfaces and No. 2 finish on concealed surfaces unless otherwise specified or indicated. Furnish Type 304 for general applications and Type 316 where exposed to acidic or alkaline conditions.

D. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.

1. As-Milled Finish: Standard one-side bright.

E. Fastenings:

1. Galvanized Steel: Nails, rivets, and other fastenings furnished in connection with galvanized sheet steel Work shall be sealed with rust resistive coating. Rivets shall be tinned. Nails and other fastenings shall be zinc-coated.

2. Copper: Nails, rivets, and other fastenings furnished in connection with copper sheet metal Work, shall be manufactured from hard-temper copper or hard brass.

3. Stainless Steel: Nails, rivets and other fastenings furnished in connection with stainless steel Work, shall be 300 series alloy to match alloy of stainless steel being fastened.

F. Soldering Flux: Raw muriatic acid for galvanized steel; rosin for tin, and tinned copper; non-corrosive soldering salts for uncoated copper and acid-type flux formulated for soldering stainless steel.

G. Solder: ASTM B32, Grade 5A, composed of 95-5 tin-antimony. Name of product manufacturer and grade designation shall be labeled, stamped or cast onto each coil or bar.

2.02 FABRICATION

A. General:

1. Accurately form sheet metal Work to dimensions and shapes indicated and required. Cope finish molded and brake metal shapes with true, straight, sharp lines and angles and, where intersecting each other, to a precise fit. Unless otherwise specified, all galvanized sheet steel shall be 22 gage. Exposed edges of sheet metal shall have a ½ inch minimum hemmed edge.

2. Soldering of sheet steel or copper shall be performed with well-heated copper soldering iron or soldering torch, joints full flowing, neat and consistent. Fill joint completely with solder. Clean materials at joints before soldering, and tin coppers before soldering. Exposed soldering on finished surfaces shall be scraped smooth. Lock seam work shall be fabricated flat and true to line and soldered along its entire length. Acid-fluxed Work shall be neutralized after fabrication.

3. Form and install sheet metal Work to provide proper allowances for expansion and contraction, without causing undue stresses in any part of completed Work. Installation shall be water and weathertight.

B. Gutters and Downspouts:

1. Gutters: Fabricate from 22 gage galvanized steel to match existing size and design unless otherwise indicated. Maximum length of gutter shall be 40 feet between end or expansion joints unless the system is specially designed to accommodate the greater expansion, the larger flow and the need for special supports. Drain gutter towards nearest downspout and provide an expansion joint at mid-point between downspout outlets, but not to exceed 40 feet on center. Gutters shall not pond water. Rivet joints and ends with a minimum of 6 rivets per joint or maximum rivet spacing not to exceed 1 ½-inch on center and ½ inch from the edge of the metal, consisting of 3-inch overlap. Sweat solder from inside of gutter and in horizontal position where possible. Neatly fit downspouts to gutter using a slip joint. Provide expansion joints, consisting of 3-inch lap joints at not over feet.

2. Form and install sheet metal Work to provide allowance for expansion and contraction without causing undue stresses in the completed Work.

3. Downspouts: Fabricate downspouts from 3-inch round, or 3-inch by 4-inch rectangular shapes, 16 gage steel tubing with butt joints and mitered elbows, sized as indicated. Downspouts shall be constructed with conductor heads every 40 feet to admit air and prevent vacuum. Keep downspouts offsets to a maximum of 10 feet. Downspout shall be fabricated with elbows at bottom discharge or connected to drains as indicated. Joints, except expansion joints shall be sealed with a continuous weld. Galvanize downspouts after fabrication.

4. Outlets: Fabricate outlets of 22 gage galvanized sheet steel with a 1/4 inch rolled flanged soldered continuously to gutter. Outside diameter shall be 1/8 inch less than the inside diameter of the downspout and extend into downspout 4 inches. Install a removable wire "bulb type" strainer to outlet opening. Strainer shall be fabricated of 22 gage galvanized steel and ½ inch hardware cloth.

C. Conductor Heads: Fabricate conductor heads and outlets from 22 gage galvanized sheet steel. Cover tops of the conductor heads with 22 gage galvanized ¼ inch wire mesh soldered securely to separately fabricated frame and mechanically fastened to top conductor head with a minimum of two fasteners.

D. Gravel Stops: Provide 24 gage galvanized sheet steel gravel stops wherever roof area drops to a lower level; at the eaves and rake of roof, where roof comes to an abrupt edge, and where indicated. Stops shall be of height indicated and shall be fabricated with two flanges. Horizontal flange shall be not less than 4 inches wide, and vertical flange shall extend down over vertical surfaces of trim or gutter. Gravel stops shall lap 4 inches at ends and corners and shall be fabricated by notching and interlocking vertical face flanges. Contact surfaces of lapped flanges, including raised areas, vertical face and corners, shall be completely covered with flashing compound. Fabricate lap joints so that they will be in the direction of water flow. Where flanges are over five inches wide, provide 20 gage continuous cleats fastened at 24 inches on center.

E. Overflow Outlets: Provide galvanized sheet steel overflow outlets at locations and of sizes indicated. Outlets shall extend through full thickness of wall in one continuous piece and completely line the opening. On outside face of wall, top and sides of outlet shall finish 1/2 inch on surface of wall. Bottom of outlet shall project 1 ½ inches beyond face of wall and shall be bent down slightly. Outlets shall be sealed on the surface of the building. On inside face, side and bottom flanges shall extend not less than 8 inches beyond edge of opening, and not less than 6 inches at top. Outlets shall be installed at time roof is being installed.

F. Reglet Type Counterflashing: Where roof comes in contact with vertical surfaces, provide counterflashing. Set top of counter flashing 8 inches above roof deck unless otherwise indicated and extend down at least 5 inches or to top of cant strip. Counterflashing and reglet shall be 22 gage galvanized sheet steel. Lap counter flashing and reglet 3 inches minimum at splices and miter at angles or supply special metal corner fittings. Reglet and method of securing flashing shall be so

constructed that flashing is firmly locked in place but may be readily removed for replacement.

G. Splash Pans: Provide splash pans for all downspouts, which empty onto lower roofs. Pans shall be galvanized sheet steel 12-inch by 18-inch, unless otherwise indicated, and turned up 2 inches on at least three sides.

H. Roof Expansion Joint Covers: Fabricate of 22 gage galvanized sheet steel, as detailed. One side of joint shall be zee shaped, with 3-inch standing leg extended over the joint and turned down. The other side shall be box shaped, fabricated to extend over the joint, over the standing leg, and turn down to form a water barrier. Prefabricated bellows type joint covers are not permitted.

I. Miscellaneous Flashing: Unless otherwise indicated, miscellaneous flashing shall be fabricated of galvanized steel. Exterior doors and windows, unless covered by overhangs shall be provided with 22 gage galvanized steel drip flashing as detailed. At wood construction, nail flashing to framing before paper backed lath is installed.

J. Roof Pipe Flashings:

1. PVC roofs: provide PVC flashings or prefabricated welded or seamless flashings.

2. Tile and built-up roofs: provide 24 gage galvanized steel flashings with a storm worker.

## PART 3 - EXECUTION

### 3.01 PREPARATION

A. Concrete and masonry materials in contact with sheet metal shall be painted with alkali resistant coating, such as heavy-bodied bituminous paint. Wood in contact with sheet metal shall be painted with two coats of aluminum paint or one coat of heavy-bodied bituminous paint.

### 3.02 INSTALLATION

A. General: Coordinate with installation of underlayment indicated in the Drawings and specified in Section 09 2423 Cement Plaster and Metal Lath.

B. Gutters and Downspouts:

1. Anchor gutters to structure with 10 gage steel straps, galvanized after fabricating. Secure straps with galvanized fasteners at 3 feet on center. Drill pilot holes and use 12 by 2-inch pan head screws.

2. Install 1/4-inch galvanized wire mesh continuous cover on gutter.

3. Secure downspouts to walls with 1/8 inch by 2-inch galvanized steel straps. Straps shall be located at top, bottom, and at not over 10 feet on center. Block downspouts out ½ inch from the finish wall surfaces and 1 inch from the bottom of downspout grade. Secure straps to wall framing with 1/4 inch

by 2-inch-long galvanized anchors. Expansion type anchors shall be provided when anchoring to concrete and masonry. Provide toggle bolts for attachment to masonry or plaster. At steel columns, provide fasteners as indicated. Plastic anchors are not permitted.

4. Anchor conductor heads to walls with 1/4-inch diameter by 2 ½-inch long galvanized lag screws or 1/4-inch expansion type anchors.

C. Reglets: Install reglets at constant height above cant or as indicated. Provide minimum 3-inch lap at end splices of reglets. Seal laps watertight.

D. Counterflashing:

1. Install at constant horizontal elevation across roof slope and slope at constant height above cant or as indicated.

2. Provide minimum 3-inch lap at all end splices of counterflashing.

E. Galvanized sheet steel parapet coping and flashing shall be continuous over top of parapet to form a watertight cap, with waterproof seams at approximately 10 feet on center, or as indicated. Anchor coping to outside of wall with a continuous cleat face nailed at 24-inch centers. Coping shall be fastened on inside wall with hex head screws and bonded sealing washers through oversized holes in the back of the coping. Corners and angles shall be lapped and soldered; do not install joint sealant.

3.03 TESTING

A. Perform field water testing to demonstrate installation is watertight. Continue testing with a continuous hose stream applied at base of installation for at least 30 minutes. If leaking is observed, discontinue test and repair installation, then test until satisfactory results are obtained.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.05 CLEANING

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 07 6200

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including the Conditions of the Contract and Division 01 Specification Sections apply to this section.

1.02 SUMMARY

A. Provide all labor, equipment, and materials to fabricate and install the following.

1. Install 24-gauge gutters.
2. Install schedule 40 down spouts.
3. Color match per District Standard.
4. Drainage calculations of roof area are applicable.
5. Contractor to provide 5-year warranty. Manufacturer to supply 30-year warranty on hazing, fading, and cracking for floralcarbon finish on all gutters.

B. Related Sections:

1. Division 07 Section Common Work Results for Thermal and Moisture Protection.

C. Related Work Specified Elsewhere:

1. Division 06 Section Rough Carpentry
2. Division 07 Section Modified Bituminous Membrane Roofing
3. Division 07 Section Built Up Roofing
4. Division 07 Section Roof Accessories
5. Division 07 Section Joint Sealants
6. Division 07 Section Manufactured Metal Roof Panels
7. Division 07 Section Manufactured Metal Wall Panels.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (galvanized) or Zinc-Iron Alloy-Coated (galvannealed) by the Hot-Dip Process.
2. ASTM A792 Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip Process.

3. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

4. ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

5. ASTM D692 Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.

B. Warnock Hersey International, Inc., Middleton, WI (WH)

C. Factory Mutual Research Corporation (FMRC)

D. Underwriters Laboratories (UL)

E. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)

1. 1993 Edition Architectural Sheet Metal Manual

F. National Roofing Contractors Association (NRCA)

1. Roofing and Waterproofing Manual

G. Single Ply Roofing Institute (SPRI)

1. Wind Design Guide for Use with Low Slope Roofing

1.04 SUBMITTALS FOR REVIEW

A. Product Data:

1. Provide manufacturer's specification data sheets for each product.

2. Metal material characteristics and installation recommendations.

3. Submit color chart prior to material ordering and/or fabrication so that equivalent colors to those specified can be approved.

B. Samples: Submit two (2) samples, illustrating typical metal edge, coping, gutters, fascia extenders for material and finish.

C. Shop Drawings

1. For manufactured and shop fabricated gravel stops, fascia, scuppers, and all other sheet metal fabrications.

2. Indicate material profile, jointing pattern, jointing details, fastening methods, flashing, terminations, and installation details.

3. Indicate type, gauge and finish of metal.

D. Specimen Warranty: Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer and the Owner.

1.05 SUBMITTALS FOR INFORMATION

A. Design and Test Reports: Provide the following certified test reports from an independent testing laboratory:

1. Independent laboratory testing report for system design load and seam integrity.
2. Professional engineer's documentation that system incorporates sufficient allowance for stress and movement.
3. A letter from an officer of the manufacturing company certifying that the materials furnished for this project are the same as represented in tests and supporting data.
4. Manufacturer's verifications that the panels are factory roll-formed.
5. UL 1897: Test report must be submitted for windstorm rating no less than that specified in Design and Performance Criteria article. The proposed roof system must have approval over specified substrate with steel framing spaced no further apart than as specified.
6. FM 4470: Test report must be submitted for windstorm rating no less than that specified in Design and Performance Criteria article. The proposed roof system must have approval over specified substrate with steel framing spaced no further apart than as specified.
7. ASTM E108 or similar evidence of Class A Fire Resistance

B. Mill production reports certifying that the steel thicknesses are within allowable tolerances of the nominal or minimum thickness or gauge specified.

C. Qualification Data for Installer. Refer to Quality Assurance Article below.

D. Certification of work progress inspection. Refer to Quality Assurance Article below.

E. Certifications:

1. Submit roof manufacturer's certification that metal fasteners furnished are acceptable to roof manufacturer.
2. Submit roof manufacturer's certification that metal furnished is acceptable to roofing manufacturer as a component of roofing system and is eligible for roof manufacturer's system warranty.

1.06 CONTRACT CLOSEOUT SUBMITTALS

A. General: Comply with Requirements of Section 01 78 00 - Closeout Submittals.

B. Special Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.

C. Roofing Maintenance Instructions. Provide a manual of manufacturer's recommendations for maintenance of installed roofing systems.

D. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

1.07 QUALITY ASSURANCE

A. Engage an experienced roofing contractor specializing in sheet metal flashing work with a minimum of five (5) years experience.

B. Maintain a full-time supervisor/foreman who is on the job-site at all times during installation. Foreman must have a minimum of five (5) years experience with the installation of similar system to that specified.

C. Source Limitation: Obtain components from a single manufacturer. Secondary products which cannot be supplied by the specified manufacturer shall be approved in writing by the primary manufacturer prior to bidding.

D. Upon request fabricator/installer shall submit work experience and evidence of financial responsibility. The Owner's representative reserves the right to inspect fabrication facilities in determining qualifications.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original, unopened containers or packages with labels intact and legible.

B. Stack pre-formed and pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials which may cause discoloration or staining.

1.09 PROJECT CONDITIONS

A. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage requirements for pre-formed metal edge system.

1.10 DESIGN AND PERFORMANCE CRITERIA

A. Thermal expansion and contraction:

1. Completed metal edge flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability.

B. Factory Mutual Approvals

1. Factory Mutual Research Corporation's (FMRC) wind uplift resistance classification: The roof perimeter flashing as defined in the FMRC Loss Prevention Data Sheets 1-7 and 1-49 shall be classified under an FM rating. R-Mer Edge Snap-On Coping Cap shall be classified as FM <1-60, 1-75, 1-90, 1-105, 1-120, 1-135, 1-150, 1-165, 1-180>.

1. Factory Mutual Research Corporation's (FMRC) wind uplift resistance classification: The roof perimeter flashing as defined in the FMRC Loss Prevention Data Sheets 1-7 and 1-49 shall be classified under an FM rating. R-Mer Edge Snap-On Fascia shall be classified as FM <1-195, 1-210, 1-255>.

1.11 WARRANTIES

A. Owner shall receive one (1) warranty from manufacturer of roofing materials covering all of the following criteria. Multiple warranties are not acceptable. Contractor to provide a 5-year warranty. Manufacturer to provide 30-year warranty.

1. Pre-finished metal material shall require a written twenty (30)-year non-prorated warranty covering fade, chalking and film integrity. The material shall not show a color change greater than 5 NBS color units per ASTM D2244 or chalking excess of 8 units per ASTM D659. If either occurs material shall be replaced per warranty, at no cost to the Owner.

2. Changes: Changes or alterations in the edge metal system without prior written consent from the manufacturer shall render the system unacceptable for a warranty.

3. Warranty shall commence on date of substantial completion or final payment, whichever is agreed by contract.

4. The Contractor shall provide the Owner with a notarized written warranty assuring that all sheet metal work including caulking and fasteners to be watertight and secure for a period of five years from the date of final acceptance of the building. Warranty shall include all materials and workmanship required to repair any leaks that develop, and make good any damage to other work or equipment caused by such leaks or the repairs thereof.

5. Installing roofing contractor shall be responsible for the installation of the edge metal system in general accordance with the membrane manufacturer's recommendations.

6. Installing contractor shall certify that the edge metal system has been installed per the manufacturer's printed details and specifications.

7. One manufacturer shall provide a single warranty for all accessory metal for flashings, metal edges and copings, along with the warranty for metal roof areas, membrane roof areas, and any transitions between two different material types.

PART 2 — PRODUCTS

2.01 PRODUCTS, GENERAL

A. Refer to Division 01 Section "Common Product Requirements."

B. Basis of Design: Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.

2.02 ACCEPTABLE MANUFACTURERS

A. The design is based upon roofing systems engineered and manufactured for Mountain View School District district standards

The Garland Company

3800 East 91st Street

Cleveland, Ohio 44105

Sean Magee

Telephone: (310) 420-0713

Smagee@garlandind.com

Website: www.garlandco.com

2.03 MATERIALS

A. General: Product designations for the materials used in this section shall be based on performance characteristics of the R-MER Edge System manufactured by the Garland Company, Cleveland, OH, and shall form the basis of the contract documents.

B. Materials:

1. Exposed base metal material:

a. Garland Aluminum-zinc alloy (galvalume) coated steel, ASTM A792, coating designation AZ-50, in thickness of .0217 nom./ 24 gauge or 0.157 nom; 36" to 48" by coil length, chemically treated, commercial or lock-forming quality.

2. Unexposed base metal material:

a. Garland Zinc-coated steel, ASTM A653, coating designation G-90, in thickness of 0.0299 nom. / 24 gauge, 36" to 48" by coil length, chemically treated, commercial or lock-forming quality.

3. Minimum gauge of steel or thickness of Aluminum to be specified in accordance with Architectural Sheet Metal Manual, Sheet Metal

and Air Conditioning Contractor's National Association, Inc. recommendations.

C. Finishes:

1. Exposed surfaces for coated panels:

a. Steel Finishes: Garland fluorocarbon finish. Epoxy primer baked both sides, .2-.25 mils thickness as approved by finish coat manufacturer.

Weathering finish as referred by National Coil Coaters Association (NCCA).

| PROPERTY | TEST | METHOD |
|---|---|---|
| | FLUOROCARBON* | |
| Pencil Hardness | ASTM D3363<br>NCCA II-2 | HB-H |
| Bend | ASTM D-4145<br>NCCA II-19 | O-T |
| Cross-Hatch Adhesion | ASTM D3359 | no loss of adhesion |
| Gloss (60° angle) | ASTM D523 | 25+/-5% |
| Reverse Impact | ASTM D2794 | no cracking or loss of adhesion |
| Nominal Thickness | ASTM D1005 | |
| Primer | | 0.2 mils |
| Topcoat | | 0.8 mils |
| TOTAL | | 1.0 mils |

* Subject to minimum quantity requirements

b. Color shall be as specified

2. Exposed and unexposed surfaces for mill finish flashing, fascia, and coping cap, shall be as shipped from the mill.

3. Exposed and unexposed surfaces for anodized aluminum flashing, fascia, and coping cap, shall be as shipped from mill.

2.04 RELATED MATERIALS AND ACCESSORIES

A. Metal Primer: Zinc chromate type.

B. Plastic Cement: ASTM D 4586

C. Sealant: Tuff Stuff non sag urethane sealant.

1. Corrosion resistant screw fastener as recommended by metal manufacturer. Finish exposed fasteners same as flashing metal.

2. Fastening shall conform to Factory Mutual requirements or as stated on section details, whichever is more stringent.

D. Gutter and Downspout Anchorage Devices: Material as specified for system.

PART 3 — EXECUTION

3.01 EXECUTION, GENERAL

A. Refer to Division 07 Section Common Work Results for Thermal and Moisture Protection.

3.02 PROTECTION

A. Isolate metal products from dissimilar metals, masonry or concrete with bituminous paint, tape, or slip sheet. Use gasketed fasteners where required to prevent corrosive reactions.

3.03 GENERAL

A. Secure fascia to wood nailers at the bottom edge with a continuous cleat.

B. Fastening of metal to walls and wood blocking shall comply with building code standards.

C. All accessories or other items essential to the completeness of sheet metal installation, whether specifically indicated or not, shall be provided and of the same material as item to which applied.

D. Allow sufficient clearances for expansion and contraction of linear metal components. Secure metal using fasteners as required by the system. Exposed face fastening will be rejected.

3.04 INSPECTION

A. Verify that curbs are solidly set and nailing strips located.

B. Perform field measurements prior to fabrication.

C. Coordinate work with work of other trades.

D. Verify that substrate is dry, clean and free of foreign matter.

E. Commencement of installation shall be considered acceptance of existing conditions.

3.05 MANUFACTURED SHEET METAL SYSTEMS

A. Provide factory-fabricated accessories including, but not limited to, fascia extenders, miters, scuppers, joint covers, etc. Refer to Source limitation provision in Part 1.

3.06 SHOP-FABRICATED SHEET METAL

A. Metal work shall be shop fabricated to configurations and forms in accordance with recognized sheet metal practices.

B. Hem exposed edges.

C. Angle bottom edges of exposed vertical surfaces to form drip.

D. Lap corners with adjoining pieces fastened and set in sealant.

E. Form joints for gravel stop fascia system, coping cap with a 3/8" opening between sections. Back the opening with an internal drainage plate formed to the profile of fascia piece.

F. Install sheet metal to comply with referenced SMACNA and NRCA standards.

3.07 FLASHING MEMBRANE INSTALLATION

A. Edge Metal With Gutter

1. Position base plies of the Built-Up and/or Modified Roofing membrane over the roof edge covering nailers completely, fastening eight (8) inches on center. Install membrane and cap sheet with proper material and procedure according to manufacturer's recommendations.

2. Install gutter and strapping fastening six (6) inches on center.

3. Install continuous cleat on face of nailer and fasten six (6) inches on center.

4. Install new edge metal hooked to continuous cleat. Set metal flange into roofing cement, nail every three (3) inches on center, and prime at a rate of one hundred (100) square feet per gallon.

5. Strip in edge metal with base flashing membrane extending six (6) inches into roof field, followed with a cap sheet extending nine (9) inches into the roof field. Install membrane and cap sheet with

proper material and procedure according to manufacturer's recommendations.

3.08 CLEANING

A. Clean installed work in accordance with the manufacturer's instructions.

B. Replace damaged work than cannot be restored by normal cleaning methods.

3.09 CONSTRUCTION WASTE MANAGEMENT

A. Remove and properly dispose of waste products generated. Comply with requirements of authorities having jurisdiction

3.10 FINAL INSPECTION

A. At completion of installation and associated work, meet with Contractor, Architect, installer, installer of associated work, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.

B. Inspect work and flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.

C. Repair or replace deteriorated or defective work found at time above inspection as required to a produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

D. Notify the [Contractor] [Architect] [Owner] upon completion of corrections.

E. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.

F. Immediately correct roof leakage during construction. If the Contractor does not respond within twenty-four (24) hours, the Owner will exercise rights to correct the Work under the terms of the Conditions of the Contract.

3.11 DEMONSTRATION AND TRAINING

A. At a time and date agreed to by the Owner, instruct the Owner's facility manager, or other representative designated by the Owner, on the following procedures:

1. Troubleshooting procedures.
2. Notification procedures for reporting leaks or other apparent roofing problems.
3. Maintenance.

4. The Owner's obligations for maintaining the warranty in effect and force.
5. The Manufacturer's obligations for maintaining the warranty in effect and force.

END OF SECTION 07 6200

SECTION 07 8413

PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Penetrations for the passage of duct, cable, cable tray, conduit, piping, electrical busways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor/ceiling assemblies), and vertical service shaft walls and partitions.

2. Mineral fiber insulation, fire safing, and safing edge of floor slabs and curtain walls.

3. Damming material, clips, and closures.

4. Gaps between the top of walls and ceilings or roof assemblies.

5. Expansion joints in walls and floors.

6. Openings around structural members which penetrate floors or walls.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 03 3000 - Cast-in-Place Concrete.

3. Section 07 9200 - Joint Sealants.

1.02 REFERENCES

A. ASTM Standards:

1. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

2. ASTM E119 – Standard Test Methods for Fire Tests of Building Construction and Materials.

3. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.

4. ASTM E1399 – Standard Test Method for Cyclic Movement and Measuring Minimum and Maximum Joint Widths on Architectural Joint Systems.

5. ASTM E1966 – Standard Test Methods for Fire-Resistive Joint Systems.

6. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestops

7. ASTM E2307 – Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus.

8. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers.

B. Underwriters Laboratories, Inc.

1. UL Fire Resistance Directory.

2. UL 263 – Standard for Fire Tests of Building Construction and Materials.

3. UL 723 – Standard for Test for Surface Burning Characteristics of Building Materials.

4. UL 1479 – Fire Tests of Through Penetration Firestops.

5. UL 2079 – Test for Fire Resistance of Building Joint Systems.

C. Testing Services:

1. Intertek ES SAT.

2. Southwest Research Institute.

3. Underwriters Laboratories.

D. International Firestop Council Guidelines for Evaluating Firestop Systems Engineering Judgments.

E. California Building Code, Chapter 7 Fire Tests of Through-Penetration Fire Stops.

F. Firestop Contractors International Association (FICA) Manual of Practice.

1.03 SYSTEM DESCRIPTION

A. Provide fire stops and smoke seals to prevent the passage of fire, smoke, toxic gasses or water from one floor or area to another. Seal openings in floors, fire rated

walls and permanent partitions penetrated by pipes, ducts, conduits and other items as shown, specified, and as required for the type of construction.

B. Mineral fiber insulation installed as fire safing at non-rated penetrations not containing pipes, ducts, conduits, and other items in floor slabs, wall partitions, construction-joint conditions between slabs and adjacent construction and where indicated or required.

C. Provide damming material, clips, and closures as required for support and containment of dams, and other insulation materials required for tested and rated fire stop systems.

1.04 QUALITY ASSURANCE

A. Performance Criteria:

1. Provide materials and Work to conform to source quality control criteria specified herein and CBC requirements in fire resistant wall and floor assemblies to prevent the passage of fire, smoke, and toxic gases.

2. Installed fire stops shall be of sufficient thickness, width, and density to provide a fire resistance rating at least equal to the floor, wall, or partition construction into which it is installed.

B. Comply with CBC requirements for fire rated construction.

C. Qualifications of Manufacturer: Products furnished for fire stopping and smoke seals shall be manufactured by a firm which has been continuously and regularly employed in the manufacture of these materials for a period of at least 5 years; and which can provide evidence of these materials being satisfactorily installed on at least 5 projects of similar size and type within such period.

D. Qualifications of Installer: The Work of this section shall be installed by a firm which has been in the business of installing similar materials for at least 5 consecutive years; and can provide evidence of satisfactory completion of 5 projects of similar size and scope. Installer shall have applicators trained and certified by manufacturer for performing this Work. Comply with requirements of FICA Manual of Practice.

E. For those firestop applications that exist for which no UL tested system is available through a manufacturer, an engineering judgment derived from similar UL system designs or other tests will be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineering judgment drawings must follow requirements set forth by the International Firestop Council.

F. Firestopping tests shall be performed by a qualified testing and inspection agency. A qualified testing and inspection agency shall be UL, Intertek or another agency

performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction. Firestopping products shall bear the classification marking of a qualified testing and inspection agency.

1.05 SUBMITTALS

A. Product Data:

1. Submit manufacturer's Product Data for each type of fire stop and smoke seal material proposed for installation. Indicate product characteristics, typical installations, performance, and limitation criteria and test data.

2. Submit manufacturer's printed installation instructions for each type of product, system, and construction required for the Work. Indicate fire resistance rating of each installation.

3. Submit fire test reports from independent testing agency indicating the following:

a. Fire test report of fire stop material installed to substrate and penetration materials similar to the Work of this section. Test to indicate both Fire Resistance (F) and Temperature (T) Ratings.

b. Test reports of products to be installed shall indicate conformance to ASTM E814 or UL 1479 for penetrations, ASTM E1966 or UL 2079 for joints, and ASTM E2307 for perimeter fire barrier (edge-of-slab) systems.

B. Field Samples: No less than 10 days before commencing the Work of this section, provide field installed Samples of fire stop materials and systems.

1. Apply one Sample of fire stop material for each different penetration and related fire rating required for the Work.

2. Sample areas shall comply with thickness, fire resistance ratings, and finished appearance.

C. Manufacturer's Qualifications: Submit evidence of conformance with qualification requirements specified above.

D. Installer’s Qualifications: Submit evidence of conformance with qualification requirements specified above.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver products to the Project site in manufacturer's original, unopened containers bearing correct UL labeling.

B. Fire stop material shall be stored above grade in an area protected from detrimental weather and moisture conditions and in compliance with manufacturer's requirements, including temperature restrictions.

C. Fire stop and seal materials shall be installed before expiration of shelf life.

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS

A. Unless otherwise noted, products of this section shall be as manufactured by:

1. 3M Fire Protection Products.
2. Hilti, Inc.
3. Nelson Firestop Products.
4. Specified Technologies, Inc. (STI).
5. Tremco, Inc.
6. Or Approved Equal.

B. Provide materials and systems of specified manufacturers to suit penetration and substrate as determined by various conditions of installation.

C. Provide firestopping composed of components that are compatible with the substrates forming openings and the items penetrating the firestop, under conditions of service and application, as demonstrated by the fire stopping manufacturer based on testing and field experience.

### 2.02 MATERIALS

A. Cast-in Firestop Devices: Pre-installed firestop devices penetrating cast-in-place concrete decks and concrete over metal decks, for use with combustible and non-combustible pipe, (closed and open systems) insulated pipe, conduits and cable bundles. Provide metal deck adapters and top seal plugs.

1. 3M: Fire Barrier Cast-in-Place Devices.
2. Hilti: CP 680 Cast-in-Place FS Device
3. Tremco: CIPP Plastic, CIPP Metal.
4. Specified Technologies, Inc. (STI): Cast-In Firestop Devices.

5. Or Approved Equal.

B. Firestop Collar: Made of galvanized steel housing and Intumescent inserts for firestopping combustible pipes through walls and floors. For use with concrete, masonry, wood floor and gypsum wall assemblies. Provide two collars on walls, one on each side, and one collar on underside of floors.

1. 3M: Plastic Pipe Device PPD.

2. Hilti: CP 643N and CP 644.

3. Tremco: TREMstop D.

4. Nelson Firestop Products: PCS Pipe Choke System.

5. Specified Technologies, Inc. (STI): Intumescent Firestop Collars, type LCC, SSC or RTC.

6. Or Approved Equal.

C. Fire Pillows and Blocks: Intumescent flexible pillows consisting of a mineral fiber core sealed with a water-resistant intumescent membrane, heat-sealed in a durable fire-retardant poly bag; or intumescent block based on a two component foam, for use in walls and floors and concrete, masonry and gypsum wall assemblies. For large openings containing multiple penetrations: wall openings up to 48 inches by 48 inches and floors up to 36 inches by 36 inches.

1. 3M: Fire Barrier Self-Locking Pillow.

2. Hilti: FS 657.

3. Tremco: TREMstop PS1, TREMstop PS2.

4. Nelson Firestop Products: Fire Brick, Pillows.

5. Specified Technologies, Inc. (STI): SSB Firestop Pillows.

6. Or Approved Equal.

D. Firestop Mortar: Fire-resistant mortar suitable for firestopping large horizontal or vertical, concrete or masonry openings penetrated by single or multiple non-combustible pipes or cable trays.

1. 3M: Fire Barrier Mortar.

2. Hilti: CP 637.

3. Tremco: TREMstop Mortar.

4. Nelson Firestop Products: CMP Firestop Mortar.

5. Specified Technologies, Inc. (STI): SSM Firestop Mortar.

6. Or Approved Equal.

E. Firestop Putty Stick: Intumescent, non-hardening, firestop putty for single or bundled cables and non-combustible pipe penetrations. For use in horizontal or vertical, concrete, masonry or gypsum wall assemblies.

1. 3M: MP + Stix.

2. Hilti: CP 618 and CP 619T.

3. Tremco: TREMstop MP Putty Stick.

4. Nelson Firestop Products: FSP AA445, AA439.

5. Specified Technologies, Inc. (STI): SSP Firestop Putty.

6. Or Approved Equal.

F. Firestop Putty Pad: Moldable firestop putty for protection of electrical outlet boxes.

1. 3M: MPP+.

2. Hilti: CP 617.

3. Tremco: TREMstop MP Putty Pad.

4. Nelson Firestop Products: FSP AA452, AA439.

5. Specified Technologies, Inc. (STI): SSP Putty Pads or Electrical Box Insert.

6. Or Approved Equal.

G. Firestop Sealant: Smoke, gas and water resistant. For use in horizontal or vertical, concrete, masonry or gypsum wall assemblies.

1. Single component intumescent sealant for protection of combustible and non-combustible pipe, conduit and cable penetrations.

a) 3M: CP-25WB+, IC-15WB+, 3000WT.

b) Hilti: FS ONE.

c) Tremco: TREMstop IA+ or FyreCaulk.

d) Nelson Firestop Products: ES1399.

e) Specified Technologies, Inc, (STI): LCI or SSS Intumescent Firestop Sealant.

f) Equal.

2. Silicone based system that provides maximum movement in fire-rated joint applications and pipe penetrations.

a) 3M: 2000+, 2000 NS.

b) Hilti: CP 601S.

c) Tremco: TREMstop Fyre-sil.

d) Nelson Firestop Products: CLK AA529, AA542, AA492.

e) Specified Technologies, Inc. (STI): SIL Silicone Firestop SealantSIL300 or SIL300SL (self-leveling).

f) Or Approved Equal.

3. Acrylic based system that provides movement capability in fire rated joints and seals through penetration applications.

a) 3M: FD 150+.

b) Hilti: CP 606.

c) Tremco: TREMstop Acrylic GG.

d) Nelson Firestop Products: FSC3.

e) Specified Technologies, Inc. (STI): ES Elastomeric Firestop Sealant.

f) Or Approved Equal.

4. Self-leveling silicone-based firestop sealant for use with through penetrations and construction joints in horizontal floor/ceiling assemblies.

a) 3M: 1000 SL.

b) Hilti: CP 604.

c) Tremco: TREMstop Fyre-sil S.L.

d) Nelson Firestop Products: CLK AA539, AA552.

e) Specified Technologies, Inc. (STI): SIL Silicone Firestop, type SIL300SL.

f) Or Approved Equal.

H. Firestop Wrap Strip: Wrap strip of intumescent, flexible firestop for use with plastic and insulated pipe penetrations. For use in horizontal or vertical, concrete, masonry or gypsum wall assemblies.

1. 3M: Ultra GS, FS-195.

2. Hilti: CP 648-S, CP 648-E.

3. Tremco: TREMstop SuperStrip or TREMstop WS.

4. Nelson Firestop Products: MCT, MPS.

5. Specified Technologies, Inc. (STI): SSW Intumescent Wrap Strips, type BLU, BLU2, RED or RED2.

6. Or Approved Equal.

I. Spray: Sprayable or brush applied fire-rated mastic for construction joints where maximum movement is required. For use in horizontal or vertical, concrete, masonry or gypsum wall assemblies, at top of wall joints, curtain wall/slab edge and expansion joints.

1. 3M: FD 200.

2. Hilti: CP 672.

3. Tremco: TREMstop Acrylic SP spray.

4. Nelson Firestop Products: FSC3.

5. Specified Technologies, Inc. (STI): AS200 Elastomeric Spray with or without SpeedFlex® Joint Strip, or Fast Tack® Firestop Spray.

6. Or Approved Equal.

J. Drywall Track Gaskets: Intumescent cover for drywall ceiling track providing fire, smoke and acoustical ratings for head-of-wall joints between gypsum walls and concrete floor slabs.

1. Hilti: CFS-TTS Top Track Seal.

2. Specified Technologies, Inc. (STI): TTG Track Top Gasket.

3. Equal.

K. Fire Rated Cable Pathways: Gangable device modules capable of being retrofitted around existing cables and comprised of steel raceway with built-in intumescent material allowing 0 to 100 percent cable fill and requiring no additional action in the form of plugs, twisting closure, putty, pillow, or sealant to achieve fire and leakage ratings.

1. 3M: Fire Barrier Pass-Through Device.

2. Hilti: CP 653 Firestop Speed Sleeve.

3. Specified Technologies, Inc. (STI): EZ-Path Fire Rated Pathway.

4. Or Approved Equal.

L. Fire Rated Grommet or Disc: For single or dual cable penetrations through the same small opening.

1. Hilti: CFS-D Firestop Cable Disc.

2. Specified Technologies, Inc. (STI): EZ-Path Firestop Grommets

3. Or Approved Equal.

M. Metal Deck Strips and Plugs: Precut preformed mineral wool plugs and strips to fit flutes of metal deck profile and gap between top of wall and metal deck.

1. 3M: PM4.

2. Hilti: CP 777 Speed Plugs; CP 767 Speed Strips.

3. Tremco.

4. Nelson Firestop Products.

5. Or Approved Equal.

N. Fire Safing, Mineral Fiber or Ceramic Wool Non-Combustible Insulation:

1. Mineral Fiber: Density 4 pounds per cubic foot, USG Thermafiber, Johns Manville Industrial Insulation Group (IIG), Roxul AFB, or equal.

2. Ceramic Wool: Density 6 pounds per cubic foot, Johns Manville "Ceramic Fiber Insulation", Unifrax "Fiberfrax" ceramic fiber, or equal. Provide material in tested thickness for required hour rating.

a. Flame Spread: Less than or equal to 25.

b. Smoke developed: Less than or equal to 50.

3. For mineral fiber, provide 20 gage minimum size metal retainer clips and plates for fire safing support in vertical applications and in compliance with tested system design.

O. Supplemental Material: Provide supplementary materials required for complete, fire rated, installation.

2.03 SOURCE QUALITY CONTROL

A. Fire stop and smoke seal material shall be tested by an independent testing agency for conformance to Flame (F) and Temperature (T) requirements of ASTM E814/UL 1479, ASTM E1966/UL 2079, or ATSM E2307.

B. Conform to UL Fire Hazard Classification Requirements. Material shall be classified as a fill, void, or cavity material and system for UL through Penetration Firestop System.

C. Material shall be tested and shall display Flame Spread Index of 25 or less, and Smoke Developed Index of 450 or less when tested in accordance with ASTM E84.

PART 3 - EXECUTION

3.01 APPLICATION REQUIREMENTS

A. Provide single component fire stop sealant or putty:

1. Within penetrations subject to movement including conduit, cable bundles, buss duct, and noncombustible pipe.

2. As a sealant or caulking for smoke barrier construction, fire, and smoke dampers, mechanical/electrical framed elements in masonry and gypsum board partition systems, and other conditions.

B. Provide mineral fiber insulation for fire safing at joints and openings through floor slabs, walls, and partitions not indicated to be grouted, gaskets, sealed or otherwise made sound or air tight in this or other sections. Fire safing shall be packed and wedged solidly from both sides of walls and partitions, and from both top and bottom sides of slabs with noncombustible mineral fiber insulation.

3.02 PREPARATION

A. Examine the areas and conditions where fire stops and smoke seals are to be installed for conditions detrimental to the proper completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected for rated fire protection.

B. Surface to receive fire stops or smoke seals shall be free of dirt, dust, grease, form release agents, or other matter that would impair the bond of the fire stop material to the substrate or penetrating items. Substrate shall be frost free and when required, dry.

C. Voids and cracks in substrate shall be filled and unnecessary projections removed before installation of fire stops.

D. Assure that all pipes, conduit, cable, and other items, which penetrate fire rated construction, have been permanently installed before installation of fire stops. Schedule and sequence the Work to assure that partitions and other construction, which would conceal penetrations, are not installed before the installation of fire stops and smoke seals.

E. Comply with manufacturer's recommendations for temperature and humidity conditions before, during, and after installation of fire stops and smoke seals.

3.03 INSTALLATION

A. General: Provide installation in accordance with manufacturer's installation procedures, as required. Install fire stops in accordance with fire test reports, UL Fire Resistance Directory, Intertek Testing Services Directory or SpecDirect, and reviewed Sample installations.

B. Dam Construction:

1. Install dams when required to properly contain fire stopping materials within openings and as required to achieve fire resistance rating as tested and rated.

2. Provide in conformance with installation requirements for type of floor, wall, and partition construction, and as recommended by fire stop manufacturer.

3. Combustible damming material shall be removed after appropriate curing. Noncombustible damming material may be left as a permanent component of the fire stop system.

4. Placement of dams shall not interfere with function, or adversely affect the appearance, of adjacent construction.

C. Installation of Single Component Fire Stop Sealant:

1. Provide noncombustible insulation as required to achieve fire resistance rating.

2. Install with manual or powered sealant gun. For up to four hour rating, install to the thickness required by the Listed System Designs as directed for wall and floor applications.

3. Surface of gun grade fire stop sealant shall be tooled in accordance with manufacturer's recommendations.

4. Remove excess materials from adjacent surfaces within 10 minutes, with either water or other material compatible with sealant and recommended by sealant manufacturer, leaving the Work in a neat, clean condition.

D. Installation of Cementitious Fire Stop Mortar:

1. Mixing: Add dry powder to water and mix with mechanical mixer or hand mixing tools. Ratio and duration of mix shall be as instructed by fire stop mortar manufacturer. Average wet density of mortar shall be 70 pounds per cubic foot (plus or minus 5).

2. Wet surfaces before installation of fire stop mortar. Mortar may be hand installed or pumped into the opening.

3. When installing around layered and grouped cables, vibrate or move the cables slightly to prevent voids from forming between the cables.

4. Exposed surfaces shall be finished with conventional plastering tools before curing.

5. Allow at least 48 hours for initial cure before form removal. For full cure allow 28 days.

3.04 FIELD QUALITY CONTROL

A. Examine sealed penetration areas to ensure proper installation before concealing or enclosing areas.

B. Repair damaged areas and restore integrity of assembly.

C. Keep areas of work accessible until inspection by authorities having jurisdiction.

D. OWNER will engage a qualified independent inspection agency to inspect through-penetration firestop systems in accordance with ASTM E2174, or joint systems in accordance with ASTM E2393. Manufacturer representatives shall not perform inspections of installed firestopping systems.

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.06 CLEANUP

A. Clean surfaces adjacent to sealed openings and joints and remove excess of firestopping materials.

B. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 07 9200

JOINT SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Joint sealants.

2. Preparation for application of sealants.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Division 09 - Finishes.

1.02 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating sealant joint locations, with full-size sealant joint details.

B. Product Data: Submit manufacturer's literature for each sealant material.

C. Material Samples: Submit Samples indicating color range available for each sealant material intended for installation in exposed locations.

D. Certifications: Submit manufacturer’s certification materials comply with requirements specified.

E. Site Samples: At locations required, provide a Sample of sealant for each typical installation, approximately 24 inches long, including joint preparation, backing, sealant and tooling. Allow backing to extend 6 inches beyond end of sealant for inspection of substrate.

F. Test Reports: Submit manufacturer's adhesion compatibility test reports according to ASTM C794 for each substrate.

1.03 QUALITY ASSURANCE

A. Qualifications of Installer: The Work of this section shall be installed by a firm which has been in the business of installing similar materials for at least five consecutive years; and can show evidence of satisfactory completion of five

projects of similar size and scope. Installer shall have applicators trained and approved by manufacturer for performing this Work.

1.04 DELIVERY, STORAGE AND HANDLING

A. Store in accordance with manufacturer's recommendations. Provide a uniform ambient temperature between 60- and 80-degrees F.

1.05 WARRANTY

A. Manufacturer: five-year material warranty.

B. Installer: two-year installation/application warranty.

PART 2 - PRODUCTS

2.01 GENERAL

A. Furnish sealants meeting following in-service requirements:

1. Normal curing schedules are permitted.

2. Non-staining, color fastness (resistance to color change), and durability when subjected to intense actinic (ultraviolet) radiation are required.

B. Furnish the products of only one manufacturer unless otherwise required, sealant colors as selected to match the adjoining surfaces.

2.02 MATERIALS

A. Sealants:

1. Sealant 1: Acrylic latex, one-part, non-sag, mildew resistant acrylic emulsion compound complying with ASTM C834, Type S, Grade NS, formulated to be paintable.

a. Tremco Inc., Acrylic Latex Caulk.

b. Pecora Corporation, AC-20.

c. Or Approved Equal.

2. Sealant 2: Butyl sealant, one-part, non-sag, solvent-release-curing sealant complying with ASTM C1311, gun grade and formulated with a minimum of 75 percent solids.

a. Tremco Inc., Tremco Butyl Sealant.

b. Pecora Corp., BC-158.

c. Or Approved Equal.

3. Sealant 3: Silicone sealant, one-part non-acid-curing silicone sealant complying with ASTM C920, Type S, Grade NS, Class 25.

a. Dow Corning Corp., Dow Corning 790, 791, 795.

b. General Electric Co., Silpruf.

c. Tremco, Inc., Spectrem 1.

d. Pecora Corp., 864.

e. Or Approved Equal.

4. Sealant 4: One-part mildew-resistant silicone sealant, complying with ASTM C920, Type S, Grade NS, Class 25.

a. Dow Corning Corp., Dow Corning 786.

b. General Electric Co., Sanitary 1700.

c. Tremco, Inc., Proglaze White.

d. Or Approved Equal.

5. Sealant 5: One-part non-sag urethane sealant, complying with ASTM C920, Type S, Grade NS, Class 25.

a. Sika Corporation, Sikaflex -221e.

b. Or Approved Equal.

6. Sealant 6: Multi-part pouring urethane sealant, complying with ASTM C920, Type M, Grade P, Class 25.

a. Sika Corporation, Sikaflex 2C NS/SL.

b. Or Approved Equal.

7. Sealant 7: Acoustical sealant, non-drying, non-hardening permanently flexible conforming to ASTM D217.

a. Pecora Corp., BA-98 Acoustical Sealant.

b. Or Approved Equal.

B. See 07 8413 - Penetration Firestopping for rated sealants.

C. Joint Backing: ASTM D1056; round, closed cell Polyethylene Foam Rod; oversized 30 to 50 percent larger than joint width, reticulated polyolefin foam.

D. Primer: Non-Staining Type. Provide primer as required and shall be product of manufacturer of installed sealant.

E. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer.

F. Sealants shall have normal curing schedules, shall be non-staining, color fast and shall resist deterioration due to ultraviolet radiation.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

A. Verify that joint openings are ready to receive Work and field tolerances are within the guidelines recommended by sealant manufacturer.

### 3.02 SURFACE PREPARATION

A. Joints and spaces to be sealed shall be completely cleaned of all dirt, dust, mortar, oil, and other foreign materials which might adversely affect sealing Work. Where necessary, degrease with a solvent or commercial degreasing agent. Surfaces shall be thoroughly dry before application of sealants.

B. If recommended by manufacturer, remove paint and other protective coatings from surfaces to be sealed before priming and installation of sealants.

C. Preparation of surfaces to receive sealant shall conform to the sealant manufacturer's specifications. Provide air pressure or other methods to achieve required results. Provide masking tape to keep sealants off surfaces that will be exposed in finished Work.

D. Etch concrete or masonry surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Etch with 5 percent solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.

E. Perform preparation in accordance with ASTM C804 for solvent release sealants, and ASTM C962 for elastomeric sealants.

F. Protect elements surrounding Work of this section from damage or disfiguration.

3.03 SEALANT APPLICATION SCHEDULE

| | Location | Type | Color |
|---|---|---|---|
| A. | Exterior and Interior joints in horizontal surfaces of concrete; between metal and concrete masonry and mortar. | Sealant 6 | To match adjacent material |
| B. | Exterior door, entrance and window frames. Exterior and interior vertical joints in concrete and masonry metal flashing. | Sealant 3 or 5 | To match adjacent material |
| C. | Joints within glazed curtain wall system. Skylight framing system. Aluminum entrance system glass and glazing. | Sealant 3 | Translucent or Black |
| D. | Interior joints in ceramic tile and at plumbing fixtures. | Sealant 4 | Translucent or White |
| E. | Under thresholds. | Sealant 2 | Black |
| F. | All interior joints not otherwise scheduled | Sealant 1 | To Match Adjacent Surfaces |
| G. | Heads and sills, perimeters of frames and other openings in insulated partitions | Sealant 7 | Match Adjacent Surfaces |

3.04 APPLICATION

A. Provide sealant around all openings in exterior walls, and any other locations indicated or required for structure weatherproofing and/or waterproofing.

B. Sealants shall be installed by experienced mechanics using specified materials and proper tools. Preparatory Work (cleaning, etc.) and installation of sealant shall be as specified and in accordance with manufacturer's printed instructions and recommendations.

C. Concrete, masonry, and other porous surfaces, and any other surfaces if recommended by manufacturer, shall be primed before installing sealants. Primer

shall be installed with a brush that will reach all parts of joints to be filled with sealant.

D. Sealants shall be stored and installed at temperatures as recommended by manufacturer. Sealants shall not be installed when they become too jelled to be discharged in a continuous flow from gun. Modification of sealants by addition of liquids, solvents, or powders is not permitted.

E. Sealants shall be installed with guns furnished with proper size nozzles. Sufficient pressure shall be furnished to fill all voids and joints solid. In sealing around openings, include entire perimeter of each opening, unless indicated or specified otherwise. Where gun installation is impracticable, suitable hand tools shall be provided.

F. Sealed joints shall be neatly pointed on flush surfaces with beading tool, and internal corners with a special tool. Excess material shall be cleanly removed. Sealant, where exposed, shall be free of wrinkles and uniformly smooth. Sealing shall be complete before final coats of paint are installed.

G. Comply with sealant manufacturer's printed instructions except where more stringent requirements are indicated on Drawings or specified.

H. Partially fill joints with joint backing material, furnishing only compatible materials, until joint depth does not exceed 1/2 inch joint width. Minimum joint width for metal to metal joints shall be 1/4 inch. Joint depth, shall be not less than 1/4 inch and not greater than 1/2 inch.

I. Install sealant under sufficient pressure to completely fill voids. Finish exposed joints smooth, flush with surfaces or recessed as indicated. Install non-tracking sealant to concrete expansion joints subject to foot or vehicular traffic.

J. Where joint depth prevents installation of standard bond breaker backing rod, furnish non-adhering tape covering to prevent bonding of sealant to back of joint. Under no circumstances shall sealant depth exceed 1/2 inch maximum, unless specifically indicated on Drawings.

K. Prime porous surfaces after cleaning. Pack joints deeper than 3/4 inch with joint backing to within 3/4 inch of surface. Completely fill joints and spaces with gun applied compound, forming a neat, smooth bead.

## 3.05 MISCELLANEOUS WORK

A. Sealing shall be provided wherever required to prevent light leakage as well as moisture leakage. Refer to Drawings for condition and related parts of Work.

B. Install sealants to depths as indicated or, if not indicated, as recommended by sealant manufacturer but within following general limitations:

1. For joints in concrete walks, slab and paving subject to traffic, fill joints to a depth equal to 75 percent of joint width, but not more than 3/4 inch deep or less than 3/8 inch deep, depending on joint width.

2. For building joints, fill joints to a depth equal to 50 percent of joint width, but not more than 1/2 inch deep or less than 1/4 inch deep.

3.06 CLEANING

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.07 CURING

A. Sealants shall cure in accordance with manufacturer's printed recommendations. Do not disturb seal until completely cured.

3.08 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

Section 09 9000

PAINTING AND COATING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on

1. Exterior substrates:

2. The following Exterior substrates:

Portland cement plaster (stucco) Wood

Galvanized metal

Steel

B. The location of the work to be performed is:

Various school sites at Lennox School District

1.2 DEFINITIONS

A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. Gloss Level 2: Not more than 10 units at 60 degrees and 35 units at 85 degrees, according to ASTM D 523

C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

H. EG: Ethylene Glycol. Ethylene glycol is listed as a hazardous air pollutant (HAP) by the U.S. EPA

I. Blocking: Two painted surfaces sticking together such as a painted door sticking to a painted jamb.

J. RAVOC: Reactivity adjusted VOC 'Reactivity' means the ability of a VOC to promote ozone formation.

K. PDCA: Painting & Decorating Contractors of America www.pdca.org

L. SSPC: Scopes of SSPC Surface Preparation Standards and Specifications. www.sspc.org

M. Owner – usage of the term “Owner” shall be construed to mean the actual owner of the Property or a duly authorized representative of the owner.

N. Property – usage of the term “Property” shall be construed to mean the property location identified in paragraph 1.1 B. 1. of this specification at which location the work shall be performed.Painting Contractor – usage of the term “Contractor” shall be construed to mean the 3rd party contractor performing the painting portion of the project.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

B. Samples for Initial Selection: For each type of topcoat product.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, no smaller than 7 inches by 10 inches (177.8 mm by 254 mm) or larger than 8.5 inches by 11 inches (215.9 mm by 279.4 mm).

2. Label each Sample for project, owner’s agent, general contractor, painting contractor, paint color name and number, paint brand name, 'P' number if applicable, and application area.

D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas.

2. VOC content.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials from the same product run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Ten [10] percent, but not less than [1 gal. (3.8 L)] of each material and color applied.

1.5 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Owner’s agent will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).

b. Other Items: owner's agent will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by owner's agent at a cost to be agreed upon by Contractor and Owner.

3. Approval of mockups does not constitute approval of deviations from the paint systems indicated unless owner's agent specifically approves such deviations in writing.

4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C) or more than 120 deg F (49 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.

2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

A. Surfaces must be clean and moisture free. Prime and paint as soon as possible. Do not apply paints in snow, rain, fog, or mist. No painting shall be done immediately after rain or foggy weather or when the temperature is below 50 °F. Substrate temperature must be 5 °F or more above dew point temperature while painting and during the coating's cure time. Avoid painting surfaces while they are exposed to a full, hot sun.

B. Painting contractor should follow proper painting practices and exercise judgment based on his or her experience and project specific conditions as to when to proceed.

C. WIND VELOCITY: Excessive wind velocity can seriously impair spray application, resulting in significant material loss, low film build, excessive dry spray or overspray, plus the possibility of depositing airborne spray mist on unprotected surfaces downwind from the work. Some of these adverse effects can be compensated for by material and equipment adjustments if winds are not too high. Generally speaking, wind velocity 15m.p.h. or higher can cause sufficient spray application problems, in which case suspending work until conditions improve should be considered.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide products manufactured or distributed by the Dunn-Edwards Corporation.

2.2 PAINT, GENERAL

B. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

D. Colorants: The use of colorants containing hazardous chemicals, such as ethylene glycol, is prohibited.

E. Colors: As Selected by owner's agent from manufacturer's full range.

3. Where color is selected prior to bid submittal, Contractor shall bid [one (1)], [two (2)], or more finish coats, as appropriate to the color selected, and shall expressly state number of finish and prime coats and type (full or spot) of prime coat.When the final color has not been selected prior to bid submittal, Contractor may need to bid additional coats when submitting their bid. The Owner should be aware that if a color is chosen following the bid process and the color is significantly different from original color, a change order for an additional finish coat might be required.

2.3 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure.

1. Owner may engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.

2. Testing agency will perform tests for compliance with product requirements.

3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove non- complying paint materials from Project site, pay for

testing, and repaint surfaces painted with rejected materials. Contractor will comply with requirements to use compatible products and systems as described in Paragraph 2.2.A. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

Interior Substrates:

1. Concrete: 11 percent or less.
2. Masonry (Clay and CMU): 11 percent or less.
3. Wood: 8 percent or less.
4. Plaster: 5 percent or less.
5. Gypsum Board: 5 percent or less.

Exterior Substrates:

1. Concrete: 11 percent or less.
2. Masonry (Clay and CMU): 11 percent or less.
3. Wood: 15 percent or less.
4. Plaster: 5 percent or less.

B. Portland Cement Plaster Substrates: Verify that plaster is fully cured, including pH testing to determine that alkalinity is within limits established by the manufacturer.

C. Interior and/or exterior Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Concrete floors require a calcium chloride test to measure hydrostatic pressure. Consult floor coating manufacturer with test results prior to beginning surface preparation.

E. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

F. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions applicable to substrates and paint systems indicated.

B. Scraping or sanding surfaces of older buildings (especially pre-1978) may release dust containing lead or asbestos. EXPOSURE TO LEAD OR ASBESTOS CAN BE VERY HAZARDOUS TO YOUR HEALTH. Always wear appropriate personal protective equipment during surface preparation, and finish cleanup of any residues by water- washing all surfaces. For more information, see Dunn-Edwards brochure on “Surface Preparation Safety” or call EPA’s National Lead Information Hotline at 1-800-424-LEAD, or visit www.epa.gov/lead or/asbestos, or contact your state or local Health Department.

C. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

D. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and re-prime substrate with compatible primers or apply bond coat as required to produce paint systems indicated.

E. Where mildew is present, remove mildew by scrubbing with a commercial mildew remover, or, with a solution of one (1) part household bleach mixed in three (3) parts water by volume. The solution should be left on the surface for a minimum of twenty (20) minutes, rinsed thoroughly with clean water to remove any residue, and then allowed to dry completely prior to application of patching/caulking/prime/finish coat systems.

F. Moisture: All areas that may cause paint failure due to moisture shall be addressed and eliminated. This would include, but is not limited to:

1. Gutters and downspouts not working properly.

2. Previous coats of paint not adhering properly.

3. Wood checking (cracks and splits in wood).Deteriorated caulking.

4. Gaps between substrates.

5. Rotten wood.

6. Areas affected by water splashing.

7. Painting in inclement weather.

8. Painting a substrate where residual moisture exceeds limits stated in 3.1.B.

9. Un-caulked nail holes.

G. Pressure washing and surface preparation methods

1. Pressure wash or water blast to remove oil, grease, dirt, loose mill scale, and loose paint at pressures of 2500-3500 p.s.i. at a flow of 3.0-3.5 gallons per minute. This is the recommended standard for optimal efficiency.

H. Prior to application of prime/finish interior and/or exterior coat systems, provide a clean, sound surface free of dust, dirt contaminants, mildew and efflorescence by use of a power wash and hand scraping or use of mechanical grinders where necessary. Additionally, areas are to be scrubbed with a bristle brush to insure complete removal of any residual salts. Remove all labels, stickers, price tags, etc. from surfaces before priming. Wood areas stamped with ink codes must be spot primed with blocking primers. Power wash areas to be coated to ensure that new salt deposits do not occur. Failure to do so may cause adhesion issues or result in delamination and invalidate any manufacturer warranty given or implied. After cleaning if there is still chalk evident, this condition must be brought to the owner's attention in writing before any further work is done.

I. Cementitious Substrates: (concrete, stucco, masonry) Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

1. Wire brush all loose and peeling paint and dust all surfaces before spot priming or applying finish coats. Industry standards apply to applications of cracks, voids, and repairs. Any areas of repair shall be patched and dried before coatings are applied. Cracks should be repaired as follows: 1. Cracks less than ¼" wide should be filled using Dunn-Edwards Brush Grade Elastomeric Patch. 2. Cracks wider than ¼" should be cut and scraped to a "V" shape and filled with Dunn-Edwards Trowel Grade Elastomeric Patch. Large cracks and holes may require repeated applications of patching materials to bring flush with adjacent substrate. Feather-in all repairs and caulking to blend with adjacent substrate.

2. Large holes in stucco / plaster/ concrete will be patched with Rapid Set Premium Stucco Patch or Rapid Set Wunderfixx Concrete Patching Compound in appropriate texture to blend with existing texture. Allow stucco patch to cure to acceptable pH level (10) prior to application of prime/finish coat systems. Caulk large cracks in stucco / plaster/ cement with GE-Life Time 920.

3. Spot prime over all patched areas, cracks, and holes then use an appropriate topping material to match existing surface level and texture.

J. All Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing.

a. SSPC-SP 1, "Solvent Cleaning."

b. SSPC-SP 2, "Hand Tool Cleaning."

c. SSPC-SP 3, "Power Tool Cleaning."

1. All ferrous metals should be thoroughly cleaned and all loose rust or mill scale be removed by wire brush, scraper and/or power tool, such as an electric drill with a wire brush attachment. Any rust spots or bare metal should receive the appropriate prime coat. Rust inhibited primer to be applied on all properly prepared surfaces where rust is evident. Any hard, glossy surfaces should be dulled. Previously painted ferrous metal in sound condition should be washed down with a strong detergent-type cleaner such as Krud-Kutter or Simple Green.

2. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

3. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

a. All galvanized gutters and flashing should be thoroughly cleaned to remove loose and peeling paint.

b. Any bare galvanized metal should be wiped down with a non-petroleum solvent cleaner.

c. Prime bare metal with the specified galvanized metal primer.

d. Any rust on galvanized metal must be removed. Clean to bare metal and apply a rust inhibitive primer.

4. Aluminum Substrates: Remove loose surface oxidation.

K. Wood Substrates:

1. All deteriorated or delaminated substrates (i.e. wood, hardboard siding, T1-11) shall be replaced. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for interior and/or exterior use in paint system indicated.

2. Sand and dust surfaces that will be exposed to view.

3. Prime edges, ends, faces, undersides, and backsides of wood.

4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

5. Spot prime all patched and filled areas as well as any new wood with the appropriate primer or sealer as stated in the Finish Schedule.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations.

1. Use applicators and techniques suited for paint and substrate indicated.

2. The number of coats scheduled is the minimum number of coats required. Additional coat(s) shall be applied at no additional cost to the Owner, to completely hide base material, provide uniform color, and to produce satisfactory finish results.

3. Apply coatings without thinning except as specifically required by label directions, or required by these specifications. In such cases, thinning shall be the minimum reduction permitted.

4. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.

5. Paint both sides and edges of interior and/or exterior doors and entire exposed surface of interior and/or exterior door frames.

6.Paint entire exposed surface of window frames and sashes.

7.Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

8.Priming may not be required on items delivered with prime or shop coats, unless otherwise specified. Touch up prime coats applied by others as required ensuring an even primed surface before applying finish coat.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Block Fillers: Provide block fill as scheduled to conform to the following PDCA Standard P12-05.

a. Level 3 - Premium fill: One or multiple coats of high performance block filler manufactured to be applied at a high dry film build. Block filler shall be back- rolled to eliminate voids and reduce the majority of the masonry profile depth.

F. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1.Paint the following work where exposed to view:

b. Equipment, including panel boards.

c. Uninsulated metal piping.

d. Uninsulated plastic piping.

e. Pipe hangers and supports.

f. Metal conduit.

g. Plastic conduit.

h. Tanks that do not have factory-applied final finishes.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by owner’s agent, and leave in an undamaged condition.

D. At completion of activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING

A. Prepare, paint and finish all surfaces specified and agreed upon.

B. Provide paint finishes of even uniform color, free from cloudy or muddled appearance. Properly correct all non-complying work to the

satisfaction of owner and owner's representative and the representative of the paint manufacturer.

C. Paint application finish schedule:

Stucco, Concrete, Walls, Corridors

Spot Prime: EFF-STOP Premium, Masonry Primer/Sealer (ESPR00)

First Coat: ULTRA-GRIP Premium, Acrylic Multi Purpose Primer (UGPR00 Series) Second Coat: SPARTASHIELD, Exterior 100% Acrylic Velvet Paint (SSHL20)

Third Coat: SPARTASHIELD, Exterior 100% Acrylic Velvet Paint (SSHL20)

SPECIAL NOTES AND INSTRUCTIONS:

A. Remove all dust, dirt, oil and grease from stucco and concrete surfaces. V Groove all cracks and patch or caulk concrete and stucco walls. Remove all chipping, loose, peeling and delaminated paint on walls and along foundations. Reclean to remove all foreign material after scapping sanding. Prime, patch, prime bare stucco areas where patching is needed.

B. Follow trenching requirements on architects specifications where dirt meets stucco areas.

C. Follow manufactures recommendations for proper Preparation, Application, Recoat Time, and Dry Film Thickness D.F.T. as stated on Manufacture's data sheets.

Wood, Fascia, Trim

Spot Prime: EZ-PRIME Premium Exterior Wood Primer (EZPR00)

First Coat: ULTRA-GRIP Premium, Acrylic Multi Purpose Primer (UGPR00 Series)

Second Coat: SPARTASHIELD, Exterior 100% Acrylic Semi-Gloss Paint (SSHL50)

Third Coat: SPARTASHIELD, Exterior 100% Acrylic Semi-Gloss Paint (SSHL50)

SPECIAL NOTES AND INSTRUCTIONS:

A. Remove all dust, dirt, oil and grease from wood surfaces. Remove all chipping, loose, peeling paint on all wood areas. Repair or replace damaged wood. Reclean to remove all foreign material after scapping and sanding.

B. Follow manufactures recommendations for proper Preparation, Application, Recoat Time, and Dry Film Thickness D.F.T. as stated on Manufacture's data sheets.

Galvanized Metal, Flashing, Vents, Doors and Door Frames, Galvanzed Pipes

Spot Prime: ULTRASHIELD, Galvanized Metal Primer (ULGM00-0-WH)

| | |
|---|---|
| First Coat: | ULTRA-GRIP Premium, Acrylic Multi Purpose Primer (UGPR00 Series) |
| Second Coat: | SPARTASHIELD, Exterior 100% Acrylic Semi-Gloss Paint (SSHL50) |
| Third Coat: | SPARTASHIELD, Exterior 100% Acrylic Semi-Gloss Paint (SSHL50) |

SPECIAL NOTES AND INSTRUCTIONS:

A. Remove all dust, dirt, oil and grease from surfaces. Remove all rust, peeling and chipping paint. Reclean to remove all foreign material after scrapping and sanding. Reclean to remove all foreign material after sanding.

If existing paint is in sound condition, clean the surface of all contaminants. Smooth, hard or glossy coatings and surfaces must be dulled by abrading the surface to approximately 120 grit sandpaper texture. Reclean to remove all foreign material after sanding.

B. Follow manufactures recommendations for proper Preparation, Application, Recoat Time, and Dry Film Thickness D.F.T. as stated on Manufacture's data sheets.

Ferrous Metal, Wrought Iron

| | |
|---|---|
| Spot Prime: | ENDURAPRIME, Interior/Exterior Acrylic Rust Preventative Metal Primer (ENPR00) |
| First Coat: | ENDURAPRIME, Interior/Exterior Acrylic Rust Preventative Metal Primer (ENPR00) |
| Second Coat: | ENDURA-COAT, Interior/Exterior Semi-Gloss Industrial Maintenance Coating (ENCT50) |
| Third Coat: | ENDURA-COAT, Interior/Exterior Semi-Gloss Industrial Maintenance Coating (ENCT50) |

SPECIAL NOTES AND INSTRUCTIONS:

A. Remove all dust, dirt, oil and grease from surfaces per SSPC-SP1. Minimum surface preparation is Hand Tool Clean per SSPC SP2. Remove all rust scale, peeling and chipping paint. Remove all chipping, loose, peeling paint on all wood areas. Reclean to remove all foreign material after scrapping and sanding.

If existing paint is in sound condition, clean the surface of all contaminants. Smooth, hard or glossy coatings and surfaces must be dulled by abrading the surface to approximately 120 grit sandpaper texture. Reclean to remove all foreign material after sanding. Stripe coat bottom side of all corroded wrought iron fence areas.

B. Follow manufactures recommendations for proper Preparation, Application, Recoat Time, and Dry Film Thickness D.F.T. as stated on Manufacture's data sheets.

**For lead safety refer to 3.2 B. and Dunn-Edwards PDS sheets under Special Instructions.**

**END OF PAINTING SPECIFICATION**

SECTION 09 9013

PAINTING OF EXISTING FACILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. EXTERIOR PAINTING PKVW & LPRIM.

B. Related Requirements:

1. Division 01 - General Requirements.

1.02 REGULATORY REQUIREMENTS

A. Paint materials shall comply with Food and Drug Administration's (FDA) Lead Law and current rules and regulations of local, state and federal agencies governing use of paint materials.

B. Paint color requirements for CALOSHA: CALOSHA requires the following items be painted as prescribed:

1. Gas Mains and Valves shall be painted "gun metal gray" (medium gray)

2. Fire Valves and Risers shall be painted OSHA's "safety red"

1.03 SUBMITTALS

A. Submit in accordance with Division 01 – General Requirements.

1. Submit a complete list of materials to be furnished stating supplier and distributor's names with product recommendations.

2. Submit manufacturer's standard color samples for each type of paint specified. Once colors have been selected, submit six samples of each color selected for each type of paint, on standard 8 ½ by 11 spray-out panel.

3. Before any coating is applied, submit to IOR samples of each color to be used on contract. If more than one batch of material and color is to be used, samples from each batch shall be submitted.

B. Paint and Enamel Spray-Outs

1. Samples of Paint and Enamel shall be submitted on standard 8 ½ by 11 Leneta Opacity-Display Charts. Each display chart shall have color in full coverage. Sample shall be prepared using material from batch to be used on actual job. Identify school on which paint is to be used, batch number, color number, type of material, name of manufacturer and name of Contractor.

2. Furnish samples of colors to Project Inspector. Samples shall be kept on the job until painting is completed.

3. Contractor shall be responsible for finish color on surface to be painted; where different materials of same color are specified to be applied on same, or adjoining surfaces, final color match shall match color sample on those surfaces.

C. Elastomeric coating shall be submitted in duplicate samples of texture coating. Samples shall be not less than 2 ½-inch by 3 ½-inch in size and on adequate backing.

D. Materials and color samples shall be approved before a job start meeting will be scheduled.

1.04 QUALITY ASSURANCE

A. Certification of Materials: With every delivery of paint materials, manufacturer shall certify, on form supplied by Owner that materials comply with requirements of this Section.

B. Paint materials shall comply with applicable requirements of Food and Drug Administration's (FDA) Lead Law and SCAQMD.

C. Painters working on Lead related work shall be (DHS) Lead Certified by the State of California.

1.05 DELIVERY, STORAGE AND HANDLING

A. Materials shall be delivered to project site in original unbroken containers bearing manufacturer's name, brand number, batch number, and MSDS Sheets.

B. Open and mix ingredients on premises in presence of Project Inspector. Immediately remove rejected materials from premises.

1.06 METAL STORAGE CONTAINER

A. Storage and Mixing of Materials: Store materials and mix only in spaces designated for purpose by Project Inspector. Keep such spaces clean and take necessary

precautions to prevent fire. Hang out oily rags singly in open air. Stack paint containers so that manufacturer's labels are clearly displayed.

B. Paint, combustible materials, gasoline driven equipment, etcetera shall not be stored or left in any school building overnight.

C. In event that equipment and material storage sheds must be placed on asphalt pavement less than six months old, each wheel, leg or other supporting member shall be centered on a 4-foot by 8-foot by ¾ inch thick sheet of plywood. Shed shall be set down in such a manner as to prevent damage to pavement. Contractor shall be responsible for any damage to pavement caused by improper placement of shed.

1.07 ENVIRONMENTAL CONDITIONS

A. Temperature: Do not apply exterior paint in damp, rainy weather or until surface has dried from effects of such weather. Do not apply paint when temperature is below 50 degrees F., or above manufacturer's stated recommended temperature, or when dust conditions are unfavorable to proper workmanship.

1.08 WARRANTY

A. Manufacturer shall provide a three year material warranty from date of Substantial Completion.

B. Contractor warrants work executed and materials furnished under contract shall be free from defects of materials and application for a period of three years from date of Substantial Completion.

C. Elastomeric coating shall be warranted for a period of five years from date of Substantial Completion.

D. Attic Stock Materials: Provide al least five (5) gallons of each type, color and sheen of sheen of paint installed. Label containers with colors designation indicated in drawings or approved color board. Provide proof of purchase NOT to exceed two (2) months prior delivery of project.

1.09 PROTECTION

A. Fire alarm boxes, fire sprinkler heads, smoke detectors and intrusion alarm systems shall be uncovered and available to perform function that it was designed for each and every night.

B. Pressure relief grilles with barometric damper leading to a corridor or an exterior shall be masked off before spraying and then uncovered immediately after spraying.

C. Conspicuously post sufficient “Wet Paint” signs continuously to alert public and school personnel to existing conditions until paint is completely dried.

D. Provide and maintain barriers, guards, lights, warning signs, etcetera for complete protection and as directed by the Project Inspector.

E. Do not impede emergency egress.

1.10 REMOVAL AND REINSTALLATION OF SECURITY GRILLES

A. Replace and secure at end of each working day protective security grilles. Every bolt shall be replaced properly using a washer, cut smooth and filed down.

B. Remove window grilles and anchoring devices prior to painting area behind grille.

C. Repair or replace grills, anchoring devices, and hardware damaged during removal and replacement process with material of same composition.

D. Reinstall grilles; anchoring devices and hardware shall be replaced with new hardware of same material. Installation of previously used or damaged hardware and anchoring devices shall not be permitted.

E. Provide hardware, specialty tools, and labor needed to remove and reinstall window grilles.

F. Paint security grilles that have graffiti or have been vandalized.

G. Do not leave any building or classroom unsecured. Grilles shall be reinstalled and rooms properly secured at end of each day.

H. Patch holes that exist prior to removal of grilles or that are exposed or created during removal.

I. Removal And Replacement

1. Grille and window sill shall be numbered prior to removal. Grille must be reinstalled to original location. Remove numbers upon reinstallation.

2. Window grilles may have been anchored in different ways according to building composition and grille type. Following is a list of different types of anchors and methods of removal and installation. (Processes listed are not applicable to every situation. Use appropriate methods as needed, with prior consent of Project Inspector).

a. Nail In Anchor:

1) Removal: Use cold chisel to split aluminum head, pull out steel nail in center, and then pull out aluminum sleeve or

grind off aluminum head to reveal nail, them remove nail. Touch up grille with approved spray cold galvanize where galvanize has been damaged from grinding.

2) Reinstallation: With grille flush to wall, insert anchor flush with mounting tab, and drive nail with hammer until secure. Bent nails will not be accepted.

b. Threaded Anchors

1) Removal: Grind off tack weld only, threaded stud shall remain in wall. Remove nut, washer, and grille. Touch up galvanizing damaged during grinding.

2) Reinstallation: Install grille without damaging anchor threads. Install new washer and nut, tack weld nut to tab, clean weld, and paint. Do not weld threads.

c. Carriage Bolts: Note: Extra long carriage bolts are a specialty item. Allow sufficient time to order.

1) Removal: Remove nut and washer and pull out bolt (do not reuse).

2) Reinstallation: Replace with new bolt of same size and minimum of 1 inch longer than bold removed. Install a new fender washer and nut. Tighten until grill is firmly against wall. Check to make sure window operates correctly. Cut off bolts flush with nut and de-burr bolt.

d. Lag Type Screws

1) Removal: Remove nut and washer and pull out bolt (do not reuse).

2) Reinstallation:

a) If existing hole is capable of receiving new screw: Replace with new lag, of same diameter, using 1 inch longer than those removed. Tack weld screws to grille.

b) If existing hole is damaged or otherwise compromised, a new placement of tab and screw is necessary. Remove existing tab, offset location of tab 2 inches, and drill correct size pilot hole into wood frame to avoid splitting wood. Replace with a

new lag, of same length and diameter as removed. Tack weld screws to grill. Welds shall be cleaned and painted with cold galvanized paint.

c. Tamper Proof Screws

1) Removal: Remove nut and washer and pull out bolt (do not reuse).

2) Reinstallation:

a) If existing hole is capable of receiving new screw: Replace with new screw, of same diameter, using 1 inch longer than those removed.

b) If existing hole is damaged or otherwise compromised, a new placement of tab and screw is necessary. Remove existing tab, offset location of tab 2 inches, and drill correct size pilot hole into wood frame to avoid splitting wood. Replace with a new screw, of same length and diameter as removed. Welds shall be cleaned and painted with cold galvanized paint.

d. Pop Rivet-Steel, Aluminum, or Stainless Steel. Note: Extra long pop rivets are a specialty item. Allow sufficient time to order.

1) Removal: Drill out with proper size drill bit, do not increase hole size.

2) Reinstallation: Replace with new pop rivet, of same diameter and composition as rivet removed.

3. Grilles reinstalled in exact prior position. Do not use plastic anchors or toggle bolts. Grilles have been installed with expanded metal situated in a consistent directional manner and shall be reinstalled in same manner. Extra or oversized holes shall be repaired. If for any reason anchor will not securely hold, use next bigger size anchor and offset tab 2 inches and re-anchor as per OAR direction.

4. Repair damage that previously exists prior to removal or is done to existing concrete, brick, wood, or any other surface during removal. If welding is necessary, welder shall protect surfaces from damage and maintain a fire watch during welding and at least ½ hour after completion.

5. Do not change original type of anchor without prior approval from OAR and Project Inspector.

6. Comply with applicable lead and asbestos abatement requirements prior to removal of grilles. Only employees properly trained and certified shall be permitted to disturb building materials containing lead or asbestos.

1.11 MOVING EQUIPMENT

A. Perform handling and moving of furniture, equipment, casework, books, and supplies, or items impeding project and re-installing in their original location, except as otherwise directed by OAR. Library books shall be moved and re-shelved in same sequence and in same location from which they were removed, unless otherwise directed by OAR.

1.12 MISCELLANEOUS

A. Provide and maintain barriers, guards, lights, warning signs, etcetera for complete protection and as directed by the OAR. Provide access to doors and openings. Do not store equipment or material near openings or traffic lanes that could be hazardous during an emergency.

1.13 DEFINITION OF TERMS

A. Work shall include labor, material, equipment and scaffolding required for cleaning and preparation of surfaces to receive painters finish and for painting and varnishing, as herein specified. Perform work unless specifically noted otherwise.

B. Painting shall include complete preparation and finish or refinishing in accordance with requirements specified herein. Drywall shall be treated same as specified for plaster.

C. Wherever woodwork is specified to be refinished, it will include wood finish member (trim), movable cabinets with doors and center cut doors, windows and sash, screen doors, screens, sash poles, movable and fixed bulletin boards and chalkboards, etcetera.

D. Plastic, impregnated plywood, hardwood, metal, asbestos board (if painted), and mastic coated wood surfaces shall be treated in same manner as specified for “woodwork”.

E. Whenever “Paint or Enamel” is referred to in these specifications, it shall be taken to mean types of waterborne materials and water reducible materials.

F. Whenever “edges” are referred to in these specifications, it shall be taken to mean every edge, (which include tops and bottoms).

G. Work shall be done by skilled and experienced painters in a professional manner. Painters must wear presentable white uniforms consistent with industry standard and personal ID Badges.

1. Provide ID badges identifying the following:

   a. Employee's name

   b. Employee's photo

   c. Company Position (i.e. apprentice, journeyman, foreman)

   d. Company name and logo

   e. Company phone number.

1.14 SCAFFOLDING

A. Scaffolding shall be made available to Owner, without cost, to make repairs. Owner will coordinate its work with that of Contractor's to avoid delays to the work.

1.15 SCHEDULING OF WORK

A. Schedule work through the OAR.

PART 2 - PRODUCTS

2.01 PAINT MATERIALS

A. Factory mix paint materials to correct color, gloss, and consistency for installation to maximum extent feasible.

B. Paint materials shall be by one manufacturer.

C. Paint materials shall be "Premium Architectural Grade".

D. Acceptable manufacturers, unless otherwise noted:

1. Sherwin-Williams

2. Dunn Edwards.

3. Vista Paints.

4. ICI Paints.

5. Or Approved Equal.

E. Gloss degree standards shall be as follows:

| | | | |
|---|---|---|---|
| High Gloss | 70 and above | Eggshell | 30 to 47 |
| Semi-Gloss | 48 to 69 | Satin | 15 to 29 |

PART 3 – EXECUTION

3.01 REMOVE AND REINSTALL

A. Remove coat hooks, name plates, label frames, sash lifts, sash locks, pencil sharpeners, flag brackets, drawer handles and locks, window coverings, switch and receptacle plates, removable bulletin boards, mirrors, maps and thermometer. Reinstall all of the above after painting is completed.

B. Remove exposed nails, hooks, tacks, screws, staples and pins in surface to be painted and patch holes with a matching material. Remove obsolete screens, grille hangers, fasteners and patch holes.

C. Remove and reinstall Venetian blinds and channels, insuring security latches are secure. When removed, blinds and channels shall be marked with its location and reinstalled in the same location.

D. Contractor shall replace map and picture hooks as directed by the Project Inspector.

E. Paper labels shall be soaked off and glue residue from tape removed.

F. Remove metal or plastic room numbers, letters, signs, and, after painting is complete, clean and reinstall them neatly.

G. Sash locks shall be reset in accordance with instructions for locking doors and windows each night.

3.02 REPLACEMENT SCREWS AND HARDWARE

A. Hardware shall be replaced using new screws, of same diameter, but one size longer than those removed. Screws used must be of finish design and material to match hardware.

B. Remove paint from hardware, including paint from previous painting.

3.03 GENERAL PREPARATION OF EXISTING PAINTED SURFACES

A. Previously painted surfaces will be assumed to contain lead.

B. Trenching: Before any cleaning or sandblasting operation is started, soil at base of building shall be trenched to a depth of six inches and eight inches wide. After completing painting application and allowing sufficient drying time, trench shall be refilled.

C. Insure a consistently uniform horizontal, vertical and curved surface, with a maximum deformation of 1/8 inch in a five foot span. Apply a brown scrub coat and a fog coat.

D. Glass, fiberglass and polycarbonate on exterior shall be traced neat and clean with approximately, but no more than 1/16 inch overlay. Paint specks, smears or splatters shall be immediately removed and surface cleaned.

E. Miscellaneous Exterior Surfaces; Freestanding exterior school signs, windbreaks, baffles, benches, scoreboards, fences, gates (excluding chain link) and decorative panels shall be prepared and primed as specified under "Doors." They shall receive number of coats of paint as detailed under "Colors and Number of Paint Coats."

F. Examine surfaces to receive paint finish. Surfaces which are not properly prepared, and cleaned or which are not in condition to receive finish specified, shall be corrected before paint is applied. Painting shall not be done on existing painted surfaces until surfaces are approved by the Project Inspector.

G. Remove items fastened to existing painted surfaces and patch holes with a material, and re-fasten in original location upon completion of painting work.

H. Existing painted surfaces indicated to be painted, shall be prepared as follows:

1. Wood, plaster and metal surfaces shall be washed with TSP (tri-sodium phosphate) substitute to remove dirt, grease and other foreign materials and rinsed with clean water and then sand papered and dusted off. Surfaces shall have wax completely removed before washing, which includes base, shoe base, and concrete base.

2. a. Checked, cracked, blistered, scaled, peeling, and alligatored paint on wood and metal surfaces shall have paint removed down to original finished surface, then hand-sanded and dusted clean.

b. Surfaces shall then be considered as new work.

c. Woodwork must be hand sanded smooth after each and every coat, except last coat. Coats shall be free from dust, dirt or other imperfections.

d. Steel sash and aluminum sash to be painted must be steel-wooled and dusted off. Sash putty shall be hand sanded smooth and dusted off.

e. Remove lint and grease from screens, vents, hoods, etcetera that are to be painted.

## 3.04 OTHER SURFACE PREPARATION REQUIREMENTS

A. Existing painted surfaces shall be prepared and made ready to receive new coat of paint or other finish coating materials by any of following methods:

1. H.E.P.A. machine sanding: Checked, cracked, blistered, scaled loose, and alligator paint on wood and metal surfaces of facilities shall be machine sanded to a smooth solid surface, dusted clean and then painted as specified. Power sanding shall be done with a H.E.P.A. vacuum sander and shall be used only when school is not in session, and students and staff are not on site.

2. Trenching: Before any cleaning or sandblasting operation is started, soil at base of building shall be trenched to a depth of six inches and eight inches wide. After completing painting application and allowing sufficient drying time, trench shall be refilled.

3. Hydro-washing: Exterior masonry and plaster on buildings, bungalows, pavilions, and appurtenances must be washed with a cleaner using hydro-washing equipment, or as directed by Project Inspector, to remove grease, dirt and foreign materials and then rinsed with clean water to remove residue. Surfaces must be allowed to dry for at least five days or as determined by Project Inspector. Care shall be taken to prevent water from entering buildings through vents, etcetera. Immediately following hydro-washing, areas surrounding buildings must be rinsed down.

    a. Exposed mastic, concrete, and/or plaster surfaces shall be cleaned with a cleaner, using hydro-cleaning equipment. This process is to remove dirt, foreign materials, grease, and oil and rinsed with clean water to remove residues.

    b. Before hydro-washing efflorescence must be brushed off and surface treated with a 10 percent solution of Muriatic Acid, neutralized with a 10 percent solution of ammonia water and then rinsed with clean water.

    c. Painted surfaces that will be directly or indirectly impacted by hydro-washing shall have paint stabilized to remove loose, flaky or peeling paint. Wood, metal, and other exterior non-masonry/stucco surfaces shall be primed where stabilization has occurred prior to application of cleaner and hydro-washing.

    d. Hydro-washing is not intended to remove loose, flaky or peeling paint or paint chips. Water generated from cleaning and hydro-washing process that does not contain visible paint chips shall be directed to soil, such as a planted area, or collected and disposed in the sewer system.

    e. At no time shall water from hydro-washing process be directed to a storm drain, be allowed to flow off Owner property to adjoining public or private property, or to flow across asphalt or cement concrete and allowed to dry.

f. If, during hydro-washing process, paint chips are generated with waste water work shall stop. Contractor shall install a system under and around area requiring washing sufficient enough to collect waste water generated. Waste water shall be stored in DOT approved barrels and visible paint chips separated from waste water. Paint chips shall be characterized to determine if waste is hazardous or disposed of assuming it is hazardous. Waste water shall be characterized to determine if it is hazardous and disposed of according to code. If water tests non-hazardous, water shall be removed from Owner's property.

g. Hazardous waste generated by this process requires being transported under a Uniform Hazardous Waste Manifest. Contractor shall ensure manifest is completed as required by code. OAR will sign manifest once it is accurately completed and prior to transport of waste off site.

4. Sandblasting: Shall be performed when school is not in session and when students are not present. Premises shall be left in a clean condition and ready for use by occupants by end of any day prior to beginning of school session. Work shall be coordinated with Project Inspector and the OAR. Only wet blasting shall be allowed. Masonry or stucco surfaces shall be sandblasted to remove mastic, paint and other materials to original plaster brown coat or formed concrete surface. Rinse with clean water to remove residue. Adjacent surface, plants and shrubs shall be protected from damage due to sandblasting operations.

a. Immediately upon completion of sandblasting operation, roof, gutters and areas around buildings, etcetera shall be cleaned of sand and debris resulting from sandblasting operation. No sand or debris shall be hosed or swept into drains.

b. Metal surfaces including decorative metal and fencing requiring sandblasting shall be sandblasted to white metal and primed same day with a metal primer per manufacturer's recommendation.

3.05 CRACKS AND VOIDS

A. Voids between surfaces and wood or metal trim or scribed edges where finish exists or is specified to be applied, must be filled with putty, filler or latex sealing compound.

B. Areas where finish plaster coat is loose must have that portion removed to a solid surface. Surfaces that are broken, cracked, or damaged and areas where finish plaster coat has been removed must be coated with compatible bonding agent. Surface will then be given a cement plaster finish coat consisting of one-part Plastic Portland Cement to three parts sand to match existing finish. Cracks shall be "V-

eed" out, filled, finished flush with and textured to match adjoining surfaces, per Owner Representative's approval.

C. Neutralize walls showing effects of alkali.

3.06 FILLER ON SIDING AND WOODWORK

A. Checked and cracked portions of siding and woodwork (after surrounding areas have been prepared as specified above) shall be primed, smoothed with an exterior filling compound and then sanded smooth when dry. Filled areas must be spot primed. Filler shall not be used on handball walls or basketball backstops.

3.07 SEALING SASH, DOOR FRAMES

A. Sealant that will interfere with proper application of waterproof coating shall be removed. Seal around door and window frames, flashing, vents, separations between masonry or plaster and adjoining surfaces, etcetera, with a sealant compound recommended by manufacturer of coating to be used. Sealing and filling shall be done with sufficient pressure to force material to base of opening.

3.08 MASTIC REPAIR AND ELASTOMERIC REPAIR

A. Surface must be clean, firm and free of oil, wax and chalk. Mildew must be killed. Surface must be rinsed and allowed to dry.

B. Use primers as recommended by manufacturer for each substrate.

C. May be applied with airless spray equipment, using a 22 to 34 orifice tip and do not apply when surface or air temperature is below 50 degrees F.

D. Apply elastomeric with a ½ inch to 1 ½-inch roller cover or an air-atomized spray texture pump system. Do not over-roll.

E. Spreading rate:

| | | | |
|---|---|---|---|
| Fine texture: | Approx. Mil thickness<br>at 80 square feet per gallon | Wet<br>Dry | 18 Mils<br>9 Mils |
| Medium texture: | Approx. Mil thickness<br>at 60 square feet per gallon | Wet<br>Dry | 18 Mils<br>9 Mils |
| Heavy texture: | Approx. Mil thickness<br>At 40 square feet per gallon | Wet<br>Dry | 39 Mils<br>26 Mils |

NOTE: Coverage will vary depending upon texture desired and surface. Direction will be given by an Owner representative.

F. Dry time: To touch: 1 to 1 ½ hours

To re-coat: 24 hours

G. Finish will be uniform in texture and free of imperfections.

H. Elastomeric coatings will receive at least two coats of paint.

I. Hairline cracks: Two coats of elastomeric coating to bridge hairline cracks.

J. Small to medium cracks and imperfections: elastomeric coating to fill and span cracks up to 1/32 inch. Cracks 1/32 inch width or greater shall be treated with an elastomeric sealant (recommended by paint manufacturer) prior to applying elastomeric coating.

K. Medium to large cracks and imperfections: Cracks from 1/32 inch to 1/8 inch shall be treated with a brush-grade elastomeric sealant applied in a 2-inch wide band; crowned at center and feathered at edges to conceal repair.

L. Large cracks: Cracks 1/8 inch to ½ inch shall receive a urethane sealant (recommended by paint manufacturer), "rake out" crack to conform to manufacturer's specifications and applied as directed for medium to large cracks.

M. Cracks, holes and damaged spots larger than ½ inches: Damaged areas shall be given a cement plaster finish coat consisting of one-part plastic Portland cement to three-parts plaster sand to match existing finish. When finished, it shall be flush with and match existing texture of adjoining surface.

N. Texture match: Crack repairs shall be finished to match texture of adjoining surfaces, per Project Inspector's approval. Hand held plaster hopper guns may be used. Exercise care to ensure that areas finished by hand held plaster machines match in color, texture and thickness to adjoining surfaces. A compatible bonding agent shall be used.

## 3.09 REPAIR OF PLASTER

A. Exterior areas, where finish plaster coat is loose, shall have that portion removed to a solid surface. Surfaces that are broken, cracked, or damaged and areas where finish plaster coat has been removed shall be coated with compatible bonding agent. Surface will then be given a cement plaster finish coat consisting of one-part Plastic Portland Cement to three parts plaster sand to match existing finish. Cracks shall be "veed-out", filled, finished flush with and textured to match adjoining surfaces, per Project Inspector's approval.

1. If existing plaster was a machine applied, dash coat, apply final application of finish coat over patched areas by machine to match existing adjacent machine texture. Use a finish plaster material with a bonding admixture mixed according to manufacturer's recommendation.

2. Cracks, holes, and damaged spots larger than ½ inch, see 3.09.

B. Exterior plaster designated to be painted shall receive three coats. First coat shall be sealer. Second and third coats shall 100 percent acrylic gloss enamel unless otherwise indicated.

3.10 REPAIR OF SPALLING CONCRETE

A. Remove surface contamination, broken and spalled concrete to a sound concrete base. Concrete shall be removed to a depth of one-half inch minimum around rebar. Sides of areas to be repaired shall be straight, not tapered or sloped.

B. Spalled or loose concrete shall be removed using an electric or compressed air chipping hammer.

C. Clean exposed rebar by sandblasting, remove debris and dust and treat steel with a sealant compatible to patching materials same day. Project Inspector shall approve sealant application prior to any patching materials being applied.

D. Repair concrete to match existing concrete surfaces using Sika Top 123 Gel Mortar, DAP Concrete Patch, Quikrete Fast-Setting Concrete, or equal.

E. Sealant and patching materials shall be applied by qualified applicator.

3.11 SPRAYING MASONRY/CEMENT PLASTER

A. Masonry/plaster material must be a 100 percent acrylic flat paint, color as directed. Material must be applied in strict conformity to manufacturer's directions. There must be at least 24 hours drying time between first coat which shall be factory tinted 10 percent to 15 percent lighter (or darker) in color than finish coat. Manufacturer shall be acquainted with conditions of surfaces to be refinished and provide written specifications for the job including special primers or additives needed for adhesion sealing of first coat of paint and general performance of materials. Finished surface must be uniform and free of imperfections. Each coat applied to surface must be sprayed using "Cross-Off" method of application by spraying horizontally with a 50 percent overlap on returns and doubling back with a vertical stroke with a 50 percent overlap on returns.

B. After painting of masonry/plaster, replace (stencil) security numbers per plot plan. See Owner representative for locations.

3.12 STAINED AND VARNISHED SURFACES

A. Where existing varnish has been removed and woodwork is to be enameled, woodwork shall be primed as specified under "Priming" and then given three coats. First coat of enamel undercoat, second and third coats of gloss or semi-gloss enamel.

3.13 SASH PUTTY

A. Loose sash putty must be removed and replaced. Rough, uneven or otherwise deteriorated sash putty shall be sanded smooth or re-puttied.

B. Sash putty and sealing compound shall be painted with same number of coats as specified for woodwork.

3.14 PUTTY

A. Holes, open joints of siding, woodwork and sash glazing shall, after surrounding areas have been prepared as specified above, be knife puttied. On stained woodwork, putty must be colored to match stain. Puttying shall be done after first coat of paint or varnish has been applied. Latex sealant may be used on open joints and woodwork. Putty and/or sealant shall be spot primed before finish coat is applied. Putty or latex sealant shall not be used on handball walls or basketball backstops.

3.15 FILLER ON SIDING AND WOODWORK

A. Checked and cracked portions of siding and woodwork (after surrounding areas have been prepared as specified above) shall be primed, smoothed with an exterior filling compound and then sanded smooth when dry. Filled areas must be spot primed. Filler shall not be used on handball walls or basketball backstops.

3.16 MIXING AND APPLICATION

A. Colors of coatings shall be as directed by Project Inspector.

B. Three coats of paint shall be applied as follows:

1. First coat: primer or undercoat, shall be white.

2. Second coat shall be factory tinted in range of 10 percent to 15 percent lighter or darker than finish coat.

3. Third coat shall be factory tinted to color selected, but allowing for tint variations in more than one color for application to different surfaces. Color combinations in rooms and for surfaces shall be varied in accordance with color letter.

C. Any number of colors may be used on any portion of work. Owner reserves right to change colors before work is started in an area or on a particular surface.

D. Various colors may require additional coats of paint complete coverage. No additional allowances will be made. Contractor is responsible for consulting color letter and knowing color and coverage.

E. Surfaces to be finished and each coating shall be separately inspected by Project Inspector and checked for mill thickness. The requirements are two mils each coat wet and three mils dry after three coats. Notice that such work is ready for inspection shall be given to Project Inspector. Should such notice not be given before succeeding coat is put on, finish applied shall be removed or an additional coat shall be applied, as directed by Project Inspector. Allow at least one day drying time between coats for exterior work or as directed by Project Inspector for proper drying.

F. Roof work to be painted Q8-38T Birch Gray.

3.17 PAINT ROLLERS, BRUSH AND SPRAY

A. Paint rollers may be used on masonry, stucco and plywood surfaces, nap not to exceed 1/2 inch in length.

B. First coat on wood overhang and soffits must have material applied by roller and then must be brushed out in a professional manner to leave surface free of imperfections. Finish coat may be sprayed.

C. Other surfaces shall have coatings applied with brushes of proper size.

D. Spray work shall be permitted only on radiators, acoustic plaster, acoustic tile, fiberboard, wood fiber acoustical units, masonry and plaster or as directed by Project Inspector.

E. All metal fencing and gate materials must be BRUSH painted. Coordinate with Architect and OWNER as required.

3.18 PRIMING

A. Surfaces from which paint finish have been removed down to original wood or metal surfaces shall be primed as follows:

1. Wood shall be sealed or primed with a non-water borne material on both sides and edges. Wood completely sealed with a non-water borne material shall be top coated with a water borne material as specified herein. Finish material (water borne) shall be compatible with non-water borne primer per manufacturer's recommendations. Hardwood shall be filled and stained to an even color.

2. Galvanized Metal: Clean oil and foreign material from surfaces. Apply vinyl wash pretreatment coating. Follow manufacturer's instructions for drying time, and then prime with one coat of metal primer.

3. Ferrous and non-ferrous metal: Use a primer for ferrous and non-ferrous metal.

3.19 FIRE AND LIFE SAFETY EQUIPMENT

A. Cal-OSHA requires the following equipment be painted as follows:

1. Gas Mains and Valves shall be painted “gun metal gray” (medium gray)

2. Fire Valves and Raisers shall be painted OSHA’s “safety red”

3.20 DOORS

A. Painted or refinished exterior wood or metal must be finished on both sides and edges with three coats of paint consisting of first coat of primer, second coat and third coat of exterior high gloss enamel.

B. Where doors open into rooms or spaces having different finishes, communicating doors must have edges finished according to industry standard or as directed by Project Inspector.

1. Strike edge of door shall be same color as inside face of door.

2. Hinged edge of door shall be same finish as outside face of door.

C. Exterior hardwood doors and frames where varnish finish has been removed shall be built-up to match adjoining finish with stain, filler and one coat of exterior varnish. Then surfaces, including edges must be given specified number of coats of exterior varnish as detailed under “Stain and Varnish Finish.”

3.21 PORCH, STAIRS AND HANDRAILS

A. Unpainted, painted and mastic coated porch floors, treads, risers and thresholds of building shall be prepared as specified herein and painted with two coats of a non-skid porch and deck paint.

B. Handrails must be finished same as specified for exterior wood doors using exterior gloss enamel.

3.22 THRESHOLDS

A. Painted thresholds to be prepared, primed, and receive two coats of a non-skid porch and deck paint.

B. Natural finished wood thresholds to be prepared and receive three coats of a high gloss varnish.

3.23 INTERIOR WOODWORK

A. Not applicable.

3.24 ENAMEL FINISH

A. Unpainted plaster surfaces to receive an enamel finish, must receive four coats of paint. First coat of pigmented sealer, second coat of enamel undercoat, third and fourth coats of gloss or semi-gloss enamel as specified herein.

3.25 CABINETS

A. Not applicable.

3.26 PLYWOOD WALLS

A. Exterior plywood shall be cleaned and finished with three coats. First coat shall be undercoat. Second and third coats shall be gloss enamel. Exterior plywood may be sprayed if it is then back-rolled.

3.27 INTERIOR PLASTER AND DRYWALL WORK - WALLS, CEILINGS, ETCETERA

A. Not applicable.

3.28 AREAS REQUIRING ENAMEL

A. Exterior Enamel – Gloss

Woodwork, walls and soffits.

3.29 UNPAINTED METAL

A. Unpainted bronze, brass, copper work, window grilles, stairways, handrails, chain-link fences, stainless steel, open metal shelving, porcelain metal faced cabinets and aluminum will not be painted, unless otherwise specified.

3.30 PAINTED METAL

A. Exposed structural steel, miscellaneous/ornamental iron, sheet metal work, guards, steel sash, gates, painted aluminum, basketball rims, etcetera shall have surfaces cleaned and prepared as specified. The areas from which original painter's finish has been removed shall be spot primed with metal primer to match adjoining surfaces and then surfaces shall be given a prime coat of metal primer, second and third coats as specified. Copper pipe shall be painted with one coat of enamel undercoat per manufacturer's recommendation, a second and third coat of enamel as specified.

B. Painted ornamental iron rails and gates, metal soffits (metal decking, etcetera) stairs, pipe columns, and pipe rails shall be prepared and finished as specified herein. Metal decking and metal roll-up doors may be sprayed.

C. Exterior surfaces (except bottom) of exterior metal storage container, including both sides of door(s) and edges shall be prepared, primed and painted. Exterior metal storage container(s) must be sprayed.

3.31 METAL COVERED DOORS, RADIATORS

A. Metal Covered Doors: Bare metal must be primed with a metal primer. Doors and edges shall then be painted with one coat of enamel undercoat, a second coat and third coat of exterior gloss enamel as specified.

B. Fly screens and hardware cloth of copper, bronze or galvanized wire must be painted with one coat of exterior enamel.

C. Radiator guards must be removed, painted with three coats of enamel to match adjoining surface and replaced after radiators have been painted

3.32 LIGHT FIXTURES

A. Exterior light fixtures (other than plated or bronzed) and bells to be primed and then painted with two coats of an enamel to match adjoining surface. Bell identification plates must have paint removed and be kept clean.

B. Metal stacks and kilns must, after preparation, receive two coats of aluminum paint or a heat resistant material. Minimum required heat resistant coating shall be rated to not less than 700 degrees F.

C. Cafeteria equipment: Metal work in cafeteria, kitchen and serving counters in student and faculty dining rooms having an existing aluminum paint finish must be cleaned as specified and given two coats of an aluminum paint.

3.33 FLAG AND LIGHT POLES

A. Clean by wire-brushing and sanding to remove foreign debris, loose paint, rust, etcetera from pole, platform, steps, cage area and mechanical fixtures related to those areas. After removing loose paint, feather-edge sand surrounding areas of existing finish. Remove dust. Exclude electrical fixtures.

B. Spot-prime with a quick-dry metal primer.

C. Apply by brushing first and second coat of aluminum paint per manufacturer’s time recommendation for re-coating.

D. Rolling or airless spraying is not permitted on flag and light poles.

3.34 METAL SURFACES

A. Clean by wire-brushing and sanding to remove foreign debris, loose paint, rust, etcetera. After removing loose paint, feather-edge sand surrounding areas of existing finish. Remove dust.

B. Exterior bare metal surfaces shall be primed with a metal primer then painted with a first coat of enamel undercoat, then a second coat and third coat of exterior gloss enamel.

C. Hardware having a painted finish shall have paint removed. Doors closers shall be finished with a leather brown or aluminum paint. Aluminum paint shall be applied in sanitary areas such as cafeterias, dining rooms and toilet rooms. Leather brown (N-2501) paint shall be used in other areas.

3.35 PAINTING OF MECHANICAL WORK

A. Exposed heating, ventilating, air conditioning, plumbing, electrical equipment, apparatus, piping, ducts, coverings, etcetera shall be cleaned, prepared and painted as specified herein for that item.

B. Mechanical work not specifically mentioned must be painted as specified for other work of same character.

C. Finished bronze, brass fittings, plated work, name plate and fusible links and chains must be cleaned of paint.

D. Automatic sprinkler valves, gas meters and water meters must be painted as specified herein

3.36 ELECTRICAL CABINETS

A. Front side of doors and exposed lip around doors to electrical cabinets must be finished same as walls.

3.37 LETTERING

A. Lettering and numerals on glass, fiberglass, plaster, and surfaces to be refinished shall be reproduced in original locations and will be of size, color and design as directed by Project Inspector. An experienced sign painter shall do lettering.

3.38 HARDWARE AND AUTOMATIC DOOR CLOSERS

A. Hardware having a painted finish must have paint removed. Doors closers must be finished with a leather brown or aluminum paint. Aluminum paint shall be applied in sanitary areas such as cafeterias, dining rooms, toilet rooms. Leather brown (N-2501) paint shall be used in other areas. Where both sides of doors are specified to be painted, door closers shall be included.

3.39 GAS FIRED UNITS

A. Gas fired units, which need to be disconnected and reconnected, and/or any unit that must be shut down, re-ignited and tested will be done by Owner personnel.

3.40 CLEANING

A. Glass, polycarbonate and fiberglass shall be cleaned of paint and varnish,. Glass, fiberglass and polycarbonate that are scratched or damaged by painting work shall be replaced with material to match original.

B. Finished bronze, copper, brass fittings, plated work, name plate and fusible links and chains shall be cleaned of paint.

C. Before applying finish coat of material to exterior sash with security grilles, Contractor shall clean window panes with a cleaner.

D. Dispose of debris, waste or unused materials, off site. Use of school dumpsters is strictly prohibited.

E. Remove paint from hardware, including paint from previous painting.

F. Contractor shall free sash and leave it in an easy operating condition.

G. Glass, fiberglass and polycarbonate on exterior shall be traced neat and clean with no more than 1/16 inch overlay. Paint specks, smears or splatters shall be immediately removed and surface cleaned.

H. Rooms, Buildings, and Campuses must be cleaned of paint debris, including dust caused by painting project to approval of Project Inspector.

3.41 POST OCCUPANCY WORK

A. Two months after substantial completion the Contractor must return to the site to check and free sashes that were painted so they are in proper operating condition.

END OF SECTION

SECTION 09 9623

GRAFFITI-RESISTANT COATINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Work includes anti-graffiti coating.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 09 9000: Painting and Coating.

3. Section 09 9013: Painting of Existing Facilities.

1.02 SUBMITTALS

A. Provide submittals in accordance with Division 01.

B. Samples: Submit Samples of coating system.

C. Product Data: Submit anti-graffiti coating manufacturer's technical data and installation instructions, recommended coverage rates for types of surfaces to be treated, and evidence that coatings conform to requirements specified. Submit evidence of code approvals.

D. Furnish Samples on the same materials to which coating will be applied on. Indicate satin or flat finish. Coat one-half of each Sample, with the other half non-coated.

E. Installer: Submit written evidence the installer for the Work of this section has completed at least five projects of similar complexity within the past five years.

F. Certificate and Summary Statement: Before Substantial Completion, submit a certificate stating that coatings applied conform to reviewed submittals and specified requirements. Provide a summary statement setting forth the following:

1. Number of square feet of each surface treated with coating, classified as to the kind of material treated, open pore or closed pore type, and whether vertical or horizontal.

2. The number of gallons of each type, class, or grade of coating required to treat involved surfaces, based on the number of square feet of each type and orientation of the material the coating was installed on.

3. Total gallons of each coating type, class, or grade installed.

G. Maintenance Instructions: Furnish manufacturer's recommended graffiti removal instructions, and recommendations for recoating. Furnish names and addresses of cleaning firms and of suppliers of maintenance materials.

H. Maintenance Material / Stock Items: Furnish five gallons of each product specified. Provide proof of purchase NOT to exceed two (2) months prior delivery of project.

1.03 QUALITY ASSURANCE

A. Manufacturer's Observation: Start coating application under the observation of the coating manufacturer’s technical representative. Notify Project Inspector and coating manufacturer at least 72 hours before starting installation.

B. Preliminary Tests: Perform tests on each kind of surface to be treated to establish the actual application rates required to provide the surfaces resistant to defacing and meet warranty requirements. Tests shall demonstrate the coating does not yellow, darken, mottle, or discolor any treated surface and those surfaces to be treated are dry. Established application rates shall not be less than those recommended in the coating manufacturer's technical data for the kind and surface orientation of the material.

C. Compliance with Regulations: Materials shall comply with the current rules and regulations of the local air quality management district, with the rules regarding volatile organic compounds, and with FDA rules and regulations for dangerous materials in coatings.

D. Materials shall meet requirements of SCAQMD regarding emission of solvents and other pollutants.

E. Qualifications:

1. Manufacturer: Anti-graffiti coating shall be product of a manufacturer who has been regularly engaged in manufacturing anti-graffiti coatings for at least 5 years. Manufacturer shall supply references of at least five satisfactory installations in which anti-graffiti coating has been in service for at least five years.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver coating materials to the Project site in containers bearing name and batch number of manufacturer, with seals intact.

1.05 PROJECT CONDITIONS

A. Protection: Install temporary coverings and protection, and do not allow coating to contact plastic, planting soil, plants, asphaltic paving, roofing membranes, or other materials that are likely to be damaged by coating.

B. Weather Conditions: Do not install coating during windy, wet, or excessively hot or dry weather conditions.

1.06 WARRANTY

A. Manufacturer shall provide a five-year material warranty.

B. Installer shall provide a one-year application warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE PRODUCTS

A. Permashield, by Monopole Inc.:

1. Permashield Premium 5600 over Aquaseal ME12, Permanent Graffiti Control, Monopole Inc., ND Graffiti Shield System, Rainguard VandlGuard System, or equal. Matte finish.

B. Coval Anti-Graffiti coating by Coval Molecular Coatings.

C. Or Approved Equal.

2.02 PROPERTIES

A. Coatings shall not darken or discolor the treated surfaces and shall be non-toxic, compatible with standard polymer type sealing materials, conforming to AQMD 1113, and certified by manufacturer as suitable over paint finish.

B. Colors of opaque materials shall match adjoining colors, or shall be selected from manufacturer's custom colors.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Do not start installation of coating if conditions are present that prevent or interfere with the correct preparation of surfaces or installation of coating system.

3.02 PREPARATION

A. Remove dust, dirt, oil, grease, other deleterious substances and stain, and efflorescence and laitance from surfaces. Repair cracks and holes over 1/16-inch size. Spot prime cracks and holes 1/16-inch size and smaller and prime horizontal surfaces other than soffits with a heavy duty coating supplied by same coating manufacturer. Mask and protect adjoining surfaces and glass, unless coating is harmless and easily removed.

3.03 APPLICATION

A. Install the anti-graffiti coating to surfaces indicated on drawings.

B. Test graffiti resistant coating in an inconspicuous location to ensure adhesion and performance.

C. Apply the anti-graffiti coating to surfaces indicated on drawings per manufacturer's recommended application methods and thicknesses.

3.04 CLEANING

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 31 1000

SITE CONCRETE CLEARING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes the following:

1. Protection of existing trees indicated to remain.

2. Removal of trees and other vegetation.

3. Topsoil stripping and stockpiling.

4. Clearing and grubbing.

5. Removing above-grade improvements.

6. Removing below-grade improvements.

B. Related Sections:

1. "Temporary Facilities and Controls" Section for temporary utility services, construction and support facilities, and security and protection facilities.

2. "Execution" Section for field engineering and surveying.

3. "Construction Waste Management and Disposal" and "Sustainable Design Requirements" Section for additional LEED requirements.

4. "Structure Demolition" Section for demolition of buildings, structures, and site improvements.

5. "Selective Structure Demolition" Section for partial demolition of buildings or structures.

1.03 PROJECT CONDITIONS

A. Traffic: Conduct site-clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.

B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.

1. Protect improvements on adjoining properties and on Owner's property.

2. Restore damaged improvements to their original condition, as acceptable to property owners. The full width of pavements damaged due to construction access and other construction-related activities shall be replaced with a structural section (pavement and base) at least equal to the adjacent existing section.

3. Protect existing utility lines indicated to remain. Notify Owner immediately of any damage to or encounter with an unknown existing utility line. Immediately repair damage to existing utility lines.

C. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place against unnecessary cutting, breaking or skinning of roots, ANY skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.

1. Water trees and other vegetation to remain within limits of contract work as required to maintain their health during course of construction operations.

2. Provide protection for roots over 1-1/2 inch in diameter that are cut during construction operations. Coat cut faces with an emulsified asphalt or other acceptable coating formulated to use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.

3. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations in a manner acceptable to Architect. Employ a licensed arborist to repair damage to trees and shrubs.

4. Replace trees that cannot be repaired and restored to full-growth status, as determined by arborist.

D. Improvements on Adjoining Property: Authority for performing removal and alteration work on property adjoining Owner's property will be obtained by Owner prior to award of contract.

1. Extent of work on adjacent property is indicated on Drawings.

E. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated or directed.

F. Do not commence site clearing operations until temporary erosion- and sedimentation-control measures are in place. Contractor shall abide by all conditions in the Storm Water Pollution Prevention Plan Prepared by others.

G. Soil stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

1.04 EXISTING SERVICES

A. General: Indicated locations are approximate; determine exact locations before commencing Work.

B. Arrange and pay for disconnecting, removing, capping, and plugging utility services. Notify affected utility companies in advance and obtain approval before starting this Work.

C. Place markers to indicate location of disconnected services. Identify service lines and capping locations on Project Record Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 SITE CLEARING

A. General: Remove shrubs, grass, and other vegetation, improvements, or obstructions, as required, to permit installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. Removal includes digging out and off-site disposal of stumps and roots.

1. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.

2. Unless specifically designated to remain, strip the upper two inches (minimum) of soil containing vegetation and root growth within the Limits of Work shown on the Drawings.

B. Topsoil: Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2 inches in diameter, and without weeds, roots, and other objectionable material.

1. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping.

a. Where existing trees are indicated to remain, leave existing topsoil in place within drip lines to prevent damage to root system.

2. Stockpile topsoil in storage piles in areas indicated or directed. Construct storage piles to provide free drainage of surface water. Cover storage piles, if required, to prevent wind erosion. Limit height of stockpiles to 72 inches.

3. Dispose of unsuitable or excess topsoil as specified for disposal of waste material.

C. Clearing and Grubbing: Clear site of trees, shrubs, and other vegetation, except for those indicated to be left standing.

1. Completely remove stumps, roots, and other debris protruding through ground surface.

2. Use only hand methods for grubbing inside drip line of trees indicated to remain.

3. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.

a. Place fill material in horizontal layers not exceeding 8 inches loose depth, and thoroughly compact each layer and compact in accordance with the requirements specified in Division Section 31 2000: Earth Moving, to make the new surface conform with the existing adjacent surface of the ground.

4. Trim trees, designated to be left standing within the cleared areas, of dead branches 1-1/2 inches or more in diameter; and trim all branches to heights and in a manner as indicated. Neatly cut limbs and branches to be trimmed close to the bole of the tree or main branches. Paint cuts more than 1-1/4 inches in diameter with specified tree-wound paint.

D. Removal of Improvements: Remove existing above-grade and below-grade improvements as indicated and as necessary to facilitate new construction.

1. Abandonment or removal of certain underground pipe or conduits may be indicated on mechanical or electrical drawings. Removing abandoned underground piping or conduits interfering with construction are included under this Section.

3.02 DISPOSAL OF WASTE MATERIALS

A. Burning on Owner's Property: Burning is not permitted on Owner's property.

B. Removal from Owner's Property: Remove waste materials and unsuitable or excess topsoil from Owner's property.

C. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other project work.

END OF SECTION

# SECTION 32 0117

# ASPHALT PAVEMENT REPAIR

## PART 1 - GENERAL

### 1.01 SUMMARY

A. Section Includes:

1. Bituminous Surfacing Repair: Areas removed for utility trenches, heaved by tree roots, cracked areas, protruding areas where pavement meets hard surfaces, depressed areas, holes and areas around new structures, and raveled bituminous pavement.

2. Areas heaved by tree roots, cracked areas, holes and trenches, and areas around new structures.

B. Related Sections:

1. Division 01 - General Requirements.

2. Section 31 2213 - Earthwork and Grading.

3. Section 31 2313 - Excavation and Fill.

4. Section 31 2316 - Excavation and Fill for Paving.

5. Section 31 2319 - Excavation and Fill for Structures.

6. Section 31 2323 - Excavation and Fill for Utilities.

7. Section 31 2326 - Base Course.

9. Section 32 1216 - Asphalt Paving.

### 1.02 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating areas to be repaired.

B. Product Data: Submit manufacturer’s technical data for materials and products.

### 1.03 QUALITY ASSURANCE

A. Comply with Standard Specifications for Public Works Construction, current edition.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

A. Base course materials: Section 31 2326 - Base Course.

B. Asphalt paving materials: Section 32 1216 - Asphalt Paving.

C. Headers: Section 32 1216 - Asphalt Paving.

### 2.02 BITUMINOUS MATERIALS

A. Provide materials and products of the class, grade or type indicated, conforming to relevant provisions of Section 203 - Bituminous Materials of the latest Standard Specifications for Public Works Construction.

## PART 3 - EXECUTION

### 3.01 PAVEMENT REMOVAL

A. Remove bituminous and concrete pavement in accordance with applicable provisions of Section 300 - Earthwork of the Standard Specifications for Public Works Construction.

B. Pavement Heaved By Roots: Remove pavement to limits of distortion and expose roots. Trim roots to provide at least 12-inch clearance to pavement.

C. Remove protruding bituminous surfaces flush with the surrounding grade using a suitable tool or equipment so that adjacent finishes are not blackened.

D. Remove raveled and depressed bituminous pavement to limits indicated or required.

E. Saw cut existing improvements, trim holes and trenches in bituminous and concrete pavement to permit mechanical hand tampers to compact the fill.

F. Remove broken concrete by saw cutting. If the required cut line is within 30 inches of a score or joint line or edge, cut and remove to the score, joint line, or edge.

### 3.02 EXCAVATING, BACKFILLING AND COMPACTING

A. Conform to requirements in Section 31 2313 - Excavation and Fill; Section 31 2316 - Excavation and Fill for Paving; Section 31 2319 - Excavation and Fill for Structures; or Section 31 2323 - Excavation and Fill for Utilities, as required.

B. Where subgrade or base is deemed to be unstable or otherwise unsuitable, excavate such materials to firm earth, and replace with a required material. Install and

compact fill materials in accordance with the requirements of related Specification sections.

3.03 HEADERS

A. Install headers along edge of bituminous surfacing abutting turf, earth, or planting area, unless indicated otherwise.

B. Install headers so the bottom surface has continuous bearing on solid grade. Where excavation for headers is undercut, thoroughly tamp soil under the header. Compact backfill on both sides of header to the density of the adjacent undisturbed grade.

C. Fasten headers in place with redwood or Douglas fir stakes of length necessary to extend into solid earth a minimum of 12 inches. Stakes shall be of sound material, neatly pointed, driven vertically, and securely nailed to headers. Space stakes, not to exceed 4 feet on centers with top of stakes set one inch below top of header. Provide a minimum of two 12d galvanized common nails through each stake.

D. Remove existing headers where new surfacing is installed adjacent to existing surfacing.

E. Install temporary headers at transverse joints of paving where continuous paving operations are not maintained.

F. Provide additional stakes and devices as required to fasten headers.

3.04 BASE COURSE

A. Unless otherwise indicated, base course shall be crushed aggregate base, fine grade, 3 inches thick or equal to thickness of the existing base, whichever is greater.

B. Fill grade and compact as specified in Section 31 2213 Earthwork and Grading.

3.05 RESURFACING

A. Holes and Trenches: Remove loose dirt and backfill with cement-sand slurry allowing for surfacing one inch thicker than existing. Resurface flush with existing adjoining pavement installing the same type of materials and section provided in existing improvements.

B. Other Areas: Other surface improvements damaged or removed shall be cut to a neat even line and excavated one inch below the bottom of the existing pavement. Resurface by following the original grades and installing the same type of materials provided in existing improvements.

C. Where bituminous surfacing abuts concrete, masonry, walks or paving, tamp joint smooth, if necessary, as described above to obtain a uniformly even joint, true to line and grade. Tamp and smooth materials before asphalt cools.

3.06 REPAIRING AND RESEALING EXISTING SURFACES

A. Preparation of Surfaces: Prior to filling cracks, clean existing bituminous surfacing of loose and foreign materials and coat with a film of asphalt emulsion.

B. Repair of Existing Surfacing:

1. Fill cracks ½ inch wide and less with RS-1 emulsion and silica sand or other required material. Cracks larger than ½ inch wide shall be filled with Type C2 Asphalt Concrete as specified. Cracks shall be filled to the level of adjacent surfacing.

2. Where low areas, holes, or depressions occur in existing surfacing, repair with emulsified asphalt. Install material, strike off the emulsified asphalt with a straightedge flush with adjoining surfacing. Finish with a steel trowel, and after dehydration, compact by rolling or tamping.

C. Testing: Flood test entire area in presence of the Project Inspector. Entire area tested shall be free of standing water or puddles.

3.07 CLEANING

A. Remove all stains on the Project site and adjacent properties caused by or attributed to the Work of this section.

B. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.08 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 32 0190

LANDSCAPE MAINTENANCE

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

### 1.02 DESCRIPTION OF WORK

A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for Landscape Maintenance as specified in this Section during the landscape maintenance period, referred to herein as the Maintenance Period. The work includes establishing the plantings, providing pest and disease control, mowing, and maintaining the irrigation system and related construction elements during the Maintenance Period.

B. Related Work:

1. Irrigation
2. Planting

### 1.03 MAINTENANCE PERIOD

A. Time Limits: The Maintenance Period commences from the date of approval of substantial completion and extend for 60 calendar days, or until final completion approval, whichever is later.

### 1.04 REVIEWS

A. Substantial Completion Review: Specifically request this review at least (5) five days in advance of the proposed start of the Maintenance Period. The Owners Representative will review for a final checklist of minor items to be completed. The Maintenance Period commences once the items are completed and approved by the Owners Representative. Items to be checked during this review include but are not limited to:

1. All planted areas including turf grass.
2. Valve boxes, spray head / emitter / tree bubbler installation.
3. Overall operation of the irrigation system.
4. For point-source drip-irrigated areas, do not apply mulch until the system has been inspected unless permitted otherwise by the Owner's Representative.
5. For sub-surface drip irrigated areas, ensure that the system was inspected earlier by the Owner's Representative prior to soil backfill over the drip lines.

C. Final Review: Specifically request this review at least (5) five days in advance of the end of the Maintenance Period. Failure to request this notice automatically extends the date of completion. The Maintenance Period will continue until final completion is approved by the Owners Representative. Items to be checked during this review include but are not limited to:

1. All planted areas including turf and naturalized areas if applicable, including all punch-list items identified at Substantial Completion Review and Punch-list Check.
2. All irrigation punch-list items identified at Substantial Completion Review, and Punch-list Check.

1.05 MAINTENANCE PERIOD SUBMITTALS

A. Fertilizer: Submit written certificate showing rates, materials, and date of fertilizer application, to the Owner within five (5) days of each application.

B. Pesticides / herbicides: If pesticides / herbicides are used, submit written certificate showing rates, materials, and date to the Owner within five (5) days of each application.

C. Mowing: Submit mowing occurrences to the Owner each time mowings are completed.

1.06 CLOSE-OUT DOCUMENTATION

A. Submit prior to the Final Review, the following additional documents for the Maintenance Binder.

1. Work tags / reports, countersigned by the Owners Representative:
   a. Fertilizer applications, including initial application.
   b. Pesticide and herbicide applications, including initial application.
   c. Mowing occurrences
   d. In-service meeting discussion / decisions.

B. The Final Review will take place only after additional submittals and documents have been reviewed and approved by the Owners Representative.

PART 2 - MATERIALS

2.01 FERTILIZER

A. For maintenance fertilization: as specified in Specification Section Landscape Planting.

2.02 WATER

A. During the course of construction and maintenance, water for landscape will be paid for by the Owner. Submit watering schedule with dates, times and frequency at start of the Maintenance Period.

2.03 CHEMICALS

A. Insecticides, fungicides, pre and post-emergent herbicides as recommended by licensed Pest Control Operator and approved by the Owners Representative.

PART 3 - EXECUTION

3.01 GENERAL

A. Contractor's Responsibility: Work installed under this Contract damaged by vandalism, vehicular damage and/or theft during the installation of the work and up to the Substantial Completion approval, is to be repaired or replaced without additional cost to the Owner.

B. Owner's Responsibility: Throughout the Maintenance Period, these damages and similar factors such as excessive litter, abuse and defacement will be the Owner's responsibility to repair or replace and will not be a part of this Contract. No planting is to be guaranteed beyond the Maintenance Period, except as to conformance to specified species and variety, and as specified in Specification Section Landscape Planting.

3.02 BASIC REQUIREMENTS

A. Irrigation and Erosion: Maintain all planting areas at optimum moisture for plant growth. Hand water planting not adequately served by the automatic irrigation system. Repair settlement of soil and plants and soil erosion and replant areas to the satisfaction of the Owners Representative. Replace dying or deficient plants as they become apparent or as directed by the Owners Representative.

B. Cultivating and Clean-Up: Keep all planting areas neat and free from debris at all times and be cultivate at not more than ten (10) day intervals.

C. Weed control: Keep all planting areas weed-free at all times during the Maintenance Period.

D. Insect, Pest, and Disease Control: Control insects, pests, rodents and diseases by the use of insecticides and fungicides, as applied by a licensed pest control operator with the prior approval of the Owners Representative.

E. Fertilizer: Application for all planting areas including turf: as specified in Specification Section Landscape Planting.

F. Mowing Schedule:

1. Winter - Mow grass to 1.25" when it reaches a height of 1.75".
2. Other Seasons - Mow grass to 0.75” when it reaches a height of 1.25”.
3. Should the grass reach a height of more than 1” above the specified height, mow the grass in multiple passes, lowering the grass height by no more than 1” with each pass.

4. Spray mower decks and blades with water and thoroughly clean these of grass clippings and dirt prior to mowing. Have the Owners Representative inspect the equipment prior to mowing operations.

G. Pruning: Prune new trees and shrubs as directed by the Owners Representative. Do not remove lower branches from multi-trunk or low branching trees unless directed.

H. Replacement Materials: Immediately replace any dead or damaged plant materials. Repair or replace turf areas not fully established and healthy as directed by the Owners Representative. Carry out replacements to the specifications and as required to match adjacent plantings at no additional cost to the Owner.

I. Irrigation: Schedule and monitor controller stations as necessary to minimize water consumption while still providing adequate water for the plant material.

1. Adjust and clean all heads, emitters, valves, filters, regulators and other equipment as necessary to maintain the system.

## 3.03 CONDITION OF PLANTING AT END OF MAINTENANCE PERIOD

A. Complete the following tasks prior to Final Review, and bring all planting areas to a satisfactory condition before final acceptance of the work. Replace plantings that do not conform to specifications.

B. Clean all mulched planting areas of all broadleaf and grass weeds including those sprouting from root balls. Remove all basal growth and tree suckers from tree trunks and branches.

C. Remove all nursery tree stakes and associated tying materials.

D. Mulch: Rake out watering basins from all plants under a permanent irrigation system and re-spread the mulch, keeping mulch away from the plant stem.

E. All turf areas are to be completely covered at the time of final acceptance, free of all weeds (broadleaf and grass weeds) and mowed to specified height. Patch up low spots and/or bare patches with sod, to be equivalent to the sod used during planting operations.

## 3.04 IN-SERVICE MEETING

A. Specifically request, prior to Final Review, an In-Service meeting with the Owner's maintenance staff to identify any landscape maintenance issues and verify mowing schedules, and irrigation station sequence / run-times (controller schedule).

1. Document any discussions / decisions at the in-service meeting and provide this to the Owners Representative. Include a copy in the Maintenance Binder. See Specification Section Landscape Irrigation for other documents to be included in the Maintenance Binder.

2. The Final Review will take place only after the in-service meeting is completed, and final approval is contingent on the in-service meeting taking place to the satisfaction of the Owners Representative.

3.05 HARDWARE

A. Provide the Owner at the in-service meeting the following:
   1. Quick Couplers – (2) quick coupler key / hose swivels
   2. Special tools required for the maintenance of specific components

END OF SECTION

SECTION 32 1723

PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Parking stripes, markings and accessibility symbols.
2. Fire lane “No Parking.”
3. Curb marking and red curbs.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 32 1236 - Seal for Bituminous Surfacing.

1.02 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings, indicating location, extent, color and texture of markings.

B. Material Samples: Submit color Samples.

1.03 PROJECT CONDITIONS

A. Do not install markings when adverse weather conditions are forecasted.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Paint: Water emulsion-based traffic paint.

1. Dunn Edwards: Vin-L-Stripe.
2. Pervo Paint Company: Acrylic Traffic Paint.
3. Sherwin Williams: Setfast Acrylic Traffic Paint.
4. Vista Paint Corporation: Traffic Paint.
5. Equal.

PART 3 - EXECUTION

3.01 PAVEMENT MARKINGS

A. Application of Paint:

1. Prior to application of paint, allow the pavement to properly cure. Clean and prepare in accordance with paint manufacturer's written recommendations.

2. Provide mechanical equipment to apply paint in a uniform, straight or curved pattern, without gaps, holidays, runs, or other defects.

3. Do not permit traffic until paint has completely cured.

4. Apply two coats in thickness recommended by manufacturer.

B. Marking Width and Color: Unless indicated otherwise, marking width and color are as follows:

| Location | Width | Color |
|---|---|---|
| Parking stall lines | 4 inches | White |
| Traffic markings | | |
| Striping: | 4 inches | Yellow |
| General | 4 inches | Yellow |
| Accessible Parking | 4 inches | Blue |
| International Symbol of Accessibility (ISA) | 2 inches | White on blue background |
| Athletic Court Lines: | 2 inches | *White |
| Letters and numbers: | | As indicated |

*Where two sets of lines overlap, one set shall be white and the other set shall be yellow.

3.02 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.03 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 32 1811

PERFORMANCE PAD

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

1.02 DESCRIPTION OF WORK

A. Extent: Work in this section includes, but is not limited to, providing all labor, materials, and equipment necessary for the complete installation of the performance pad (referred to herein as the pad). Install the pad over entire stone base, terminating at the perimeter of the synthetic turf field.

B. Related Work

1. Porous Synthetic Turf Base
2. Synthetic Turf System

1.03 DEFINITIONS

A. Relative compaction or compaction: is defined as the in-place dry density of the compacted soil divided by the laboratory compacted maximum dry density as determined by ASTM Test D1557 (Modified Proctor), latest edition, expressed as a percentage.

1.04 QUALITY ASSURANCE

A. Prospective bidders and/or installers of the performance pad shall be required to comply with the following:

1. The Contractor shall provide competent workmen skilled in pad installation. Sub-contract supervisory installation personnel are permitted as approved by the Architect.
2. The designated supervisory personnel on the project shall be certified by the manufacturers of the products as competent in the installation of these materials.
3. The manufacturers shall have these representatives on site to certify that the installation meets their specifications and standards.

## PART 2 – PRODUCTS

### 2.01 PERFORMANCE PAD

A. Performance pad shall be furnished by the Owner and installed by the Contractor.

## PART 3 – EXECUTION

### 3.01 JOB CONDITIONS

A. Timing of pad installation shall coincide with synthetic turf installation. No more than 20 yards of field coverage shall be installed of the pad product prior to installing synthetic turf.

### 3.02 PERFORMANCE PAD INSTALLATION

A. Install pad products per manufacturer's instructions and as shown on the Drawings.

END OF SECTION

SECTION 32 1813

SYNTHETIC TURF SYSTEM

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

### 1.02 DESCRIPTION OF WORK

A. The work under this section includes, but is not limited to, the installation of the new synthetic turf system, infill materials, in-laid markings, perimeter termination, warranty, and maintenance equipment.

B. Related work includes but is not limited to:

1. Porous Synthetic Turf Base

2. Performance Pad

### 1.03 SUBMITTALS

A. Installation Qualifications: The synthetic turf sub/contractor shall demonstrate experience on at least five (5) installations of the proposed material in the last year. The synthetic turf manufacturer shall certify the designated supervisory personnel on the project. A letter on the manufacturer's letterhead shall be submitted affirming the sub/contractor as competent in the installation of the material, including seaming methods, in-laid markings, termination and proper installation of the product.

1. Certified Installers include but is not limited to:

a. AFE Sports, 562) 981-2508

b. AstroTurf, 559) 454-8873

c. Colony Landscapes, 408) 941-1090

d. Ohno, 619) 278-8824

e. Valley Precision Grading, 916) 638-8800

B. Synthetic Turf: The Contractor shall submit turf layout shop drawings with field markings and any colors, logos, and lettering, and provide the infill sieve analysis. Submit turf field maintenance equipment product data.

C. Warranty: The Contractor shall submit a manufacturer's warranty listing an eight (8) year guarantee for all labor, materials, workmanship, and services for the synthetic turf system, as specified herein.

D. Maintenance and Operating Data: Submit a copy of maintenance and operating data for the synthetic turf system. Provide descriptions of all equipment recommended for the maintenance, repair, and citing activities not recommended relative to the warranty. Include maintenance recommendations for; coverings for special events, small repair procedures, minor seam repair, discussion of the precautions to be practiced, general maintenance, and uses to avoid to protect the turf system.

E. Site Acceptance: As a part of this contract, this contractor shall be responsible to oversee the installation of the base and drainage and to comment on any problems or conflicts that may be discovered. Upon completion of the base work, submit a letter confirming the site inspection has been performed, noting any discrepancies, problems and/or conflicts. A summary of certification of the acceptance of the base planarity shall be submitted. Continuing with the installation of the synthetic turf (without submittal of a written acceptance by the synthetic turf Contractor) over the base shall be considered as an approval of the base by the synthetic turf Contractor.

1.04 STANDARD SPECIFICATIONS FOR LAYOUT AND RULES

A. All markings shall be performed using selected colors of turf materials.

B. All markings and layout shall conform to the requirements set by the National Federation of State High School Associations (NFHS). See also paragraph 2.07.

1.05 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping: Deliver products in original unopened packaging with legible manufacturers' identification. All materials shall be stored in a dry place out of the direct sunlight.

B. Bulk Materials: Deliver materials in clean, washed and covered trucks to eliminate contamination during transportation. On site stockpiling locations to be coordinated with the Owner. Stockpile only in areas free of debris and away from drainage routes. Cover all materials with plastic or geotextile if materials are to be stockpiled more than 48 hours.

C. Prior to the installation of any materials and immediately upon delivery of the synthetic turf system and components to the project site, the Contractor shall inspect/verify the following:

1. Damaged or defective items.

2. Appropriate turf pile height and roll lengths.

3. Uniformity of perforations.

4. Arrival of adhesives in sealed, dry containers.

5. Arrival of infill with a dry, loose condition, and contained in large sacks or bags without tears.

1.06 FIELD SYSTEM HOLD HARMLESS

A. The contractor shall hold the Owner, Project Manager, and Field Consultant harmless from infringement of any current or future patent issued for the synthetic turf system, fibers, backings, including performance pad (as required), installation methods and vertical draining characteristics. The successful Proposer will be required to submit a letter for consent from their surety. Surety will indemnify the requirements.

1.07 FIELD DIMENSIONS AND LAYOUT

A. The Contractor will be responsible for furnishing, setting and marking all lines, seams and markings for the field. The Contractor shall at all times maintain all necessary benchmarks and control points to locate all events and markings.

PART 2 - MATERIALS

2.01 SYNTHETIC TURF

A. The synthetic turf system, including infill, maintenance equipment (TCA 1400), and adhesive material, shall be furnished by the Owner and installed by the Contractor.

2.02 LINES AND MARKINGS

A. All lines and markings shall be installed as shown on the Drawings, and shall include all incidental markings required by the NFHS that may not be shown on the Bid and Shop Drawings.

B. Primary field lines (football 5 yard lines, goal lines, endzone lines, sidelines, and soccer perimeter lines) shall be woven into the turf fabric during manufacturing. All other lines shall be field installed. All markings shall be uniform in color, providing a sharp contrast with the turf color and shall have sharp and distinct edging. Markings shall be true and shall not vary more than 1/2” from specified width and location. Manufacturer is to guarantee that the synthetic fiber is adaptable to painted lines.

PART 3 - EXECUTION

3.01 OWNER TESTING

A. The Owner reserves the right to submit any material, either before or after installation to any testing it deems necessary to satisfy the conditions of this contract.

B. Any material tested and found not in compliance with the contract will be rejected and replaced with material conforming to the specifications. This will be done at the sole expense of the contractor.

C. Any testing performed by the Owner will be at the Owner's expense. The contractor is responsible for the cost of all testing that fails.

3.02 TURF INSTALLATION

A. Perform all work in strict accordance to the drawings, shop drawings and manufacturer's specifications and instructions.

B. Verification: The Contractor is responsible for the inspecting, verifying and completing all installed work of this section.

C. Weather Permitted Conditions: The Contractor shall not perform any work if any of the following conditions exist;

1. Ambient air temperatures are below 45 degrees F.

2. Material temperature falls below 45 degrees F.

3. Rain is forecast or falling

4. Conditions exist or are pending that will be unsuitable to the installation of the system.

D. Seams:

1. All panel seams shall be securely sewn using a double stitch bagger seam and/or glued to a backing material of nylon or Mylar.

2. All panel seams spacing are to be held to a minimum of 15 feet unless prior approval of seaming diagram indicates a lesser panel.

3. All inlaid areas shall have full fastenings and no loose areas. At no time can pulling on the section separate the material.

4. All seams and inlaid areas shall be brushed thoroughly before infill materials are installed.

E. Turf Edges and Termination: All edges and ends of the turf shall be secured to the perimeter nailer. This termination shall be as detailed in the drawings and specifications. The turf shall be attached directly to the nailer utilizing galvanized fabric studs, placed at 8" intervals. The contractor shall submit a shop drawing of this termination detail prior to any work on the site.

3.03 LINES, MARKINGS AND IN-LAID TURF

A. See drawings for locations, widths, and colors of lines, in-laid turf, and (if applicable) logos.

3.04 GROOMING

A. After installation of the turf, all the lines, and perimeter termination, the Contractor shall groom the entire surface, slowly and deliberately. The speed of the grooming operation shall be no more than 2 miles an hour, to properly blossom the turf fibers and remove any wrinkles. Grooming shall be done with a minimum of 5 passes, prior to infill installation.

3.05 INFILL INSTALLATION

A. No infill materials shall be installed until the turf system is fully installed with all lines and markings, and groomed as stated above.

B. The finished field infill installation shall filled to allow a maximum of ½" reveal of the turf. The Nike Grind infill installation shall consist of not less than 1.5 pounds total per square foot. Zeolite must be approved by the Owner prior to installation.

C. The Zeolite infill material shall be watered down (while still in bags) one hour prior to installation. 200 gallons per sack, with full immersion until water drains from the bags.

D. The infill materials shall be installed in layers not to exceed 0.3 pound per square foot, per layer, using multiple passes. Set brushes to top of fibers, vibrating only is required to settle infill.

E. The turf shall remain free draining at all times: before, during, and after the infill materials are installed.

F. After the infill installation, the field shall be groomed at a minimum of 4 passes; including down the length, across the width, and 2 diagonal passes at 45 degrees to the field.

G. This contractor shall be required to return to the site after not less than 60 days to inspect and add infill materials as needed.

3.06 SURPLUS MATERIALS

A. Supply the additional following materials upon completion of installation:

1. Remnant turf and infill material as accepted by the Owner.

2. Fifty linear feet of primary line color in 4-inch width.

3. Ten linear feet of secondary line color, logo and lettering colors in 4-inch width.

3.07 TRAINING

A. Provide one four-hour onsite training session for the Owner's maintenance staff for proper use of new or existing field maintenance equipment and proper long-term maintenance of synthetic turf system for warranty compliance. Training session shall be coordinated through the Owner. Installer shall provide a small field utility vehicle suitable for towing maintenance equipment to demonstrate how equipment works for training session.

3.08 FINAL INSPECTION, SITE PROTECTION, AND GENERAL CLEANUP

A. Final inspection: Once installation is complete, the entire surface shall be inspected, with particular attention to seams and edge attachments, by the Contractor, Project Inspector, Owner and Architect. Corrections shall be noted and rectified prior to Substantial Completion. Lines shall be checked for straightness, correctness and installation. Each sport lines and correct dimensions shall be verified. Entire area shall be checked for wrinkles, evenness of field infill and planarity deficiencies.

B. The Contractor shall take special care to protect all field and stadium structures and utilities

C. The site shall be kept clean and free of debris throughout the installation. Empty barrels, sacks, bags, and remnant materials shall be appropriately and legally stored or disposed of daily. Usable remnant materials of turf shall become property of the Owner. Store as directed by the Owner.

D. After completion of the entire project, all debris remaining that is not a part of the final project shall be removed from the site.

END OF SECTION

# IRRIGATION

## SECTION 32 8400

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

### 1.02 DESCRIPTION OF WORK

A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for the installation of a complete and operational automatic Landscape Irrigation system as shown on the Drawings and as specified in this Section. The work includes:

1. Trenching, excavation, backfill including base and backfill materials.
2. Valve wiring associated with the system.
3. Maintenance of the system during the maintenance period.
4. Electrical wiring/conduit work associated with the controller.
5. Removal and modification and/or relocation of existing irrigation equipment as required to complete the work.
6. Connection to existing main lines.
7. Connection to existing controller(s).

B. Related work includes but is not limited to:

1. Earthwork and Grading
2. Planting
3. Landscape Maintenance

### 1.03 STANDARDS & DEFINITIONS

A. Unless otherwise shown or specified, all materials and methods shall conform to the applicable current sections of:

1. National Sanitation Foundation (NSF) Standard 61 Drinking Water System Components
2. California Code of Regulations (CCR) Title 24 Part 5 California Plumbing Code (CPC)

3. California Code of Regulations (CCR) Title 24 Part 3 California Electrical Code (CEC)

4. State of California, Department of Transportation (CALTRANS) Standard Specifications (DTSS), except for measurement and payment requirements.

5. South Coast Air Quality Management District's (SCAQMD) Laboratory Methods of Analysis for Enforcement Samples Method 316A for VOC content of PVC, CPVC, and ABS pipe cements, and adhesives.

B. ASTM International Standards (latest revisions) as they apply to this work and related test methods, including:

1. A536 Standard Specification for Ductile Iron Castings.

2. D1557 Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort

3. D1784 Specification for Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compounds

4. D1785 Specification for Polyvinyl Chloride Plastic Pipe, Schedules 40, 80, and 120

5. D2241 Specification for Polyvinyl Chloride Pressure-Rated Pipe (SDR)

6. D2287 Specification for Non-rigid Vinyl Chloride Polymer, Copolymer Molding, &Extrusion Compounds

7. D2464 Specification for Threaded Polyvinyl Chloride Plastic Pipe Fittings, Schedule 80

8. D2466 Specification for Polyvinyl Chloride Plastic Pipe Fittings, Schedule 40

9. D2467 Specification for Polyvinyl Chloride Plastic Pipe Fittings, Schedule 80

10. D2564 Specification for Solvent Cements for Polyvinyl Chloride Plastic Piping Systems

11. D2609 Specification for Plastic Insert Fittings for Polyethylene Plastic Pipe

12. D2672 Specification for Joints for IPS PVC Pipe Using Solvent Cement

13. D2737 Specification for Polyethylene (PE) Plastic Tubing

14. D2855 Standard Practice for Making Solvent-Cemented Joints with Polyvinyl Chloride Pipe and Fittings

15. D3350 Specification for Polyethylene Plastics Pipe and Fittings Materials

16. F477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

17. F656 Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings

18. F690 Standard Practice for Underground Installation of Thermoplastic Pressure Piping Irrigation Systems

19. F1498 Specification for Taper Pipe Threads 60° for Thermoplastic Pipe and Fittings

C. AWWA Standards (latest revisions) as they apply to this work and related test methods, including:

1. C900 Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In.- 12 In. for Water Transmission and Distribution

D. All materials and methods shall conform to the applicable standards of the following organizations:

1. American Society of Irrigation Consultants (ASIC) Design Guidelines for Earth Grounding Electronic Equipment in Irrigation Systems

2. American Society of Mechanical Engineers (ASME) Standards

3. American Welding Society (AWS) Specifications

4. Copper Development Association: Copper Tube Handbook.

5. Manufacturers Standardization Society (MSS) Standards

6. National Electrical Manufacturers Association (NEMA) Standards

7. Underwriters Laboratories (UL) Standards

E. Relative compaction: is defined as the in-place dry density of the compacted soil divided by the laboratory compacted maximum dry density determined in accordance with ASTM D1557, expressed as a percentage.

F. Slope: as defined for installation of sub-surface drip irrigation, emitters low-flow bubblers, and tree bubblers on the uphill side of a plant or tree is any gradient in excess of 5%.

1.04 QUALITY ASSURANCE

A. Materials: All materials shall be new and of the best quality available unless otherwise specified. Manufacturer shall be clearly marked on all material, containers, or certificates of contents for inspection.

B. Codes: Install and test irrigation system in accordance with local codes and manufacturer's specifications.

C. Guarantee: Guarantee irrigation system for one year from date of acceptance.

1.05 SUBMITTALS

A. General:
   1. Product data: all specified irrigation equipment, including any proposed substitutions.

B. Certification: Prior to the Substantial Completion Review submit to the Owner's Representative:

   1. Written statement that the controller has been grounded adequately from the controller manufacturer's representative or other qualified testing professional.

C. Drawings: Irrigation As-built Drawing(s) and Valve Stationing Plan(s).

D. Close-out Documentation: As specified herein.

1.06 REVIEWS

A. Request at least two (2) days in advance the following reviews prior to progressing with the work:

   1. Site Preparation Review - Removal of and adjustments to existing valve boxes and valves and sprinkler heads and drip lines / emitters. Adjustments as needed to make final grade.

   2. Preliminary Review – Main-line layout, trenching, pressure-test, flushing of main-line.

   3. Intermediate Review - Irrigation coverage, controller location Requirements for irrigation coverage inspection are specified herein.

   4. Substantial Completion Review - valve box inspection, and overall operation of the irrigation system.

   5. Final Review (at the completion of Maintenance Period) - all punch-list items identified at Substantial Completion Review, Close-out Documentation

   6. See Specification Sections Earthwork and Grading, Soil Preparation, Planting, and Landscape Maintenance for other items to be inspected during these reviews.

   7. Each review will be conducted only after all items pertaining to that review as noted above and in related Sections have been completed.

1.07 DELIVERY, STORAGE AND HANDLING

A. General: Exercise care in loading, unloading, storage, and handling of pipe, fittings, and irrigation equipment.

B. Remove any pipe / fittings that have been cracked, dented, or otherwise damaged from the site. If installed, replace pipe / fittings with undamaged pipe / fittings as directed by the Owner's Representative at no additional cost to the Owner.

## PART 2 - PRODUCTS

### 2.01 PLASTIC PIPE AND FITTINGS

A. Unless otherwise noted:

1. Lateral lines: Schedule-40 PVC / Class 200 PVC, solvent weld joints.
2. Mainline up to 2" diameter: Schedule-40 PVC, solvent weld joints.
3. Mainline 2-1/2" – 3" diameter: Class 315 PVC / SCH-40 PVC, solvent weld joints.
4. Mainline 4" and larger diameter: Class 200-PVC DR14 Rubber Ring Joint. Install joint restraints on all rubber ring joints.
5. Lateral line solvent weld fittings: Schedule 40 PVC.
6. Lateral line threaded fittings: Schedule 40 PVC heavy wall.
7. Mainline threaded / solvent weld fittings: Schedule 80 PVC.
8. Risers and nipples: Schedule 80 PVC, molded thread. Machine threaded nipples will not be permitted.
9. Pipe Thread Sealant: low VOC soft setting multi-purpose sealant, ASTM D2564, Weld-On All Seal by IPS Corporation or approved equal.
10. PVC cement: low VOC high strength solvent weld cement, ASTM D2564, Weld-On 2711 by IPS Corporation or approved equal.
11. Primer: low VOC primer, ASTM F656, Weld-On P-70 by IPS Corporation or approved equal.
12. Ensure that cans of solvents and primers have labels intact and stamped with the date of manufacture. Do not use cans dated over 1-year old. Do not thin solvents and primers.
13. Paint: Krylon Fusion spray paint for plastics, for PVC pipe only where approved by the Owner's Representative to be installed above grade.

### 2.02 RED BRASS PIPE AND FITTINGS

A. Pipe sizes less than 4": ASTM B43 Specification for Seamless Red Brass Pipe, Standard Sizes.

B. Fittings: ANSI / ASME B16.15 Cast Bronze Threaded Fittings, Class 250.

2.03 BRONZE VALVES

A. Shut-off valves: MSS SP-80 Bronze Gate, Globe Angle and Check Valves, latest edition.

B. Shut-off valves (NSF-61 compliant): MSS SP-139 Copper Alloy Gate, Globe, Angle, and Check Valves for Low Pressure/Low Temperature Plumbing Applications, latest edition.

2.04 DUCTILE IRON PIPE AND FITTINGS

A. Pipe sizes 4” and up, including flanges: ductile-iron only, ANSI/AWWA C151/A21.51, AWWA Standard for Ductile-Iron Pipe (Centrifugally Cast) latest edition, and C115/A21.15 AWWA Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges, latest edition.

B. Fittings: standard flanged, bolted connections, ductile-iron only, ANSI/AWWA C110/A21.10, AWWA Standard for Ductile-Iron and Gray-Iron Fittings, latest edition.

C. Wrap ductile iron piping below grade with 2" wide plastic adhesive tape (#50 "Scotch Wrap" or equal).

2.05 JOINT RESTRAINTS AND FITTINGS

A. Joint restraints: manufactured by Leemco, Inc., (909)422-0088 www.leemco.com

B. Fittings: slant-bell design, deep bell type, manufactured from ductile iron, grade 65-45-12 in accordance with ASTM A536 Standard Specification for Ductile Iron Castings.

1. Fittings shall be equipped with four 90-degree apart, outwardly extending radial lugs to accommodate for appropriate method of joint restraints.

2. Fittings made from more than one piece shall utilize securely fastened bolt-on style spigot-bell components. Loosely attached, slip-on links as the method of attachment is not permissible.

C. Bolts and nuts: as supplied by the joint restraint manufacturer.

D. All tee fittings used to connect remote control valve and quick coupling assemblies to the main line shall be ductile iron, deep bell service tee’s. Saddles are not permissible.

E. Joint restraints shall be capable of securing the PVC pipe directly to the ductile iron fitting without the use of bolts, links, and adapters. The joint restraint shall be capable of securing PVC gasket pipe joints and gate valves without the use of threaded rods. The width of the clamp at its apex shall be no less than 3 inches wide. Joint restraints made for iron or steel pipe are not permissible.

F. The following Leemco models shall be utilized where applicable:

1. LH- Series restraints shall be used for all connections between PVC pipe and push-on deep bell, ductile iron fittings.

2. LB and LPP Series restraints shall be used for PVC bell spigot connections that require restraints.

3. LG- Series restraints shall be used for all push on gate valves.

4. LGK- Series restraints shall be used for all push on gate valves installed adjacent to a ductile iron fitting.

5. LMJ- Series restraints shall be used for all MJ gate valves, and flanged valves.

2.06 SLEEVING

A. Sleeves: As shown on the Drawings.

2.07 VALVE BOXES

A. General: Pre-cast plastic with bolt-down covers free of all cracks, chips or structural defects.

1. Size: valve boxes as required by equipment plus adequate clearance to operate valves unless otherwise noted. Ensure that for drip irrigation valves, the box is sized large enough so that the filter mounted sideways or pointing down as shown on the Drawings can be easily removed for cleaning.

2. Color: unless otherwise noted on the Drawings: Green for turf areas. Black for shrub / groundcover / mulch areas.

B. Models / Types:

1. Shrub / groundcover / mulch areas: Carson, Rainbird PVB Series, NDS Standard Series (Commercial) or approved equal.

2. Turf areas: ribbed / reinforced lids capable of withstanding the loads of ride-on lawn mowers. Carson TrussT Line, Rainbird VB Series, NDS Pro Plus Series or approved equal.

3. Vehicular paving: concrete with traffic rated lids.

C. Valve identification tags: Christy's ID Tags by T.Christy Enterprises, Anaheim CA, (800)258-4583, or approved equal. For recycled / reclaimed water, see relevant clause elsewhere in this Specification.

2.08 IRRIGATION EQUIPMENT

A. General: Supply and install irrigation equipment as shown on the Drawings, or approved equal.

B. See Irrigation Demolition Plan for removal and salvaging of existing irrigation equipment for relocation or return to the Owner as specified on the Irrigation Plan.

2.09 CONDUCTORS

A. Control Wire: Type UF, 600V, copper, common ground white, UL listed for irrigation control use.

1. Minimum wire gauge #14, use gauge appropriate to distance to account for voltage loss.

2. PVC (polyvinyl chloride) or PE (polyethylene) insulation.

3. Seal splices with connectors using epoxy resin or sealant; grease filled connectors not permitted: Spears DS-100 connectors with Spears DS-300 sealant, 3M Scotchlok 3570 connector sealing pack, or approved equal.

2.10 CONDUIT

A. Conduits: rigid nonmetallic type, conforming to UL 651, rated 90 degrees C, and NSF certified. Schedule 40 PVC plastic for underground installations with glue-on PVC couplings and factory made elbows and sweeps. Carlon Plus 80 or approved equal.

1. Size: minimum 1” diameter or size for the conductors, whichever is greater.

2. Install conduits minimum 18” depth in planting areas, minimum 24” depth under paving.

3. Make couplings and connectors watertight in all runs. Utilize solvent cement of type approved by conduit manufacturer.

4. Join conduits with approved conduit couplings with ends butted in all such cases. Ream all conduit ends to remove burrs and sharp edges.

5. Provide adapters and locknuts where conduit is attached to metal boxes and panels.

6. Chamfer inner edges of conduits which open into pull boxes or install bushings.

7. Bends: free from dents or flattening, made with standard conduit elbows or conduit bent to not less than same radius. No more than 360 degrees of bend between pull boxes.

8. Leave a 14 AWG trace wire in each empty conduit.

9. Use Duct Seal to seal all conduit ends.

B. Conduits above grade: rigid galvanized steel.

1. Field wrap steel conduits extending below grade with 3M Scotchrap 50, with a 50% overlap. Complete with necessary fittings for a complete watertight installation.

## 2.11 EXISTING BOOSTER PUMP

A. Pump shall be: Existing pump shall be removed and repair in shop by authorized supplier - See paragraph G.

B. Electric motor shall be of the squirrel cage induction type suitable for full voltage starting. Motor shall be ODP to aid in cooling. Electric motor shall be rated for continuous service. The motor shall have horsepower ratings such that the motor will carry the maximum possible load to be developed under the designed pumping conditions and not overload the motor beyond the nameplate rating of the motor. Motor shall have a 1.15 service factor. The motor shall conform to the latest NEMA Standards for motor design and construction.

C. Pump Control Panel shall have a NEMA3R plain front non-metallic enclosure with padlock latches. This Includes power and control re-settable thermal circuit breakers, heavy duty magnetic starter with adjustable overload protection, Hand-Off-Auto switch to select mode of operation, and heavy duty numbered terminal strips for power and control wiring lead terminations.

D. 24V control started, a Metal oxide varistor protected pump start relay shall be incorporated in panel to start pump with signal from an irrigation controller.

E. Gauges shall be 2½" diameter face, glycerin filled with stainless casing and brass internals.

F. Pump Assembly shall include the following option(s):

1. (VFD-F) Where specified by the System Design Parameters, a Fuji Variable Frequency Drive system to receive feedback signal from system mounted stainless steel pressure transducer, and in conjunction with internal software driven PID control loop maintain customer adjustable constant system discharge pressure by varying the speed of the pump in response to varying system load.

G. The authorized services of a factory representative or trained service professional (Imperial Technical Services, or approved equal) shall be made available on the job site to remove existing pump and motor to send in for repair existing pump with new impeller, gaskets, shaft, and seals and re-mount new motor. In addition, the authorized supplier shall install new control panel and variable frequency drive, gauges, pressure transducer, flow switch and re-wire new motor to new control panel, variable frequency drive and 24V. signal from new irrigation controller.

H. The warranty period shall be a non-prorated period of 12 months from date of purchase.

PART 3 - EXECUTION

3.01 GENERAL

A. Acceptance of Work: Complete site grading to specified tolerances before trenching. Verify the existing conditions on site and the removal and or reinstallation required making the grades.

B. Existing Utilities: Verify location of all on site utilities prior to trenching. Notify Owner's Representative by telephone and in writing of any conflicts prior to installation. Restore damaged utilities as directed by the Owner's Representative at no additional cost to the Owner.

C. Coordination: Coordinate trenching as required with trenching contractor as well as with any other trades affected by irrigation installation. Coordinate installation of pipe and other irrigation equipment with other existing and proposed utilities and planting locations.

D. Grading: Install all irrigation features to their finished elevation and at depths indicated.

E. Finish Grade: Unless otherwise noted, set all heads at and perpendicular to, finish grade.

F. As-Built Conditions: regularly update a print of the system and any changes made to the system throughout the project. See Valve Stationing requirements elsewhere in this Specification.

G. Unusual Conditions: Immediately notify the Owner's Representative in the event that any unusual soil conditions are encountered during irrigation trenching operations. Excavate unsuitable material encountered below the natural grade and dispose of as directed by the Owner's Representative. Unsuitable material is defined in Section 19 Earthwork Clause 1.01B of the CALTRANS Standard Specifications.

H. Hazardous Materials: In the event existing asbestos pipe is encountered and needs to be modified and/or removed, comply with the requirements of Federal (OSHA) regulations, and California Code of Regulations Title 8 (Cal/OSHA).

3.02 INSTALLATION – TRENCHING & PIPE

A. Point of Connection: below grade. Connect to existing mains and plumb remaining irrigation system.

B. Excavation:

1. Depth – excavate trenches for mainline, sleeves, and laterals to the depth required for laying pipe or conduit, plus depth of bedding if required as noted below.

2. For pipes 4" dia. and less - level bottom of trenches for a smooth flat grade, and excavate bell holes where necessary to ensure that pipe rests for entire length on solid

ground. Should rock or other unsuitable material be encountered, excavate to 6" below bottom of pipe and replace with well tamped and compacted approved backfill material or sand before laying pipe.

3. For pipes greater than 4" dia. – depth of pipe and bedding as shown on the Drawings, or 6" below bottom of pipe whichever is greater.

4. Width – excavate trenches wide enough to provide adequate working space to align and lay pipe or to construct the trench, make up and inspect joints, and allow placing and compaction of bedding material. Maximum trench width at the top of the pipe is the pipe outside diameter plus 12- inches on each side of the pipe.

5. Maintain excavations free of water while installing pipe and until backfilled.

C. Bedding: Install bedding upwards from the bottom of the trench to the extent shown on the Drawings.

1. Bedding material: compacted approved sub-soil or sand as defined herein.

2. In planting areas excluding natural turf sports fields, sand bedding may be jetted or ponded into place. Compact to equal that of the adjacent prepared sub-grade as specified herein. Mechanical compaction may be necessary to achieve this required density. If the bedding is jetted or ponded, the operation should be closely supervised and provisions should be made for the removal of excess water.

D. Backfill: Cover no joints until system has been pressure tested and approved by the Owner's Representative.

1. Backfill material: selected on-site excavated/sub-soil material, imported sandy soils, subject to prior approval by the Owner's Representative. Backfill with potentially damaging rocks and debris is not permitted.

2. When piping has been installed, tested, inspected, and approved, backfill excavations in layers not exceeding 8". Moisten and machine tamp as required.

3. In planting areas, install on-site near surface soils in the top 6" of the trenches compacted to maximum 85% relative compaction. For trenches in existing planting areas maintain near surface soils as uniform as possible with existing upper stratum soils.

4. In paving areas, install fill in maximum 6-inch lifts (compacted layers) and compact by mechanical means only. Condition fill conditioned, at time of compaction, to 1% to 3% above the optimum moisture content of the soil, and compact each lift to minimum 95% relative compaction.

5. For trenches in existing areas, restore the ground or paving to original condition.

6. After backfilling, remove from the premises all surplus earth resulting from this work and dispose of same, to the satisfaction of the Owner's Representative.

E. Pipe: pipes shown parallel on the Plan may be installed in a common trench. Where required, snake pipe from side to side when trench exceeds 30 feet in length.

1. Install pipes in planting areas including those shown schematically adjacent or parallel to such areas.

2. Install all changes in depth of pipe using 45 degree fittings.

3. Use Teflon tape on all threaded connections.

F. Check Valve: On sloped sites, install in-line check-valves in sloped main / lateral / supply lines as required to prevent low sprinkler head / drip emitter / tree bubbler drainage. This may be omitted only on those circuits where all sprinkler heads or tree bubblers have built-in check valves.

G. Sleeves: install sleeves for all wiring and irrigation lines to be placed (with ends clearly marked above grade) under driveways and walks prior to their construction.

1. Install sleeves minimum 24" under paving.

2. Extend sleeves a minimum of 12-inches into planting areas.

3. Install all wiring in a separate sleeve.

4. Install temporary PVC caps to prevent intrusion of earth/debris prior to installation of pipes / wire.

5. For longer lengths of sleeve (> 15'-20') with multiple pipes, consider installing pipes along with sleeve and connecting later.

6. Install removable non-decaying plugs, expanding insulation foam, grout, or equal, at ends of sleeves and conduits to prevent entrance of earth and roots.

H. Fabrication: Install all manifolds in a neat and orderly manner, for ease in maintenance operations. Install manifolds to allow valve boxes to be parallel to each other and to adjacent walls, walks, and curbs. Cuts and joints shall be free of burrs, smooth and minimum in quantity.

I. Joint Restraints and Fittings: Install on rubber ring joint mainlines, including isolation valves, changes in pipe direction, pipe reduction, and stub outs using methods recommended by the Manufacturer. Clamp to fittings and pipe per manufacturer's instructions. Tighten bolts and nuts per Manufacturer's recommended torque ratings. All ductile iron bends, reducers, tee's and gate valves shall be mechanically restrained. All bell and gasket joints within fifty (50) feet of a directional or diameter change in the main line shall also be equipped with joint restraints.

J. Flushing of System: After installation of pipe lines and risers, but before installation of sprinkler heads, tree bubblers, and/or drip irrigation emitters, thoroughly flush the system to remove any foreign material in the pipes.

1. Flush the system in the presence of the Owner's Representative.

2. For flushing mainline and sprinkler portions of the system utilize full water main pressure.

3. For flushing downstream of drip irrigation valves via flush ports use drip system design pressure.

4. After flushing, backfill and settle soil. Rake smooth to match surrounding grade.

5. Flush out the existing mainline by operating one of the existing quick couplers down stream of the new valve installation, prior to operating any portion of the system again.

## 3.03 INSTALLATION – EQUIPMENT

A. General: Install irrigation equipment as shown on the Drawings

B. Valve Boxes: Install valve boxes so that the top of box is ½" above finish grade in turf areas and 1-½" above finish grade in mulch areas. Install valve box assembly in ground cover / shrub and not in hard paved areas. Install in lawn area only if groundcover does not exist adjacent to lawn.

1. Label valve box lids with the valve station number using a weather resistant method. Plastic valve box lids may be labeled using a branding tool / branding iron.

2. Attach a Valve ID tag, with the valve station number clearly marked with weatherproof method, to the inside of each remote control valve, and attached by means of a weatherproof tie.

C. Sprinklers:

1. Install sprinkler heads at a spacing not to exceed that shown on the Drawings, unless verified in advance with the Owner's Representative.

2. Install sprinkler bodies and swing joints down at lateral depth with hole in swing joint cap as shown in the details to allow for un-impeded soil preparation of entire area. See "Heading Up" clause in this Specification.

3. Coverage Adjustments: Adjust all heads for arc, radius, riser height, and distribution for uniform and optimum coverage, and eliminate overspray onto paved surfaces and structures. Such adjustments are to include nozzle changes without additional cost to the Owner.

## 3.04 CONTROL WIRE

A. General: Install control wire in pipe trenches wherever practical. Install wire below or level with the bottom of adjacent pipes. Install wire inside conduits as specified in this section where pipes are not available.

1. Bundle wire and tape to pipe every 10 feet. Size conduits or sleeve required based on control wires as specified herein.

2. Enclose wiring above finish grade in steel conduit.

3. Use a different color for control wires and the common wire.

4. One solenoid valve per station unless otherwise indicated on the Drawings or with prior approval of the Owner's Representative.

5. Test all wiring for continuity, open circuits and unintentional grounding prior to connecting.

B. Splices: seal with direct bury connectors as specified in this section.

1. Install wire splices in valve boxes, locations as approved by the Owner's Representative. Install traffic rated boxes in vehicular areas.

C. Additional wire:

1. Pull control wire for unused stations as noted on the Drawings.

2. Pull control wire and common to each stub-out as shown on the Drawings. Minimum one control wire and common if not indicated on the Drawings.

3. Provide 24" excess wiring in each valve box / pull box and in the nearest project valve box at 100-ft intervals on wire runs of greater than 100-ft. Neatly coil in valve box or pull box.

D. Existing Wire: Project has existing control wires installed to existing valves in working condition. Test each station from the controller in the presence of the Owner's representative, to verify connection to each valve, prior to starting work.

1. Should any of the existing wire connections appear to be not working, inform the Owner's Representative in writing.

2. New valves, if shown in locations different from existing valves, will require additional control wire, spliced as specified elsewhere in this Section.

## 3.05 VALVE STATIONING

A. As-built Drawing: Provide the Owner's Representative as-built mark-ups of the most current irrigation drawings, to reflect changes to the irrigation system layout, including:

1. Point of connection, isolation valves, filter, pressure regulator, master valve & flow sensor as applicable.

2. Remote control valve locations and renumbering if applicable.

3. Isolation valve, quick couplers, and stub-out locations as applicable.

4. Valve boxes for intermediate control wire splices.

5. Main-line and lateral lines.

6. Drip irrigation supply pipes. These are shown only in typical schematic form on the Drawings. Do not draw in drip irrigation distribution pipes.

7. Dimensionally locate all the above irrigation equipment with at least two measurements from surface features such as pavements, fences and buildings. Dimensionally locate each direction of main-line with one offset measurement from a surface feature. Lateral lines and drip irrigation supply pipes do not require measurements but are required to be drawn accurately.

8. Record all final changes before trenches are backfilled.

B. Record Drawings: Obtain Record Drawings from the Owner's Representative that reflect the as-built markups. Provide valve stationing information on these Drawings.

C. Valve-stationing Plan (New Systems): Clearly label and sequence stations according to the assigned valve identification numbers shown on the As-built / Record *SELECT ONE* Drawings and color code the corresponding valve zones. Use a separate color for each valve zone.

1. Valve Stationing Maps shall be electronically and neatly prepared in color using software capable of annotating PDF documents. Hand colored mark-ups will not be accepted. Provide the Owner an unlocked copy of the PDF for future use.

2. In case valve sequencing needs to be changed for ease in maintenance operations, verify changes in advance with the Owner's Representative.

3. Provide (2) 11"x17" laminated copies for reference purposes inside the controller, and for the Owner's record.

4. Include a non-laminated 3rd copy of the Valve-stationing Plan in the Post

5. Submit completed valve-stationing plan to the Owner's Representative before final payment request.

D. Valve-stationing Plan (Existing System Modifications): Obtain clear copies of the existing Irrigation Drawings or existing Valve Stationing Plans and mark-up as required to reflect changes and a separate color to indicate each revised valve zone. Submit modified plan to the Owner's Representative for approval prior to laminating.

1. Provide (2) 11”x17” laminated copies for reference purposes inside the controller, and for the Owner’s record.

2. Submit completed valve-stationing plan to the Owner’s Representative before final payment request.

3.06 PRESSURE TEST

A. Pressure Test:

1. Notify the Owner’s Representative a minimum of two (2) working days prior to pressure test.

2. Furnish all equipment and temporary connections required for tests at no additional cost to the Owner.

3. Exercise caution in filling the system to prevent excessive surge pressure and water hammer.

4. Test pipe subject to continuous water pressure (pressure lines) at 125 lbs. of hydrostatic pressure for two hours with a maximum 5 PSI drop.

5. Repair any leaks, if necessary, and re-test.

6. Have the Owner’s Representative visually inspect the pressure gauge at the start and end of the test period, without which the test will not be approved.

B. Closing in Un-inspected Work: Pay all costs necessitated by requiring opening, restoration and correction of all work closed in or concealed before inspection, testing as required and approval by Owner’s Representative. Notify Owner’s Representative 48 hours in advance of required testing.

3.07 IRRIGATION COVERAGE

A. Inspection of irrigation coverage shall take place during the Intermediate Review, as specified herein.

1. In the presence of the Owner’s Representative, perform a coverage and operation test to determine if the system is fully operational.

2. If it is determined that adjustments in the irrigation equipment and the re-spacing of heads and/or relocation of emitters / low-flow bubblers will provide more complete coverage, then make such adjustments prior to planting. Adjustments may also include changes in nozzle or emitter / low-flow bubbler sizes, and degrees of nozzle arc as necessary.

3. Make changes and obtain complete and adequate coverage in all irrigated areas at no additional cost to the Owner.

3.08 HARDWARE

A. See Specification Section Landscape Maintenance for items to be handed over to the Owner at the in-service meeting.

3.09 CLOSE-OUT DOCUMENTATION

A. Submit prior to Final Review, the following documents:
   1. Sheet containing:
      a. Contractor's name, address, and phone number.
   2. Copies of the following documents:
      a. Valve-stationing Plan
      b. Existing soils test report – see Specification Section Soil Preparation.
   3. Warranties and Certificates. Warranty documents or accompanying letters on company letterhead are to include project name and location and effective start date for warranties.
   4. In-service Meeting discussions & decisions. See Specification Section Landscape Maintenance.
   5. For new projects, include all the documents in a 3-ring binder.

B. The Final Review will not be considered complete until the Close-out Documentation has been reviewed and approved by the Owner's Representative.

3.10 CLEAN-UP

A. Keep project area clean on a daily basis, removing debris from the site.

END OF SECTION

# SECTION 32 8416

# IRRIGATION CONTROLS

## PART 1 - GENERAL

### 1.01 SUMMARY

A. Section Includes:

1. Weather based irrigation controllers.
2. Flow sensors.
3. Master valves.
4. Enclosures.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Division 22 - Plumbing.
3. Division 26 - Electrical.
4. Section 32 8400 - Irrigation.
5. Section 32 9303 - Planting.

### 1.02 PROJECT REQUIREMENTS

A. Provide an EvapoTranspiration (ET) weather based irrigation controller with capabilities to receive data from weather stations and sensing devices or servers to automatically adjust or terminate programmed watering schedules.

B. The controller must be capable of utilizing two way communications with server for remote programming and continuous control and monitoring of the central irrigation system from OWNER’s designated location.

### 1.03 SUBMITTALS

A. Product Data: Provide catalog cuts, technical data, and manufacturer’s specifications for each product provided.

B. Provide proof of purchase to the OWNER. OWNER will receive rebates as part of energy savings program.

C. Operation and Maintenance Manuals:

1. Provide complete operating and maintenance instruction manuals for each weather based irrigation controller provided.
2. Provide complete programming instructions for each weather based controller.
3. Provide documentation showing compliance with the California Code of Regulations, Title 23, Division 2, Chapter 2.7, Model Water Efficient Landscape Ordinance.

1.04 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with local, municipal and state laws, rules, and regulations governing or relating to this Work. Wiring shall conform to National Electrical.

B. Conform to California Code of Regulations, Title 23 Division 2, Chapter 2.7, Model Water Efficient Landscape Ordinance.

1.05 PRODUCT HANDLING

A. Do not damage materials during handling, loading, unloading, and storage. Transport materials in a manner to avoid undue stress on products.

B. Packaging of weather based controller shall be sufficient to eliminate damage to the controller upon shipping.

1.06 TRAINING

A. Provide a minimum 4 hours of on-site installation training per site from each ET irrigation controller manufacturer. Training shall explain facets necessary to set up a centrally managed irrigation system. Training is to include drawings and handouts for trainee reference. Training shall be provided by an authorized representative of the controller manufacturer.

B. Provide a minimum 2 hours of on-site operation training per site from each ET irrigation controller manufacturer. Training shall demonstrate all irrigation control and hand held remote control programming features. Training shall be provided by an authorized representative of the controller manufacturer.

C. Provide 8 hours of central management system training from each weather based irrigation control manufacturer. Training, for designated OWNER personnel shall include generating reports from the Central Management Control Area to satisfy the Model Water Efficient Landscape Ordinance, requirements as well as operating and programming irrigation controllers using a remote personal computer. Training shall be provided by an authorized representative of the controller manufacturer.

D. Provide an attendance sheet to the OWNER listing personnel trained. The attendance sheet shall list the date and time and type of training and shall have signatures and contact information of all attendees including the instructor.

1.07 WARRANTY

A. Provide a five year manufacturer's warranty for controller units commencing from time of installation.

PART 2 – PRODUCTS

2.01 CENTRAL IRRIGATION CONTROLLERS

A. General:

1. Controllers shall be UL approved.
2. Controllers shall operate on 110 volts, single phase current, shall be completely automatic, and shall function with clock. Controllers output shall be at least 2 Amps and minimum 24 volts.
3. Controllers shall fully perform without soil moisture sensors, or mandatory telephone wires, repeaters or CAT5/Ethernet wiring.
4. Controllers shall have a Master Valve output circuit.
5. Controllers shall be capable of operating normally open or normally closed master valves.
6. After installation all ET weather based irrigation controllers shall be capable of being monitored and programmed from a single central location away from individual school sites.
7. Controllers shall have a built in flow metering circuit.
8. Controllers shall be capable of receiving EvapoTranspiration (ET) data to automatically adjust or terminate existing programmed watering schedules.
9. Weather based controllers shall be provided with appropriate antenna for wireless transceiver.
10. Weather based controllers with more than six stations shall be furnished with at least 3 extra stations for future use.
11. Weather based controllers shall be capable of fully operating without the need of excavating to conceal wiring infrastructure.
12. Controllers shall be capable of watering using (ET) Data without the need of a central monitoring station.

    a. Rain Master i-Central, Rain Bird ESP-LXME, or equal.

B. Communications Capabilities:

1. System shall be capable of wireless 2-way communications.

C. Programming Capabilities:

1. Controllers shall be capable of allowing programming changes to be performed at the controller and from a central irrigation management center away from individual school campuses.
2. Each controller shall be capable of being automatically updated with daily ET weather data.
3. System shall be capable of providing ET data from more than one source.
4. Controllers shall be able to pause or suspend irrigation automatically in real time.
5. Controllers shall be able to automatically read flow sensing equipment without adding on flow meter circuits.
6. Flow metering circuit shall provide high flow shutoff protection to individual remote control valves or circuits.
7. Controllers shall be capable of programming appropriate pipe size for accurate water consumption reports.
8. System shall be able to fully function using a hand held remote transmitter without additional set up requirements.
9. Controllers shall be password protected.
10. Controller management system shall not impose a security, infrastructure or product support impact on OWNER's ITD department.
11. Controllers shall be capable of producing water savings efficiency data reports required by state agencies.

D. Antenna:

1. Provide appropriate antenna type to allow complete operation of system.
2. After installation, antenna must communicate with server to produce two way communications in order to manage the central irrigation system on site and from a central irrigation management center designated by OWNER.

E. Weather Based ET Data:

1. Provide with each controller a one year subscription of weather based ET data for each irrigation controller requiring a subscription.

2.02 FLOW SENSORS

A. Spinning impeller type, brass or PVC tee as required and sized to accurately read irrigation system designed flow maximum and minimum.

1. Data Industrial Model IR Series or equal.

2.03 MASTER VALVES

A. Normally open, solid brass (ASTM B584, B271, B505), self-cleaning, automatic electric globe valve with manual flow control stem. Valve shall operate with pressures to 200 psi and shall be slow closing with one-piece molded diaphragm incorporated with an integral O-ring seal reinforced with 600 pound test fabric and be guaranteed for 15 years. Equip with an internal self-flushing filter and self-cleaning metering rod for dirty water. Plunger and solenoid coil shall be electroless nickel plated for corrosion protection. 24 VAC 3-way solenoid coil shall be guaranteed for the life of the valve.

1. Superior Controls Model 3300 Series, or equal.

2.04 ENCLOSURES

A. Controllers shall be provided with a lockable weather resistant housing enclosure for protection of control panel and wireless transceiver.

B. Pedestal Enclosures:

1. Shall be constructed with 14 gage stainless steel.

2. Shall include a 110 Volt GFI power outlet inside enclosure.

C. Wall Mounted Enclosures:

1. Shall be constructed with 18 gage stainless steel.

2. Shall include a 110 Volt GFI power outlet inside enclosure.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installations shall include at least one flow sensor and master valve.

B. Installation of irrigation controllers, flow sensors, master valves, antennas, cabinets, and enclosures will be the CONTRACTOR’s responsibility unless otherwise specified.

3.02 MANUFACTURERS' FIELD SERVICES

A. Provide technical support to assure communication capabilities between controllers and sensing devices and between controllers and servers are within acceptable range for operation of the system.

3.03 MANUFACTURERS' TECHNICAL SERVICES

A. ET irrigation control manufacturers shall provide phone in technical support to OWNER's of their irrigation controllers.

END OF SECTION

SECTION 32 9000

PLANTING

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

### 1.02 DESCRIPTION OF WORK

A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for the provision and installation of plant materials as shown on the Drawings and as specified in this Section.

B. Related work includes but is not limited to:

1. Soil Preparation
2. Irrigation
3. Landscape Maintenance

### 1.03 QUALITY ASSURANCE

A. Quality: Minimum quality of all plant material shall unless otherwise indicated conform to:

1. ANSI Z60.1-2004 American Standard for Nursery Stock, Sponsored by the American Nursery and Landscape Association (ANLA)
2. Prevailing published specifications of the California Association of Nurserymen.
3. Additional standards as indicated on the Drawings and as specified herein.

B. Applicable ASTM International Standards (latest revisions) as they apply to this work and related test methods, including:

1. D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

C. Fertilizers: Comply with the requirements of the Fertilizing Materials Inspection Program of the California Department of Food and Agriculture.

### 1.04 SUBMITTALS

A. Product Data: to be approved by the Owners Representative before the material is delivered to the site.

1. Summary list certifying species / size of plant material ordered, the nursery supplier(s), along with nursery photographs of species.

2. Note any plant material not available at that time, or proposed substitutions to be reviewed.
3. All associated planting products specified herein and shown on the Drawings.

B. Samples: to be approved by the Owners Representative before the material is delivered to the site.
1. 1-quart bag sample of each mulch type specified.

C. Sod soils analysis: by an agricultural soil testing laboratory approved by the Owners Representative, referred to herein as the "Testing Lab".
1. Pre-approved Testing Labs include:
a. Waypoint Analytical (formerly Soil & Plant Laboratory) 1101 S. South Winchester Blvd., Suite G173, San Jose, CA 95128, (408) 727-0330
b. Wallace Laboratories LLC, 365 Coral Circle, El Segundo, CA 90245, (310) 615-0116
c. Soil Control Lab, 42 Hangar Way, Watsonville CA 95076, (831) 724-5422
2. The Owners Representative reserves the right to reject the analysis from an alternate soil testing lab without prior approval.
3. Analysis shall not be more than three months old at the time of delivery of the sod to the site.
4. Do not deliver any sod to the site without approval by the Owners Representative.
5. Soil texture analysis is to note percent of gravel, sand, silt, and clay, and indicate USDA soil classification. Soil agricultural suitability analysis is to indicate pH, salinity (ECe), and sodium absorption ration (SAR).
6. The Owners Representative reserves the right to take a separate sample of the sod soil on-site and send to the Testing Lab for analysis
7. Remove and replace sod not matching the approved soils analysis with approved sod at no additional expense to the Owner.

1.05 REVIEWS

A. Specifically request at least (2) two days in advance the following review prior to progressing with the work:
1. Intermediate Review – plant material approval and layout/locations. See Specification Sections Landscape Irrigation and Soil Preparation for other items to be inspected during this review.

B. Specifically request at least (5) five days in advance the following reviews prior to progressing with the work:
1. Substantial Completion Review (to initiate Maintenance Period) – all planting areas including turf, See Specification Section Landscape Maintenance.

2. Final Review (at the completion of Maintenance Period) - all planting areas including turf, including all punch-list items identified at Substantial Completion Review. See Specification Section Landscape Maintenance.

C. Each review will be conducted only after all items pertaining to that review as noted above and in related Sections have been completed.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver fertilizers and manufactured amendments to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Materials in broken containers or which become caked or contaminated making them unsuitable for use will not be accepted and are to be removed from the site.

PART 2 - PRODUCTS

2.01 GENERAL

A. Nomenclature and Labels: Plant botanical names conform to “Standardized Plant Names,” second edition, and secondly, “A Checklist of Woody Ornamental Plants of California, “Manual 32, University of California. Deliver all plants of each clone, species, and cultivar to the site labeled with their full botanical name. Label every plant species with no less than one label for every ten plants of a species.

B. Quantities: The quantities shown on the plant list and in labels are for the use of the Owners Representative use and are not to be construed as the complete and accurate limits of the Contract. Furnish and install all plants shown schematically on the Drawings.

C. Root Systems: All container-grown stock shall be grown in its container for at least six months prior to its planting. Allow a minimum of two (2) and maximum of five (5) % of the quantity of plants of each species for removal and inspection. Any plant material, within twelve (12) months following the final acceptance of the project, determined by the Owners Representative to be defective, restricted, declining or otherwise deficient due to abnormal root growth, shall be replaced to the equal condition of the adjacent plants, at the time of replacement.

D. Health: Foliage, roots and stems of all plants shall be of vigorous health and normal habit of growth for its species. All plants shall be free of all disease, insect stages, burns or disfiguring characteristics.

E. Untrue Species: All plant material, within 12-months following the final acceptance of the Project, determined by the Owner to be untrue to the species, clone, and/or variety specified, shall be replaced to the equal condition of adjacent plants at the time of replacement.

## 2.02 FERTILIZER

A. 15-15-15 (N-P-K) Commercial Fertilizer, uniform pellet.

1. The requirements above are for bidding purposes only, exact fertilizer types per Testing Lab analysis.

## 2.03 TURF SOD

A. Sod: grown from high quality seed in soil treated with appropriate State and Federal agency approved pesticides, fungicides, and herbicides and regularly inspected by the State in accordance with "State of California Regulations for Nursery Inspection ".

1. Grown in fields with a sandy loam soil containing a minimum of 65% sand. Clay or clay loam soils are not be acceptable.
2. Well-developed root structure sufficiently mature so that it will hold together when held by one end of the roll.
3. Yellowing, brown, diseased, dried, or pest infested sod will be rejected.
4. Soil thickness: 1/4 inch to 5/8 inch thick excluding top growth and thatch.
5. Size of rolls or slabs: consistent to the supplier's standard length and width and is not to vary by more than 2% in either dimension.
6. See submittal requirements for sod soil as specified herein.

B. 90% dwarf fescue and 10% bluegrass mix. Pre-approved suppliers:

1. Dwarf Enduro Sod, by Greenfields Turf, Greenfield, CA (800)673-3058, www.greenfieldsturf.com
2. Approved equal.

# PART 3 - EXECUTION

## 3.01 GENERAL

A. Plant Material Approvals: Before planting operations commence, review all plant material with the Owners Representative. Remove defective plants from the site and substitute acceptable material in its place. The review does not accept defective plants which may be installed.

B. Layout: Lay out only those plants to be planted in any single day. Review locations of all plants prior to planting. Plants installed without this review may have be relocated and replanted as directed by the Owners Representative.

C. Protection of Plants: Maintain all plant material in a healthy growing condition prior to and during planting operation. Contractor shall be responsible for vandalism, theft, and damage to plant material until commencement of the maintenance period.

D. Pruning: Do not prune without specific authorization of the Owners Representative. Replace plants pruned without authorization if directed by the Owners Representative.

3.02 CHEMICALS

A. Pesticide: Verify compatibility, dosage and other application procedures with the manufacturer. All pesticides shall be applied by a pest control operator licensed in the State of California.

B. Include copies of documentation of pesticide applications, countersigned by the Owner, as part of Close-out Documentation – see Specification Section Landscape Maintenance.

3.03 FERTILIZER

A. Apply Commercial Fertilizer at 5 pounds per 1,000 square feet to all planting areas 30 days after planting. Schedule re-application at 45 day intervals until completion of Landscape Maintenance.

1. The requirements above are for bidding purposes only, exact application rates per Testing Lab analysis.

B. Include copies of documentation of fertilizer applications, countersigned by the Owner as apart of Close-out Documentation – see Specification Section Landscape Maintenance.

3.04 SOD INSTALLATION

A. The installation specifications below prevail over the sod grower's installation specifications, unless otherwise noted.

B. Grading / Soil Preparation: Finish grade to smooth, even surface, allowing for sod thickness at pavement and other structures to leave the sod flush to the finish grade of adjacent surfaces. Lightly roll the soil surface so that it is sufficiently firm to resist impressions over 1/4 inch deep. Water the top 6-8 inches of soil until this zone has an optimum moisture content for root growth.

C. Fertilization: Follow Existing Soils Report recommendations for amendments and fertilization.

D. Storage: Protect sod from wind and sun exposure during storage, with a maximum storage period of twenty-four hours.

E. Installation: Lay sod in rows with staggered ends neatly and tightly butted on all edges. Remove harvesting netting upon installation. No overlap, gaps, ripples, or other uneven placement will be accepted. Lightly roll sod after installation to insure optimum contact with the soil. Cut and trim sod around structures with sharp tools and carefully fit the panels so the final appearance is a continuous bed of turf with no gaps at the edges.

F. Establishment Watering / Mowing: Follow sod grower's specifications.

G. Rolling: Allow the field sod to grow for a minimum of two weeks before rolling. Roll both in length and width.

3.05 MAINTENANCE

A. See Specification Section Landscape Maintenance

3.06 CLEAN UP

A. After completion of all planting operations, remove all trash, excess soil and other debris. Sweep and wash clean all walks, walls, and pavement. Leave the entire area in a neat, orderly condition.

END OF SECTION

SECTION 32 9113

SOIL PREPARATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

1.02 DESCRIPTION OF WORK

A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for Soil Preparation of planting areas as shown on the Drawings and as specified in this Section. The work includes installation of soil amendments, finish grading and plant pit backfill.

B. Related work includes but is not limited to:

1. Demolition
2. Earthwork and Grading
3. Planting

1.03 QUALITY ASSURANCE

A. Finish Grade: is defined as the finished top surface of the soil after all grading and soil preparation activities, and prior to installation of mulch.

B. Applicable ASTM International Standards (latest revisions) as they apply to this work and related test methods, including:
1. C602 Specification for Agricultural Liming Materials

C. Fertilizers: Comply with the requirements of the Fertilizing Materials Inspection Program of the California Department of Food and Agriculture.
.

1.04 SUBMITTALS

A. Product Data: to be approved by the Owners Representative before the material is delivered to the site.

1. Amendments, fertilizers and chemicals.

B. Samples: to be approved by the Owners Representative before the material is delivered to the site.

1. 1-quart bag of soil amendments

C. Test Samples: Provide samples, as specified herein, to an agricultural soil testing laboratory approved by the Owners Representative, referred to herein as the Testing Lab, unless delivered to the site in original, unopened containers, each bearing the manufacturer guaranteed analysis.

1. Pre-approved Testing Labs include:
    a. Waypoint Analytical (formerly Soil & Plant Laboratory) 1101 S. South Winchester Blvd., Suite G173, San Jose, CA 95128, (408) 727-0330
    b. Wallace Laboratories LLC, 365 Coral Circle, El Segundo, CA 90245, (310) 615-0116
    c. Soil Control Lab, 42 Hangar Way, Watsonville CA 95076, (831) 724-5422
2. The Owners Representative reserves the right to reject the analysis from an alternate soil testing lab without prior approval.
3. Do not deliver any soil or amendment material to the site without approval by the Owners Representative.
4. Use the same Testing Lab for all tests specified herein.
5. Pay for all testing fees from the Testing Lab for all tests specified herein.

D. Testing – Amendments: Provide, along with a sample, latest analysis of amendments / compost / bulk organic materials by the Testing Lab for verification of conformance to this specification, and specific recommendations as to exact quantities to be used in planting.

1. Analysis is to conform to physical and chemical properties specified herein.
2. Analysis is to assume tilling of the amendments into the soil as described elsewhere in this Specification
3. Analysis is to be no more than three months old relative to the date of amendment installation, not the start of the project.

E. Testing – Existing Soil: Prior to finish grading operations or at least four weeks before proposed planting operations, take a sample each of the topsoil and sub-soil, from 0”-12" deep, in at least three separate locations across the site, or as directed by the Owners Representative. Topsoil stockpiled from the same site is to be considered as one of the locations. Mix the samples from the locations to provide a composite sample, representative of the entire site, combined volume of samples not less than 2 quarts. Forward the soil samples to the Testing Lab for testing and recommendations as to exact fertilizers and soil amendments to be used in planting, A05-2 complete analysis or approved equal.

1. Amendment and fertilizer recommendations by the Testing Lab shall be specific to the proposed amendments to be used and include the amendment lab test / sample ID number and testing date as reference. Generic recommendations will be rejected and will require specific recommendations to be re-obtained from the Testing Lab.
    a. For planting other than turf sod, recommendations shall reference the amendment test report by number.

b. For turf sod planting, recommendations shall reference the sod soils report (fertility and texture) by number.

2. Soils report shall include an estimated infiltration rate for the tested soils.

3. Provide a sketch on an 8.5”x11” site plan of the locations from which samples were taken.

F. Submit delivery tags for all amendments and fertilizers delivered to the Site for the Project, if required by the Owners Representative.

1. Fertilizer delivery tags should clearly indicate the product and NPK designation.

2. Amendment delivery tags should clearly indicate the lab test number corresponding to the approved amendment test report.

1.05 REVIEWS

A. Specifically request at least (2) two days in advance the following review prior to progressing with the work:

1. Intermediate Review – completion of site grading, topsoil placement amendment depths, finish grade.

2. See Specification Sections Landscape Irrigation and Landscape Planting for other items to be inspected during this review.

3. The review shall be conducted only after all items pertaining to the review as noted above and in related Sections have been completed.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver fertilizers and manufactured amendments to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Materials in broken containers or which become caked or contaminated making them unsuitable for use will not be accepted and are to be removed from the site.

PART 2 - PRODUCTS

2.01 FERTILIZER

A. Soil amendment fertilizer: commercial fertilizer, 16-6-8 (N-P-K) uniform pellet. For bidding purposes only, exact fertilizer type and quantity to be determined by Testing Lab analysis.

B. Plant fertilizer: commercial fertilizer packets / tablets, two-year controlled-release 20-10-05 (N-P-K). Best Tabs by Simplot Professional Products, Agriform by The Scotts Company, or equal.

2.02 SOIL AMENDMENTS

A. Amendment: mineralized and nitrified bark or sawdust, with wetting agent and properly pulverized, containing a minimum of 270 lbs. per cubic yard of organic matter. Submit sample analysis for approval.

1. Amendment Chemistry – Suitability Considerations Nitrogen (dry weight basis): 0.4 to 0.6%
2. Iron (minimum): 0.08%
3. Organic content: above 17%
4. Carbon-Nitrogen Ratio: below 25
5. pH: below 8.0
6. Salinity (ECe): a value such that when combined with the existing site soil at a use rate determined by the Testing Lab Analysis, the salinity of the amended soil shall not exceed 4.0 dS/m (mmhos/cm). *BFS SOILS ANALYSIS & PREP GUIDELINES HAS A CHART TO EVALUATE THIS*

B. Gypsum (if required by existing soils test): agricultural grade, OMRI listed.

1. Cal-Sul Pelletized Gypsum by North Pacific, Portland OR
2. Ultra Fine AG Gypsum by Western Mining & Minerals
3. Approved equal.

C. Sulfur (if required by existing soils test): granular degradable sulfur product, Tiger 90CR Organic 0-0-0-90 Sulfur by TigerSul.com, or approved equal.

2.03 CHEMICALS

A. The following brand names of various chemicals to be used in this Section are provided for ease of specifying; equals or brands with similar chemicals that will match or improve performance may be used at the Contractor's discretion. Verify use of any chemicals with Owner’s Representative prior to application:

1. Pre-emergent herbicides - (granular form only) Treflan, Ronstar, or prior approved equal.

PART 3 - EXECUTION

3.01 GENERAL

A. Limits and Grades: Prior to commencing soil preparation operations, request a review by the Owners Representative to verify rough / mass grading work completed to date and verify specified limits of soil preparation work to commence.

B. Finish grade all non-hardscape areas to round the top and toe of all slopes, providing natural contouring to integrate newly graded areas with the existing natural topography.

C. Finish grade all non-hardscape areas to smoothly integrate newly graded areas with the existing grades.

D. Protect concrete from any sulfate-based amendments that may be specified from soils analysis to avoid staining. Replace any concrete damaged from amendment placement at the no additional cost to the Owner.

3.02 TOPSOIL PLACEMENT

A. Install stockpiled topsoil as necessary to produce final finish grade requirement as shown on the Drawings, minimum depth 6 inches / 12 inches.

1. Existing undisturbed landscape areas that are to be replanted (excluding bio-retention areas) as shown on the Drawings, do not require topsoil across the areas, only individual plant pit preparation per Specifications.

2. Proposed landscape areas including areas to be graded or that have been disturbed by construction that are to be planted as shown on the Drawings require topsoil across the entire planting areas. Amended excavated subsoil cannot be used as topsoil for these areas.

B. Cross-rip or cultivate sub-grade to a depth of 10-inches. Add water if necessary and continue ripping or cultivation until the entire 10-inch depth is loose and friable. Place 2-inches of topsoil uniformly over sub-grade and thoroughly cultivate before placing remaining topsoil. Place topsoil and bring to a smooth, even grade. Settle the soil with water as needed and regrade high/low areas in accordance with paragraph "Finish Grading" this Section.

C. Stockpiled Topsoil: See Specification Section Earthwork and Grading

3.03 AMENDMENT PLACEMENT

A. The requirements below are for bidding purposes only, adjustments to the bidding formula shall be determined by the Testing Lab analysis.

B. Cross-rip all planting areas including naturalized areas thoroughly to a minimum 10-inch depth. Upon completion of cross-ripping apply the amendments, as follows:

| Amount/1000 Square Feet | |
|---|---|
| 6 cubic yards | Nitrogen Stabilized Organic Amendment |
| 12 lbs. | Commercial Fertilizer |
| 50 lbs | Gypsum |

C. Uniformly spread and incorporated the materials to obtain a homogeneously blended soil, 6-inches in depth.

D. Plant pits: Use soil which has been amended in the above manner as the backfill mix around the sides of the root balls. See Specification Section Landscape Planting for plant pit requirements.

E. Watering: Apply water to areas to be drip irrigated to thoroughly mix in amendments and fertilizers immediately after amending soil, and a minimum of 24-hours prior to planting, unless rain is forecast for that period.

1. Water may be manually applied by spray attachments or impact sprinklers on stands.
2. Connect hose pipes to quick couplers or hose bibs. If neither is available or the main line has not been pressurized, use a portable lawn sprinkler pump connected to a water tank.
3. The cost of watering to mix in amendments is at no additional cost to the Owner.

## 3.04 FINISH GRADING

A. Finish grade all areas, including those indicated to be planted on the Drawings, and remove all rocks and clods over 1 cubic inch. Remove all rocks and clods in turf areas. Finish grade all planting areas smoothly and uniformly. Repair all erosion damage during the construction period.

B. Unless otherwise shown on the Drawings, all soil finish grades shall be 1-inch below finish surface of walks, pavements, and curbs.

## 3.05 CHEMICALS

A. Herbicides and pesticides: Verify compatibility, dosage and other application procedures with the manufacturer. All chemicals shall be applied by a pest control operator licensed in the State of California.

B. Planting areas: Treat all planting and non-naturalized areas for weed control with pre-emergent herbicide, as recommended by the manufacturer. See Specification Section Landscape Maintenance for related work.

## 3.06 CLEAN UP

A. After completion of all soil preparation operations, remove all trash, excess soil and other debris. Sweep and wash clean all walks, walls, and pavement. Leave the entire area in a neat, orderly condition.

END OF SECTION

**FOR REFERENCE ONLY.**
COORDINATE WITH DISTRICT
FOR APPROVED DESIGN
AND LAYOUT PRIOR TO
CONSTRUCTION

# LENNOX SCHOOL DISTRICT

## SCHOOL FAÇADE PAINTING PROJECT

2025 1118

### SCHOOL SITES:

1. **Buford Elementary School**
   4919 W 109th St, Inglewood, CA 90304
2. **Felton Elementary School**
   10417 Felton Ave, Lennox, CA 90304
3. **Huerta Elementary School**
   4125 W. 105th St., Lennox, CA 90304
4. **Jefferson Elementary School**
   10322 Condon Ave., Lennox, CA 90304
5. **Moffet Elementary School**
   11050 Larch Ave., Lennox, CA 90304
6. **Lennox Middle School**
   11033 Buford Ave, Lennox, CA 90304

### CONSTRUCTION NOTES:

**1.** CONTRACTOR TO PROVIDE PAINT MOCK-UP FOR EACH COLOR SCHEME FOR DISTRICT APPROVAL PRIOR TO CONSTRUCTION.
**2.** PREP AND PAINT PER SPECIFICATIONS AND/OR PAINT MANUFACTURER RECOMMENDATION.
**3.** WHERE OCCURS, NEW SIGNAGES WILL BE EXTERIOR RATED. DESIGN TO BE APPROVED BY DISTRICT PRIOR TO FABRICATION.
**4.** CONTRACTOR TO COORDINATE WITH DISTRICT FOR SCHOOL SCHEDULE. CONTRACTOR TO WORK AROUND SCHOOL SCHEDULE (AND WORK AFTER SCHOOL HOURS, IF NECESSARY). ANY DELAYS CAUSED BY THIS WILL NOT BE DISTRICT'S RESPONSIBILITY.
**5.**RIOR TO PAINTING, CONTRACTOR TO TRIM TREES, SHRUBS AND LANDSCAPPING AT LEAST 16" CLEAR AWAY THE STRUCTURE TO BE PAINTED. CONTRACTOR TO CAREFULLY TRIM AND COVER EXISTING LANDSCAPING (SHRUBS, PLANTS, FLOWER BEDS, ETC.) AND PROTECT FROM DAMAGE.
**6**.PRIOR TO STARTING THE PROJECT, CONTRACTOR TO DOCUMENT ALL AREAS TO BE AFFECTED BY WORK. ITEMS ON SITE THAT ARE NON-OPERABLE AND HAVE ISSUES MUST BE DOCUMENTED AND PRESENTED TO THE DISTRICT PRIOR TO START OF THE PROJECT. PRIOR TO COMPLETION OF THE PROJECT, CONTRACTOR TO ENSURE ALL WINDOW GRILLS ARE OPERABLE, LIGHTING, ELECTRICAL, PLUMBING CONNECTIONS, FIRE ALARM, SECURITY ALARM. HORNS, CAMERAS AND OTHER UTILITIES ARE IN PERFECT WORKING ORDER. CONTRACTOR IS RESPONSIBLE OF REPLACING AND/OR REPAIRING ALL ITEMS IF DAMAGED.

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.

## Buford Elementary School







## Jefferson Elementary School










## Felton Elementary School




**FOR REFERENCE ONLY.**
COORDINATE WITH DISTRICT
FOR APPROVED DESIGN
AND LAYOUT PRIOR TO
CONSTRUCTION

## Moffett Elementary School







## Huerta Elementary School

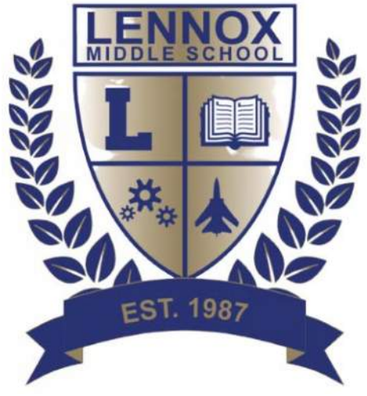






## Lennox Middle School




## Lennox School District Logo




# LOGOS/ BRANDING

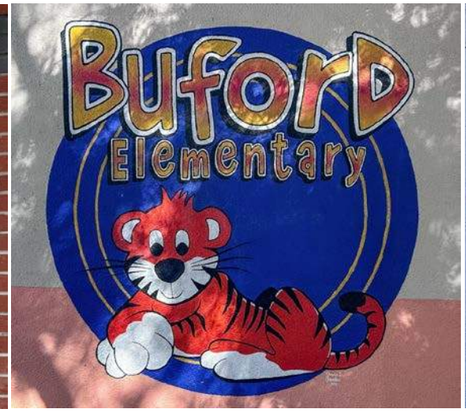
**LENNOX SCHOOL DISTRICT** SCHOOL FACADE PAINTING PROJECT

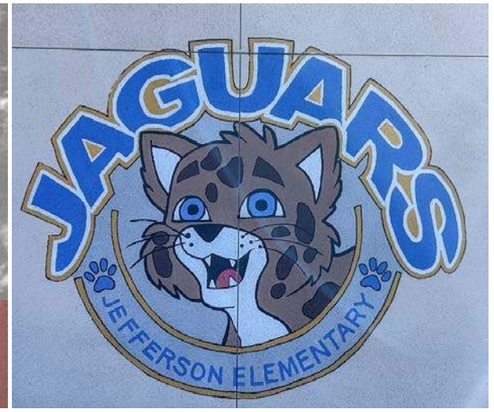


MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.

## LOGO/ BRANDING OPTIONS:




### 1. PAINT DIRECTLY ON LOCATION

PROS:
A. FLUSHED AGAINST WALL
B. LONGER LIFESPAN
C. PERMANENT

CONS:
A. NEED TO HIRE AN ARTIST TO PAINT EACH LOGO ON EACH LOCATION
B. DISTRICT NEED TO COMMIT ON EXACT LOCATION AND SIZE.
C. ANY FUTURE CHANGE TO LOGO/ BRANDING WILL NOT BE EASY

### 2. WALL MOUNTED LOGO/ BRANDING

PROS:
A. CAN BE MOVED AROUND AND REPLACED IF DAMAGED
B. CAN BE PRINTED IN MULTIPLE COPIES
C. LOGO CAN BE UPDATED FOR FUTURE SCHOOL CHANGES
D. CAN BE ORDERED IN DIFFERENT SIZES

CONS:
A. SHORTER LIFESPAN THAN PAINT/ FADING – NOT PERMANENT
B. NOT FLUSHED ON WALL
C. EASIER TO DAMAGE
D. BIGGER LOGOS WILL NEED TO BE IN 2 PIECES









**NOTE:**
**FOR WALL MOUNTED LOGOS/ BRANDING – ALL GRAPHICS SHOULD BE AVAILABLE AS A VECTOR FILE. DISTRICT NEED TO GET A GRAPHIC DESIGNER TO CONVERT THE LOGOS IF NOT AVAILABLE.**

**FOR REFERENCE ONLY.**
COORDINATE WITH DISTRICT FOR APPROVED DESIGN AND LAYOUT PRIOR TO CONSTRUCTION

# FOR REFERENCE ONLY.

CONTRACTOR TO CREATE 5' X 5' MOCK UP OF
ACTUAL PAINT SAMPLES FOR DISTRICT APPROVAL

## EXISTING COLOR SCHEME

### BUFORD ELEMENTARY SCHOOL



### FELTON ELEMENTARY SCHOOL



### HUERTA ELEMENTARY SCHOOL



### JEFFERSON ELEMENTARY SCHOOL



### MOFFET ELEMENTARY SCHOOL



### LENNOX MIDDLE SCHOOL

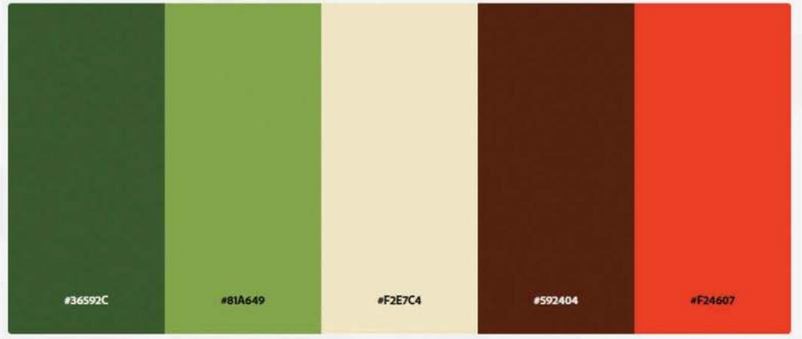


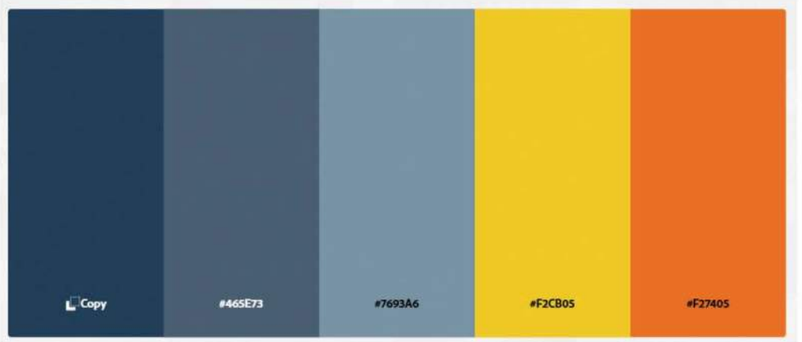
## COLOR SCHEME OPTION SAMPLES










# COLOR SCHEMES

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

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McDonald, Soutar & Paz, Inc.

## WALL MOUNTED LOGO/ BRANDING SAMPLES **FOR REFERENCE ONLY.** COORDINATE WITH DISTRICT FOR FURTHER DIRECTION AND APPROVAL


















# LOGOS/ BRANDING

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

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# BUFORD ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

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# BUFORD ELEMENTARY SCHOOL

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# BUFORD ELEMENTARY SCHOOL

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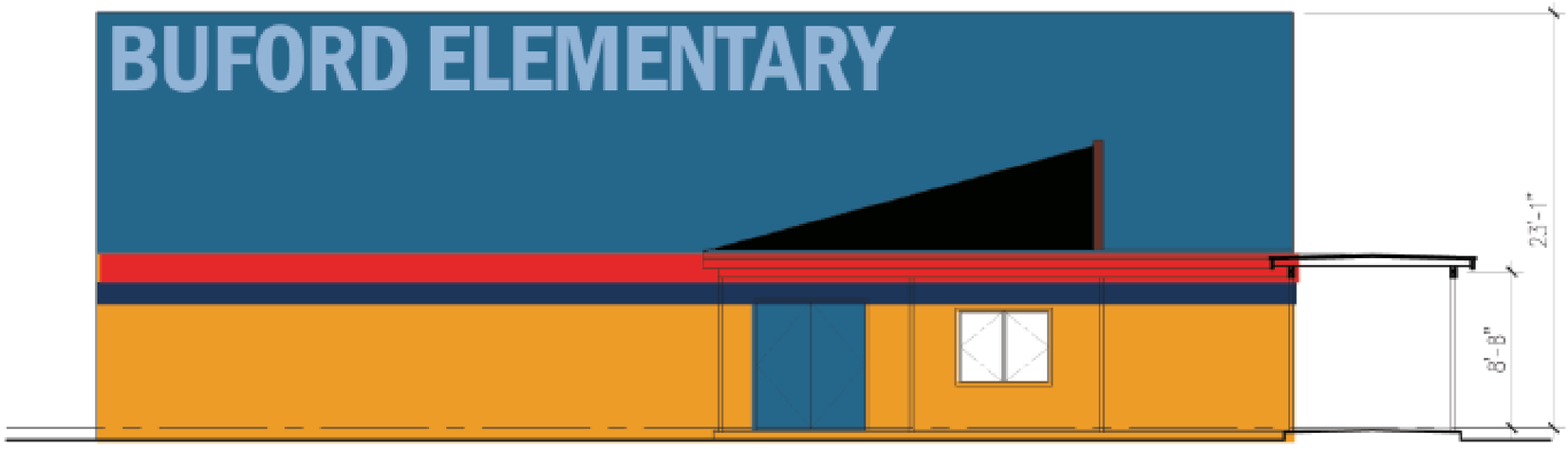
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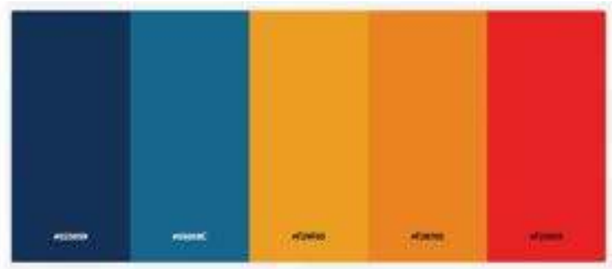
COORDINATE WITH DISTRICT
FOR APPROVED DESIGN
AND LAYOUT PRIOR TO
CONSTRUCTION

# BUFORD ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

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McDonald, Soutar & Paz, Inc.



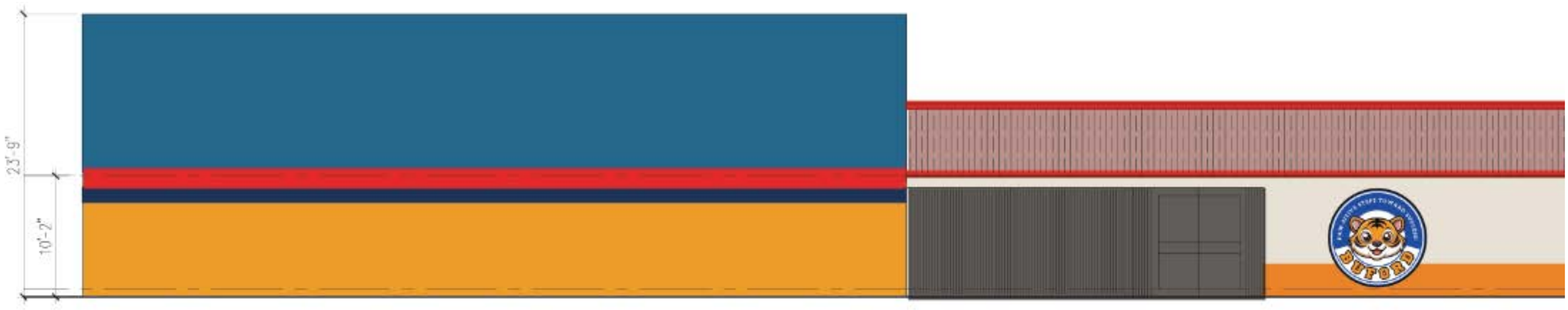








**FOR REFERENCE ONLY.**
COORDINATE WITH DISTRICT
FOR APPROVED DESIGN
AND LAYOUT PRIOR TO
CONSTRUCTION

MP BUILDING - EAST ELEVATION




ADMIN & MP BUILDING - SOUTH ELEVATION

# BUFORD ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

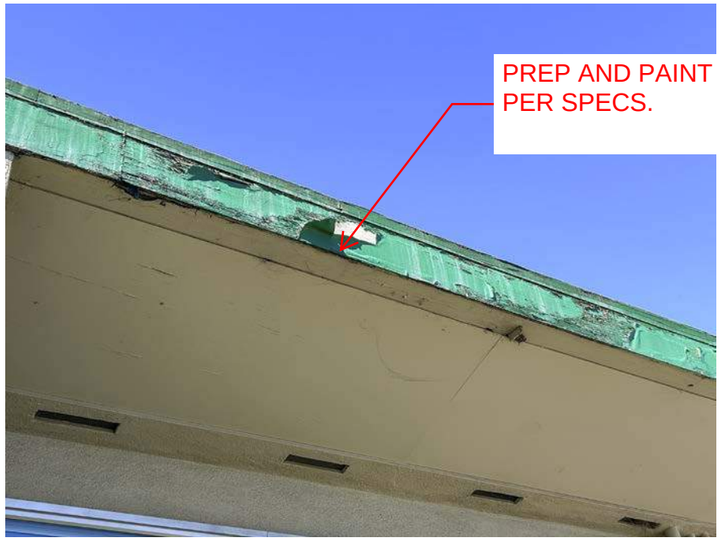
MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.




# FELTON ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.










REPLACE SIGNAGE WITH NEW 5' X 3' EXTERIOR RATED SIGNAGE.
SIGNAGE TO HAVE RAISED METAL LETTERS WITH METAL BACKING MOUNTED ON SAME LOCATION.
COORDINATE WITH DISTRICT FOR APPROVED DESIGN.







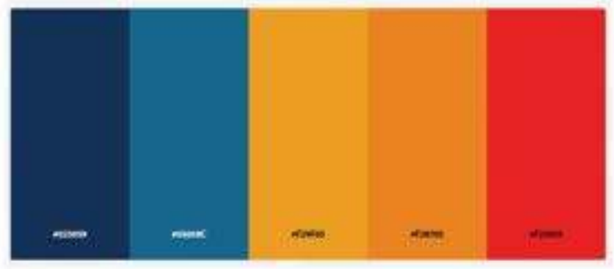
# FELTON ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.

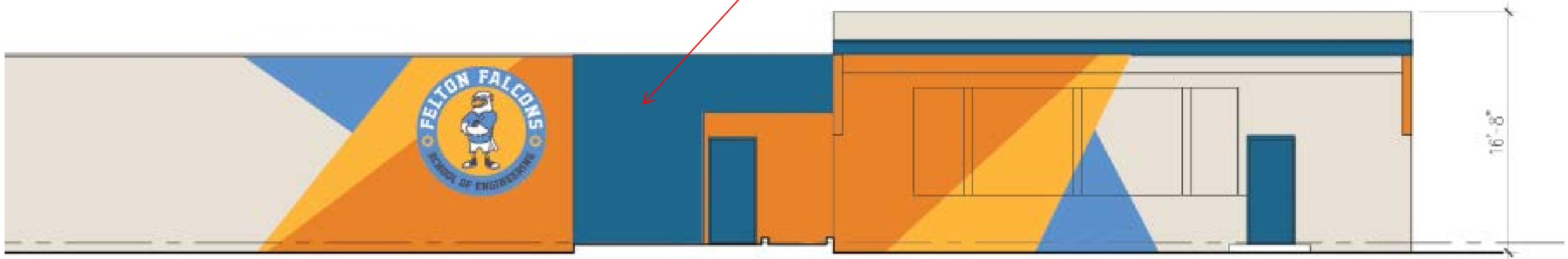
**FOR REFERENCE ONLY.**

COORDINATE WITH DISTRICT
FOR APPROVED DESIGN
AND LAYOUT PRIOR TO
CONSTRUCTION






NEW METAL
SIGNAGE
LOCATION




# FELTON ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.




# HUERTA ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.





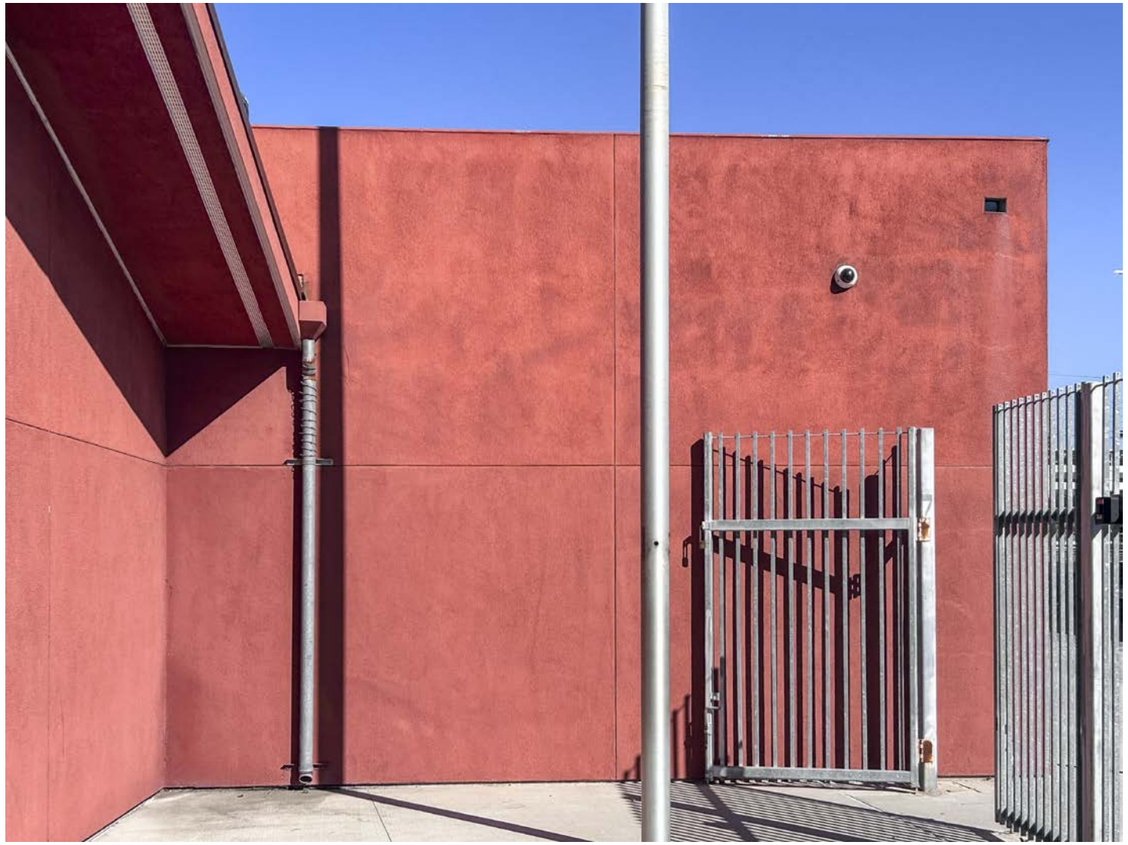



# HUERTA ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.







# HUERTA ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

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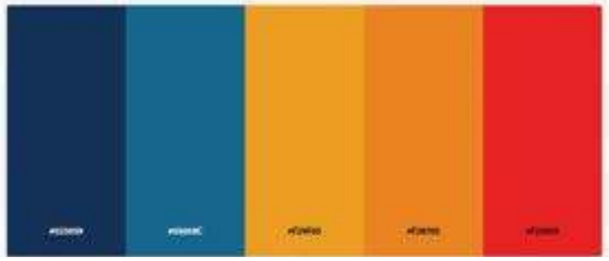




# HUERTA ELEMENTARY SCHOOL

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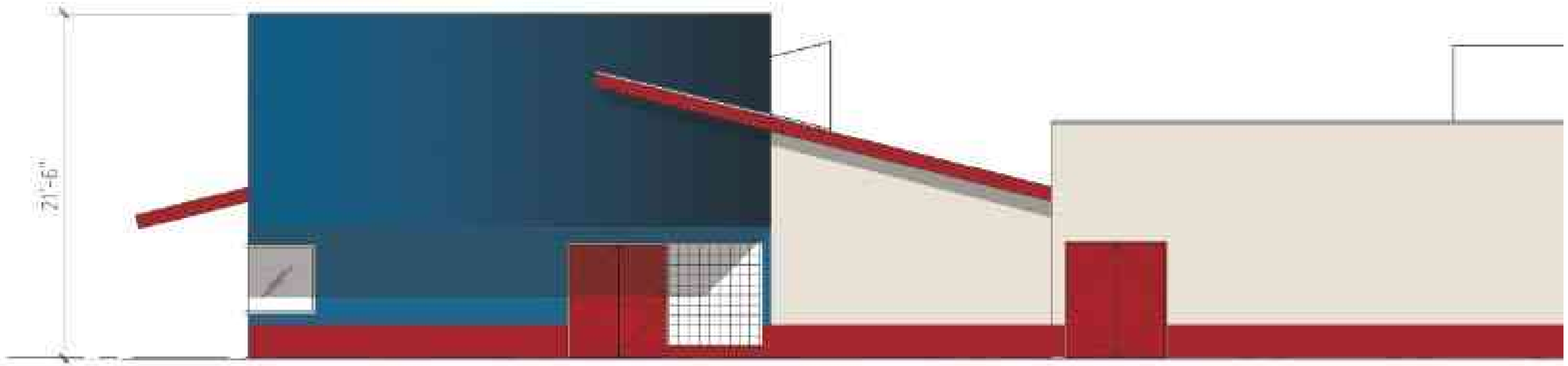




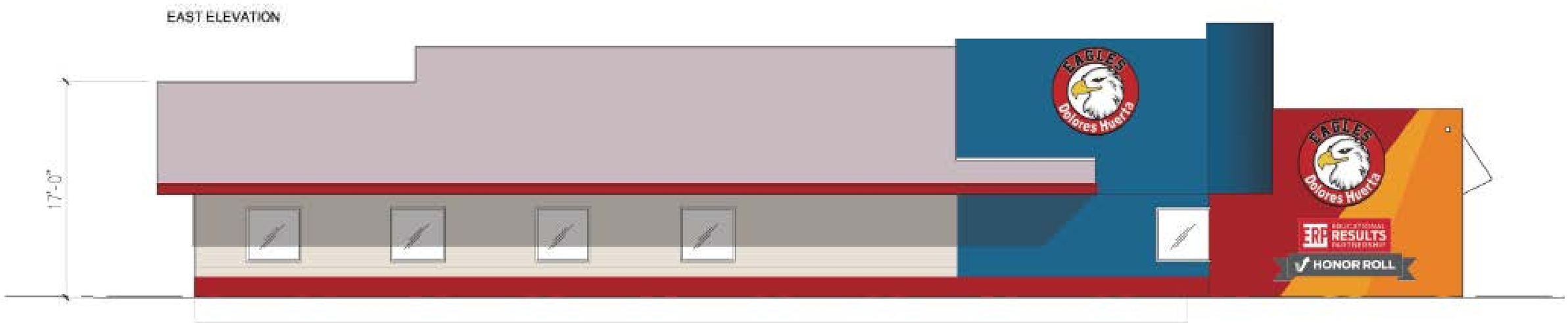









**FOR REFERENCE ONLY.**
COORDINATE WITH DISTRICT
FOR APPROVED DESIGN
AND LAYOUT PRIOR TO
CONSTRUCTION




# HUERTA ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.




# JEFFERSON ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.







# JEFFERSON ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
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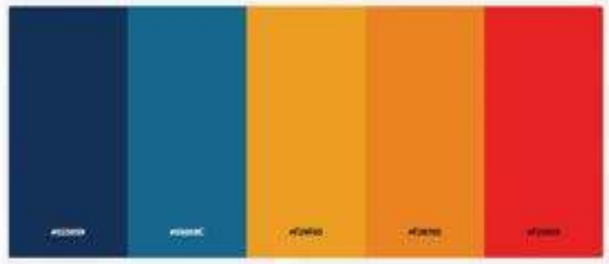
# JEFFERSON ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.

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# JEFFERSON ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
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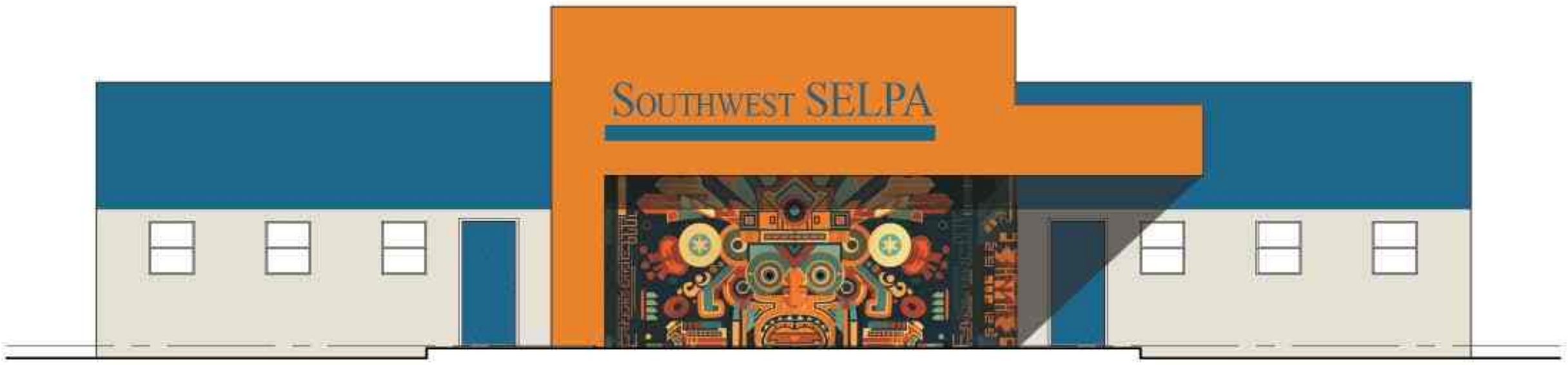



# JEFFERSON ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.

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CONSTRUCTION




NOTE: MURAL DESIGN SHOWN IS FOR REFERENCE ONLY.
DO NOT USE WITHOUT ORIGINAL ARTIST'S CONSENT.

# JEFFERSON ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.




# LENNOX MIDDLE SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.















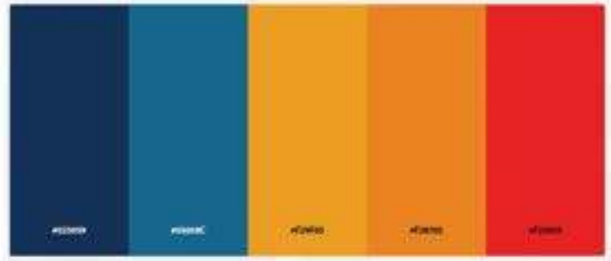
# LENNOX MIDDLE SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.

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COORDINATE WITH DISTRICT
FOR APPROVED DESIGN
AND LAYOUT PRIOR TO
CONSTRUCTION



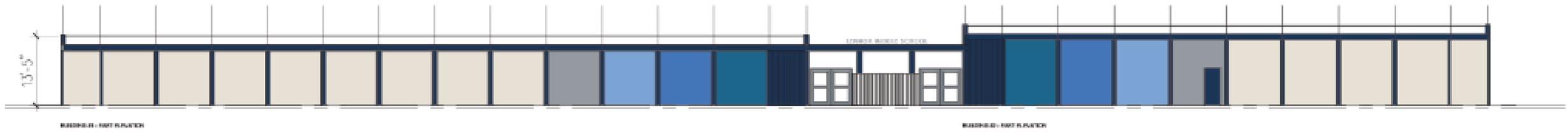








BUILDING #2 - EAST ELEVATION



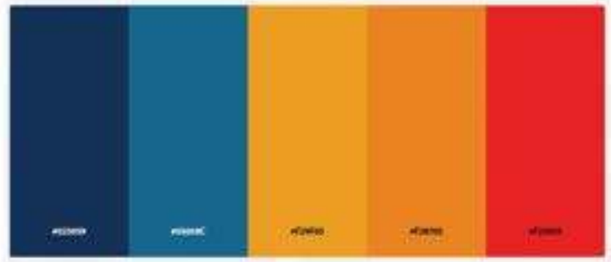

# LENNOX MIDDLE SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.

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COORDINATE WITH DISTRICT
FOR APPROVED DESIGN
AND LAYOUT PRIOR TO
CONSTRUCTION



COORDINATE WITH DISTRICT FOR FINAL
COLOR AND LOCATION.




# LENNOX MIDDLE SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.




# MOFFETT ELEMENTARY SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.







**FOR REFERENCE ONLY.**
COORDINATE WITH DISTRICT FOR APPROVED DESIGN AND LAYOUT PRIOR TO CONSTRUCTION







COORDINATE WITH DISTRICT IF SIGNAGE NEEDS REPLACEMENT OR RELOCATION

# LENNOX MIDDLE SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

MSP ARCHITECTS
McDonald, Soutar & Paz, Inc.

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COORDINATE WITH DISTRICT FOR APPROVED DESIGN AND LAYOUT PRIOR TO CONSTRUCTION






ALTERNATE OPTION:
INSTALLING WOOD CLADDIING TO SOFTEN CONCRETE FAÇADE. POSSIBLY INSTALL PLANTERS AND INTRODUCE LANDSCAPING

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# LENNOX MIDDLE SCHOOL

## LENNOX SCHOOL DISTRICT SCHOOL FACADE PAINTING PROJECT

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