

PROJECT MANUAL

**SHADOW HILLS E.S.
ALPINE UNIFIED SCHOOL DISTRICT
SAN DIEGO COUNTY OFFICE OF EDUCATION**



**Date Issued: PHASE 2 BID ISSUE
DSA#:A-04-120204
MGPA Job No. OESHE01**

THIS PAGE BLANK

SPECIFICATIONS

SHADOW HILLS E.S.

ALPINE UNIFIED SCHOOL DISTRICT
SAN DIEGO COUNTY OFFICE OF EDUCATION



IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT

APP: 04-120204 INC:

REVIEWED FOR

SS ☒ FLS ☒ ACS ☒

DATE: 02/28/2023

THIS PAGE BLANK

TABLE OF CONTENTS

Cover
Signature Page
Table of Contents

DIVISION 1 - GENERAL REQUIREMENTS

01 1100	Summary of Work
01 2100	Allowances
01 2200	Unit Prices
01 2900	Applications for Payment / Schedule of Values
01 3113	Project Coordination / Trade Contractor's Personnel
01 3119	Project Meetings
01 3216	Construction Progress Schedules
01 3516	Alteration Project Procedures
01 4219	Reference Standards
01 4500	Quality Control
01 5200	Construction Facilities and Temporary Controls
01 6116	Volatile Organic Compound (VOC) Content Restrictions <i>Accessory Material VOC Content Certification Form</i>
01 6600	Material and Equipment
01 7123	Field Engineering
01 7419	Construction Waste Management and Disposal
01 7423	Cleaning
01 7610	Temporary Protective Coverings
01 7700	Contract Closeout
01 7823	Operating and Maintenance Data
01 7836	Warranties, Guarantees and Bonds
01 7839	Project Record Documents

DIVISION 2 – EXISTING CONDITIONS

02 4100	Demolition
---------	------------

DIVISION 3 - CONCRETE

03 1000	Formwork
03 2000	Reinforcing
03 3000	Cast-in-Place Concrete

DIVISION 4 – MASONRY (NOT USED)

DIVISION 5 – METALS

05 5213	Pipe and Tube Railings
---------	------------------------

DIVISION 6 – WOOD, PLASTICS, AND COMPOSITES

06 1000	Rough Carpentry
--------------------	----------------------------

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

07 0150.19	Preparation for Re-Roofing
07 2100	Thermal Insulation
07 5419	Polyvinyl Chloride (PVC) Roofing
07 6200	Sheet Metal Flashing and Trim
07 7200	Roof Accessories
07 9200	Joint Sealants

DIVISION 8 - OPENINGS (NOT USED)

DIVISION 9 – FINISHES (NOT USED)

DIVISION 10 – SPECIALTIES

~~10 1400 Signage~~

DIVISION 11 – EQUIPMENT (NOT USED)

DIVISION 12 – FINAL FURNISHINGS (NOT USED)

DIVISION 13 – SPECIAL CONSTRUCTION (NOT USED)

DIVISION 14 – CONVEYING SYSTEMS (NOT USED)

DIVISION 21 – FIRE SUPPRESSION (NOT USED)

DIVISION 22 – PLUMBING (NOT USED)

DIVISION 23 – HEATING VENTILATING AND AIR CONDITIONING

~~23 0513 Common Motor Requirements for HVAC Equipment~~

~~23 0529 Hangers and Supports for HVAC Piping and Equipment~~

~~23 0553 Identification for HVAC Piping and Equipment~~

~~23 0593 Testing, Adjusting and Balancing for HVAC~~

~~23 0713 Duct Insulation~~

~~23 0719 HVAC Piping Insulation~~

~~23 0800 Commissioning of HVAC~~

~~23 1123 Facility Natural Gas Piping~~

~~23 2300 Refrigerant Piping~~

~~23 3113 Metal Ducts~~

~~23 7413 Packaged Outdoor Central Station Air Handling Units~~

DIVISION 25 – INTEGRATED AUTOMATION (NOT USED)

DIVISION 26 – ELECTRICAL

DIVISION 27 – COMMUNICATIONS

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY (NOT USED)

DIVISION 31 – EARTHWORK (NOT USED)

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 1123 Aggregate Base Courses

32 1216 Asphalt Paving

32 1313 Concrete Paving

32 1723 Pavement Markings

32 1726 Tactile Warning Surfacing

32 3113 Chain Link Fence and Gates

DIVISION 33 – UTILITIES (NOT USED)

END OF TABLE OF CONTENTS

SECTION 01 1100
SUMMARY OF WORK

PART 1 – GENERAL

1.01 SUMMARY

- A. Project: The Project referred to as Shadow Hills E.S. Modernization. The Project is located at 8770 Harbison Canyon Rd, Alpine, CA 91901, which is southwest of the intersection of Harbison Canyon Road and Bridle Run, in Alpine, San Diego County, California. The Project is for the San Diego County Office of Education, 6401 Linda Vista Road San Diego, CA 92111.
- B. Description of Work: ~~Replacement of existing roofing at classroom/administrative buildings, replacement of four (4) HVAC units, ADA compliance, and miscellaneous site work.~~, as indicated in the Contract Documents prepared by MGPA Architecture (MGPA). The buildings are existing Type V Construction..

1.02 WORK SEQUENCE

- A. Work is to be conducted in a single phase based on a single lump-sum Base Bid. The Project will be managed by General Contractor.

1.03 TRADE CONTRACTOR USE OF PREMISES

- A. During the construction period, the Trade Contractors shall have full use of the construction area for construction operations. The Trade Contractors' use of the construction area is limited only by the Owner's right to perform construction operations with its own forces or to employ separate contractors on portions of the project.
- B. Limit use of the premises to construction activities in areas indicated. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
- C. Keep driveways and entrances serving the premises clear and available to the Owner and the Owner's employees and agents at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for the storage of materials and equipment on site.

1.04 OCCUPANCY

- A. The Owner will occupy the Project in the manner outlined in Section 01 7700 - Contract Closeout, and as set forth in the General Conditions.
- B. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the buildings prior to Substantial Completion. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.
 - 1. A Certificate of Substantial Completion will be executed for each specific portion of the Work to be occupied prior to Owner occupancy; however, this is not to be construed as acceptance of the specific portion of the work.
 - 2. Trade Contractor shall be responsible to obtain the requisite occupancy certificates issued by local agencies that may have jurisdiction, including the County Health Department and the local Fire Department, prior to partial Owner occupancy.
 - 3. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational in the areas to be occupied. Required inspections and tests shall have been successfully completed. Trade Contractor agrees that he shall provide operation and maintenance of mechanical and electrical systems in occupied portions of the building, shall maintain security and insurance, shall pay for utilities, and shall be responsible to damage to the Work by his own forces, until such time as Notice of Completion is filed by the District and registered by the County Recorder.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

4. No warranties or guarantees shall go into effect until after Notice of Completion has been registered by the County Recorder for the Work as a whole.
5. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational in the areas to be occupied. Required inspections and tests shall have been successfully completed. Trade Contractor agrees that he shall provide operation and maintenance of mechanical and electrical systems in occupied portions of the building, shall maintain security and insurance, shall pay for utilities, and shall be responsible to damage to the Work by his own forces, until such time as Notice of Completion is filed by the District and registered by the County Recorder.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01 2100 ALLOWANCES

PART 1 - GENERAL

1.01 SUMMARY

- A. Include in the Contract Sum all allowances as may be stated in the Contract Documents.

1.02 ALLOWANCES FOR PRODUCTS

- A. The amount of each allowance includes:
1. The cost of the product to the Contractor, less any applicable trade discounts.
 2. Delivery to the site.
 3. Labor required under the allowance, only when labor is specified to be included in the allowance.
 4. Applicable taxes.
- B. In addition to the amount of each allowance, include in the Contract Sum the Contractor's costs for:
1. Handling at the site, including unloading, un-crating, and storage.
 2. Protection from the weather and from damage.
 3. Labor for installation and finishing, except where labor is specified to be part of the allowance.
 4. Other expenses required to complete the installation.
 5. Contractor's and Subcontractor's overhead and profit.

PART 2 - PRODUCTS

2.01 LUMP SUM ALLOWANCES

- A. Allowances shall be one lump sum, to be disbursed as designated by the District to provide for miscellaneous District mandated changes and additions during construction.

PART 3 - EXECUTION

3.01 SELECTION OF PRODUCTS

- A. Allowance amounts shall be as stated in the Contractor's Document – Division of Work. These amounts will be documented on the bid form at the time of bid.
- B. The Architect will:
1. Consult with the Contractor in consideration of products and suppliers or installers.
 2. Make a selection in consultation with the Owner. Obtain Owner's written decision, designating:
 - a. Product, design, and finish.
 - b. Accessories and attachments.
 - c. Supplier and installer as applicable.
 - d. The cost to Contractor delivered to the site or installed, as applicable.
 - e. Manufacturer's warranties.
- C. The Contractor shall:

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

1. Assist the Architect and Owner in determining qualified suppliers or installers.
2. Obtain proposals from suppliers and installers when requested by the Architect.
3. Make appropriate recommendations for consideration of the Architect.
4. Notify Architect promptly of:
 - a. Any reasonable objections Contractor may have against any supplier or party under consideration for installation.
 - b. Any effect on the Construction Schedule anticipated by selections under consideration.

3.02 CONTRACTOR RESPONSIBILITY

- A. On notification of selection, execute a purchase agreement with the designated supplier.
- B. Arrange for and process Shop Drawings, product data, and samples, as required.
- C. Make all arrangements for delivery.
- D. Upon delivery, promptly inspect products for damage or defects.
- E. Submit claims for transportation damage.
- F. Install and finish products in compliance with the requirements of referenced specification sections.

3.03 ADJUSTMENT OF COSTS

- A. Should the net cost be more or less than the specified amount of the allowance, the Contract Sum will be adjusted accordingly by Change Order. The amount of the Change Order will recognize any changes in handling costs at the site, labor, installation costs, overhead, profit, and other expenses caused by the selection under the allowance.
- B. Submit documentation for actual additional costs at the site, or other expenses caused by the selection under the allowance, within 60 days after completion of execution of the work. Failure to submit claims within the designated time will constitute a waiver of claims for additional costs.
- C. At contract closeout, reflect all approved changes in contract amounts in the final statement of accounting.

END OF SECTION

**SECTION 01 2200
UNIT PRICES**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. List of unit prices, for use in preparing Bids.

1.02 RELATED REQUIREMENTS

- A. Instructions to Bidders: Instructions for preparation of pricing for Unit Prices.
- B. Unit Prices Form: List of Unit Prices as a supplement to Bid Form

1.03 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.04 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.05 MEASUREMENT OF QUANTITIES

- A. Assist by providing necessary equipment, workers, and survey personnel as required.
- B. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- C. Measurement by Area: Measured by square dimension using mean length and width or radius.
- D. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- E. Contractor's Engineer Responsibilities: Sign surveyor's field notes or keep duplicate field notes, calculate and certify quantities for payment purposes.

1.06 PAYMENT

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.

1.07 SCHEDULE OF UNIT PRICES

- A. Item: Aggregate Base Course Materials; Section 32 1123.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

THIS PAGE BLANK

SECTION 01 2900 APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Administrative and procedural requirements governing the Contractor's Applications for Payment.
- B. Related Work:
 - 1. RECORD DOCUMENTS: All requirements for record documents, Specifications Section 01 7839, shall be satisfied to the Architect's satisfaction prior to Architect's processing of each month's Application for Payment.

1.02 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with the preparation of the Network Analysis Schedule.
- B. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than seven (7) days after Notice to Proceed. Include with initial submission a projected monthly payment request schedule for the total cost of the project, for Owner's cash flow planning.
- C. Acceptance of the Schedule of Values by the Architect, the Inspector of Record and the Owner is required prior to approval and payment of the first application for payment.
- D. Format and Content: The Project Manual Table of Contents may be used as a general guide to format the Schedule of Values; specific item numbers may be sequentially numerical.
 - 1. The Schedule of Values shall be a detailed breakdown of the price to provide and install each item of work and material on the project.
 - 2. Each line item on the Schedule of Values shall be presented to allow the Architect to easily find that item of work within the construction during his review of the construction operations and evaluate whether that line item is 100% complete or not.
 - 3. Each line item of the Schedule of Values shall be given a value by the Contractor that, in the opinion of the Contractor, best represents the value of that work, and if required to present evidence of his opinion, the Contractor will be able to substantiate the value by the use of supplier, subcontractor written quotations, labor wages/rates, hourly estimates and/or by industry recognized cost estimating references. Contractor to list Bond amount (matching bond premium on actual bond) and Bid Allowance as separate line items.
 - 4. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed. Each sheet of the Schedule of Values shall be titled and numbered sequentially.
 - a. Line Item Number
 - b. Description of Item.
 - c. Quantity.
 - d. Unit of Measure.
 - e. Labor Price.
 - f. Material Price
 - g. Value of Line Item.
 - h. Line Item Value Request this month.
 - i. Line Item Value Previously completed.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

- j. Amount of Retention, Per Line Item
 - k. At the bottom of each sheet, the Total Amount of Columns g. h. and i. shall be tabulated and carried forward on each page and the TOTAL AMOUNT presented at the end.
- E. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
- F. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum, after official approval by the Owner's Board of Directors.

1.03 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.
- 1. The initial Application for Payment, the Application for Payment at the time of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment Application Times: Monthly Progress Payment Applications must be transmitted to the Architect's office for review and approval NO LATER than the 22nd day of each month. The Architect will review and approve the Progress Payment request and notify the Contractor of any discrepancies. The Approved Progress Payment Application shall represent the amount of Work completed through the end of that month. The original copy of the Approved Progress Payment Request form must be in the Architect's office no later than the 1st day of the following month of the application for Progress Payment, transmitted in accordance with paragraph "C" below. **NO EXCEPTIONS TO THIS REQUIREMENT WILL BE MADE.** Payment requests received after this time and date will be held to be included in the Request for Payment to the Owner the following month.
- C. Payment Application Forms: Use AIA Documents G702 and G703 forms.
- D. Application Preparation: Complete every entry on the form, including notarization and execution by a person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action.
- 1. Entries shall match data on the Network Analysis Schedule. Use updated schedules if revisions have been made.
 - 2. Include amounts of Owner-approved Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
- E. Transmittal: Submit four (4) executed copies of each Application for Payment to the Architect via email to the job site with originals mailed to the Architect's office. Transmit copy with transmittal form listing attachments and recording appropriate information related to the application in a manner acceptable to the Architect.
- 1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.
- F. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics lien from entity who may lawfully be entitled to file a mechanics lien or a California 20 day Preliminary Notice arising out of the Contract, and related to the Work covered by the payment.
- 1. Submit each Application for Payment with the Contractor's waiver of mechanics lien, Conditional Upon Progress Payment lien release, Unconditional Upon Progress Payment, Conditional Upon Final Payment lien release, or Unconditional Upon Final Payment as applies, and as notified by the Architect for the period covered by the Application.
 - 2. Submit final Application for Payment with, or preceded by, final waivers from entity involved with the performance of Work covered by the application who could lawfully be entitled to a lien.

APPLICATIONS FOR PAYMENT

SAN DIEGO COUNTY OFFICE OF EDUCATION

- G. Initial Application for Payment: Administrative actions and submittals that must precede submittal of the first Application for Payment include the following:
1. List of subcontractors (include names, addresses, contact name, emergency contact name & telephone numbers).
 2. Schedule of Values.
 3. Contractor's Construction Schedule.
 4. Schedule of unit prices, if applicable.
 5. Submittal Schedule.
 6. Copies of permits as may be required to start the Work (i.e. business license, encroachment permits, etc., may be obtained as necessary for sequence of Construction).
 7. Copies of authorizations and licenses from governing authorities for the performance of the Work.
 8. Initial progress report.
 9. Report of pre-construction meeting.
 10. Certificates of insurance and insurance policies.
 11. Performance and payment bonds.
 12. Resumes of Contractor's Project Managers and Superintendent of Construction, or Foreman.
- H. Note: Each preceding item shall be submitted to the Architect, accepted by the Architect, and approved by the Owner prior to the certification and approval of the first payment to the Contractor.
- I. Application for Payment at Substantial Completion: Following the issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work. Administrative actions and submittals that shall proceed or coincide with this application include:
1. Occupancy permits and similar approvals.
 2. Warranties (guarantees) and maintenance agreements.
 3. Test/adjust/balance records.
 4. Maintenance instructions.
 5. Meter readings.
 6. Start-up performance reports.
 7. Change-over information related to Owner's occupancy, use, operation, and maintenance.
 8. Final cleaning.
 9. Application for reduction of retainage, and consent of surety.
 10. Advice on shifting insurance coverages.
 11. Final progress photographs.
 12. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion. Each work item value shall be listed and the total amount deducted from amounts owed over and above the retention.
- J. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Written assurance that unsettled claims will be settled.
4. Written assurance that Work not complete and accepted will be completed without undue delay.
5. Transmittal of required Project construction records to Owner.
6. Certified property survey.
7. Proof that taxes, fees, and similar obligations have been paid.
8. Removal of temporary facilities and services.
9. Removal of surplus materials, rubbish, and similar elements.
10. Change of door locks to Owner's access.
11. Furnish Unconditional Final Lien Releases (Form #4) from all suppliers/subcontractors who filed preliminary notices on the Project.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

SECTION 01 3113

**PROJECT COORDINATION/CONTRACTOR'S
PERSONNEL**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes administrative and supervisory requirements required to ensure orderly progress and timely completion of the Work.
- B. Related Work Described Elsewhere:
 - 1. Additional requirements for coordination are included on Contract Drawings and other Sections of the Specifications. It is intended that all work provided under this Contract shall be complete except where otherwise specified or shown. Any Drawing, document, or Section, by itself, is not a complete description of the work. Cross-references to related work, where given, are provided as a convenience and shall not limit the applicability of other requirements specified or shown unless specifically stated.

1.02 CONTRACTOR'S PERSONNEL AND RESUMES

- A. Within five (5) days of Notice to Proceed, the Contractor shall submit resumés for the proposed Contractor's Project Manager and Construction Superintendent,
- B. Project Manager: The resumé for the Project Manager designated by the Contractor to direct this Project shall list the following minimum information:
 - 1. Formal training, education, or certification in construction management or construction technology.
 - 2. Prior experience managing construction projects of the level of complexity and dollar value of this construction contract.
 - 3. Prior experience in permitting, inspection, and approval processes of regulatory agencies and utilities on projects of this magnitude and complexity.
 - 4. Reference contacts (name and telephone number) of at least three Architects or other Owners' agents for construction projects which the proposed Project Manager has directed.
- C. Construction Superintendent: The resumé for the Construction Superintendent designated by the Contractor to supervise this Project must show the following minimum information:
 - 1. Formal training, education, or certification in a construction related discipline.
 - 2. Prior experience as a full-time job-site superintendent on projects of the level of complexity and dollar value of this construction contract.
 - 3. Prior experience in permitting, inspection, and approval processes of regulatory agencies and utilities on jobs of this magnitude and complexity.
 - 4. Reference contacts (name and telephone number) of at least three Architects or other Owners' agents for construction projects which the proposed Construction Superintendent has supervised.
- D. Applications for Payment will not be processed by the Owner until written approval of the Architect is given to the Contractor for the above-named personnel.

1.03 QUALITY ASSURANCE

- A. Familiarity with Contract Documents:

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

1. Contractor and all Subcontractors shall conduct a study necessary to become completely familiar with all requirements. Applicable requirements indicated or described in the Contract Documents, and the publications referred to, are a part of the Work required as though repeated in each such Section.
 2. In the event discrepancies or conflicts are encountered, notify the Architect immediately. Where there is a discrepancy between different parts of the contract documents, including referenced codes and standards, the documents requiring the higher quality, the greater quantity, or the more difficult work shall govern, unless determined otherwise in writing by the Architect.
 3. Promptly distribute required information to entities concerned and ensure the needed actions are taken.
- B. Reporting: Unless otherwise noted by the Contractor in his transmittals, all of the Contractor's data transmittals to the Architect for the Architect's review will be construed as stipulating that the Contractor has thoroughly and completely reviewed and coordinated the data prior to transmittal.
- C. Interfacing: It shall be solely the responsibility of the Contractor to make sure that each Subcontractor completes in a timely manner the assigned work and that all interfaces are prepared, connected, and function as required.

1.04 REQUEST FOR INFORMATION

- A. Requests for Information (RFIs) are required as a documented means of communication between Contractor and Architect. The Contractor shall plan, schedule, coordinate, and sequence Work so RFIs, if necessary, may be submitted to the Architect in a timely manner so as not to delay the progress of the Work. Submission of, and responses to, RFIs, with copies to Owner, shall be transmitted to the Architect. RFIs shall not be submitted to the Inspector.
- B. Telephone conversations requesting information shall be confirmed in writing for a prompt reply of all RFIs. Contractor shall coordinate the timing of transmittals and telephone conversations to be made with the Architect's office between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.
- C. Each RFI shall be limited to one specific topic, question, or issue, and if at all possible, limited to one or two sentences. RFIs shall be submitted on a standard form on the Contractor's letterhead or on the RFI form at the end of this section and shall be numbered sequentially. All RFIs must be submitted through the Contractor. The following information must be included on each RFI:
1. RFI number, date of issue, Architect's project name and job number. Attachments, if any (sketches, sub-contractor documentation, supporting information, etc), must also show this information on each separate page.
 2. Text of RFI
 3. Indication if the topic in question may have a possible impact on Contract Amount or Contract Time.
 4. Space for a hand-printed response (one-third to one-half of the page)
 5. Space for respondent signature and date.
- D. The architect will have the same time period to respond to an RFI as "shop drawing review period".
- E. Nuisance RFIs: When the Architect responds to an RFI within five (5) working days after receipt of an RFI but when the response, answer, or information requested is already contained or included within the contract documents, or is already contained or included within referenced standards, or is a reiteration of established and common construction practices, or is information normally and legitimately generated by the Contractor or his subcontractors during preparation of submittals, the Contractor shall reimburse the Architect for his time in answering the RFI at the following hourly rates:

PROJECT COORDINATION/CONTRACTOR'S PERSONNEL

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

Principal	\$190
Architect	\$160
Project Manager	\$130
Job Captain	\$110
Draftsperson	\$95
Agency Liasion	\$85
Clerical	\$70

- F. If nuisance RFI requires Architect's consultant's acknowledgment, the Contractor shall reimburse the Architect's consultant at the same hourly rates for the consultant's staff, plus fifteen percent for the Architect. The Contractor will be billed at the time of the Contractor's Application for Payment. Payments to the Architect not received within 30 days will be deducted from subsequent Contractor's Applications for Payment in accordance with the General Conditions.
- G. No damages for delay due to RFI response beyond allotted time will be allowed, unless Contractor can show that RFI was not foreseeable with proper planning, scheduling, coordination, and sequencing, and that the Architect's late response delayed timely purchase or delivery of equipment or material, or limited construction personnel from proceeding with their task(s) within previously listed "Progress Schedule" activity period(s).
- H. When the Architect is required to respond to an RFI that requires the Architect or Engineers to redesign or re-engineer an aspect of the Work due to a desire of the Contractor for an alternate means of construction, or to allow a deviation from the Work due to Contractor error, Contractor shall reimburse the Architect/Engineer for his time answering the RFI in the same manner as described in item E above. Time spent in obtaining approvals from regulatory agencies for the change shall also be reimbursed in like manner.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 PLANNING THE WORK

- A. By thorough advance planning of activities, coordinate the following in addition to other coordination activities required:
1. Materials, services, and equipment purchasing.
 2. Shipping.
 3. Receipt and storage at the site.
 4. Installation, including interface with related items provided by other Contractors.
 5. Inspection and testing, to the extent required under the Contract.
 6. Assistance in initial start-up and operational tests.
 7. Completion of the Work, including removal and disposal of Contractor's surplus material and equipment, and final cleaning of structures and sites.

3.02 COORDINATION

- A. Coordination: Coordinate construction activities included under various Sections of these Specifications to ensure the efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

- C. Other Contracts: Cooperate with the Owner in the coordination of other work the Owner may elect to initiate on this site.

3.03 GENERAL INSTALLATION PROVISIONS

- A. Coordination methods used by the Contractor are at the Contractor's option, except that the Architect may disapprove Work completed by the Contractor or data submitted by the Contractor when, in the Architect's judgment, coordination has been inadequate to ensure the specified quality.
- B. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for a final decision.

3.04 WEEKLY PROGRESS MEETINGS

- A. Contractor will be required to attend Weekly Progress Meetings while working on site and two (2) weeks prior to the scheduled start of Work.

3.05 DAILY REPORTS

- A. Daily Reports for the previous day's work must be submitted to the Contractor's Field office no later than 8AM. Reports shall be on the form provided by the Contractor. They may be hand written.

3.06 CLEANING

- A. Contractor shall be responsible for daily clean up of the Contractor's own debris, and removal of same from the job site, including dumpsters and fees necessary for cleaning.
- B. The job site shall be kept in "broom-swept" condition at all times.
- C. Failure of the Contractor to Perform Cleaning Duties: The contractor will perform the work after a 48-hour Notice to the Contractor. Owner shall be reimbursed at the rate of \$75.00 per hour, plus dumping fees, for performing this work. Owner must receive reimbursement for cleaning from the Contractor prior to the next pay application processing.

3.07 TESTS AND INSPECTION

- A. Inspection Request Forms must be completed a minimum of 48 hours in advance of requested inspection and given to the Inspector.

END OF SECTION

SECTION 01 3119 PROJECT MEETINGS

PART 1 – GENERAL

1.01 PRE-CONSTRUCTION CONFERENCE

- A. The Contractor will schedule a conference prior to the start of construction.
- B. Mandatory Attendance: Owner, Contractor, Architect, Consultants, and Trade Contractors.
- C. The purpose of the conference is to establish the working relationships between the Contractor, Architect, and Trade Contractors during the construction of the project. Areas of responsibility, operational procedures, payment processing, and scheduling will be covered in detail.

1.02 PROGRESS MEETINGS

- A. Contractor shall schedule and administer progress meetings throughout progress of the work.
- B. Contractor shall make physical arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies to Owner, Architect, participants, and those affected by decisions made at the meetings.
- C. Attendance: Contractor, major trade contractors, suppliers when specifically requested, Architect, and Owner as appropriate to agenda topics for each meeting.
- D. Suggested Agenda: Review of Work progress, payment requests, status of progress schedule, and adjustments thereto, delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions, review status of record drawings, and other affecting progress of the work.

1.03 WEEKLY SAFETY MEETINGS

- A. Each Trade Contractor responsible for holding weekly “tailgate” safety meetings with their own employees and all of their subcontractor’s employees, addressing safety pertinent to their ongoing activities. Trade Contractor to provide copy of each sign in sheet/weekly meeting minutes every week to the Contractor. Current records will be evaluated each month at the time the Progress Pay Application is processed.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

THIS PAGE BLANK

SECTION 01 3216

CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, with network analysis diagrams and reports.

1.02 REFERENCE STANDARDS

- A. AGC (CPSM) - Construction Planning and Scheduling Manual 2004.
- B. M-H (CPM) - CPM in Construction Management - Project Management with CPM 2015.

1.03 SUBMITTALS

- A. Within 5 days after date established in Notice to Proceed, submit preliminary schedule.
- B. If preliminary schedule requires revision after review, submit revised schedule within 5 days.
- C. Within 5 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 - 1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 5 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.
- F. Submit in PDF format.

1.04 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- B. Diagram Sheet Size: Maximum 30 inches high by width required.
- C. Scale and Spacing: To allow for notations and revisions.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a preliminary network diagram.

3.02 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and other logically grouped activities.
- D. Include conferences and meetings in schedule.
- E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- F. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

G. Indicate delivery dates for owner-furnished products.

H. Provide legend for symbols and abbreviations used.

3.03 NETWORK ANALYSIS

A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.

B. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.

C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:

1. Preceding and following event numbers.
2. Activity description.
3. Estimated duration of activity, in maximum 15 day intervals.
4. Earliest start date.
5. Earliest finish date.
6. Actual start date.
7. Actual finish date.
8. Latest start date.
9. Latest finish date.
10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
11. Monetary value of activity, keyed to Schedule of Values.
12. Percentage of activity completed.
13. Responsibility.

D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and float.

E. Required Reports: List activities in sorts or groups:

1. By preceding work item or event number from lowest to highest.
2. By amount of float, then in order of early start.
3. Listing of activities on the critical path.

3.04 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Architect at each submittal.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.05 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity.

C. Annotate diagrams to graphically depict current status of Work.

D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

CONSTRUCTION PROGRESS SCHEDULE

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.
- G. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect including the effects of changes on schedules of separate contractors.

3.06 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

THIS PAGE BLANK

SECTION 01 3300 SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Wherever possible throughout the Contract Documents, the minimum acceptable quality of workmanship and materials have been defined by manufacturer's name and catalog number, reference to recognized industry and government standards, or description of required attributes and performance.
 - 2. To ensure that the specified products are furnished and installed in accordance with design intent, submit design product and data in advance for review by the Owner.
 - 3. Make submittals required by the Contract Documents. Revise and resubmit as necessary to establish compliance with the specified requirements.
 - 4. **ALL SUBMITTALS, WITH THE EXCEPTION OF PHYSICAL PRODUCT OR COLOR SAMPLES, SHALL BE MADE BY DIGITAL ELECTRONIC MAIL, UTILIZING PDF FILES.** Submittal review will be returned electronically. No multiple "hard copies" will be accepted, unless previous arrangements are made with the Architect due to unusual circumstances. Large files (greater than 5MB) are to be uploaded to a file service such as YouSendIt, SendSpace, or an FTP site of choice.
- B. Related Work Described Elsewhere: Additional specific requirements for submittals are described in other Sections of these Specifications.

1.02 QUALITY ASSURANCE

- A. Coordination of Submittals: Prior to each submittal, review and coordinate each item being submitted and verify that each item and the submittal conform with the requirements of the Contract Documents. By affixing the Trade Contractor's signature to each submittal, certify that this coordination has been performed.
- B. Certificates of Compliance:
 - 1. Certify that materials used in the Work comply with specified provisions thereof. Certification shall not be construed as relieving the Contractor from furnishing satisfactory materials if, after tests are performed on selected samples, the material is found not to meet specified requirements.
 - 2. Show on each certification the name and location of the Work, name, and address of Contractor, quantity and date or dates of shipment or delivery to which the certificate applies, and name of the manufacturing or fabricating company. Certification shall be in the form of a letter or company-standard forms containing the required data. Certificates shall be signed by an officer of the manufacturing or fabricating company.
 - 3. In addition to the above information, laboratory test reports submitted shall show the date or dates of testing, the specified requirements of which testing was performed, and results of the test or tests.

1.03 SUBMITTALS

- A. Contractor shall submit all shop drawings, samples, requests for substitutions, mix designs, and other items, in accordance with this Section.
- B. Prior to submittal of the Contractor's first application for payment, submit a schedule of all submittals required by the Contract Documents.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

- C. Submittals shall be submitted per the following time schedule for the following specific items. Failure to submit by these dates will be considered sufficient grounds to delay certification of Contractor's Application for Payment until these items are received in proper order.
1. Within **10 calendar days** after Notice to Proceed:
 - a. Concrete mix design, steel connectors to be embedded in concrete foundations and slabs, ALL STRUCTURAL STEEL, materials for underground site plumbing, sewer, storm drainage, and underground site electrical, sheet metal roofing, fire alarm, HVAC Controls.
 2. Within **10 calendar days** after Notice to Proceed:
 - a. **All Requests for Substitutions:** After this date, no further requests for substitution will be considered, and Contractor shall be obligated to provide the specified products - **NO EXCEPTIONS.**
 - b. All materials requiring a color selection by the Owner.
 3. Within **20 calendar days** after Notice to Proceed:
 - a. ALL OTHER SUBMITTALS. All submittals absolutely must be turned in no later than 20 days after Notice to Proceed for every bid package – **NO EXCEPTIONS.**
- D. Provide required submittals for the following products to interface with other portions of the Work. Submit data to verify compliance only.
1. For products specified only by reference standard, select product meeting that standard, by manufacturer.
 2. For products specified by naming several products or manufacturers, select one of the products or manufacturers named.
 3. For products specified by naming one or more products or manufacturers and stating "or other approved", or "or approved equivalent", or other such wording on drawings or within specifications sections, submit a request for substitutions for product or manufacturer which is not specifically named, but only after submitting bid on specified products and systems.
- E. Other products proposed for use, including those specified only by required attributes and performance, require review by the Owner before being incorporated into the Work. Certificates of compliance or test reports shall be provided to indicate for the record that the proposed products meet the specified requirements.

PART 2 - PRODUCTS

2.01 SHOP DRAWINGS AND COORDINATION DRAWINGS

- A. Scale and Measurements: Make shop drawings to a scale sufficiently large to shown pertinent aspects of the item and its method of connection to the Work.
- B. Reproduction of Reviewed Shop Drawings: Printing and distribution of reviewed shop drawings for the Owner's use will be by the Owner.
- C. Review comments of the Reviewer will be shown in a designated color when it is returned to the Contractor. The Contractor shall make and distribute copies required for his purposes.

2.02 MANUFACTURERS' LITERATURE

- A. General: Where submitted literature from manufacturers includes data not pertinent to the submittal, indicate which portion of the contents is being submitted for review.
- B. Number of Copies Required: ONE set of pdf files delivered electronically. Hard copies will not be accepted. The Owner will distribute stamped copies to Engineers, Architect, and other pertinent

SUBMITTALS

parties. This requirement supersedes individual specification Sections that may require "hard copies".

- C. The Contractor shall make and distribute copies required for his purposes.

2.03 SAMPLES

- A. Accuracy of Samples: Precise article proposed to be furnished shall be identified with a submittal number.
- B. Number of Samples Required: Submit quantity required to be returned plus two each to be retained by the Owner.
- C. Reuse of Samples: In situations accepted by the Owner, the Owner's retained sample may be used in the construction as one of the installed items.
- D. Size of Samples: Samples shall be 6" x 6", or manufactured width by 12 inches unless otherwise required by the pertinent Specification section.

2.04 COLORS AND PATTERNS

- A. Unless the precise color and pattern is specifically described in the Contract Documents, and whenever a choice of color or pattern is available in a specified product, submit accurate color and pattern charts to the Architect for review and selection. Submit data to verify compliance only.

PART 3 - EXECUTION

3.01 IDENTIFICATION OF SUBMITTALS

- A. General: Consecutively number submittals within the respective specification section. Accompany each submittal with transmittal cover letters attached to the end of this Section. Fill out each transmittal cover letter completely, number sequentially, include specification section, name of supplier or installer, and contact person and telephone number. A copy of the Architect's submittal form must be stapled to each copy of each submittal, or each set of drawings which comprise a submittal.
- B. Internal Identification: On the first page of each copy of each submittal, and elsewhere as required for positive identification, indicate the submittal number.
- C. Re-Submittals: When material is resubmitted, transmit under a new letter of transmittal and with same submittal number plus a "alphabetic" suffix indicating its a re-submittal, e.g. 05500-1A, 05500-1B.
- D. Submittal Log: Maintain submittal log for the duration of the Contract. Show current status of submittals, with columns showing "approved", "approved as corrected", etc., to match Owner's categories. Make the submittal log available for the Owner's review upon request. Log shall be available and will be reviewed at each project meeting (by Architect).

3.02 COORDINATION OF SUBMITTALS

- A. The Contractor shall be responsible to coordinate and review all submittals prior to forwarding to Owner. All submittals shall be stamped with Contractor's stamp, signed and dated, stating:
 - 1. Contractor has reviewed submittal for compliance with requirements of the Contract Documents.
 - 2. Contractor has reviewed submittal for proper interfacing with other trades.
- B. General: Prior to making submittals, coordinate materials including, but not necessarily limited to:
 - 1. Determine and verify interface conditions, catalog numbers, and similar data,
 - 2. Coordinate with other trades as required,
 - 3. Clearly indicate deviations from requirements of the Contract Documents. Deviations which are not clearly called out as a deviation and which subsequently become a part of

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

an approved submittal can under no circumstances be considered legitimate grounds for an additive change order.

- C. Grouping of Submittals: Make submittals in groups containing associated items to ensure that information is available for checking each item when it is received. Partial submittals may be rejected as not complying and the Contractor shall be strictly liable for occasioned delays.
- D. Color selections for materials in the same space or same elevation shall be submitted at one time. "Piecemeal" submission of the color samples or charts is unacceptable and will be returned awaiting a "complete" submission.

3.03 OWNER'S REVIEW

- A. General: Corrections or comments made on Shop Drawings during his review shall not relieve the Contractor from compliance with requirements of the Drawings and Specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. The Contractor is responsible for confirming and correlating quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of other trades, and performing his work in a safe and satisfactory manner.
 - 1. Authority to Proceed: The notations "No Exception Taken", "Furnish as Submitted", "Approved", "Provide as Corrected", "Approved as Noted", authorize the Contractor to proceed with fabrication, purchase, or both or the items so noted, subject to the revisions, if any, required by the Owner's review comments.
 - 2. Revisions: The notation "Revise and Resubmit" or "Submit Specified Item", means make revisions required by the Owner and resubmit. If the Contractor considers required revision to be a change, he shall so notify the Owner as provided for under "Changes" or "Changes in the Work" in the General Conditions. Show each drawing revision by number, date, and subject in a revision block on the drawing. Make only those revisions directed by or accepted by the Owner.
 - 3. Rejection: The notation "Rejected" means the submission does not meet requirements of project contract documents. Make new submission meeting project contract documents.

END OF SECTION

(ATTACHMENT: SUBMITTAL TRANSMITTAL FORM)

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

SUBMITTAL TRANSMITTAL FORM

GENERAL CONTRACTOR:			SUBMITTAL NO.:	
PROJECT:			DATE RANGE:	
ADDRESS:			PRINTED ON:	
TRANSMITTED TO:	DATE	QTY	SUBMITTAL PACKAGE ACTION	
MGPA ARCHITECTURE				
6965 EL CAMINO REAL	SUBMITTED BY:		TRANSMITTED FOR:	DELIVERED BY:
SUITE 105-278				
CARLSBAD, CA 92009				
TEL: 760-929-1500				
EMAIL:				
SUBMITTAL PACKAGE NO.	DESCRIPTION		TRADE	
SUBMITTAL ITEMS	DESCRIPTION	NOTES		ITEM ACTION

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

THIS PAGE BLANK

SECTION 01 3516

ALTERATION PROJECT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Special procedures required for alteration work.

1.02 SCHEDULING

- A. Before commencing alteration or demolition work, submit for review by the Architect and approval of the Owner, a schedule showing the commencement, the order and the completion dates for the various parts of this work.
- B. Before starting work relating to existing utilities (electrical, sewer, water, heat, gas, fire lines, etc.) that will temporarily discontinue or disrupt service to the existing building, notify the Architect and the Owner 72 hours in advance and obtain the Owner's approval in writing before proceeding with this phase of the work.

1.03 PROTECTION

- A. Make such explorations and probes as are necessary to ascertain required protective measures before proceeding with demolition and removal. Give particular attention to shoring and bracing requirements so as to prevent damage to existing construction.
- B. Provide, erect, and maintain catch platforms, lights, barriers, weather protection, warning signs, and other items as required for proper protection of the public, occupants of the building, workmen engaged in demolition operations, and adjacent construction.
- C. Provide and maintain temporary protection of the existing structure designated to remain where demolition, removal and new work is being done, connections made, materials handled, or equipment moved.
- D. Take necessary precautions to prevent dust and dirt from rising by wetting demolished masonry, concrete, plaster and similar debris. Protect unaltered portions of the existing building affected by the operations under this Section by dustproof partitions and other adequate means.
- E. Provide adequate fire protection in accordance with local Fire Departments, and with Section 01 5200, Construction Facilities and Temporary Controls.
- F. Do not close or obstruct walkways, passageways or stairways. Do not store or place materials in passageways, stairs, or other means of egress. Conduct operations with minimum traffic interference.
- G. Be responsible for damage to the existing structure or contents by reason of the insufficiency of protection provided.

PART 2 - EXECUTION

2.01 WORKMANSHIP

- A. Perform demolition, removal and alteration work with due care. Be responsible for damage which may be caused by such work to part or parts of existing structures or items designated for re-use. Perform patching, restoration, and new work in accordance with applicable technical sections of the Specifications.
- B. Materials and items designated to become the property of the Owner shall be as shown. Remove such items with care, under the supervision of the trade responsible for reinstallation; protect and store until required. Replace material and item damaged in its removal with approved similar and equal new material.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

- C. Materials and items demolished and not designated to become the property of the Owner or to be reinstalled shall become the property of the Contractor and shall be removed from the Owner's property. Storage or sale of removed items on site will not be permitted.
- D. Execute the work in a careful and orderly manner, with the least possible disturbance to the public and to the occupants of the building.
- E. Where alterations occur, or new and old work join, cut, remove, patch, repair or refinish the adjacent surfaces or so much thereof as is required by the involved conditions, and leave in as good a condition as existed prior to the commencing of the work. The alteration work shall be performed by the various respective trades which normally perform the particular items of work.
- F. Finish new and adjacent existing surfaces as specified for new work. Clean existing surfaces of dirt, grease, loose paint, etc. before refinishing.
- G. Where existing equipment and fixtures are indicated to be re-used, repair such equipment and fixtures and refinish to put in perfect working order. Refinish as directed.
- H. Cut out embedded anchorage and attachment items as required to properly provide for patching and repair of the respective finishes.

2.02 CLEANING UP

- A. Remove debris as the work progresses. Maintain the premises in a neat and clean condition.

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION
SECTION 01 4219
REFERENCE STANDARDS

PART 1 - GENERAL

1.01 SUMMARY

- A. Throughout the Contract Documents, reference is made to codes and standards which establish qualities and types of workmanship and materials, and methods for testing and reporting on the pertinent characteristics.
- B. Provide materials and workmanship which meet or exceed the specifically named code or standard.
- C. Deliver to the Architect required proof that the materials or workmanship, or both, meet or exceed the requirements of the specifically named code or standard. Such proof shall be in the form requested by the Architect and will generally be required to be copies of a certified report of tests conducted by a testing agency acceptable for that purpose to the Architect.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Specific naming of codes or standards occurs on the Drawings and in other Sections of these Specifications. Comply with laws, ordinances, and regulations of authorities having jurisdiction. Proof of compliance shall be signed approval by the respective authorities having jurisdiction. Costs relative thereto shall be borne by the Contractor.

1.03 QUALITY ASSURANCE

- A. Familiarity with Pertinent Codes and Standards: Verify the requirements of the specifically named codes and standards as well as requirements mandated by law, ordinance, and authority. Verify that the items procured and installed in this Work meet or exceed the specified requirements.
- B. Rejection of Noncomplying Items: The Architect reserves the right to reject items incorporated into the Work which fail to meet such minimum requirements.

1.04 APPLICABLE CODES

- A. Work of the project shall conform to the following codes, copies of which will be kept at the job site by each trade contractor for their applicable scope of work, for the duration of the project. Code books to be made available for Contractor/Inspector of Record/Architect's review at all times:

1. PARTIAL LIST OF APPLICABLE CODES AS OF January 1, 2020

2022 California Administrative Code, Part 1, Title 24 C.C.R.

2019 California Building Code (CBC), Part 2, Title 24, C.C.R.

(2018 International Building Code Volumes 1-2 and 2016 California Amendments)

2019 California Electrical Code (CEC), Part 3, Title 24 C.C.R.

(2017 National Electrical Code and 2019 California Amendments)

2019 California Mechanical Code (CMC) Part 4, Title 24 C.C.R.

(2018 Uniform Mechanical Code and 2019 California Amendments)

2019 California Plumbing Code (CPC) Part 5, Title 24 C.C.R.

(2018 Uniform Plumbing Code and 2016 California Amendments)

2019 California Energy Code (CEC), Part 6, Title 24 C.C.R.

2019 California Fire Code, Part 9, Title 24 C.C.R.

(2018 International Fire Code and 2016 California Amendments)

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

2019 California Green Building Standards Code, Part 11, Title 24, C.C.R.

2019 California Referenced Standards, Part 12, Title 24 C.C.R.

Title 19 C.C.R., Public Safety, State Fire Marshal Regulations

2019 ASME A17.1 Safety Code for Elevators and Escalators

Title 24, Part 1, Public Works, Chapter 1, Department of General Services.

1.05 APPLICABLE REFERENCE STANDARDS

- A. Standards referenced in the Specifications are usually referred to by the abbreviation of the organization's name and the designation of the document (e.g., ASTM A 36). Documents in common use may be referred to by their own designation (e.g., the National Electrical Code is published by the National Fire Protection Association as NFPA-70 but is referred to as NEC and is part of a series of documents or standards referred to as the National Fire Code). References are to the latest issue of the publication available on the date stipulated for the receipt of bids.

1. STANDARDS ORGANIZATIONS:

AA	Aluminum Association
AAMA	American Architectural Manufacturer's Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGA	American Gas Association
AISC	American Institute of Steel Construction
AITC	American Institute of Timber Construction
AMCA	Air Movement and Control Association, Inc.
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
ARI	Air Conditioning and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Material
AWPA	American Wood Preservers' Association
AWPB	American Wood Preservers' Bureau
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders' Hardware Manufacturers Association
CBC	California Building Code – Current Edition
CDA	Copper Development Association
CEC	California Electric Code – Current Edition (also see NFPA)
CGA	Compressed Gas Association
CISPI	Cast Iron Soil Pipe Institute
CMC	California Mechanical Code – Current Edition (also see IAPMO)
CNA	Contractors National Association
CPC	California Plumbing Code – Current Edition

REFERENCE STANDARDS

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

	(also see IAPMO)
CPSC	Consumer Product Safety Commission
CRSI	Concrete Reinforcing Steel Institute
CSUSDC	Commercial Standard of U.S. Dept. of Commerce
CSMA	Chemical Specialties Manufacturing Association
CTI	Ceramic Tile Institute
FGMA	Flat Glass Marketing Council
FM	Factory Mutual System
FS	Federal Specification
GA	Gypsum Association
HI	Hydraulic Institute, Hydraulics Institute
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
MIL	Military Specifications
ML/SFA	Metal Lath/Steel Framing Association
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry
NAAM	National Association of Architectural Metal Manufacturers
NBS	National Bureau of Standards
NEBB	National Environmental Balancing Bureau
NEMA	National Electric Manufacturers Association
N FLUID PA	National Fluid Power Association
NFPA	National Fire Protection Association
NRCA	National Roofing Contractors Association
NSF	National Sanitation Foundation
NWWDA	National Wood Window and Door Association
PS	Product Standard (of NBS)
SMACNA	Sheet Metal and Air Conditioning
SDI	Steel Deck Institute, Steel Door Institute
SJI	Steel Joist Institute
SSPC	Steel Structures Painting Council
TCA	Tile Council of America
TITLE	Title 24, California Code of Regulations, Part 1 and 2, Current Edition
UL	Underwriters' Laboratories
WIC	Woodwork Institute (formerly WIC)
WLPDIA	Western Lath Plaster Drywall Industries Association

REFERENCE STANDARDS

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

REFERENCE STANDARDS

01 4219 - 4

SECTION 01 4500 QUALITY CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Quality assurance and control of installation.
- B. References
- C. Field Samples
- D. Mock-Up
- E. Project Inspector.
- F. Permits and Fees.
- G. Verified Reports.
- H. Manufacturers' field services and reports.

1.02 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions and workmanship to produce work of specified quality.
- B. Comply fully with manufacturers' instructions including each step in the sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Where experience minimums for workmen, applicators, companies or manufacturers are required in individual sections, written certification and documentation substantiating such minimums shall be submitted and approved by the Architect, when requested.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.03 REFERENCES

- A. Conform to reference standard by date of issue current on the date of Contract Documents.
- B. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.
- C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.04 FIELD SAMPLES

- A. Install field samples at the site as required by individual specifications Sections for review by Architect.
- B. Accepted samples represent a quality level for the Work.
- C. Where field sample is specified in individual Sections to be removed, clear area after field sample has been accepted by Architect and is no longer required for reference.

1.05 MOCK-UP

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

- A. Tests will be performed under provisions identified in this Section
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashing, seals and finishes.
- C. Where mock-up is specified in individual Sections to be removed, clear area after mock-up has been accepted by Architect and is no longer required for reference.

1.06 PROJECT INSPECTOR

- A. An Inspector, herein referred to as the "Inspector of Record" or "IOR", will be employed by the Owner and approved by Office of Regulation Services, Division of State Architect (ORS/DSA) in accordance with Part 1, Title 24, Section 4-333, California Code of Regulations. His duties are described in Part 1, Title 24, Section 4-342, CCR. His duties are also required and defined in Sections 39151, 39153, 81141 and 81143 of the California Education Code as they relate to schools.
- B. The work of construction in all stages of progress shall be subject to the personal continuous observation of the Project Inspector. He shall have free access to any or all part of the work at any time. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.

1.07 PERMITS AND FEES

- A. Where required by the provisions of individual sections of the Specifications, and where required to carry out construction operations, Contractor shall obtain and pay for permits and fees, including, but not limited to, Demolition, Grading, Disposals, Off-site development permits, Requirements of Water, Gas, Sewer, Flood and Sanitary districts having jurisdiction and Municipal and County Building Departments.
 - 1. Fees for final utility connections shall be paid by the Contractor and reimbursed to the Contractor by the Owner at direct cost.
 - 2. Building permit inspection notice forms or approvals requiring fees issued by the DSA will be obtained and paid for by the Owner.

1.08 VERIFIED REPORTS

- A. Contractor shall comply with Part 1, Title 24, Sections 4-336 and 4-343, California Code of Regulations and issue verified reports through the Architect as required.

1.09 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and as applicable and to initiate instructions when necessary.
- B. Manufacturers Representatives shall report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- C. Submit a report of observation to Architect for review.

PART 2 - PRODUCTS (NOT APPLICABLE)**PART 3 - EXECUTION (NOT APPLICABLE)****END OF SECTION****QUALITY CONTROL**

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

SECTION 01 4523
TESTING LABORATORY AND INSPECTION
SERVICES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Cooperate with the Owner's selected testing agency, the Owner's assigned Inspector, and others responsible for testing and inspecting the Work, and assist the Owner and his Construction Manager by coordinating such testing and inspecting services as specified in this Section and/or elsewhere in the Contract Documents.
- B. Related Work Specified Elsewhere:
 - 1. Requirements for testing may be required in other Sections of these Specifications.
 - 2. Where no testing requirements are specified or required by reference standards or authorities having jurisdiction, the Owner may require such testing to be performed under current pertinent standards for testing. Payment for such testing will be made as described herein.
- C. Work Not Included:
 - 1. The Owner will select a prequalified independent testing laboratory and Inspector as approved by the Division of the State Architect.
 - 2. The Owner will pay for initial services of the testing laboratory as further described hereinafter.

1.02 QUALITY ASSURANCE

- A. The Owner will select an independent testing laboratory to conduct the tests. Selection of the material required to be tested shall be by the laboratory or the Owner's representative and not by the Contractor.
- B. Qualifications of Testing Laboratory: The testing laboratory shall be qualified to the Owner's acceptance in accordance with ASTM E 329. The testing laboratory shall be qualified by the Division of State Architect in accordance with Interpretation of Regulation No. IR A-15
- C. Codes and Standards: Testing, when required, will be in accordance with pertinent codes and regulations and with selected standards of the American Society for Testing and Materials and other organizations or agencies which publish recognized codes, standards, or tests. Refer to Article 3.04 - Required Testing of this Section.

1.03 TEST REPORT DISTRIBUTION

- A. Promptly process and distribute required copies of test reports and related instructions to ensure necessary retesting and/or replacement of materials with the least possible delay in the progress of the Work.
- B. One copy of test reports shall be forwarded to the Division of the State Architect by the testing agency. Such reports shall include tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations as required shall also be reported. The reports shall show that the material or materials were sampled and tested in accordance with the requirements of Title 24 and with the approved specifications. Test reports shall show the specified design strength. They shall also state definitely whether or not the material or materials tested comply with requirements.
- C. Each testing agency shall submit to the Division of the State Architect a verified report in duplicate covering tests which are required to be made by that agency during the progress of the

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

project. Such report shall be furnished each time that work on the project is suspended, including tests up to that time, and at the completion of the project.

1.04 PAYMENT FOR TESTING SERVICES

- A. Initial Services: The Owner will pay for initial testing and inspection except as specifically modified hereinafter or as specified otherwise in technical sections, provided the results of inspection indicate compliance with the Contract Documents.
- B. Retesting: When initial tests or inspection indicate noncompliance with the Contract Documents, subsequent retesting or re-inspection occasioned by the noncompliance shall be performed by the same testing laboratory or Inspector and the costs thereof will be deducted by the Owner from the Contract Sum. Retesting and re-inspection will continue until test or inspection results indicate compliance.
- C. Code Compliance Testing: Inspections and tests required by codes or ordinances, or by authorities having jurisdiction and made by a legally constituted authority, shall be the responsibility of and shall be paid for by the Owner, but back charged to the Contractor in case of retesting due to non-compliance.
- D. Specified Inspections and Tests: Tests and inspections specified in the Specifications, directly or by reference, shall be coordinated by the Contractor at his expense and paid for by the Owner unless specifically stated otherwise in a Specification Section. Corrections of non-compliance and test failures shall be paid for by the Owner, but shall be back charged to the Contractor. Re-inspection and retesting shall be in accordance with paragraph 1.04-B.
- E. Contractor's Convenience Testing: Inspecting or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of and at the expense of the Contractor.

1.05 INSPECTION BY THE OWNER

- A. The Owner and his representatives will have access, for the purpose of inspection, to parts of the work and to the shops wherein the work is in preparation, and the Contractor shall maintain proper facilities and provide safe access for such inspection.
- B. The Owner shall have the right to reject materials and workmanship which are defective and to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the Owner. If the Contractor does not correct such rejected work within a reasonable time, fixed by written notice, the Owner may correct rejected work and charge the expense to the Contractor.
- C. Should it be considered necessary or advisable by the Owner at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out the same, the Contractor shall on request promptly furnish necessary facilities, labor, and materials. If such work is found to be defective in respect due to the fault of the Contractor or his subcontractor, he shall defray expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the additional cost of labor and material necessarily involved in the examination and replacement will be allowed the Contractor.
- D. and materials. If such work is found to be defective in respect due to the fault of the Contractor or his subcontractor, he shall defray expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the additional cost of labor and material necessarily involved in the examination and replacement will be allowed the Contractor.

1.06 OWNER'S INSPECTOR

- A. An Inspector employed by the Owner in accordance with the requirements of State of California Code of Regulations, Title 24, Part 1, and qualified in accordance with Office of State Architect will be assigned to the work. His duties are specifically defined in Title 24, Part 1, Section 4-342, reprinted herein:

TESTING LABORATORY AND INSPECTION SERVICES

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

B. Duties of the Inspector”

1. General: The inspector shall act under the direction of the Architect or registered Engineer.
2. Duties: The general duties of the Inspector in fulfilling his or her responsibilities are as follows:
 - a. Continuous Inspection Requirement: He or she must have actual personal knowledge, obtained by his personal and continuous inspection of the work of construction in stages of its progress, that the requirements of the approved plans and specifications are being completely executed.
 - b. Continuous inspection means complete inspection of every part of the work. Work, such as concrete work or brickwork which can be inspected only as it is placed, shall require the constant presence of the Inspector. Other types of work which can be completely inspected after the work is installed may be carried on while the Inspector is not present. In any case, the Inspector must personally inspect every part of the work. In no case shall the Inspector have or assume duties which will prevent him or her from giving continuous inspection.
 - c. The project Inspector may obtain personal knowledge of the work of construction, either on-site or off-site, performed under the inspection of a special Inspector or Assistant
 - d. Inspector from the reporting of others on testing or inspection of materials and workmanship for compliance with the plans, specifications and applicable standards. The exercise of reasonable diligence to obtain the facts shall be required.
 - e. Relations With Architect or Engineer: The Inspector shall work under the general direction of the Architect or registered Engineer. Inconsistencies or seeming errors in the plans and specifications shall be reported promptly to the Architect or registered Engineer for his interpretation and instructions. In no case, however, shall the instruction of the Architect or registered Engineer be construed to cause work to be done which is not in conformity with the approved plans, specifications, and change orders.
 - f. Job File: The Inspector shall keep a file of approved plans and specifications (including approved addenda or change orders) on the job, and shall immediately return unapproved documents to the Architect for proper action. The Inspector, as a condition of his employment, shall have and maintain on the job, codes, and documents referred to in the plans and specifications.
 - g. Inspector's Semimonthly Reports: The Inspector shall keep the Architect or registered Engineer thoroughly informed as to the progress of the work by making semimonthly reports in writing as required in Section 37.
 - h. Notifications to Division of the State Architect: The Inspectors shall notify the Division of the State Architect:
 - (1) When work is started on the project.
 - (2) At least 48 hours in advance of the time when foundation trenches will be complete, ready for footing forms.
 - (3) At least 48-hours in advance of the first pour of concrete.
 - (4) When work is suspended for a period of more than two weeks.
 - i. Construction Procedure Records: The Inspector shall keep a record of certain phases of construction procedure including, but not limited to, the following:

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

- (1) Concrete Pouring Operations: The record shall show the time and date of placing concrete and the time and date of removal of forms in each portion of the structure.
 - (2) Welding Operations: The record shall include identification marks of welders, list of defective welds, manner of correction of defects, etc.
 - (3) Penetration under the last ten (10) blows for each pile when piles are driven for foundations.
- j. All such records of construction procedure shall be kept on the job until the completion of the work. These records shall be made a part of the permanent school records.
- k. Deviations: The Inspector shall notify the Contractor, in writing, of deviations from the approved plans and specifications which are not immediately corrected by the Contractor when brought to his or her attention. Copies of such notice shall be forwarded immediately to the Architect or registered Engineer.
- l. Failure on the part of the Inspector to notify the Contractor of deviations from the approved plans and specifications shall in no way relieve the Contractor of responsibility to complete the work covered by his or her contract in accordance with the approved plans and specifications and laws and regulations.
- m. Verified Report: The project and special Inspectors shall each make and submit to the Division of the State Architect verified reports.
- n. The Inspector shall prepare and deliver to the Division of the State Architect detailed statements of fact regarding materials, operations, etc. when requested.
 - (1) Violations: Failure, refusal, or neglect on the part of the Inspector to notify the Contractor of work which does not comply with the requirements of the approved plans and specifications, or failure, refusal, or neglect to report immediately, in writing, such violation to the Architect or registered Engineer, to the School Board, and to the Division of the State Architect shall constitute a violation of the act and shall be cause for the Division of the State Architect to take action.
- o. Note: Authority cited: Section 39152 and 81142, Education Code. Reference: Sections 39151, 39153, 81141 and 81143, Education Code."
- C. The work of construction in stages of progress shall be subject to the personal continuous observation of the Inspector as continuous observation is defined by Title 24. He shall have free access to all parts of the work at any time. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work shall not relieve the Contractor from obligation to fulfill this Contract.

1.07 OWNER'S OTHER PERSONNEL

- A. From time to time, other personnel in the employ of the Owner may inspect the Work when the Work is in progress but shall have no authority to direct the Contractor or request changes in the Work except as may be provided elsewhere in the Contract Documents.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 COOPERATION WITH TESTING LABORATORY AND INSPECTORS

- A. Inspectors and representatives of the testing laboratory shall have access to the work. Provide facilities for such access in order that the testing, inspection, and the obtaining of samples may be done properly.

TESTING LABORATORY AND INSPECTION SERVICES

SAN DIEGO COUNTY OFFICE OF EDUCATION

- B. Contractor shall deliver material specimens to the Owner's testing lab, which must by terms of the Contract be tested prior to inclusion in the Project, at least 45 days prior to scheduled delivery to the job site.
- C. Material shipped by the Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said representative that such testing and inspection will not be required shall not be incorporated in the job.

3.02 TAKING SPECIMENS

- A. Field specimens and samples for testing, unless otherwise provided in these Contract Documents, shall be selected and taken by the testing laboratory or Inspector and not the Contractor. Sampling equipment and personnel will be provided by the testing laboratory. Deliveries of specimens and samples to the testing laboratory will be performed by the testing laboratory.

3.03 SCHEDULES FOR TESTING

- A. Establishing Schedule:
 - 1. By advance discussion with the testing laboratory selected by the Owner, determine the time required for the laboratory to perform its tests and to issue each of its findings.
 - 2. Provide required time within the construction schedule.
- B. Revising Schedule: When changes of construction schedule are necessary during construction, coordinate such changes of schedule with the testing laboratory as required.
- C. Adherence to Schedule: When the testing laboratory is ready to test according to the determined schedules but is prevented from testing or taking specimens due to the incompleteness of the work, extra charges for testing attributable to the delay may be back-charged to the Contractor and will be deducted by the Owner from the Contract Sum.

3.04 REQUIRED TESTING

- A. Tests and inspections for the following items will be required in accordance with referenced Sections/Chapters of California Code of Regulations, Title 24, Part 2. All certified reports required for submittal to the Division of the State Architect (DSA) shall be submitted with a "wet" signature to the Field Office of the Inspector of Record.
 - 1. As required by approved DSA 103 Form / DSA Testing & Inspections Form, approved specifically for this Project. These forms will be made available by request to the Architect.

END OF SECTION

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

THIS PAGE BLANK

SECTION 01 5200

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Construction facilities and temporary controls including:
 - 1. Temporary utilities such as heat, water, electricity, and telephone.
 - 2. Sanitary facilities for construction personnel.
 - 3. Enclosures such as tarpaulins, barricades, and canopies.

1.02 PROJECT CONDITIONS

- A. Make required connections to existing utility systems with minimum disruption to services.
- B. When disruption of the existing service is required, do not proceed without the Owner's and Architect's review and, when required, provide alternate temporary service.
- C. Environmental Requirements: Provide and maintain heat, fuel, materials, and services necessary to protect work and materials against injury from extreme heat, cold, dry winds, dust, or dampness as follows:
 - 1. During the placing, setting and curing of concrete and cement work, provide sufficient heat to ensure the heating of spaces involved do not fall to less than 50 degrees Fahrenheit.
 - 2. Suspend operations on work when subject to damage by climatic conditions, flooding, or because of insufficient curing or drying of surfaces or materials.
 - 3. Take necessary action to protect site and Work from wind, flood, and storm damage.

PART 2 - PRODUCTS

2.01 GENERAL

- A. General: Construction facilities shall be subject to the Architect's review.

2.02 UTILITIES

- A. Water:
 - 1. Provide any necessary temporary water lines and water supply and, upon completion of the work, remove temporary facilities.
 - 2. Contractor may use District hose bibs, etc., for construction water, if coordinated with District Inspector and no inconvenience is caused to District staff.
- B. Electricity:
 - 1. Provide any necessary temporary wiring and, upon completion of the work, remove temporary facility.
 - 2. Provide area distribution boxes so located that the individual trades may use 100 feet maximum length extension cords to obtain adequate power and artificial lighting at points where required for the work, for inspection and for safety.
 - 3. Contractor may use District outlets if coordinated with District Inspector and no inconvenience is caused to District staff.
- C. Telephone: Contractor shall not use the School District's telephone, but shall provide his own means of communication via cellular phone or other means.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

- D. Utilities for Testing: Normal quantities required to make final tests of installed permanent systems shall be furnished at no cost to the Owner.
- E. Security: Provide temporary fencing as may be required to secure construction areas.

2.03 FIELD OFFICES AND STORAGE LOCATIONS

- A. Provide a Field Office as the Contractor deems necessary for proper operation of the Contractor's work.
 - 1. The Contractor's Field Personnel shall at all times have access to telephone and email.

2.04 PROJECT SIGNS

- A. Allow no other signs on the site except as specifically accepted by the Architect.
- B. Location of signs shall be as directed by the Architect.

PART 3 - EXECUTION

3.01 MAINTENANCE AND REMOVAL

- A. Maintain facilities and temporary controls as long as needed for the safe and proper completion of the work.
- B. Remove such construction facilities and temporary controls as rapidly as progress of the work will permit, or as directed by the Architect.

END OF SECTION

SECTION 01 6116
VOLATILE ORGANIC COMPOUND (VOC) CONTENT
RESTRICTIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for Indoor-Emissions-Restricted products.
- B. Requirements for VOC-Content-Restricted products.
- C. Requirement for installer certification that they did not use any non-compliant products.

1.02 RELATED REQUIREMENTS

- A. See Division 01.

1.03 DEFINITIONS

- A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
 - 1. Interior paints and coatings applied on site.
 - 2. Interior adhesives and sealants applied on site, including flooring adhesives.
 - 3. Flooring.
 - 4. Other products when specifically stated in the specifications.
- B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
 - 1. Exterior and interior adhesives and sealants applied on sites.
 - 2. Wet-applied roofing and waterproofing.
 - 3. Other products when specifically stated in the specifications.
- C. Interior of Building: Anywhere inside the exterior weather barrier.
- D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.
- F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
 - 1. Concrete.
 - 2. Clay brick.
 - 3. Metals that are plated, anodized, or powder-coated.
 - 4. Glass.
 - 5. Ceramics.
 - 6. Solid wood flooring that is unfinished and untreated.

1.04 REFERENCE STANDARDS

- 1. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

2. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings 2005 (Reapproved 2018).
3. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers 2017, v1.2.
4. CHPS (HPPD) - High Performance Products Database Current Edition at www.chps.net/.
5. CRI (GLP) - Green Label Plus Testing Program - Certified Products Current Edition.
6. GreenSeal GS-36 - Adhesives for Commercial Use 2013.
7. SCAQMD 1168 - Adhesive and Sealant Applications 1989 (Amended 2017).
8. SCS (CPD) - SCS Certified Products Current Edition.
9. UL (GGG) - GREENGUARD Gold Certified Products Current Edition.

1.05 SUBMITTALS

- A. See Section 01 3300, for submittal procedures.
- B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.
- C. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.

1.06 QUALITY ASSURANCE

- A. Indoor Emissions Standard and Test Method: CAL (CDPH SM), using Standard Private Office exposure scenario and the allowable concentrations specified in the method, and range of total VOC's after 14 days.
 1. Wet-Applied Products: State amount applied in mass per surface area.
 2. Paints and Coatings: Test tinted products, not just tinting bases.
 3. Evidence of Compliance: Acceptable types of evidence are the following;
 - a. Current UL (GGG) certification.
 - b. Current SCS (CPD) Floorscore certification.
 - c. Current SCS (CPD) Indoor Advantage Gold certification.
 - d. Current listing in CHPS (HPPD) as a low-emitting product.
 - e. Current CRI (GLP) certification.
 - f. Test report showing compliance and stating exposure scenario used.
 4. Product data submittal showing VOC content is NOT acceptable evidence.
 5. Manufacturer's certification without test report by independent agency is NOT acceptable evidence.
- B. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
 1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Report of laboratory testing performed in accordance with requirements.
- C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.
- B. Indoor-Emissions-Restricted Products: Comply with Indoor Emissions Standard and Test Method, except for:
 - 1. Inherently Non-Emitting Materials.
- C. VOC-Content-Restricted Products: VOC content not greater than required by the following:
 - 1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
 - 2. Aerosol Adhesives: GreenSeal GS-36.
 - 3. Joint Sealants: SCAQMD 1168 Rule.
 - 4. Wet-Applied Roofing and Waterproofing: Comply with requirements for paints and coatings.

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

- A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.
- B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

THIS PAGE BLANK

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

SECTION 01 6116.01
ACCESSORY MATERIAL VOC CONTENT
CERTIFICATION FORM

FORM

Identification:

Project Name: _____

Project No.: _____

Architect: _____

Use of This Form:

Because installers are allowed and directed to choose accessory materials suitable for the applicable installation, there is a possibility that such accessory materials might contain VOC content in excess of that permitted, especially where such materials have not been explicitly specified.

Contractor is required to obtain and submit this form from each installer of work on this project.

For each product category listed, circle the correct words in brackets: either [HAS] or [HAS NOT].

If any of these accessory materials has been used, attach to this form product data and MSDS sheet for each such product.

VOC content restrictions are specified in Section 01 6116.

PRODUCT CERTIFICATION

I certify that the installation work of my firm on this project:

[HAS] [HAS NOT] required the use of any ADHESIVES.

[HAS] [HAS NOT] required the use of any JOINT SEALANTS.

[HAS] [HAS NOT] required the use of any PAINTS OR COATINGS.

[HAS] [HAS NOT] required the use of any COMPOSITE WOOD or AGRIFIBER PRODUCTS.

Product data and MSDS sheets are attached.

CERTIFIED BY: (Installer/Manufacturer/Supplier Firm)

Firm Name: _____

Print Name: _____

Signature: _____

Title: _____ (officer of company)

Date: _____

END OF SECTION

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

THIS PAGE BLANK

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

SECTION 01 6116.01
ACCESSORY MATERIAL VOC CONTENT
CERTIFICATION FORM

FORM

Identification:

Project Name: _____

Project No.: _____

Architect: _____

Use of This Form:

Because installers are allowed and directed to choose accessory materials suitable for the applicable installation, there is a possibility that such accessory materials might contain VOC content in excess of that permitted, especially where such materials have not been explicitly specified.

Contractor is required to obtain and submit this form from each installer of work on this project.

For each product category listed, circle the correct words in brackets: either [HAS] or [HAS NOT].

If any of these accessory materials has been used, attach to this form product data and MSDS sheet for each such product.

VOC content restrictions are specified in Section 01 6116.

PRODUCT CERTIFICATION

I certify that the installation work of my firm on this project:

[HAS] [HAS NOT] required the use of any ADHESIVES.

[HAS] [HAS NOT] required the use of any JOINT SEALANTS.

[HAS] [HAS NOT] required the use of any PAINTS OR COATINGS.

[HAS] [HAS NOT] required the use of any COMPOSITE WOOD or AGRIFIBER PRODUCTS.

Product data and MSDS sheets are attached.

CERTIFIED BY: (Installer/Manufacturer/Supplier Firm)

Firm Name: _____

Print Name: _____

Signature: _____

Title: _____ (officer of company)

Date: _____

END OF SECTION

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

THIS PAGE BLANK

SECTION 01 6200

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: General requirements for the proposal of substitutions. All requests for approval of product options and substitutions shall be submitted within 10 days of Notice of Award, but preferably at the onset of Bid Phase. No substitutions will be considered after 10 days post award.

1.02 MATERIAL

- A. Equipment, materials, and articles incorporated into the work shall be new and suitable for the purposes intended.
- B. Reference to equipment, material, article, or patented process by trade name or catalog number shall not be construed as limiting competition.
 - 1. In cases where the Specifications designate a material, product, thing, or service by specific proprietary brand or trade name, and there is only one brand or trade name listed, the item involved is:
 - a. Used as a standard of quality which must be satisfied without compromise, or
 - b. The only brand or trade name known to the Owner and Architect.
 - 2. Wherever in the Contract Documents a material, article, or process is indicated or specified by trade, patent, proprietary name, or the name of manufacturer, such indication shall be deemed to be followed by the words, "or equivalent, as accepted in writing by the Architect".
 - 3. If the phrase "NO SUBSTITUTIONS" is used, the product is required to be used since it is a unique product application or it has been deemed a District standard via School Board resolution.
- C. The naming of more than one manufacturer in a Section does not imply that all products of named manufacturers are acceptable for use on the Project. Where more than one proprietary name is specified, provide materials or equipment of any one of the manufacturers specified, only if full compliance with other portions of the Specifications can be provided.
- D. Construction shall be in compliance with the cited standards for the materials specified.

1.03 SUBSTITUTIONS:

- A. Should the Contractor wish to substitute an item purported to be equal to the one specified, then the Contractor shall furnish to the Architect the name of the manufacturer, model number, and other pertinent data and information respecting the "or equivalent" item which has been proposed in the bid and which the Contractor contemplates incorporating in the work. See Section 01 1300, 1.03, C. for time restrictions on substitutions. If the "or equivalent" item is not found by the Architect to be, in fact, equivalent or better, then the item specified in the Contract Documents shall be furnished.
- B. When required by the Contract Documents, or when directed by the Owner, furnish full information concerning the material or article proposed for incorporation into the work. Testing of a proposed substitute material to assure compliance with the Specifications may be required by the Owner at the Contractor's expense. When so directed, submit samples for acceptance. Equipment, material, and articles installed or used without required acceptance shall be at the risk of subsequent rejection.
- C. Substitutions shall comply with, or exceed, requirements of dimension, function, structure, durability, and appearance without exception. Use of accepted substitutions shall in no way relieve the Contractor from responsibility for compliance with the Contract Documents after installation.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

It shall be incumbent upon the Contractor using accepted substitutions to assume extra costs caused by the use of such substitutions where they affect other work.

- D. Do not substitute materials, equipment, or methods unless such substitution has been reviewed and approved by the Architect. Deferred approval items shall be submitted to the Division of the State Architect for approval prior to acceptance by Architect.
- E. "Or Equivalent": Where the phrase "or equivalent", "or approved equivalent", or "or equivalent as approved by the Architect" occurs in the Contract Documents, do not assume that materials, equipment, or methods will be accepted as equal unless the item has been specifically accepted, in writing, for the Work by the Architect and by the Division of the State Architect for items which "affect health, safety or welfare."
- F. Failure to place orders for specified equipment or material sufficiently in advance of the scheduled installation date will not be considered a valid reason upon which the Contractor may base his request for substitutions or for deviations from the Drawings and Specifications.
- G. In the event the Contractor requests changes or revisions requiring drawings or services of the Architect or his consultants, to facilitate installation or erection of any portion of the work, the Contractor shall accept the responsibility to hire and pay for the Architect's or Consultant's services. A standard hourly rate, as agreed upon, shall be paid by the Contractor whether the change is accepted or rejected. In the event the change is approved, this fee shall be deducted, and paid, from the Contract Sum.
- H. Redesigning by the Contractor: Redesigning shall be by an Engineer licensed, in the State of California, to perform such work. In the event approval is required from authorities having jurisdiction, such approval shall be obtained by the Contractor at his expense before submitting the revised design or substitution to the Architect.
- I. Revision After Approval: When a submittal has been reviewed by the Architect, resubmittal for substitution of materials or equipment will not be considered unless accompanied by an explanation acceptable to the Architect as to the reason substitution is considered necessary. Changes in Plans and Specifications, which affect safety, health or welfare, shall be made by Addenda or Change Orders approved by the Division of the State Architect.

1.04 SUBSTITUTION REQUEST FORM:

- A. Submittal of the requested information shall be accompanied by the attached Substitution Request Form. Submit six copies of each request to the Architect. The architect will distribute as appropriate.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

(ATTACHMENT: SUBSTITUTION REQUEST FORM)

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

SUBSTITUTION REQUEST FORM

TO:	SAN DIEGO COUNTY OFFICE OF EDUCATION			
PROJECT:	SHADOW HILLS E.S.			
SPECIFIED ITEM:	SECTION	PAGE	PARAGRAPH	DESCRIPTION

The undersigned requests consideration of the following:

PROPOSED

SUBSTITUTION_____

1. Attached data includes product description, specifications, drawings, photographs, performance, and test data adequate for evaluation of the requests; applicable portions of the data are clearly identified.
 - a. SUBMITTED BY CONTRACTOR:
 - (1) Attached data also includes a description of changes to Contract Documents which proposed substitution will require for proper installation.
 - b. The undersigned states that the following paragraphs unless modified on attachments, are correct:
 - (1) The proposed substitution does not affect dimensions shown on Drawings.
 - (2) The undersigned will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution.
 - (3) The proposed substitution will have no adverse effect on other work, directly related or otherwise, the construction schedule, or specified warranty requirements.
 - (4) Maintenance and service parts will be locally available for the proposed substitution.
 - c. The undersigned further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item.

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

By:		Date:	
Signature:		Telephone:	
Firm Name:			
Address:			
Attachments:			
Remarks:			

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION
SECTION 01 6600
MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: General requirements for delivery, storage, and handling of materials and equipment applicable to the product sections of this specification and necessary for the construction of the Project.
- B. Related Sections:
 - 1. Section 01 3300 – Submittals
 - 2. Section 01 6200 – Product Options and Substitutions

1.02 GENERAL

- A. Material and Equipment Incorporated into the Work:
 - 1. Conform to applicable specification and standards.
 - 2. Comply with size, make, type, and quality specified.
- B. Manufactured and Fabricated Products:
 - 1. Design, fabricate and assemble in accordance with the best engineering and shop practices.
 - 2. Manufacture like parts of duplicate units to standard sizes and gages for interchangeability.
 - 3. Two or more items of the same kind shall be identical, by the same manufacturer.
- C. Reused Materials: Where the contract documents indicate that existing materials may be reused, such materials must be of like-new sound condition when reincorporated in the work.
 - 1. Metals must be free of rust, corrosion, and dents, and must be restored to a like-new finish by cleaning, polishing or refinishing, whichever is appropriate.
 - 2. Materials to be reused shall be approved for reuse by the Inspector.
- D. Supplementary materials not specifically described in each Section, but required for a complete and proper installation of the Work, shall be new, first quality of their respective kinds, and subject to review and acceptance by the District.

1.03 DELIVERY

- A. Arrange deliveries of products in accordance with construction schedules and in ample time to facilitate inspection prior to installation.
- B. Coordinate deliveries to avoid conflict with work and conditions at the site, taking into consideration:
 - 1. Work of the Contractors, or Owner.
 - 2. Limitations of storage space.
 - 3. Availability of equipment and personnel for handling products.
 - 4. Owner's use of premises.
- C. Deliver products in undamaged condition in original containers or packaging, and with identifying labels intact and legible.

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

- D. Partial deliveries of component parts of equipment shall be clearly marked to identify the equipment, to permit the easy accumulation of parts, and to facilitate assembly.
- E. Immediately on delivery, inspect shipment to ensure:
 - 1. Product complies with requirements of Contract Documents and reviewed submittals.
 - 2. Quantities are correct.
 - 3. Containers and packages are intact and labels are legible.
 - 4. Products are undamaged and properly protected.
- F. The District reserves the right to observe delivered materials, to review the accompanying bills of lading, and to reject the following:
 - 1. Materials not identifiable as accepted products of the accepted manufacturer.
 - 2. Materials exhibiting shelf-lives in excess of those stipulated by the manufacturer.
 - 3. Materials not bearing the appropriate label of Underwriters Laboratories (UL), where applicable.
 - 4. Materials in opened or excessively damaged containers.
 - 5. Materials exhibiting evidence of moisture, organic matter, or other adulterants.
- G. In the event of damage or rejection by the District for stipulated cause, immediately make repairs and replacements necessary to the acceptance of the Architect and at no additional cost to the Owner.

1.04 STORAGE

- A. No payment will be made by the Owner for materials stored off-site, until such time as the materials are incorporated into the work.
- B. Store products immediately on delivery, store in accordance with manufacturer's instructions and as further required by the Owner's Storm Water Pollution Prevention Plan (SWPPP, see requirements in Division 31), and protect until installed in the Work.
- C. Store products subject to damage by elements in weather-tight enclosures.
 - 1. Maintain temperatures within limits recommended by manufacturer's instructions.
 - 2. Provide humidity control for sensitive products, as required by the manufacturer.
 - 3. Store unpacked products in a manner accessible for inspection.
- D. Exterior Storage:
 - 1. Provide substantial platforms, blocking, or skids to support fabricated products above ground and prevent soiling or staining.
 - a. Cover products subject to discoloration or deterioration from exposure to the elements, with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
 - 2. Store loose granular materials on solid paved surfaces, or provide plywood platforms to prevent mixing with foreign matter.
 - a. Provide surface drainage to prevent flow or ponding of rainwater.
 - b. Prevent mixing of refuse or chemically injurious materials or liquids.

1.05 MAINTENANCE OF STORAGE

- A. Maintain a periodic system of inspection of stored products on a scheduled basis to assure that:
 - 1. State of storage facilities is adequate to provide the required conditions.
 - 2. Required environmental conditions are maintained on a continuing basis.

MATERIAL AND EQUIPMENT

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

- 3. Surfaces of products exposed to elements are not adversely affected.
 - B. Mechanical and electrical equipment which requires servicing during long term storage shall have complete manufacturer's instructions for servicing accompanying each item, with notice of enclosed instructions shown on the exterior of the package.
- 1.06 PROTECTION AFTER INSTALLATION
- A. Provide protection of installed products to prevent damage from subsequent operations. Remove protection materials when no longer needed, prior to completion of work.
 - B. Control traffic to prevent damage to equipment and surfaces.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

THIS PAGE BLANK

SECTION 01 7123
FIELD ENGINEERING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: General requirements for field engineering necessary to provide horizontal and vertical control, including:
 - 1. Survey work required in the execution of the project.
 - 2. Civil Engineering and Land Surveying services specified or required to execute contractors construction methods.
 - 3. Coordination with testing laboratory or agency and Soils Engineer.
 - 4. Trade Contractor furnished assistance.
 - 5. Verification and written acceptance of conditions.
 - 6. Reporting procedures.
- B. Requirements not in this section:
 - 1. Specific test procedures performed in accordance with Section 01 4523 - Testing Laboratory and Inspection Services.

1.02 QUALIFICATIONS OF ENGINEER OR SURVEYOR

- A. Qualifications: Registered Civil Engineer qualified to perform land surveying or licensed Land Surveyor acceptable to Trade Contractor and Owner. Trade Contractor shall furnish to the Owner prior to the start of work, and prior to the first Application for Payment, the name and license or registration number issued by the State of California, Board of Registration for Professional Engineers and Land Surveyors. Trade Contractor shall provide notice to the Owner during the course of construction should the identification of the individual responsible for this work change, and shall obtain approval of the Owner for the replacement.
- B. All field engineering services furnished during the course of this project shall be under the direct supervision and control of the named individual Civil Engineer or Land Surveyor.

1.03 FIELD ENGINEERING REQUIREMENTS

- A. Survey Reference Points:
 - 1. Existing basic horizontal and vertical control points for the project are those designated on the drawings.
 - 2. Locate and protect control points prior to starting site work, and preserve permanent reference points during construction. Identify and protect survey monuments on the site discovered during construction, which are not referenced on the project drawings. Tie out such monuments and notify Architect prior to allowing them to be disturbed.
 - 3. Replace any permanent boundary markers disturbed during construction with new permanent monuments and file the required Record of Survey or Corner Record in accordance with applicable State and County laws, at no additional cost to the Owner.

1.04 PROJECT SURVEY REQUIREMENTS

- A. Establish horizontal and vertical control point on the site, remote from the "Building Pad Area" and referenced to data referenced on the Drawings.
 - 1. Site improvements:
 - a. Provide stakes for grading, fill and topsoil placement.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

2. Provide curb stakes and elevations as required to construct paving and on and off-site concrete work.

1.05 SUBMITTALS

- A. On request of the Architect, submit documentation to verify the accuracy of the field engineering work.
- B. Project Record (As-built) Drawings (see Section 01 7839 - Project Record Documents for further requirements):
 1. At the appropriate times during the project, deliver to the Trade Contractor's Record Documents Recorder current, "as-built" data of the work, for inclusion into the Project Record Documents. Clearly, indicate differences between original drawings and completed work within specified tolerances.
 2. Show as-built locations by coordinates of utilities on-site with the top of pipe elevations at major grade and alignment changes.
 3. Clearly locate final locations of plumbing and electrical lines which are only shown on the drawings in a diagrammatic way.
 4. Completed as-built transparencies shall be signed and certified as correct by the licensed Surveyor or Civil Engineer.
 5. Furnish any required Engineering Survey information for all utility easements for any required document recording.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

SECTION 01 7419
CONSTRUCTION WASTE MANAGEMENT AND
DISPOSAL

PART 1 - GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.
- E. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.
- F. The following sources may be useful in developing the Waste Management Plan:
- G. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
- H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.03 SUBMITTALS

- A. See Section Division 01, for submittal procedures.
- B. Submit Waste Management Plan within 10 calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to landfilling.
- C. Waste Management Plan: Include the following information:
 - 1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
 - 2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
 - 3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
 - 4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
 - 5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
 - 6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
- D. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
 - 1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
 - 2. Submit Report on a form acceptable to Owner.
 - 3. Landfill Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

- c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
4. Incinerator Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards, of trash/waste material from the project delivered to incinerators.
 - c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
5. Recycled and Salvaged Materials: Include the following information for each:
 - a. Identification of material, including those retrieved by installer for use on other projects.
 - b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
 - c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
6. Material Reused on Project: Include the following information for each:
 - a. Identification of material and how it was used in the project.
 - b. Amount, in tons or cubic yards.
 - c. Include weight tickets as evidence of quantity.
7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 1. Prebid meeting.
 2. Preconstruction meeting.
 3. Regular job-site meetings.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 1. Provide containers as required.
 - 2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 - 3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION
SECTION 01 7423
CLEANING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Cleaning throughout the construction period.
- B. Related Work Described Elsewhere: In addition to standards specified herein, comply with requirements for cleaning up as described in other section of these Specifications.

1.02 QUALITY ASSURANCE

- A. Inspection: Conduct daily inspection, and more often if necessary, to verify that requirements of cleanliness are being met.
- B. Codes and Standards: In addition to the requirements specified herein, comply with pertinent requirements of authorities having jurisdiction.
- C. For final cleaning, use only a professional cleaning company experienced in commercial cleaning.

1.03 PAYMENT WITHHELD

- A. The Architect reserves the right to withhold certification of payment requests for failure on the part of the Contractor to regularly clean the Project in conformance with the Requirements of this Section.

PART 2 - PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

- A. Provide the required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.02 COMPATIBILITY

- A. Use cleaning materials and equipment which are compatible with the surfaces being cleaned, as recommended by the manufacturer of the material to be cleaned.

PART 3 - EXECUTION

3.01 PROGRESS CLEANING

- A. General:
 - 1. Comply with all requirements of the Owner's Storm Water Pollution Prevention Plan.
 - 2. Retain stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials.
 - 3. Do not allow the accumulation of scrap, debris, waste material, and other items not required for construction of this work.
 - 4. At least twice each month, and more often if necessary, remove scrap, debris, and waste material from the job site.
 - 5. Provide adequate storage for items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.
- B. Site:
 - 1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove items to the place designated for their storage. Combustible waste shall be removed from the site. Flammable waste shall be kept in sealed metal containers until removed from the site.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

2. Weekly, and more often if necessary, inspect, arrangements of materials stored on the site; restack, tidy, or otherwise service arrangements to meet the requirements specified above.
 3. Maintain the site in a neat and orderly condition.
- C. Structures:
1. Weekly, and more often if necessary, inspect the structures and pick up scrap, debris, and waste material. Remove items to the place designated for their storage.
 2. Weekly, 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 handheld broom, i.e., "broom-clean".
 3. As required preparatory to installation of succeeding materials, clean the structures of pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the required cleanliness.
 4. Following the installation of finish floor materials, clean the finish floor daily, and more often if necessary, and while work is being performed in the space in which finish materials have been 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, i.e., "vacuum clean".

3.02 FINAL CLEANING

- A. Definition: Except as otherwise specifically provided, "clean", for the purpose of the Article, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials, i.e., "scrub and polish clean".
- B. General: Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste, conduct final progress cleaning as described above.
- C. Site: Unless otherwise specifically directed by the Architect, water and broom clean paved areas on the site and public paved areas directly adjacent to the site. Remove resultant debris.
- D. Structures:
 1. Exterior: In areas affected by the work under this contract, visually inspect exterior surfaces and remove traces of soil, waste material, smudges, and other foreign matter. Remove traces of splashed material from adjacent surfaces. If necessary to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure. In the event of stubborn stains not removable with water, the Architect may require light sandblasting or other cleaning at no additional cost to the Owner.
 2. Interior: In areas affected by the work under this contract, visually inspect interior surfaces and remove traces of soil waste material, smudges, and other foreign matter. Remove traces of splashed materials from adjacent surfaces. Remove paint drippings, spots, stains, and dirt from finished surfaces. Use only the cleaning materials and equipment instructed by the manufacturer of the surface material.
 3. Glass: Clean glass inside and outside.
 4. Polished surfaces: On surfaces requiring the routine application of buffed polish, apply the polish recommended by the manufacturer of the material being polished. Glossy surfaces shall be cleaned and shined as intended by the manufacturer.

SAN DIEGO COUNTY OFFICE OF EDUCATION

- 5. Carpet: Use only dry-chemical method of cleaning. Steam cleaning or water-based cleaning shall not be used on carpet. Use only dry-chemical materials and methods fully approved by the carpet manufacturer, as instructed in manufacturer's published literature.
- E. Timing: Schedule final cleaning as accepted by the Architect to enable the Owner to accept a completely clean project.

3.03 CLEANING DURING OWNER'S OCCUPANCY

- A. Should the Owner occupy the work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning of the occupied spaces shall be determined by the Architect in accordance with the General Conditions of the Contract.

END OF SECTION

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

THIS PAGE BLANK

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION
SECTION 01 7700
CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Operations and submittals required to establish Substantial Completions, Project Acceptance, and filing of Notice of Completion.
- B. Contract Completion Date is the day established by the Agreement, the Special Conditions, and the Notice to Proceed as the calendar date by which all Work must be completed in accordance with the Contract Documents. Once established, the Contract Completion Date can only be altered by Change Order. If Work is not complete in accordance with the Contract Documents by the Contract Completion Date, Contractor is obligated to pay liquidated damages to the Owner in accordance with the terms of the Contract.
- C. Substantial Completion: The Date of Substantial Completion is the date on which the Architect certifies to the Owner that construction is sufficiently complete, in accordance with the Contract Documents, that the District may occupy the Project for the use intended, and all agencies and authorities have provided written acceptance of the portions of the Work over which they have jurisdiction.
- D. Project Acceptance: The District will accept completion of the Contract after the entire Work shall have been completed to the satisfaction of the District and after issuance of the Certificate of Substantial Completion. The Work may only be accepted as complete by formal action of the Governing Board of the School District. Acceptance of the Project by the Governing Board establishes the formal and official Completion Date for the Project, to be compared against the Contract Completion Date. Project Acceptance must occur prior to Contract Completion Date to preclude assessment of liquidated damages.
- E. Notice of Completion: The date of record for the Notice of Completion shall be the date stamped on the Notice by the County Recorder at the time the County Recorder registers the Notice (note: this is normally not the same date as the date the Owner actually files the Notice of Completion with the Recorder's office).

1.02 CLOSEOUT SCHEDULE AND PROCEDURE

- A. Requirements preparatory to project acceptance:
 - 1. Contractor shall deliver certifications to Architect that no new materials containing asbestos have been included in the work.
 - 2. Temporary facilities shall be removed from the site as specified in Section 01 5200, Construction Facilities and Temporary Controls, except that under no circumstances shall Owner's and Contractor's trailers, furnishings, temporary utilities to trailers and services of on-site secretary be removed from the site until acceptance of the Project by the Owner's Governing Board.
 - 3. The entire site shall be thoroughly cleaned of all construction debris.
 - 4. Record drawings shall be completed, signed by Contractor and Inspector and submitted to Architect as specified in Section 01 7839 - Project Record Documents.
 - 5. Guarantees and warranties shall be submitted to Architect as specified in the General Conditions and Section 01 7836.
 - 6. Contractor's Final Verified Report (Form DSA-6C) and other Reports and Affidavits required by the Division of the State Architect shall be submitted.
- B. Procedure for Project Acceptance:

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

1. Contractor shall complete all Work as required by the Contract Documents, to the best standards of the industry and the trades involved. It shall be the Contractor's responsibility to provide a new, complete, properly operating, professionally finished, detailed, cleaned, high-quality project. There shall be no loose, untrue, or ill-fitting materials, unsightly gaps, voids, or holes, misalignments, misjudgments, shoddy workmanship, or damaged, missing, inoperable, or incomplete work. Work shall be free of smudges, spots, stains, dirt, nicks, tears, cracks, scratches, paint runs, flaws, oversprays, and all other unsightly blemishes.
2. Completion lists and correction lists for items described in the paragraph above, as opposed to short lists of a few minor corrective items that may have inadvertently been missed by the Contractor, shall be the responsibility of the Contractor, and not the Architect, Inspector, or District. By entering into this Contract, Contractor agrees that quality control is the responsibility of the Contractor. "Punch" list generated by the Architect is under no circumstances to be considered a vehicle to compel subcontractors to complete contract work.
3. Contractor shall prepare a comprehensive and complete list of corrective items for himself and his subcontractors and shall verify that these items have been corrected prior to notifying the Architect of completion. Copies of the Contractor's list(s) shall be made available to the Architect and Inspector upon request.
4. Contractor shall notify the Architect in writing when Contractor, with concurrence of Inspector, feels the project is one hundred percent complete and is ready to leave the Project. Architect shall then commence the construction review and prepare a "Punch List", or list of minor corrective items to be issued to Contractor. For convenience, reviews may be phased for various portions of the work, as each distinct portion becomes one hundred percent complete.
5. Architect will arrange for Engineering Consultants to make their construction reviews, to be completed before Architect will make his construction review. Contractor and his principal superintendent, authorized to act in behalf of the Contractor, as well as principal subcontractors that the Architect may request to be present, shall accompany the Architect/Engineers during the construction reviews.
6. Excessive amounts of corrective ("punch list") items, as judged by the Architect, shall be grounds to terminate the construction review until such time as the Contractor is deemed sufficiently complete to once again start the review. As a very rough rule of thumb, more than four minor items per typical room will be considered excessive.
7. If Owner elects to occupy the Project after the Contract Completion Date, but before the Contractor has completed the Work, Architect must make a comprehensive construction review prior to Owner's occupancy. Contractor shall reimburse Architect and Engineers for their time in conducting such review, and for the time of their clerical staffs in preparing the review documents, at the Architect's/Engineer's standard hourly rates for extra services. Contractor will be billed at the time of Contractor's Application for Payment. Payments to the Architect not received within 30 days will be deducted from subsequent Contractor's Applications for Payment in accordance with the General Conditions.
8. After completion of "Punch List" work, Contractor shall notify Architect in writing to perform an acceptance tour. Notice shall be issued at least seven (7) days in advance of the time the acceptance tour is to be performed.
9. Contractor and his principal superintendent, authorized to act in behalf of Contractor, as well as principal subcontractors that Architect may request to be present, shall accompany Architect and Inspector on acceptance tour.
 - a. If work has been completed in accordance with Contract Documents, and no further corrective measures are required, Architect will issue a Certificate of

CONTRACT CLOSEOUT

SAN DIEGO COUNTY OFFICE OF EDUCATION

Substantial Completion and recommend that Owner accept Project and file Notice of Completion.

- b. If work is judged to be substantially completed in accordance with Contract Documents, and only a few corrective measures are required, Architect will issue a Certificate of Substantial Completion and recommend that Owner conditionally accept Project and file Notice of Completion.
 - c. Owner will conditionally accept the Project only after Contractor provides Owner with Cashier's Check(s) for twice the agreed estimated cost to accomplish the corrective measures, to assure that Owner will have sufficient funds to accomplish work by others should Contractor not complete corrective measures in a reasonable amount of time (refer to General Conditions Article 59 and Article 61). Along with the Cashier Check(s), Contractor shall issue a written notice of intent to complete the corrective measures by a specific named date agreed to by District.
10. If work has not been substantially completed in accordance with Contract Documents, and several or many corrective measures are still required, Architect will recommend that Owner not accept the project and not file Notice of Completion. Instead, based on information gathered from acceptance tour, Contractor will be required to complete corrective measures and then call for another project acceptance tour following the procedure outlined above. Contractor will compensate Architect and Inspector for additional acceptance tour and deduct amount paid from final payment to Contractor.
11. After Substantial Completion, Contractor shall issue an Application for Payment in accordance with Specification Section 01 1025, Part 1.03, H. All administrative actions and submittals, including conditions, outlined therein outlined must be complete prior to Owner's release of payment, and must be completed prior to agendizing for project acceptance by the OWNER'S GOVERNING BOARD.
12. Upon Contractor completing all administrative actions and submittals, and meeting all conditions, Owner will agendize acceptance of the Work for the next official meeting of the Governing Board. Official action by the Governing Board shall constitute Project Acceptance. Upon acceptance, Contractor shall immediately remove trailers and other remaining temporary facilities.
13. District shall file Notice of Completion with the County Recorder as soon as practicable following Project Acceptance. The date of record for the Notice of Completion shall be the date stamped on the Notice by the Recorder at the time the County Recorder registers the Notice.
14. The date stamped on the Notice of Completion by the County Recorder shall be the date for commencement of all warranties and guarantees, and the date the Owner becomes responsible for security, maintenance, heating and cooling, utilities, damage to the work (unless done by Contractor's forces working on corrective items), and insurance.
15. Contractor shall remain responsible for these items prior to this date.
16. The Owner will inform the Contractor by letter immediately after receiving confirmation in writing from the Recorder's office of registration of the Notice of Completion. Contractor is hereby notified that the process of registering, stamping, and receipt of confirmation from the County has been known to take as much as four weeks from the time of filing.
17. Upon acceptance of Project by Owner, Contractor shall submit his request for final payment in accordance with Specification Section 01 1025, Part 1.03, I. Payment of retention will not be made by Owner until 35 days after Notice of Completion has been registered by the County Recorder.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

18. In addition, retention payment will not be made until Contractor has filed the required Form SSS 6 with Division of the State Architect, with a copy to the Architect.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

CONTRACT CLOSEOUT

01 7700 - 4

SECTION 01 7823

OPERATING AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Compilation of product data and related information appropriate for Owner's maintenance and operation of products and equipment furnished under the Contract.
 - 2. Instruction of Owner's personnel in the maintenance of products and in the operation of equipment and systems.

1.02 SUBMITTAL PROCEDURES

- A. Initial: Prior to the first Pay Application, submit a blank, tabbed binder in the proper format for review by Architect. The approved binder will be returned for the collection of information during the course of construction.
- B. Preliminary: Submit one copy of proposed manuals to Architect at least 15 days prior to final inspection or acceptance.
- C. Final: Following the indoctrination and instruction of the Owner's operating and maintenance personnel, review proposed revisions to the manual with the Architect.
 - 1. Submit three copies of accepted data in final form 10 days after the final inspection. Approval of submittal is a pre-requisite at Substantial Completion prior to Owner's agendizing project for acceptance by the Governing Board.
 - 2. Record video of each indoctrination and instruction session (in-services) and submit three (3) copies of each trade. Videotapes shall be on individual flash drives in digital format.

PART 2 - PRODUCTS

2.01 FORMAT

- A. Size: Minimum 4-inch three-ring binders for 8-1/2-inch by 11-inch punched pages, completely clear plastic covered for insertion of labels on spines and covers. Submit two hard copies and one digital copy on a flash drive.
- B. Provide identifying tabbed pages. Classify by Division and by Section. All tabbing shall be in numerical order.
- C. Drawings:
 - 1. Provide reinforced punched binder tab. Bind drawings with text.
 - 2. Fanfold larger drawings to the size of text pages, for easy foldout.
- D. Cover: Identify each volume with typed or printed label, List:
 - 1. Title of Project
 - 2. Identity of separate structures as applicable.
 - 3. Identity of general subject matter covered in the manual.
- E. Spine: Identify each volume with a typed or printed label stating OPERATING AND MAINTENANCE INSTRUCTIONS, GUARANTEES AND SERVICE CONTRACTS and the following information:
 - 1. Title of Project.
 - 2. Divisions and Sections included within the volume.

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

3. Volume number (i.e. "1 of 4")

PART 3 - EXECUTION

3.01 CONTENT OF MANUAL

- A. Table of Contents:
 - 1. List of each product indexed to the content of the volume.
 - 2. List with each product the name, address, and the telephone number of:
 - a. Subcontractor and installer.
 - b. Maintenance contractor, as appropriate.
 - c. Local sources of supply for parts and replacement.
- B. Product Data: Annotate each sheet to clearly identify the data applicable to the installation. Delete references to inapplicable information.
- C. Drawings;
 - 1. Supplement product data with Drawings as necessary to illustrate the following:
 - a. Relationship of component parts of equipment and systems.
 - b. Control and flow diagrams.
 - 2. Do not include Project Record Drawings as maintenance drawings.
- D. Instructions: Provide written text, as required to supplement product data for the particular installation.
- E. Warranties, Guaranties, Bonds, and Service Contracts: Include a copy of each warranty, guaranty, bond, and service contract issued.
 - 1. Provide information sheet for Owner's personnel describing the following:
 - a. Proper procedures in the event of failure or emergencies.
 - b. Circumstances under which the validity of warranties, guarantees, or bonds might be compromised.

3.02 MANUAL FOR MATERIALS AND FINISHES

- A. Instructions for Care and Maintenance: Include manufacturer's data as follows:
 - 1. Recommendations for types of cleaning agents and methods.
 - 2. Cautions against cleaning agents and methods which are detrimental to the product:
 - 3. The recommended schedule for cleaning and maintenance.
- B. Energy Conservation Features:
 - 1. Provide a list of energy conservation features, materials, components, and mechanical devices installed in the building.

3.03 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Content, for each unit of mechanical equipment and system, as appropriate.
 - 1. Description of unit and component parts:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 - 2. Operating Procedures:

OPERATING AND MAINTENANCE DATA

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

- a. Start-up, break-in, routine, and normal operating instructions.
 - b. Regulation, control, stopping, shutdown, and emergency instructions.
 - c. Summer and winter operating instructions.
 3. Maintenance Procedures:
 - a. Routine operations.
 - b. Guide to "troubleshooting."
 - c. Disassembly, repair, and reassembly.
 - d. Alignment, adjusting, and checking.
 4. Servicing and lubrication schedule including a list of lubricants required.
 5. Manufacturer's printed operating and maintenance instructions.
 6. Description of the sequence of operation by control manufacturer.
 7. Original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance, including:
 - a. Predicted life of parts subject to wear.
 - b. Items recommended being stocked as spare parts.
 8. Control diagrams by the manufacturer of controls as installed in the project.
 9. Coordination drawings and color-coded piping diagrams.
 10. Charts of valve tag numbers, with the location and function of each valve.
- B. Content, for each electric and electronic system as appropriate:
1. Description of system and component parts:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 2. Circuit directories of panelboards:
 - a. Electrical service.
 - b. Controls.
 - c. Communications.
 3. As-installed color-coded wiring diagrams.
 4. Operating procedures:
 - a. Routine and normal operating instructions.
 - b. Sequences required.
 - c. Special operating instructions.
 5. Maintenance procedures:
 - a. Routine operations.
 - b. Guide to "troubleshooting."
 - c. Disassembly, repair, and reassembly.
 - d. Adjustment and checking.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

6. Manufacturer's printed operating and maintenance instructions.
7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

3.04 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in the operation, adjustment, and maintenance of all products, equipment, and systems installed in the project.
 1. Provide services of factory trained instructors from the manufacturer of each major item of equipment or system.
 2. Provide for each instruction session or "in-service", a camcorder operator and VHS camcorder to videotape the session. Videotapes shall be clearly labeled as to project, subject, and date. Submit tapes in triplicate.
- B. Operating and maintenance manual shall constitute the basis of instruction.
 1. Review contents of manual with personnel in full detail to explain all aspects of operation and maintenance.
 2. Review instructions on how to efficiently use state required energy conservation features, materials, components, and mechanical devices.

END OF SECTION

SECTION 01 7836

WARRANTIES, GUARANTIES, AND BONDS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: General requirements for written warranties, guarantees, and bonds required by the Contract Documents.
- B. Referenced Sections:
 - 1. Section 01 7700 - Contract Closeout: Submittal of warranties, guarantees, and bonds as a condition of project acceptance and payment.
 - 2. Section 01 7823 - Operating and Maintenance Data: Incorporation of warranties, guarantees, and bonds into instruction manuals.
- C. Approval of the warranties, guarantees, and bonds by the Owner is a prerequisite to payment at Substantial Completion and agendizing for acceptance by the Governing Board of the Owner.

1.02 TIME PERIOD

- A. Deliver manufacturer's warranties, guarantees, and bonds required by Contract Documents, with Owner named as beneficiary. Where the manufacturer's warranty or guaranty extends for a longer time period than the Contractor's warranty and guaranty, deliver the manufacturer's warranties or guarantees in the same manner.

1.03 WARRANTY/GUARANTY FORM

- A. Submit written warranties and guarantees, except manufacturer's standard printed warranties and guarantees, on the Contractor's, subcontractors', material suppliers', or manufacturers' own letterhead, addressed to Owner, in the form found in "Required contract Forms."
- B. Submit warranties and guarantees in duplicate, and in the for indicated, signed by cognizant entities, and by Contractor in every case, with modifications as approved by Owner to suit the conditions pertaining to the warranty or guaranty.

1.04 SUBMITTAL

- A. Collect and assemble written warranties and guarantees into bound booklet form, and deliver bound books to Architect for delivery to Owner for final review and approval.
 - 1. See Sections 01 7700 and 01 7823 for additional submittal requirements.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

THIS PAGE BLANK

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION
SECTION 01 7839
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Requirements for Record Documents.
- B. Throughout progress of the work of the contract, maintain an accurate record of changes in the Contract Documents, as described below.
- C. The purpose of the record documents is to provide factual information regarding the work, both concealed and visible, which will enable future modification of design to proceed without lengthy and expensive site measurement, investigation, and examination.

1.02 QUALITY ASSURANCE

- A. General: Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff, to be designated as the Record Documents Recorder, as accepted in advance by the Architect.
- B. Accuracy of Records: Thoroughly coordinate changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of drawings and other documents where such entry is required to properly show the change including as-built locations of site utilities shown on the Drawings in a diagrammatic way and progress photos. Accuracy of records shall be such that future search for items shown in the Contract Documents may reasonably rely on information obtained from the accepted Record Documents.
- C. Timing of entries: Make entries onto a Job Set, as described below, within 24 hours after receipt of information. Make entries onto a Record Documents Set, as described below, at least weekly.
- D. The Record Documents will be reviewed by the Architect, Owner's Inspector, and Owner at the regular weekly job meetings. Review will be a regular agenda item.

1.03 PAYMENT WITHHELD

- A. The Architect reserves the right to withhold certification of payment requests for failure on the part of the Contractor to maintain Record Drawings in conformance with this Section.

1.04 SUBMITTALS

- A. General: The Architect's review and approval of the current status of Record Documents will be a prerequisite to the Architect's review of requests for progress payment and request for final payment under the contract.
- B. Progress Submittals: Prior to submitting each request for progress payment, secure the Architect's review of the Record Documents as currently maintained.
- C. Final Submittal: Prior to submitting a request for final payment, submit the final Record Documents to the Architect and secure his acceptance.

1.05 PRODUCT HANDLING

- A. The Record Documents shall be maintained in the Owner's job trailer, in a secure place designated for such. The Record Documents shall be protected from deterioration and from loss and damage until completion of the work.
- B. In the event of loss of recorded data, use means necessary to again secure the data to the Architect's acceptance; such means shall include, if necessary in the opinion of the Architect, removal, and replacement of concealing materials and, in such case, replacements shall be to the standards originally specified in the Contract Documents.

PART 2 - PRODUCTS

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

2.01 RECORD DOCUMENTS

- A. Contractor's Job Set: Secure from the Architect at the beginning of the Work, at no charge to the Contractor, one complete set of documents comprising the Contract. This Job Set shall be for the Contractor's own use to collect and record all pertinent information on a daily basis.
- B. Record Documents Set: The Trade Contractor shall transfer all information to this set in final form on a weekly basis. This Record Documents Set shall be submitted as the Final Record Documents.
- C. Use only a high-resolution digital camera for the Record Photographs. Cameras shall be of a type capable of imprinting the date on photographs.

PART 3 - EXECUTION

3.01 MAINTENANCE OF JOB SET

- A. Identification:
 - 1. Upon receipt of the Job Set, identify the documents with the title "Temporary Record Documents: Contractor's Job Set".
 - 2. Upon receipt of the Record Documents Set, identify in ink appropriate to sepia media with the title "Record Documents" on each sheet of the Drawings and on the cover sheet of other documents.
- B. Preservation:
 - 1. Considering the contract completion time, the probable number of occasions upon which the Job Set must be taken out for new entries and for examination, and the conditions under which these activities will be performed, devise a suitable method for protecting the Job Set.
 - 2. Use the Job Set for no purpose other than entry of new data and for review by the Architect and Inspector upon request.
 - 3. Allow no one to have access to the Record Documents other than the Record Documents Recorder. Record Documents Recorder shall not remove the Record Documents from the Owner's trailer without expressed permission of Architect or Inspector.
- C. Making Entries on Drawings:
 - 1. Job Set: Record information in a clear and legible manner. The Job Set shall be maintained on an ongoing basis. Record pertinent information and all changes as they occur, using a sharp color pencil. Each subcontractor shall be responsible to make entries as may be required by their Section of the Specification, under the supervision of the Contractor, and shall date and sign their entries.
 - 2. Record Documents - Paper:
 - a. Entries shall only be made by the Record Documents Recorder, using only the plan table designated for drafting in the Owner's trailer.
 - b. Entries shall be made weekly, on the day prior to the regular project meetings. Transfer all information collected during the previous week from the Job Set onto the mylar drawings. As each item of information is copied onto the Record Documents, carefully and completely mark with a yellow highlighter over the corresponding item on the Job Set, so that at any time it is clear what information has been transferred and what information is new.
 - c. Using permanent ink and technical pens appropriate to mylar medium, clearly describe all changes by note and by graphic line as they occur during the course of the Work. Clearly, indicate at each affected detail and other drawing the full description of changes made during construction and the actual location of items described above. Date all entries. Call attention to the entry by a plastic-lead pencil "cloud" around the area or areas affected.

PROJECT RECORD DOCUMENTS

SAN DIEGO COUNTY OFFICE OF EDUCATION

- d. Each utility shall be shown on its own sheet. Record Documents Recorder shall request extra copies of appropriate sheets as necessary, and clearly label sheets as to the type of utility being recorded (for example, Plumbing Site Plan P1.1 sheets shall be designated P1.1A Sewer, P1.1B Water, P1.1C Fire Line, etc.)
 - e. In the event of superseding changes to any area of the drawing, erase only that portion of the preceding change that is affected by the subsequent change before entering the subsequent change.
 - f. Include on the Record Documents all changes and as-built locations caused by Addenda, Change Orders, field directive by OSA Field Engineer, etc., such that each sheet of the Record Documents is an accurate description of the final state of the Project.
3. Record Documents - Digital: Acceptable Option
- a. All items listed in #2 above may be marked on a set of digital pdf plans, utilizing a pdf editing program such as Bluebeam. All mark-ups shall be in red, dated, and initialed.
- D. Making Entries on Other Documents:
- 1. Where changes are caused by directives issued by the Architect, clearly indicate the change by note in ink, or rubber stamp, and reference Office of the State Architect approved addenda and change orders.
 - 2. Where changes are caused by Contractor-originated proposals reviewed by the Architect, including inadvertent errors by the Contractor which have been accepted by the Architect, clearly indicate the change by note in ink.
 - 3. Make entries in the pertinent documents as reviewed by the Architect.
- E. Before commencing backfilling of utilities or any other underground pipes, ducts, conduits, or structures, take photographs showing the relationship of ALL below ground utilities to structure(s) or other physical reference point.
- 1. The Record Documents Recorder shall take all photographs and document their locations on a pdf Site Plan, to be a composite utility site plan designated specifically for this purpose.
 - 2. Provide a thumb-drive ("flash drive) with all photo files names corresponding to the marked location on the pdf. Provide a photo(s) of all connections, crossings, stubs, or other critical points. Thumb-drive to be labeled "RECORD PHOTOGRAPHS", and shall show project name. At least weekly, take an overall site photo showing general progress of the Work.
 - 3. If the Contractor neglects to take such photographs, Contractor shall uncover, at the Contractor's expense, the area(s) so neglected in order to provide the requisite photos. All photos shall be taken with a camera capable of imprinting the date on the photograph, and only by the Record Documents Recorder.
 - 4. Place on a pdf the number of each photograph at the location the photo was taken from, and a mark indicating which way the camera was pointed. All numbers and marks shall be clear, legible, and neatly done. Photo thumb drive and photo plan shall be considered part of the record documents.
- F. Accuracy of Entries: Use means necessary, including proper instruments or tools for measurement, to determine actual locations of the installed items.

3.02 FINAL RECORD DOCUMENTS

- A. Job Set drawings shall be submitted as supporting documentation to the Final Record Document drawings. If the Job Set drawings have been damaged during the course of the Work, secure a new

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

copy of that document from the Architect at the Architect's usual charge for reproduction and carefully transfer the change data to the new copy and obtain the acceptance of the Architect.

- B. If the documents other than drawings have been kept clean successfully during the progress of the work, and if entries have been sufficiently orderly thereon and reviewed by the Architect, they will be accepted by the Architect as the final portion of the Record Documents. If any such document is not so accepted by the Architect, secure a new copy of that document from the Architect at the Architect's usual charge for reproduction and carefully transfer the change data to the new copy and obtain the acceptance of the Architect.
- C. Review and Approval: Submit the completed total set of Record Documents to the Architect as described above. Participate in review meeting or meetings as required by the Architect, make required changes in the Record Documents, and promptly deliver the final Record Documents to the Architect.

3.03 CHANGES SUBSEQUENT TO ACCEPTANCE

- A. The contractor shall have no responsibility for recording changes in the work subsequent to acceptance of the work by the Owner, except for changes resulting from replacements, repairs, and alterations made by the Contractor as a part of his guarantee. No changes will be allowed without approval of the Division of the State Architect.

END OF SECTION

SECTION 02 4100 DEMOLITION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of built site elements.
- B. Selective demolition of building elements for alteration purposes.

1.02 RELATED REQUIREMENTS

- A. Section 01 7419 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations 2019.

1.04 SUBMITTALS

- A. Refer to Division 1, for submittal procedures.
- B. Site Plan: Showing:
 - 1. Vegetation to be protected.
 - 2. Areas for temporary construction and field offices.
 - 3. Areas for temporary and permanent placement of removed materials.
- C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
 - 2. Identify demolition firm and submit qualifications.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS -- NOT APPLICABLE

PART 3 - EXECUTION

3.01 SCOPE

- A. Remove paving and curbs as required to accomplish new work.
- B. Remove existing roofing materials as shown on Drawings..
- C. Remove other items indicated, for salvage, relocation, and recycling.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Comply with applicable requirements of NFPA 241.
 - 3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

4. Provide, erect, and maintain temporary barriers and security devices.
 5. Use physical barriers to prevent access to areas that could be hazardous to workers, students, school staff, or the public.
 6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 7. Do not close or obstruct roadways or sidewalks without permit.
 8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Owner.
- C. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
 2. Prevent movement or settlement of adjacent structures.
 3. Stop work immediately if adjacent structures appear to be in danger.
- D. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- E. Perform demolition in a manner that maximizes salvage and recycling of materials.
1. Comply with requirements of Section 01 7419 - Waste Management.
 2. Dismantle existing construction and separate materials.
 3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.
- F. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.03 EXISTING UTILITIES

- A. Protect existing utilities to remain from damage.
- B. Do not disrupt public utilities without permit from authority having jurisdiction.
- C. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- D. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- E. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- F. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
1. Verify that construction and utility arrangements are as indicated.
 2. Report discrepancies to Architect before disturbing existing installation.

DEMOLITION

SAN DIEGO COUNTY OFFICE OF EDUCATION

3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
 - B. Separate areas in which demolition is being conducted from other areas that are still occupied.
 1. Provide, erect, and maintain temporary dustproof partitions of construction indicated on drawings in locations indicated on drawings.
 - C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - D. Remove existing work as indicated and as required to accomplish new work.
 1. Remove rotted wood and corroded metals; replace with new construction specified.
 2. Remove items indicated on drawings.
 - E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 3. Verify that abandoned services serve only abandoned facilities before removal.
 4. Remove abandoned pipe, ducts, conduits, and equipment; remove back to source of supply where possible, otherwise cap stub and tag with identification.
 - F. Protect existing work to remain.
 1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
 4. Patch as specified for patching new work.
- 3.05 DEBRIS AND WASTE REMOVAL
- A. Remove debris, junk, and trash from site.
 - B. Remove from site all materials not to be reused on site; comply with requirements of Section 01 7419 - Waste Management.
 - C. Leave site in clean condition, ready for subsequent work.
 - D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

THIS PAGE BLANK

SECTION 03 1000 FORMWORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Form accessories.
- C. Form stripping.

1.02 RELATED REQUIREMENTS

- A. Division 01 – General Requirements
- B. Section 03 2000 - Concrete Reinforcing.
- C. Section 03 3000 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

- A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials 2010 (Reapproved 2015).
- B. ACI 301 - Specifications for Structural Concrete 2016.
- C. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
- D. ACI 347R - Guide to Formwork for Concrete 2014, with Errata (2017).
- E. PS 1 - Structural Plywood 2009 (Revised 2019).

1.04 SUBMITTALS

- A. See Division 01, for submittal procedures.
- B. Product Data: Provide data on void form materials and installation requirements.
- C. The architect will review for general architectural applications only. Contractor shall be responsible for the design of formwork for structural stability and sufficiency.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver prefabricated forms and installation instructions in manufacturer's packaging.
- B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.
- C. Protect plastic foam products from damage and exposure to sunlight.

PART 2 - PRODUCTS

2.01 FORMWORK - GENERAL

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.
- B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.
- C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

2.02 MATERIALS

- A. Softwood Plywood: PS 1, B-B High Density Concrete Form Overlay, Class I.

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

- B. Earthen Forms: Provide earthen forms for footings only where the soil is firm and stable and the concrete will not be exposed. Cut earthen forms square, neat and accurate to size. Clean bottoms of excavations.

2.03 FORMWORK ACCESSORIES

- A. Form Ties: Removable type, galvanized metal, fixed length, cone type, with waterproofing washer, free of defects that could leave holes larger than 1 inch in concrete surface.
- B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
- C. Composition: Colorless, reactive, water-based or solvent-based compound.
- D. VOC Content: In compliance with applicable local, State, and federal regulations.
- E. Products:
 - 1. Nox-Crete Inc; Pro Release: www.nox-crete.com/#sle.
 - 2. Nox-Crete Inc; Quick Release Series: www.nox-crete.com/#sle.
 - 3. SpecChem, LLC; Bio Strip WB (water-based): www.specchemllc.com/#sle.
 - 4. W. R. Meadows, Inc; Duogard II (water-based): www.wrmeadows.com/#sle.
 - 5. Substitutions: Section 01 6200 - Product Options and Substitutions.
- F. Dowel Sleeves: Plastic sleeve and nailable plastic base for smooth, round, steel load-transfer dowels.
- G. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

- A. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

3.03 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members that are not indicated on drawings.
- F. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.
- G. Coordinate this section with other sections of work that require attachment of components to formwork.
- H. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Architect before proceeding.

CONCRETE FORMING AND ACCESSORIES

3.04 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Locate and set in place items that will be cast directly into concrete.
- B. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

3.06 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.

3.07 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.

3.08 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
 - 1. Comply with ACI 318, for forms and shoring to remain in place prior to removal:
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION

THIS PAGE BLANK

SECTION 03 2000 REINFORCING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Formwork.
- B. Section 03 3000 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete 2016.
- B. ACI 315R - Details and Detailing of Concrete Reinforcement 2018.
- C. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
- D. ACI SP-66 - ACI Detailing Manual 2004.
- E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2020.
- F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.
- G. ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars 2015.
- H. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification 2014 (Amended 2015).
- I. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel 2018.
- J. CRSI (DA4) - Manual of Standard Practice 2009.

1.04 SUBMITTALS

- A. See Division 01, for submittal procedures.
- B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.
 - 1. Prepare shop drawings under seal of a Professional Structural Engineer experienced in design of work of this type and licensed in the State in which the Project is located.
- C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- D. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.
- E. Reports: Submit certified copies of mill test report of reinforcement materials analysis.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301.
- B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.4/D1.4M and no more than 12 months before start of scheduled welding work.

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION
PART 2 - PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, see Structural Drawings.
 - 1. Deformed billet-steel bars.
 - 2. Unfinished.
- B. Steel Welded Wire Reinforcement (WWR): Galvanized, deformed type; ASTM A1064/A1064M.
 - 1. Form: Coiled Rolls.
 - 2. WWR Style: As indicated on drawings.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16-gauge, 0.0508 inch.
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 - 3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

2.02 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice and ACI 318.
- B. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D3963/D3963M.
- C. Accurately bend, cut and place bars as shown on Drawings and in accordance with the requirements of Title 24, Part 2. Bend bars cold; heating of bars is not permissible. Do not bend or straighten bars in any manner that will injure materials.
- D. Welding: Reinforcing to be welded shall comply with the requirements of Title 24, Part 2 and ACI 318. Perform welding, where shown or approved, by the direct electric arc process in accordance with AWS D1.4/D1.4M using E90XX series low hydrogen electrodes. When welding reinforcing bars to reinforcing bars, use E70XX electrodes when lowest steel grade is Grade 40; and E90XX electrodes when lowest steel grade is Grade 60. Preheat 6 inches each side of joint. Protect joints from drafts during the cooling process; accelerated cooling is prohibited. Do not tack weld bars. Clean metal surfaces to be welded of all loose scale and foreign materials. Clean welds each time electrode is changed and chip burned edges before placing welds. When wire brushed, completed welds must exhibit uniform section, smooth welded metal, feather edges without undercuts or overlays, freedom from porosity and clinkers, and good fusion and penetration into the base metal. Cut out welds or parts of welds found defective, with a chisel, and replace with proper welding.

PART 3 - EXECUTION

3.01 PLACEMENT

- A. Prior to commencing work of this section, inspect the work of others and verify that such work has been properly completed and installed to allow for proper installation of all materials and methods required of this section.
- B. Fabricate reinforcing in accordance with ACI 315R. Locate reinforcing splices not shown on drawings, at points of least stress. Where shown or required, weld reinforcing bars in accordance with AWS D1.4/D1.4M.
- C. Ensure that reinforcing used is clean, free of scale, dirt, dust, rust and other matter.
- D. Provide a minimum splice for bars noted as "cont.", typical wall reinforcing, and vertical column reinforcing. Provide a standard lap of 36 bar diameters in concrete and 48 bar diameters in masonry, and in no case less than 24 inches. Wire all laps and splices in welded wire mesh and provide side and end laps of at least 8 inches, or one full mesh plus 2 inches, whichever is greater.

SAN DIEGO COUNTY OFFICE OF EDUCATION

1. Spacing - the minimum center-to-center distance between parallel reinforcing bars is to be in compliance with that shown on drawings, or in a absence of such information on drawings, the clear spacing is to be one bar diameter, but in no case less than 1-1/2 inch, nor less than 1-1/3 times the maximum size of aggregate.
 2. Where possible, stagger splices of adjacent vertical bars.
 - E. Only splice reinforcing where shown or noted. Splices at other locations must be approved by the Architect. Provide continuous reinforcement between splice locations in vertical walls. No splices of vertical wall reinforcing may occur except at foundations unless specifically approved by Division of the State Architect, and the Architect.
 1. Securely tie reinforcing with 16-gage tie wire at all splices and intersections, and as may be directed.
 2. Point ends of wire ties away from forms.
 - F. Stagger splices in adjacent horizontal wall reinforcing bars a minimum of 4 feet.
 - G. Provide dowels in footings and/or grade beams the same size and number as vertical wall or column reinforcing. Provide a minimum dowel projection equal to standard lap splices unless noted otherwise.
 1. Secure tie dowels in place before depositing concrete. Install No. 3 bars for securing dowels where no other reinforcement is provided.
 - H. No. 5 or larger bars shall not be re-bent without the Structural Engineer's approval.
 - I. Place, support and secure reinforcement against displacement. Do not deviate from required position.
 - J. Do not displace or damage vapor barrier.
 - K. Accommodate placement of formed openings.
 - L. Maintain concrete cover around reinforcing as follows:
 1. Beams: 1-1/2 inch
 2. Supported Slabs and Joists: 1-1/2 inch.
 3. Column Ties: 1-1/2 inch.
 4. Walls (exposed to weather or backfill): 1-1/2 inch.
 5. Footings and Concrete Formed Against Earth: 3 inch.
 6. Slabs on Fill: 3/4 inch.
 - M. Comply with applicable code for concrete cover over reinforcement.
- 3.02 FIELD QUALITY CONTROL
- A. An independent testing agency, as specified in Section 01 4523 - Testing Laboratory and Inspection Services, will inspect installed reinforcement for compliance with contract documents before concrete placement.
- 3.03 APPLICATION
- A. Correction During Concreting: Maintain capable steelworkers during placement of concrete for properly resetting reinforcement displaced by runways, workers, or other causes.
 - B. Reinforcement: As a minimum for slab reinforcement, provide 6 x 6 10/10 WWF, wire mesh ASTM A1064/A1064M, if no other reinforcement is indicated.
- 3.04 DEFECTIVE WORK
- A. The following reinforcing work will be considered defective and may be ordered by the Owner to be removed and replaced at no additional expense to the Owner:

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

1. Bars with kinks or bends not shown on Drawings.
2. Bars injured due to bending or straightening.
3. Bars heated for bending.
4. Reinforcement not placed in accordance with Drawings or Specifications.
5. Rusty or oily reinforcement.

END OF SECTION

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION
SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Joint devices associated with concrete work.
- B. Miscellaneous concrete elements, including footings for post mounted signs and railings.
- C. Concrete curing.

1.02 RELATED REQUIREMENTS

- A. Division 01 - General Requirements
- B. Section 03 1000 - Formwork: Forms and accessories for formwork.
- C. Section 03 2000 - Reinforcing.
- D. Section 32 1313 - Concrete Paving: Sidewalks, curbs, and gutters.

1.03 REFERENCE STANDARDS

- A. All work under this section shall be in accordance with applicable provisions of CBC 2019 Title 24, Part 2, Chapter 19A.
- B. ACI 301 - Specifications for Structural Concrete 2016.
- C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).
- D. ACI 305R - Guide to Hot Weather Concreting 2010.
- E. ACI 306R - Guide to Cold Weather Concreting 2016.
- F. ACI 308R - Guide to External Curing of Concrete 2016.
- G. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
- H. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.
- I. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2020.
- J. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2019.
- K. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing 2017.
- L. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures 2016.
- M. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete 2020a.
- N. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete 2013.
- O. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink) 2017.
- P. ASTM C1116/C1116M - Standard Specification for Fiber-Reinforced Concrete 2010a (Reapproved 2015).
- Q. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete 2012.

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION****1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
 - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.
 - 3. Indicate proposed mix design complies with fiber reinforcing manufacturer's written recommendations.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.
- D. Inspections: Notify the Architect, Structural Engineer, and the Division of the State Architect (DSA) at least forty-eight hours in advance of the first pour of concrete and sufficiently in advance of subsequent pours, see Chapter 17A, Title 24, Part 2.

1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Labor and material warranty to be covered by \$1 million per occurrence policy.

PART 2 - PRODUCTS**2.01 FORMWORK**

- A. Comply with requirements of Section 03 1000.

2.02 REINFORCEMENT MATERIALS

- A. Comply with requirements of Section 03 2000.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
 - 1. Conforming to requirements of Chapter 19A, Title 24, Part 2. Aggregates that contain reactive substances that react with cement alkalies may not be used.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.
 - 1. 1-1/2 inch maximum.
 - 2. Conforming to Title 24, Part 2, 1903A.2
 - 3. Acquire aggregates for entire project from same source.
- C. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.
 - 1. Comply with 1903A., Title 24, Part 2.
- D. Structural Fiber Reinforcement: ASTM C1116/C1116M.
 - 1. Fiber Type: Alkali-resistant cellulose.

CAST-IN-PLACE CONCRETE

2.05 ACCESSORY MATERIALS

- A. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Grout: Comply with ASTM C1107/C1107M.
 - 2. Height Change, Plastic State; when tested in accordance with ASTM C827/C827M:
 - a. Maximum: Plus 4 percent.
 - b. Minimum: Plus 1 percent.
- B. Non-Shrink Epoxy Grout: Moisture-insensitive, two-part; consisting of epoxy resin, non-metallic aggregate, and activator.
 - 1. Composition: High solids content material exhibiting positive expansion when tested in accordance with ASTM C827/C827M.
 - a. Maximum Height Change: Plus 4 percent.
 - b. Minimum Height Change: Plus 1 percent.

2.06 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
- B. Epoxy Bonding System:
 - 1. Complying with ASTM C881/C881M and of Type required for specific application.

2.07 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
 - 1. Fiber Reinforcement: Batch and mix as recommended by manufacturer for specific project conditions.
- B. Transit Mixers: Comply with ASTM C94/C94M.
- C. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Ensure that the required inspections have taken place prior to pouring.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in accordance with bonding agent manufacturer's instructions.
 - 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
 - 2. Use latex bonding agent only for non-load-bearing applications.
- E. Where new concrete with integral waterproofing is to be bonded to previously placed concrete, prepare surfaces to be treated in accordance with waterproofing manufacturer's instructions.

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

Saturate cold joint surface with clean water, and remove excess water before application of coat of waterproofing admixture slurry. Apply slurry coat uniformly with semi-stiff bristle brush at rate recommended by waterproofing manufacturer.

- F. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

3.03 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- C. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- D. Handling and Placing: Concrete transported and placed as per Title 24, Part 2 and ACI 304R. Concrete shall be thoroughly compacted and worked into forms around reinforcing steel using suitable equipment. Vibrating of formwork will not be permitted. Where conditions make placing difficult or reinforcing is congested, batches containing the same proportions of sand and cement used in the concrete plus a maximum of 50 percent of coarse aggregate shall be used.

3.05 CONCRETE FINISHING

- A. Repair surface defects, immediately after removing formwork.

3.06 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 - 1. Normal concrete: Not less than seven days.
 - 2. High early strength concrete: Not less than four days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. Surfaces Not in Contact with Forms:
 - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 - 2. Final Curing: Begin after initial curing but before surface is dry.

3.07 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4523 Testing Laboratory and Inspection Services.
 - 1. The Inspector will take at least four cylinders of concrete from each day's run of 50 yards, or 2,000 sq. ft. of surface area for slabs, 1905A., Title 24, Part 2, or fractional part thereof. Field specimens of concrete taken and tested in accordance with 1705A.3. Label each cylinder with job name, date, number, the result of the slump test, and the point in the pour in the structure from which the sample was taken noted thereon. One cylinder shall be tested at seven days and two at 28 days. The 4th cylinder shall be stored for 56 days unless instructed otherwise.
 - 2. Provide free access to work. Provide laboratory design mix. No substitutions will be accepted. Cement and aggregates shall be tested.
- B. Cement: Test Portland cement in accordance with Sections 1913A.1, Title 24, Part 2.

CAST-IN-PLACE CONCRETE

- C. Core Tests: Take and test composite construction cores in accordance with Section 1913A.4, Title 24, Part 2.
- D. Batch Plant Inspection: Provide in accordance with Section 1705A.3.2, Title 24, Part 2.
- E. Placing Record: Keep records of placing in accordance with Section 1705A.3.6, Title 24, Part 2.
- F. Cylinder Test: Provide in accordance with Section 1905A.6, Title 24, Part 2.
- G. Slump Test: Provide in accordance with ASTM C143/C143M for each set of test cylinders.
- H. Placing Inspection: Provide in accordance with 1705A.3, Title 24, Part 2.
- I. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

3.08 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

END OF SECTION

THIS PAGE BLANK

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION
SECTION 05 5213
PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Wall mounted handrails.
- B. Stair railings and guardrails.
- C. Free-standing railings.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of anchors in concrete.
- B. Section 10 1400 - Signage

1.03 REFERENCE STANDARDS

- A. California Code of Regulations, Title 24, Part 2, California Building Code (CBC), International Building Code with California Amendments.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- C. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures 2006.
- D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2020.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- F. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings 2013, with Editorial Revision.
- G. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2012.
- H. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification 2014 (Amended 2015).
- I. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer 1999 (Ed. 2004).
- J. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic") 2002 (Ed. 2004).

1.04 SUBMITTALS

- A. See Section 01 3300, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
 - 2. Include the design engineer's seal and signature on each sheet of shop drawings.
- C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated within the previous 12 months.
- D. Fabricator's Qualification Statement.

1.05 QUALITY ASSURANCE

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

- A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.
- B. Welder Qualifications: Welding processes and welding operators qualified within previous 12 months.
- C. Fabricator Qualifications:
 - 1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 201.
 - 2. A company specializing in manufacturing products specified in this section, with not less than seven years of documented experience in engineering fabricating and installing railings with an architectural exposed steel finish..

1.06 REGULATORY REQUIREMENTS

- A. Top of gripping surfaces of handrails shall be 34" minimum and 38" maximum vertically above walking surfaces, stair nosings, and ramp surfaces. Handrails shall be at a consistent height above such surfaces.
- B. Clearance between handrail gripping surfaces and adjacent surfaces shall be 1-1/2" minimum. Handrail may be located in a recess, if the recess is 3" maximum deep and 18" minimum clear above the top of the handrail.
- C. Handrail gripping surfaces shall be continuous along their length and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20 percent of their length. Where provided, horizontal projections shall occur 1-1/2" minimum below the bottom of the handrail gripping surfaces.
- D. Handrail gripping surfaces with a circular cross-section shall have an outside diameter of 1-1/4" minimum and 2" maximum.
- E. Handrail gripping surfaces with a non-circular cross-section shall have an outside dimension of 4" minimum and 6-1/4" maximum, and a cross-sectional dimension of 2-1/4" maximum.
- F. Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements and shall have rounded edges.
- G. Handrails shall not rotate within their fittings.
- H. Handrail gripping surfaces shall extend beyond and in the same direction of stair flights and ramp runs in accordance with C.B.C. Section 11B-505.10. Such extensions are not required for continuous handrails at the inside turn of switchback or dogleg stairs and ramps.
- I. A 2" minimum high curb or a barrier shall be provided to prevent the passage of a 4" diameter sphere rolling off the sides of a ramp surface. Such curb or a barrier shall be continuous and uninterrupted along the length of a ramp. C.B.C. Section 11B-405.9.2.

PART 2 - PRODUCTS**2.01 RAILINGS - GENERAL REQUIREMENTS**

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 250 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set.
- C. Allow for expansion and contraction of members and building movement without damage to connections or members.
- D. Dimensions: See drawings for configurations and heights.

PIPE AND TUBE RAILINGS

SAN DIEGO COUNTY OFFICE OF EDUCATION

- E. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
 - 1. For anchorage to concrete, provide inserts to be cast into concrete, for bolting anchors.
 - 2. For anchorage to masonry, provide brackets to be embedded in masonry, for bolting anchors.
 - 3. For anchorage to stud walls, provide backing plates, for bolting anchors.
 - 4. Posts: Provide adjustable flanged brackets.
- F. Provide mechanical and welding fittings where indicated to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02 STEEL RAILING SYSTEM

- A. Steel Pipe: ASTM A53/A53M Grade B Schedule 80, galvanized finish.
 - 1. Handrails, balusters, posts: Round (size noted on Drawings).
- B. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable iron castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.
- C. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.
 - 1. Elbows, T-shapes, wall brackets, escutcheons: Cast steel. Brackets: Round top to accept tube rail, size to allow exact 1-1/2 inch clearance from rail to wall.
- D. Exposed Fasteners:
 - 1. Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- E. Galvanizing: In accordance with requirements of ASTM A123/A123M.
 - 1. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic.
 - 2. Galvanizing: Thickness of coating on tubing in accordance with ASTM A123. Fittings shall be galvanized in accordance with ASTM A153.
- F. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- G. Non-Shrink Grout: ASTM C1107, premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 5,000 psi in 24 hours and 8,000 psi in 7 days; of consistency for application and a 30-minute working time.
- H. Welded wire cloth: 1"x1" mesh, 8 gauge. Interior welded wire cloth shall be hot dipped galvanized by manufacturer. Exterior welded wire cloth shall be plain steel by manufacturer and hot dipped galvanized as part of railing assembly.

2.03 FABRICATION

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Fabricate components with joints tightly fitted and secured.
 - 1. Fabricate handrails of specified pipe or tubing only in conformance with requirements of CAS/CAR and Chapter 10 CBC.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

D. Welded Joints:

1. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
2. Interior Components: Continuously seal joined pieces by continuous welds.
3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Accurately form components to each other and to building structure.

F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

G.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. The beginning of installation means erector accepts existing conditions.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Install railings in compliance with ADA Standards for accessible design at applicable locations.
- D. Anchor railings securely to structure.
- E. Field weld anchors as indicated on drawings. Touch-up welds with primer. Grind welds smooth.
- F. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.
- G. Set vertical supports in sleeves with the specified non-shrink grout.
- H. Touch up welds and chipped surfaces with specified galvanizing compound prior to painting.
- I. Non-welded Connections: Use mechanical joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings.
- J. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to 1 side, and locate joint within 6 inches of post.

3.04 TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch per floor level, non-cumulative.
- B. Maximum Offset from True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

3.05 PROTECTION

PIPE AND TUBE RAILINGS

SAN DIEGO COUNTY OFFICE OF EDUCATION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit or provide new units.

END OF SECTION

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

THIS PAGE BLANK

SECTION 07 9200 JOINT SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: Sealants and backing, primers, and bond-breakers as indicated on the Drawings and specified herein. Work will include, but is not limited to the following locations:
 - 1. Expansion and control joints
 - 2. Cross joints in copings and projecting work
 - 3. Sills jambs and heads of windows, doors, louvers and similar openings where they abutt dissimilar materials.
 - 4. Horizontal joints
 - 5. Hidden joints expected to undergo minimal movement.
- B. Related Sections:
 - 1. Division 01 - General Requirements.

1.02 REFERENCE STANDARDS

- A. Provide an installation in strict compliance with Title 24 requirements.
- B. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants.
- C. ASTM C834 - Standard Specification for Latex Sealants.
- D. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
- F. ASTM C1193 - Standard Guide for Use of Joint Sealants.
- G. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
- H. ASTM C1472 - Standard Guide for Calculating Movement and Other Effects When Establishing Sealant Joint Width.
- I. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

1.03 SUBMITTALS

- A. Submit manufacturer's printed literature and installation instructions on specified materials for review.
- B. Submit manufacturer's standard colors of materials for selection.
- C. Submit standard size sample of back-up material, primer, and bond-breaker proposed for each system.

1.04 QUALITY ASSURANCE

- A. Proper caulking and proper installation of sealants require that installers be thoroughly trained and experienced in the necessary skills and thoroughly familiar with the specified requirements.
- B. For caulking and installation of sealants throughout the project, use only personnel who have been specifically trained in such procedures and who are completely familiar with the joint details shown or required, and the installation requirements called for in these specifications.
- C. Coordinate this work with the work of other sections to ensure proper installations.

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

- D. Provide written certification that materials in contact with the sealants and appurtenant components, such as gaskets, spacers, setting blocks, concrete curing compounds, aluminum finishes, etc., are compatible with the sealants after 21-days exposure to ultraviolet 2000 - 4000 (micro-watt radiation).
- E. Provide adhesion test data to production samples of metal and glass/spandrels, tested in accordance with ASTM C794.

1.05 GUARANTEES AND WARRANTIES

- A. Provide two-year guarantee against defects in materials and workmanship of materials and installation. Include replacement or repairs as may be required by Owner.
- B. Manufacturer's 10 year warranty for exterior sealers against sealer failure.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers:
 - 1. Tremco. www.tremcosealants.com
 - 2. BASF Building Systems. www.buildingsystems.basf.com
 - 3. Dow Corning. www.dowcorning.com
 - 4. GE Silicones. www.siliconeforbuilding.com
 - 5. Pecora. www.pecora.com
 - 6. Sika. www.sikausa.com
- B. Substitutions: Refer to Division 01.

2.01 MATERIALS

- A. Exterior Joints Subject to Vehicular Traffic:
 - 1. ASTM D6690, Type 1, hot-poured polymer modified asphalt.
 - 2. Movement capability: Plus or minus 25 percent.
 - 3. Color: Black
 - 4. ASTM C920, Grade P, multiple component polyurethane type, self-leveling and slope grades
 - 5. Movement capability: Plus or minus 25 percent.
 - 6. Color: To be selected from manufacturer's full color range.
- B. Exterior Joints in Above-Grade Surfaces:
 - 1. ASTM C920, Grade NS, single component polyurethane type, non-sag.
 - 2. Movement capability: Plus or minus 25 percent.
 - 3. Color: To be selected from manufacturer's full color range.
- C. Exterior Joints in Above-Grade Surfaces:
 - 1. ASTM C920, Grade NS, single component silicone type, nonstaining field tintable, non-sag.
 - 2. Movement capability: Plus or minus 25 percent.
 - 3. Color: To be selected from manufacturer's full color range.
- D. Joints Subject to Continuous Water Immersion:

JOINT SEALANTS

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

1. ASTM C920, Grade NS, single component polyurethane type, non-sag, recommended by manufacturer for continuous water immersion.
 2. Movement capability: Plus or minus 25 percent.
 3. Color: To be selected from manufacturer's full color range.
- E. Interior Joints Not Otherwise Specified:
1. ASTM C834, single component acrylic latex, non-sag.
 2. Movement capability: Plus or minus
 3. Color: White.

2.02 ACCESSORIES

- A. Primers: Where necessary, provide primers compatible with not only sealant, but substrate and finish on which to be applied. Primers are to be a non-staining type and must have been specifically tested for durability on the surfaces to be sealed and are specifically recommended for this installation by their manufacturer.
- B. Joint Backing: ASTM C1330, closed cell polyethylene foam, minimum, 1.25 times joint width.
- C. Bond Breaker: Use only one of the following as best suited for the specific application and as recommended by the manufacturer of the sealant to be used.
 1. Type 1: Polyethylene type, pressure-sensitive adhesive, with the adhesive required only to hold tape to the construction materials shown.
 2. Type 2: Aluminum foil.
 3. Type 3: Wax paper
- D. Masking Tape: For masking around joints, provide masking tape.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Joints and surfaces which are to be caulked or sealed shall be clean, dry and free of dust, loose mortar, and other foreign materials.
- B. Clean ferrous metals of rust, mill scale, and coatings by wire brush, grinding or sandblasting. Remove oil, grease and/or temporary protective coatings with high-performance cleaners, as approved by sealant manufacturer.
- C. Joint dimensions for sealant should be reviewed and installed in accordance with sealant manufacturer's printed instructions. In no case should the sealant application be less than 1/4-inch wide, and 1/4-inch deep, except in specific metal-to-metal curtain wall applications, and then as recommended by the sealant manufacturer.
- D. Concrete or masonry joint surfaces shall be wire brushed, then air-blown clean. The joint interface must be free of form release agents of chemical retarders which may interfere with sealant adhesion and performance.
- E. Sealants shall not be applied to masonry joints where a water repellent or masonry preservative has been applied prior to caulking. When called for, waterproofing treatments should be applied after caulking.
- F. Do not caulk joints until they are in compliance with requirements of the approved manufacturer of the materials, the details as shown on the Drawings, and the specific requirements of other sections of the specification.

3.02 INSTALLATION

- A. Apply and install sealant where shown on drawings, or if not shown on Drawings, apply and install sealant materials and products which need to avoid infiltration of moisture, water, light, or

JOINT SEALANTS

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

air blown particles into building; and within building where changes of materials in the same or different planes could allow moisture, water, air, or light to penetrate.

- B. Provide acoustical sealants on, around and between building construction members such as framing, panel boxes, cutouts for penetrations of other materials or equipment, etc., where walls and floors are designated to be sound attenuated or acoustically treated.
- C. Install joint backing with a blunt instrument so as not to puncture the surface skin. Size of joint backing should be determined by taking the joint width and adding 25 percent to assure proper compression of backer rod.
- D. Apply sealant with a caulking gun, using proper nozzles. Use sufficient pressure to properly fill the joints with sealant to the back-up materials.
- E. After joints have been completely filled, they shall be neatly tooled to eliminate air pockets or voids and to provide a smooth, neat appearing finish in intimate contact with interfaces. After tooling, the surface of sealant shall be free of ridges, wrinkles, sags, air pockets, and embedded impurities.
- F. It is recommended that a 40-degree F. minimum application temperature is maintained for joint sealant installations. When it is necessary, that applications be made at lower temperatures, take precautions to assure that joints have clean, dry, and frost-free surfaces. Submit letter by sealant manufacturer's representative, that surfaces are acceptable.

END OF SECTION

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION
SECTION 32 1123
AGGREGATE BASE COURSES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base course.

1.02 RELATED REQUIREMENTS

- A. Section 32 1216 - Asphalt Paving: Finish and binder asphalt courses.
- B. Section 32 1313 - Concrete Paving: Finish concrete surface course.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices for general requirements applicable to unit prices for earthwork.

1.04 REFERENCE STANDARDS

- A. State of California Department of Transportation (Caltrans) Standard Specifications, Latest Edition.
- B. State of California Department of Transportation (Caltrans) "Manual of Traffic Control for Construction and Maintenance Works Zones" (Latest Edition).
- C. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop 2018.
- D. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 2019.
- E. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)) 2012, with Editorial Revision (2015).
- F. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method 2015, with Editorial Revision (2016).
- G. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)) 2012, with Editorial Revision (2015).
- H. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method 2015.
- I. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) 2017, with Editorial Revision.
- J. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth) 2017a.

1.05 SUBMITTALS

- A. See Section 01 3300, for submittal procedures.
- B. Materials Sources: Submit name of imported materials source.
- C. Aggregate Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
- D. Certificates of Compliance for Class 2 Aggregate Base Course.
- E. Compaction Density Test Reports.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Aggregate Storage, General:

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Aggregate Base Course Materials shall comply with Section 26 of SS-2, Class 2, for 3/4" maximum size gradation of the CalTrans Standard Specifications.

2.02 SOURCE QUALITY CONTROL

- A. See Section 01 4523, for general requirements for testing and analysis of aggregate materials.
- B. Where aggregate materials are specified using ASTM D2487 classification, test and analyze samples for compliance before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials of each type from same source throughout the Work.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Verify that survey bench marks and intended elevations for the work are as indicated.
- B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

- A. Place aggregate in maximum 4 inch layers and roller compact to specified density.
- B. Level and contour surfaces to elevations and gradients indicated.
- C. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- D. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Variation From Design Elevation: Within 1/2 inch.

3.05 FIELD QUALITY CONTROL

- A. See Division 01 for general requirements for field inspection and testing.
- B. Perform compaction density testing on compacted aggregate base course in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
- C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D698 ("standard Proctor"), or ASTM D1557 ("modified Proctor").
- D. If tests indicate work does not meet specified requirements, remove work, replace and retest.

3.06 CLEANING**AGGREGATE BASE COURSES**

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

THIS PAGE BLANK

SECTION 32 1216 ASPHALT PAVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base course.
- B. Single course bituminous concrete paving.
- C. Double course bituminous concrete paving.
- D. Surface sealer.

1.02 RELATED REQUIREMENTS

- A. Section 32 1123 - Aggregate Base Courses
- B. Section 32 1723 - Pavement Markings.

1.03 REFERENCE STANDARDS

- A. State of California Department of Transportation (Caltrans) Standard Specifications, Latest Edition.
- B. AI MS-2 - Asphalt Mix Design Methods 2015.
- C. AI MS-19 - Basic Asphalt Emulsion Manual 2008.
- D. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction 2009a.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with State of California Department of Transportation Standard Specifications.
- B. Mixing Plant: Complying with State of California Department of Transportation Standard Specifications.
- C. Obtain materials from same source throughout.

PART 2 - PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Comply with applicable code for paving work on public property.

2.02 MATERIALS

- A. Asphalt Cement: ASTM D946.
- B. Aggregate for Base Course: See Section 32 1123.
- C. Aggregate for Binder Course: State of California Department of Transportation Standard Specifications.
- D. Aggregate for Wearing Course: State of California Department of Transportation Standard Specifications.
- E. Fine Aggregate: State of California Department of Transportation Standard Specifications.
- F. Primer: AI MS-19.
- G. Tack Coat: State of California Department of Transportation Standard Specifications.
- H. Seal Coat: AI MS-19, slurry type.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

2.03 ASPHALT PAVING MIXES AND MIX DESIGN

- A. Base Course: 3.0 to 6 percent of asphalt cement by weight in mixture in accordance with AI MS-2.
- B. Binder Course: 4.5 to 6 percent of asphalt cement by weight in mixture in accordance with AI MS-2.
- C. Wearing Course: 5 to 7 percent of asphalt cement by weight in mixture in accordance with AI MS-2.
- D. Submit proposed mix design of each class of mix for review prior to beginning of work.

2.04 SOURCE QUALITY CONTROL

- A. Test mix design and samples in accordance with AI MS-2.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that compacted subgrade is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 BASE COURSE

- A. Place and compact base course.

3.03 PREPARATION - PRIMER

- A. Apply primer in accordance with manufacturer's instructions.
- B. Apply primer to contact surfaces of curbs, gutters, and base course.
- C. Use clean sand to blot excess primer.

3.04 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with manufacturer's instructions.
- B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 1/3 gal/sq yd.
- C. Coat surfaces of manhole frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.05 PLACING ASPHALT PAVEMENT - SINGLE COURSE

- A. Install Work in accordance with State of California Department of Transportation Standard Specifications.
- B. Place asphalt within 24 hours of applying primer or tack coat.
- C. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- D. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

3.06 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

- A. Place asphalt binder course within 24 hours of applying primer or tack coat.
- B. Place wearing course within two hours of placing and compacting binder course.
- C. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- D. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.07 SEAL COAT

ASPHALT PAVING

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

- A. Apply seal coat to surface course and asphalt curbs in accordance with AI MS-19.

3.08 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Variation from True Elevation: Within 1/2 inch.

3.09 FIELD QUALITY CONTROL

- A. See Division 01, for general requirements for quality control.
- B. Provide field inspection and testing. Take samples and perform tests in accordance with AI MS-2.

3.10 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury for 3 days or until surface temperature is less than 140 degrees F.

END OF SECTION

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

THIS PAGE BLANK

SECTION 32 1313 CONCRETE PAVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Concrete sidewalks, integral curbs, and gutters.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Formwork.
- B. Section 07 9200 - Joint Sealants: Sealing joints.
- C. Section 32 1123 - Aggregate Base Courses
- D. Section 32 1723 - Pavement Markings.
- E. Section 32 1726 - Tactile Warning Surfacing: Plastic tactile and detectable warning tiles for pedestrian walking surfaces.

1.03 REFERENCE STANDARDS

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).
- B. ACI 301 - Specifications for Structural Concrete 2016.
- C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).
- D. ACI 305R - Guide to Hot Weather Concreting 2010.
- E. ACI 306R - Guide to Cold Weather Concreting 2016.
- F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2020.
- G. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.
- H. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2021.
- I. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2020.
- J. ASTM C150/C150M - Standard Specification for Portland Cement 2020.
- K. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete 2019.
- L. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2019.
- M. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing 2017.
- N. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types) 2018.
- O. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction 2018.

1.04 SUBMITTALS

- A. See Section 01 3300, for submittal procedures.
- B. Product Data: Provide data on joint filler, admixtures, and curing compound.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

- C. Design Data: Indicate pavement thickness, designed concrete strength, reinforcement, and typical details.

PART 2 - PRODUCTS

2.01 PAVING ASSEMBLIES

- A. Comply with applicable requirements of ACI 301.
- B. Concrete Sidewalks: 3,000 psi 28 day concrete, thickness indicated on Drawings, minimum 4-inch thickness, natural grey color Portland cement.

2.02 FORM MATERIALS

- A. Form Materials: As specified in Section 03 1000, comply with ACI 301.
- B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).
 - 1. Thickness: 1/2 inch.

2.03 REINFORCEMENT

- A. General: As indicated on the Drawings and specified. Reinforcement for Portland Cement concrete paving in public rights-of-way shall comply with all applicable requirements in the Standard Specifications for Public Works Construction and Standard Details, as adopted by local authorities having jurisdiction.
- B. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) yield strength; deformed billet steel bars; unfinished.
 - 1. Unless detailed otherwise on Drawings, provide #4 reinforcing bars at 24 inches on center, each way.
- C. Dowels: ASTM A615/A615M, Grade 60 - 60,000 psi yield strength; deformed billet steel bars; unfinished finish.

2.04 CONCRETE MATERIALS

- A. Obtain cementitious materials from same source throughout.
- B. Cement: ASTM C150/C150M, Normal - Type I Portland cement, gray color.
- C. Fine and Coarse Mix Aggregates: ASTM C33/C33M.
- D. Water: Clean, and not detrimental to concrete.
- E. Fiber Reinforcement: Synthetic fibers shown to have long-term resistance to deterioration when in contact with alkalis and moisture; 1/2 inch length.
- F. Chemical Admixtures: ASTM C494/C494M, Type A - Water Reducing, Type B - Retarding, Type D - Water Reducing and Retarding, Type F - Water Reducing, High Range, and Type G - Water Reducing, High Range and Retarding.

2.05 ACCESSORIES

- A. Curing Compound: ASTM C309, Type 1, Class A. Comply with all applicable air pollution requirements.
- B. Liquid Surface Sealer:
 - 1. High solids, acrylic curing and sealing compound: Minimum 30% non-yellowing, acrylic solids curing compound, shall conform to ASTM C309 and ASTM C1315, Type I, Class A, VOC compliant.
 - a. Acceptable products:
 - (1) L&M Construction Chemicals, Inc.: Dress & Seal WB: www.lmcc.com.

CONCRETE PAVING

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

- (2) L.M. Scofield Company: Cureseal-W: www.scofield.com.
 - (3) W.R. Meadows Company: Decra-Seal W/B: www.wrmeadows.com.
 - (4) Substitutions: Refer to Division 1.
 - C. Expansion Joint Filler: ASTM D1751, pre-molded, compressible 1/2 inch thick non-extruding bituminous type resilient filler, compatible with joint backing and sealing products.
 - D. Tactile Warning Surfaces: See Section 32 1726.
 - E. Concrete Paving Joint Sealant: Polyurethane, self-leveling; ASTM C920, Class 25, Uses T, I, M and A; single-component.
 - 1. Color: Gray.
 - 2. Applications: Use for:
 - a. Joints in sidewalks and vehicular paving.
 - 3. Products:
 - a. Pecora Corporation: NR-201 Self-Leveling Traffic and Loop Sealant: www.pecora.com.
 - b. BASF Construction Chemicals-Building System: www.buildingsystems.basf.com.
 - c. Sherwin-Williams Company: Stampede ISL Polyurethane Sealant: www.sherwin-williams.com
 - d. Substitutions: Refer to Division 1.
 - F. Soil Sterilant: As specified in Standard Specifications for Public Works Construction. Soil sterilant shall comply with all applicable environmental protection and hazardous materials laws and regulations.
 - 1. See Section 32 1123 Aggregate Base Course for product.
 - G. Headers and Stakes: Pressure preservative treated Douglas Fir, 2 x 6 inch nominal size except at curves provide laminated 1 x 6 inch. Use hot-dipped galvanized nails only.
- 2.06 CONCRETE MIX DESIGN
- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
 - B. Concrete Strength: Establish required average strength for concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
 - C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
 - D. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.
 - E. Concrete Properties:
 - 1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; As scheduled.
 - 2. Water-Cement Ratio: Maximum 50 percent by weight.
 - 3. Maximum Slump: 4 inches.

2.07 MIXING

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 SUBBASE

- A. See Section 32 1123 for construction of base course for work of this Section.

3.03 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Coat surfaces of manhole frames with oil to prevent bond with concrete pavement.

3.05 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.06 REINFORCEMENT

- A. Place reinforcement at midheight of slabs-on-grade.
- B. Interrupt reinforcement at expansion joints.
- C. Place dowels to achieve pavement and curb alignment as detailed.

3.07 COLD AND HOT WEATHER CONCRETING

- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of ACI 306R when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

3.08 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Do not place concrete when base surface is wet.
- C. Place concrete using the slip form technique.
- D. Ensure reinforcement, inserts, embedded parts, formed joints and [____] are not disturbed during concrete placement.
- E. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.
- F. Place concrete to pattern indicated.
- G. Apply surface retarder to all exposed surfaces in accordance with manufacturer's instructions.

3.09 JOINTS

- A. Align curb, gutter, and sidewalk joints.

CONCRETE PAVING

- B. Place 1/2 wide expansion joints at 20 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated.
- C. Provide scored joints.
 - 1. As indicated on Drawings. If not indicated, locate joints in compliance with Standard Details and as indicated below.
 - 2. Evenly spaced at maximum 5 feet intervals.
 - 3. Between sidewalks and curbs.
 - 4. Between curbs and pavement.
- D. Provide keyed joints as indicated.
- E. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

3.10 FINISHING

- A. Area Paving: Light broom, texture perpendicular to pavement direction.
- B. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.
- C. Curbs and Gutters: Light broom, texture parallel to pavement direction.
- D. Inclined Vehicular Ramps: Broomed perpendicular to slope.
- E. Place sealer on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.11 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.
- B. Maximum Variation From True Position: 1/4 inch.

3.12 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Division 1.
 - 1. Provide free access to concrete operations at project site and cooperate with appointed firm.
 - 2. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
 - 3. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
- B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
 - 1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
 - 2. Perform one slump test for each set of test cylinders taken.
- C. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.13 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian traffic over pavement until 75 percent design strength of concrete has been achieved.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

- C. Prohibit all vehicular traffic across pedestrian paving unless suitable base and reinforcement have been added.
- D. Provide lumber ramping and plywood covering where curbs and gutters are subject to vehicular and equipment traffic during construction.

END OF SECTION

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION
SECTION 32 1723
PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Painted pavement markings.

1.02 RELATED REQUIREMENTS

- A. Section 32 1216 - Asphalt Paving.

1.03 REFERENCE STANDARDS

- A. AASHTO MP 24 - Standard Specification for Waterborne White and Yellow Traffic Paints 2015 (Reapproved 2020).

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the work of this section with adjoining work.
- B. Preinstallation Meeting: Conduct a preinstallation meeting at least one week prior to the start of the work of this section; require attendance by affected installers.

1.05 SUBMITTALS

- A. See Section 01 3300, for submittal procedures.
- B. Shop Drawings: Indicate survey control points and pavement markings.
- C. Shop Drawings: Indicate traffic management plan with barricades, cones, and temporary markings.
- D. Product Data: Manufacturer's data sheets on each product to be used.
- E. Manufacturer's Instructions:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience and approved by manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

1.08 FIELD CONDITIONS

- A. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Painted Pavement Markings:
 - 1. Sherwin Williams: www.sherwin-williams.com.
 - 2. PPG Architectural Finishes: www.pittsburghpaints.com .

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

3. Benjamin Moore: Benjamin Moore.
4. Substitutions: Refer to Division 01.
- B. Painted Pavement Markings
 1. Painted Pavement Markings: As indicated on drawings.
 - a. Marking Paint: In accordance with AASHTO MP 24.
 - (1) Parking Lots: White.
 - (2) Symbols and Text: White.
 - (3) Wheelchair Symbols: Provide blue and white.
 - (4) Fire lane designations: Red with white.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Identify existing markings for removal.
- B. Verification of Conditions: Verify that pavement is dry and ready for installation.
- C. Notify Architect of unsatisfactory conditions before proceeding.

3.02 PREPARATION

- A. Establish survey control points for locating and dimensioning of markings.
- B. Place barricades, warning signs, and flags as necessary to alert approaching traffic.
- C. Clean surfaces prior to installation.
 1. Remove dust, dirt, and other debris.
 2. Remove rubber deposits, existing paint markings, and other coatings.
- D. Temporary Markings: Apply as directed by Architect.
- E. Apply paint stencils by type and color at necessary intervals.

3.03 INSTALLATION

- A. General:
 1. Position pavement markings as indicated on drawings.
 2. Field location adjustments require approval of Architect.
- B. Painted Pavement Markings:
 1. Apply in accordance with manufacturer's instructions.
 2. Marking Paint: Apply uniformly, with sharp edges.
 - a. Applications: One coat.
 - b. Wet Film Thickness: 0.015 inch, minimum.
 - c. Stencils: Lay flat against pavement, align with striping, remove after application.

3.04 PROTECTION

- A. Prevent approaching traffic from crossing newly applied pavement markings.
- B. Replace damaged or removed markings at no additional cost to Owner.
- C. Preserve survey control points until pavement marking acceptance.

END OF SECTION

PAVEMENT MARKINGS

SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION

SECTION 32 1726
TACTILE WARNING SURFACING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Plastic sheet tactile and detectable warning system for pedestrian walking surfaces.

1.02 RELATED REQUIREMENTS

- A. Section 32 1313 - Concrete Paving: Concrete sidewalks.
- B. Section 32 1723 - Pavement Markings.

1.03 REFERENCE STANDARDS

- A. California Building Code, Volume 1, Chapter 11B.
 - 1. 49 CFR 37 - Transportation Services for Individuals with Disabilities (ADA) current edition.
 - 2. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
 - 3. ATBCB PROWAG - Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way 2011.
 - 4. SAE AMS-STD-595 - Colors Used in Government Procurement 2017a.

1.04 SUBMITTALS

- A. See Section 01 3300, for submittal procedures.
- B. Product Data: Submit manufacturer's product data, standard details, details specific to this project; written installation and maintenance instructions.
- C. Shop Drawings: Submit plan and detail drawings. Indicate:
 - 1. Locations on project site. Demonstrate compliance with referenced accessibility standards.
 - 2. Sizes and layout.
 - 3. Pattern spacing and orientation.
 - 4. Attachment and fastener details, if applicable
- D. Manufacturer's Qualification Statement.
- E. Installer's Qualification Statement.
- F. Warranty: Submit manufacturer warranty; complete forms in Owner's name and register with manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver to project site in manufacturer's protective wrapping and in manufacturer's unopened packaging.
- B. Store covered and elevated above grade and in manufacturer's unopened packaging until ready for installation. Maintain at ambient temperature between 40 and 90 degrees F.

1.06 WARRANTY

- A. See Section 01 7836, for additional warranty requirements.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

- B. Plastic Tiles: Provide manufacturer's standard five year warranty against manufacturing defects, breakage or deformation.

1.07 REGULATORY REQUIREMENTS

- A. Detectable warning surfaces shall comply with CBC Section 11B-705.1
- B. Detectable warning surfaces at curb ramps and hazardous vehicular areas shall be yellow and approximate FS 33538 of SAE-AMS-STD-595A and CBC Section 11B-705.1.1.3.1

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Plastic Sheet Tactile and Detectable Warning Surface Tiles:
 - 1. Durabak Depot (a division of Worldwide Safety Systems); Safety-Trax Sheet; www.durabakdepot.com/saftitrax.
 - 2. Or approved equivalent..
 - 3. Substitutions: Refer to Division 01.

2.02 TACTILE AND DETECTABLE WARNING DEVICES

- A. Plastic Sheet Detectable Warning System: 2019 CBC compliant, exterior grade, slip-resistant, flexible polyurethane safety coating over resilient rubber dome pattern, solid color throughout.
 - 1. Installation Method: Liquid/surface applied.
 - 2. Shape: See Drawings.
 - 3. Pattern: In-line pattern of truncated domes complying with 2019 CBC.
 - 4. Edge: See Drawings.
 - 5. Joint: Not applicable.
 - 6. Color: SAE AMS-STD-595A, Table IV, Federal Yellow No. 33538.
- B. Accessories:
 - 1. DURABAK 18™ totally flexible one-step slip-resistant coating.
 - 2. Accelerator packets (if required).
 - 3. COTE-L's special stipple rollers.
 - 4. Truncated rubber domes attached to 2'x2' plastic sheets in A.D.A. specified matrix.
 - 5. Xylene, for cleaning surface and for thinning of DURABAK™, if necessary.
 - 6. Heavy duty rubber gloves.
 - 7. Masking tape, preferably duct tape.
 - 8. Paint roller pan.
 - 9. Recommended electric drill with paint mixer attachment.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. When installation location is near site boundary or property line, verify required location using property survey.
- B. Verify that work area is ready to receive work:
 - 1. If existing conditions are not as required to properly complete the work of this section, notify Architect.

TACTILE WARNING SURFACING

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

2. Do not proceed with installation until deficiencies in existing conditions have been corrected.
- C. Verify that dimensions, tolerances, and attachment methods for work in this section are properly coordinated with other work on site.

3.02 INSTALLATION, GENERAL

- A. Install in accordance with manufacturer's written instructions.
 1. Do not install damaged, warped, bowed, dented, abraded, or otherwise defective units.
 2. Do not install when ambient or substrate temperature has been below 40 degrees F during the preceding 8 daylight hours.
- B. Field Adjustment:
 1. Locate relative to curb line in compliance with ATBCB PROWAG, Sections 304 and 305.
 2. Orient so dome pattern is aligned with the direction of ramp.
 3. Align truncated dome pattern between adjacent units.
- C. Install units fully seated to substrate, square to straight edges and flat to required slope.
- D. Align units so that tops of adjacent units are flush and joints between units are uniform in width.

3.03 INSTALLATION, PLASTIC SHEET

- A. Clean surface as specified in DURABAK™ instructions. New concrete should be fully cured and cleaned with a concrete cleaner. (See new concrete instructions.) Remove all residue. Old concrete should be cleaned with Muriatic Acid or a citric cleaner or scarifying machine. Again, remove all residue. Surface should then be thoroughly dried. Old or new concrete should be wiped finally with Xylene immediately before the first coat of DURABAK™ is applied. The Xylene should be allowed to evaporate.
- B. Lay out SAFTI-TRAX™ plastic sheets with truncated domes for sizing. Be sure to leave white paper release sheet in place underneath domes. If required, cut sheets to size with scissors. When more than one sheet is to be installed in a single area, be sure to line up the alternating rows of domes correctly.
- C. Mask off area to be covered by SAFTI-TRAX™
- D. Place plastic sheet with domes still attached outside work area.
- E. If supplied with kit, add packet or can of accelerator to quart or gallon of DURABAK™ and mix can thoroughly and frequently, preferably with an electric mixer. Apply one coat of DURABAK™ onto masked-off area. Check packing slip and accelerator container to make sure proper amount goes into quart or gallon. Do not coat an area larger than one sheet at a time as the domes will need to be placed on wet DURABAK™ within 10 minutes.
- F. NOTE: After each coat, close can tightly. Lightly wet stipple roller with Xylene and cover with plastic bag so roller will not dry out. If application is by spray gun, clean spray gun between coats with Xylene.
- G. Lift plastic sheets (with domes attached) and remove the white, bottom release sheet from SAFTI-TRAX™ PLASTIC SHEET.
- H. While the DURABAK™ is still wet (within 10 minutes of application), lay domes (with top plastic sheet still attached) in place on wet surface. Without removing plastic sheet, lightly press domes down with a small flat board to ensure that the bottom of all the domes are making contact with the wet DURABAK™. If surface is uneven, you may need to remove and press some individual domes down by hand.

SHADOW HILLS E.S.**SAN DIEGO COUNTY OFFICE OF EDUCATION**

- I. After the plastic sheets are in place, slice the sheets in straight lines with a razor cutter between every two rows to allow the air to circulate between the domes and to enable the DURABAK™ to dry faster.
- J. Do not remove plastic sheets from the domes for two to three hours or more, until the domes are solidly attached to the DURABAK™ and the DURABAK™ is dry. Lighter colors, such as Safety Yellow, may require more time to dry, depending on climactic conditions.
- K. Gently and slowly peel off top plastic sheet parallel to surface, holding the individual domes down with one hand while peeling the sheet back with the other, being careful not to dislodge domes. If a dome should become dislodged, apply some DURABAK™ to the bottom of the dome and press firmly back into place. Let dry.
- L. Apply 2nd coat of DURABAK™ over truncated domes and entire masked-off surface, making sure DURABAK™ covers the outside base of the domes. Roll in several different directions to ensure complete coverage.
- M. When the 2nd coat of DURABAK™ has become touch dry, repeat step 11 with two more coats, allowing each coat to dry to the touch before applying the next one.
- N. NOTE: The completed system will have one base coat and three top coats.
- O. Slowly remove masking tape and let SAFTI-TRAX™ dry. If tape is not removed promptly and is sticking to the DURABAK™, cut along edge with a razor knife and then remove tape.
- P. SAFTI-TRAX™ surface can be walked on in 6 to 12 hours in conditions of average humidity. For special circumstances, average walking time may be able to be reduced. For information, contact authorized SAFTI-TRAX™ representative.

3.04 PROTECTION

- A. Protect installed units from traffic, subsequent construction operations or other imposed loads until concrete is fully cured.
- B. Touch-up, repair or replace damaged products prior to Date of Substantial Completion.

END OF SECTION

SECTION 32 3113 CHAIN LINK FENCE AND GATES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: Chain link fencing, including gates, as indicated on the Drawings and specified herein.
- B. Division 1

1.02 REFERENCE STANDARDS

- A. ASTM A53 - Pipe, Steel, Black and Hot-dipped, Zinc-coated Welded and Seamless.
- B. ASTM A123 - Zinc (Hot-Dip Galvanized) Coating on Iron and Steel Products.
- C. ASTM A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- D. ASTM A392-11a - Zinc-Coated Steel Chain-Link Fence Fabric.
- E. ASTM A491-11 - Aluminum-Coated Steel Chain-Link Fence Fabric.
- F. ASTM A446 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
- G. ASTM A569 - Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip Commercial Quality.
- H. ASTM A121-13 - Aluminum-Coated Steel Barbed Wire.
- I. ASTM B117-11 - Method of Salt Spray (Fog) Testing.
- J. ASTM C94 - Ready-mixed Concrete.
- K. ASTM F567 - Installation of Chain-Link Fence.
- L. FS RR-F-191 - Fencing, Wire and Post, Metal.
- M. Gates and hardware which are placed across required exit pathways shall comply with Section C.B.C Sections 1008 and 1009, and C.F.C. 401.2.

1.03 SUBMITTALS

- A. Submit shop drawings showing application to project, including gates. Include plan layout, grid, spacing of components, accessories, fittings, hardware, anchorages, and schedule of components.
- B. Submit manufacturer's product data with printed specifications and installation instructions.
- C. Submit samples.
- D. Manufacturer's certifications of compliance for Chain Link fabric, posts, and rail.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Materials shall be delivered to the site in an undamaged condition. Carefully store material off the ground to provide proper protection against oxidation caused by ground moisture.

PART - 2 PRODUCTS

2.01 MANUFACTURERS

- A. Materials shall be new and products of recognized, reputable manufacturers. Used, rerolled or re-galvanized materials are not acceptable. Like products shall be supplied by a single source.
- B. All fences, gates, openings, hardware, etc. shall conform to requirements of the local fire authority.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

2.02 MATERIALS

- A. Fabric: Steel fabric shall be aluminum coated in accordance with ASTM A491. Wire shall be 9 gauge, 2" diamond mesh (1-3/4" diamond mesh at tennis courts). Height as indicated on drawings.
- B. Tension Wire: 7 gauge galvanized spring steel with same galvanizing as fabric.
- C. Framework: Shall conform to FS RR-F-191/3C Class 1, Grade A or B, or Class 3, except as herein modified.
 - 1. Class 1, grade A pipe shall conform to ASTM A53, except the Hydrostatic test shall be waived. Galvanizing shall be in accordance with ASTM A123.
 - 2. Grade B pipe shall be made from steel complying with ASTM A446 Grade D or ASTM A569. The exterior surface shall have a hot-dipped zinc coating of 1.0 + .1oz/ft² followed by 15 micrograms/in² minimum chromate conversion coating and .5 + .2 mils of clear acrylic. The interior surface shall be hot dipped zinc coated with a minimum of 1.0 + .1 oz/ft², or shall be a minimum of .5 mils of zinc rich organic coating with a minimum zinc loading of 91%.
 - 3. Class 2 Roll-Formed C-Sections shall be made from steel conforming to ASTM A570, Grade 45 and shall be galvanized with 1.8 oz. hot dipped zinc in accordance with ASTM A123. The product of the yield strength and the section modulus of framework material shall not be less than that of pipe conforming to ASTM A53.

2.03 COMPONENTS

- A. 6 foot High Fence or Less:
 - 1. Line Posts: 1.9" O.D. steel pipe, Class 1 Grade A or B; or 1.875" x 1.625" x 1.85 lbs/ft. Class 3.
 - 2. Corner and Terminal Posts: 2.375" O.D. steel pipe, Class 1 Grade A or B.
 - 3. Provide posts at 10'-0" maximum o.c. Provide top rail and bottom tension wire, as specified herein.
- B. 6 to 8 Foot High Fence:
 - 1. Line Posts: 2.375" o.d. steel pipe, Class 1 Grade A or B;
 - 2. Corner and Terminal Posts: 2.875 o.d. steel pipe, Class 1 Grade A or B.
 - 3. Provide posts at 10'-0" maximum o.c. Provide top rail and bottom tension wire, as specified herein.
- C. For Fence Heights Over 8 Feet (except around Tennis Courts):
 - 1. Line Posts: 2.875" o.d. steel pipe, Class 1 Grade A or B.
 - 2. Corner & Terminal Posts: 4.0" o.d. steel pipe, Class 1 Grade A or B.
 - 3. Rails and Bracing: 1.66" o.d., plain end steel pipe, Class 1, Grade A or B; or 1.625" x 1.25" x 1.35 lbs/ft Class 3. Use manufacturer's longest lengths. Join using 6" sleeves.
 - 4. Provide posts @ 10'-0" maximum o.c. Provide top rail and bottom tension wire, as specified herein. Provide mid-rail at 12 feet high fence.

2.04 ACCESSORIES

- A. Gates: Refer to Gate Schedule on Drawings for Gate Size:
 - 1. Gate Frame: 1.90" O.D. steel pipe Class 1, Grade A or B for welded fabrication. Welded or damaged areas shall be cleaned and coated with two coats of zinc rich paint. Provide same fabric as for fence. Install diagonal cross-bracing using 3/8" truss rods.
 - 2. Gate Posts: For swing gates, shall be as follows:

CHAIN LINK FENCE AND GATES

**SHADOW HILLS E.S.
SAN DIEGO COUNTY OFFICE OF EDUCATION**

Gate Leaf Width	Gate Post Dimensions
6' or less	2.875" O.D., 4.64lbs/ft
over 6' to 12'	4.000" O.D., 6.56 lbs/ft
over 12' to 18'	6.625" O.D., 18.02 lbs/ft
over 18' to 24'	8.625" O.D., 27.12 lbs/ft

3. Gate Hardware: Fork type latch with gravity drop with 5 lbs maximum pressure to open (latch shall not required, tight grasping, twisting or pinching to operate); or center gate stop and drop rod; with mechanical keepers; two 180 degree gate hinges per leaf and hardware for padlock. Provide 18" chain at each gate, welded to gate per District's requirement. Spot weld hardware to gates and posts. For double leaf gates, provide 3/4-inch diameter cane bolts with ground sleeves. Repair galvanizing with a hot stick. (Note: NO cane bolts shall be installed on gates shown on the Drawings to be on the Accessible Path of Travel or required exit pathways where panic hardware is required per CBC 1008.1.10).
 4. Gates in the path of travel must comply with exit door requirements (CBC Section 1003.3.2) Gate hardware in the path of travel must not require pinching, grasping, or twisting motion to operate. Provide solid kick plates 10" minimum high 3" maximum from the paving on both sides of the gate
 5. Fittings and accessories shall be galvanized in accordance with ASTM A153, Table I.
 6. Post Caps: Weathertight caps shall be supplied for each post. Shall be cast steel or malleable iron, galvanized. Caps shall have a loop to receive top rail or tension wire.
- B. Rolling Gates: When rolling gates are indicated, they shall be fabricated and installed complete with tracks, track wheels, double front wheel assembly, locking devices, gate bumpers, etc. Double wheels shall roll on and be supported by a continuous concrete track. Concrete shall be 8 inches thick with two (2) #4 continuous steel reinforcing bars.
1. Rolling gate posts shall be 2.875" o.d. steel pipe weighing 5.79 lb/ft. Guideposts of 2.375" o.d., steel pipe, weighing 3.65 lb/ft shall be installed in line with the gate posts. Line posts to support the tracks shall be spaced not over 5'-0" on center.

2.05 FINISHES

- A. Hot Dipped Galvanized. ASTM Spec A-153.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install framework, fabric, accessories, and gates in accordance with ASTM F567, follow the lines, grades, and details as indicated.
- B. Posts shall be set in concrete with the diameter to be four times the largest cross-section of the post. The depth shall be a minimum of 24 inches plus an additional 3 inches for each 1-foot increase in fence height over 4 feet.
1. Terminal posts shall be braced on fences 7 feet or above in height, and on fences without a top rail, regardless of height.
 2. Provide concrete for setting posts. Portland Cement shall be Type V and shall conform to ASTM C150. Concrete aggregates shall conform to ASTM C33. The maximum size aggregate shall be 1-1/2 inch. The mix shall be 1 part cement and 6 parts well-graded aggregate.
 - a. Dig holes 3 inches deeper than the bottom of the post. Make a slight crown at top of concrete to shed water.

SHADOW HILLS E.S.

SAN DIEGO COUNTY OFFICE OF EDUCATION

3. Where posts are set in curbs, walls, or floors, holes formed by core drilling. Fill space between the sleeve and post with Por-Rok as manufactured by the Hallemite Manufacturing Company.
4. Erect fencing straight and plumb, following the finish grade. Place no post in ditches, dips, or mounds.
5. Set posts before laying asphalt and install fabric after paving and mow strips are in place.

END OF SECTION