

Technical Specifications For:

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

Client:

Mountain Empire Unified School District
3291 Buckman Springs Road
Pine Valley, CA 91962

Architect:

AlphaStudio Design Group
6152 Innovation Way
Carlsbad, CA 92009
760-431-2444



www.alphastudio-design.com

TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

01 1000	SUMMARY
01 1150	PROJECT COORDINATION
01 2000	PRICE AND PAYMENT PROCEDURES
01 3000	ADMINISTRATIVE REQUIREMENTS
01 3060	SUBMITTALS
01 3216	CONSTRUCTION PROGRESS SCHEDULE
01 4000	QUALITY REQUIREMENTS
01 4219	REFERENCE STANDARDS
01 5000	TEMPORARY FACILITIES AND CONTROLS
01 6000	PRODUCT REQUIREMENTS
01 7000	EXECUTION AND CLOSEOUT REQUIREMENTS
01 7450	CLEANING
01 7750	PROJECT CLOSEOUT
01 7800	CLOSEOUT SUBMITTALS
01 9100	TESTING AND INSPECTION REQUIREMENTS

DIVISION 02 - EXISTING CONDITIONS

02 4100	DEMOLITION
---------	------------

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 1000	ROUGH CARPENTRY
06 4100	ARCHITECTURAL WOOD CASEWORK

DIVISION 08 - OPENINGS

08 1113	HOLLOW METAL DOORS AND FRAMES
08 1416	FLUSH WOOD DOORS

DIVISION 09 - FINISHES

09 2116	GYPSUM BOARD ASSEMBLIES
09 6500	RESILIENT FLOORING
09 7730	FIBER REINFORCED PLASTIC PANELS
09 9000	PAINTS AND COATINGS

DIVISION 10 - SPECIALTIES

10 2800	TOILET, BATH, AND LAUNDRY ACCESSORIES
---------	---------------------------------------

DIVISION 26 - ELECTRICAL

26 0100	GENERAL PROVISIONS
26 0519	POWER CONDUCTORS
26 0526	GROUNDING
26 0533	CONDUITS AND FITTINGS
26 0534	OUTLET AND JUNCTION BOXES
26 2726	SWITCHES AND RECEPTACLES
26 2816	DISCONNECTS
26 5113	LED LIGHT FIXTURES AND LAMPS
26 9090	ELECTRICAL CLOSEOUT

DIVISION 28 – FIRE ALARM

28 0100	GENERAL PROVISIONS
28 3000	FIRE ALARM SYSTEM

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 1000
SUMMARY

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: Preschool Improvements - Pine Valley Middle School.
- B. Owner's Name: Mountain Empire Unified School District.
- C. Architect's Name: AlphaStudio Design Group.
- D. The Project consists of the following:
 - 1. Interior improvements for the addition of two single occupant restrooms.
 - 2. Replacement of a sink cabinet and wall cabinet.
 - 3. Demolition and removal of interior partitions, doors, and finishes.
 - 4. All associated demolition, new wall framing, finishes, accessories, doors and frames, mechanical, plumbing, and electrical/fire alarm work.
 - 5. As shown in Contract Documents prepared by AlphaStudio Design Group; 6152 Innovation Way, Carlsbad, CA 92009; (760) 431-2444.

1.02 DEFINITIONS

- A. C.B.C.: California Building Code.
- B. C.C.R.: California Code of Regulations.
- C. Furnish: To supply products to the project site, including delivery.
- D. Install: To put products in place in the work ready for the intended use, including unloading, unpacking, handling, storing, assembling, installing, erecting, placing, applying, anchoring, working, finishing, curing, protecting, cleaning, and similar operations.
- E. Provide: To furnish and install products.
- F. Indicated: Shown, noted, scheduled, specified, or drawn, somewhere in the Contract Documents.

1.03 REGULATORY REQUIREMENTS

- A. The following regulations are applicable to this project:
 - 1. 2019 California Building Code, Title 24, Part 2, California Code of Regulations (C.C.R.).
 - 2. 2019 California Electrical Code, Title 24, Part 3, California Code of Regulations (C.C.R.).
 - 3. 2019 California Mechanical Code, Title 24, Part 4, California Code of Regulations (C.C.R.).
 - 4. 2019 California Plumbing Code, Title 24, Part 5, California Code of Regulations (C.C.R.).
 - 5. 2019 California Fire Code, Title 24, Part 9, California Code of Regulations (C.C.R.).
- B. Submit copies of all permits, licenses, and similar permissions obtained, and receipts for fees paid, to the owner directly.

1.04 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price.

1.05 OWNER OCCUPANCY

- A. Owner intends to continue to occupy adjacent existing building during the entire construction period.
- B. Owner intends to occupy the Project upon Substantial Completion.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- D. Schedule the Work to accommodate Owner occupancy.

1.06 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Arrange use of site and premises to allow:

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

1. Owner occupancy.
 2. Work by Others.
 3. Work by Owner.
- C. Provide access to and from site as required by law and by Owner:
1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- D. Time Restrictions:
1. Limit conduct of especially noisy exterior work to the hours of before or after school hours or on weekends. Coordinate with the District Representative prior to commencing work.
- E. Utility Outages and Shutdown:
1. Limit disruption of utility services to hours the site is unoccupied.
 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 48-hours notice to Owner and authorities having jurisdiction.
 3. Prevent accidental disruption of utility services to other facilities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 1150
PROJECT COORDINATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
 - 1. Coordination.
 - 2. Administrative and supervisory personnel.
 - 3. General installation provisions.
 - 4. Cleaning and protection.

1.03 COORDINATION

- A. Coordinate all aspects of the Work so each portion is installed in proper relationship with the whole, so the Work progresses in the proper order, in a smooth manner, and without interference between the trades.
- B. Observation of Work by others shall not be interpreted as relieving the Contractor from responsibility for coordination of all Work, superintendence of the Work, or scheduling and direction of the Work.
- C. Coordinate construction activities included under various Sections of these Specifications to assure 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.
 - 1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 - 2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- D. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.
- E. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress Meetings.
 - 5. Project Closeout activities.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- E. Visual Effects; Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I. 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 final decision.

3.02 STARTING EQUIPMENT AND SYSTEMS

- A. Provide manufacturer's field representative to prepare and start systems.
- B. Adjust for proper operation within manufacturer's published tolerances.
- C. Demonstrate proper operation of equipment to Owner's designated representative.

3.03 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 2000
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Contract Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, Special Conditions, and other Sections in Division 1 of these Specifications.
- B. The Contract Sum and the schedule for payments are described in other Documents of the Contract.

1.03 SCHEDULE OF VALUES

- A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- B. Forms filled out by hand will not be accepted.
- C. Submit a printed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet. Contractor's standard form or electronic media printout will be considered.
- D. Submit Schedule of Values in duplicate within 5 days after date of Owner-Contractor Agreement.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization.
- F. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
- G. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Present required information two on electronic media printout.
- E. Form: AIA G702 Application and Certificate for Payment and AIA G703 - Continuation Sheet including continuation sheets when required.
- F. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of work.
 - 3. Scheduled Values.
 - 4. Previous Applications.
 - 5. Work in Place and Stored Materials under this Application.
 - 6. Authorized Change Orders.
 - 7. Total Completed and Stored to Date of Application.
 - 8. Percentage of Completion.
 - 9. Balance to Finish.
 - 10. Retainage.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- G. Execute certification by signature of authorized officer.
- H. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- I. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.
- J. Submit three copies of each Application for Payment.
- K. Include the following with the application:
 - 1. Transmittal letter as specified for Submittals in Section 01 3000.
 - 2. Construction progress schedule, revised and current as specified in Section 01 3000.
 - 3. All items listed and required under Article 37 of the General Conditions.
- L. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.
- M. PROCESSING:
 - 1. The Contractor shall submit a proposed Schedule of Values along with a draft Application for Payment to the Architect and Project Inspector for review, comment and approval prior to submitting the first Application for Payment.
 - 2. When preparing the Application for Payment each month, the Contractor shall review the proposed percentages of completion of work being applied for with the Project Inspector, who shall approve of the percentages prior to formalizing the Application for Payment. If possible, the percentages should be reviewed with the District, Architect and Project Inspector at the closest scheduled job meeting prior to finalizing.
 - 3. The Contractor shall submit three (3) copies of the Applications for Payment, with original signatures to the Project Inspector, who will verify the percentages and sign all copies. The Contractor shall be responsible for delivery to the Architect for signatures.
 - 4. The Architect will review the Application for Payment, and the Architect of Record will sign all copies and forward it to the Contractor, who in turn shall be responsible for delivery to the District for signatures, processing and payment.
 - 5. Applications for Payment shall be made on a monthly basis and shall be filed by the Contractor to the District in the timeframe as set forth in the General Conditions. Signatures on the Application for Payment shall include the Contractor, Architect, and Project Inspector. The Contractor shall be responsible for obtaining all required signatures. Once all signatures are obtained, Application for Payment may be submitted to the District. Work for payment may be estimated or pro-rated to the end of the month if approved before hand by the District.
 - 6. Applications for Payment may include billing for project materials not on-site if these materials have been received and are being stored in a bonded warehouse. Receipts for such project materials must accompany the Application for Payment.
 - 7. Applications for Payment will not be processed if As-Built Drawings are not updated to the satisfaction of the Project Inspector and the Architect.

1.05 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to the Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Price or Contract Time, Architect will issue instructions directly to Contractor.
- C. Architect's Supplemental Instructions (ASI): Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time as authorized by the Conditions of the Contract by issuing supplemental instructions on Architect's Supplemental Instructions (A.S.I.).
- D. Construction Change Directive (CCD): Architect may issue a document, signed by District, instructing Contractor to proceed with a change in the Work, for subsequent inclusion in a

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

Change Order.

1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 2. Promptly execute the change.
- E. Proposal Request (P.R.): Architect may issue a document which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 5 days.
1. PROPOSAL REQUEST PRICING:
 - a. The Contractor responds to a Proposal Request using the Proposal Request Pricing area on the Proposal Request form, a copy of which is found at the end of this section. The Contractor completes this form providing an itemized cost breakdown and indicating any extensions of time required. Upon review and acceptance of the cost submitted, and when signed by the Owner and Architect and received by the Contractor, this document becomes effective IMMEDIATELY and the Contractor shall proceed with the approved changes. Proceeding with the changes constitutes acceptance of the cost and time adjustment indicated.
- F. Proposed Contract Modifications (PCM): Contractor may propose a change by submitting a request for change or Proposed Contract Modification (P.C.M.) to the Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.
1. PROPOSED CONTRACT MODIFICATIONS (P.C.M.'s):
 - a. If additional services are required in the opinion of the Contractor that a Proposal Request has not been issued for, the Contractor issues the Proposed Contract Modification form, a copy of which is found at the end of this section. The Contractor completes this form providing an itemized cost breakdown and any pertinent backup information deemed necessary to fully justify the cost submitted, and indicating any extensions of time required. Upon review and acceptance of the cost submitted, and when signed by the District and Architect and received by the Contractor, this document becomes effective IMMEDIATELY and the Contractor shall proceed with the approved changes. Proceeding with the changes constitutes acceptance of the cost and time adjustment indicated.
 2. P.R. / P.C.M. REPLY:
 - a. If the Architect takes exception to any portion of the Proposal Request Pricing and/or Proposed Contract Modification submitted by the Contractor, the Architect shall reply in writing using the the P.R./P.C.M. Reply form. The Contractor shall resubmit a revised P.R. or P.C.M. (utilizing the same number but with a letter suffix, i.e. "P.C.M. #1A") in response to the comments made by the Architect.
 - b. Should the dollar amount of additional costs or credits attributable to the P.R. and/or P.C.M. become a point of contention, the Contractor and the Architect shall each make a reasonable effort to arrive at a mutually agreed upon dollar amount. If an agreement cannot be reached within a reasonable time frame, dollar amounts will be based on the current edition of SAYLOR PUBLICATIONS, INC. CURRENT CONSTRUCTION COSTS. Other cost estimating books or reference materials may be used for determining dollar amounts if acceptable to the General Contractor, Architect and the Owner.
- G. Execution of Change Orders: All approved P.R.'s and P.C.M.'s shall be processed as Change Orders. Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract. All Change Orders must be approved by the School Districts Governing Board and D.S.A.
- H. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

1. Refer to Article 40 of General Conditions.
- I. Substantiation of Costs: Provide full information required for evaluation.
 1. On request, provide following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- J. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- K. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- L. Promptly enter changes in Project Record Documents.

1.06 APPLICATION FOR FINAL PAYMENT

- A. As specified in the Agreement and Conditions of the Contract.
 1. Refer to Article 37 of the General Conditions.
- B. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- C. Application for Final Payment will not be considered until the following have been accomplished:
 1. All requirements of Article 37 of the General Conditions.
 2. DSA Form 6-C Contractor Verified Report filed with the Division of the State Architect.
 3. All closeout procedures specified in Section 01780.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Progress meetings.
- C. Construction progress schedule.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Stages of the Work, Work covered by each contract, occupancy, [_____].
- B. Section 01305 - Submittals: Submittal procedures.
- C. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.
- D. Section 01 7800 - Closeout Submittals: Project record documents.

1.03 DEFINITIONS

- A. REQUEST FOR INFORMATION (R.F.I.'s):
 - 1. Requests for Information may be generated by the Contractor, any of the Contractor's subcontractors or the Owner's Inspector and should be directed to the Architect through the General Contractor using the form provided at the end of this section. Request for Information forms are used to help clarify and/or interpret the information contained in the Contract Documents or to resolve construction questions in the field.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. District will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. School District Representative.
 - 2. Architect.
 - 3. Contractor.
 - 4. Inspector.
 - 5. Project Superintendent.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 - 5. Designation of personnel representing the parties in Contract, School District Representative and the Architect.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.
 - 8. Scheduling activities of a Geotechnical Engineer.
- D. Architect shall record minutes and distribute copies within five days after meeting to participants, with copies to Contractor, School District, Project Inspector, participants, and those affected by decisions made.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

3.02 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at an interval to be determined by the District.
- B. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required: School District Representative, Architect, Project Inspector, Job Superintendent, Major Subcontractors and suppliers, as appropriate to agenda topics for each meeting.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems that impede, or will impede, planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Contractor update on Safety Program / Storm Water Management.
 - 8. Maintenance of progress schedule.
 - 9. Corrective measures to regain projected schedules.
 - 10. Planned progress during succeeding work period.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to Work.
- E. The Architect will record minutes and distribute copies prior to the next meeting to participants, with copies to the Owner, Inspector, Contractor, other participants, and those affected by decisions made.
- F. The Progress Meetings are intended to be conducted in an orderly and professional manner. Any foul language or unprofessional conduct will not be tolerated, and will result in the cessation of the meeting. Meetings shall not be recorded without the concurrence of all parties in attendance.

3.03 CONSTRUCTION PROGRESS SCHEDULE - SEE SECTION 01 3216

- A. Refer to Article 7 of the General Conditions for requirements.
- B. The first payment will not be made unless the District has been provided and has accepted the project schedule.
- C. Submit updated schedule with each Application for Payment.

3.04 REQUEST FOR INFORMATION

- A. Request for Information (RFI): Requests for Information may be generated by the Contractor, any of the Contractor's subcontractors or the Owner's Inspector and should be directed to the Architect through the General Contractor using the form provided at the end of this section. Request for Information forms are used to help clarify and/or interpret the information contained in the contract documents or to resolve construction questions in the field.
 - 1. The Architect shall respond in writing within three (3) working days of receipt of the RFI. The Architect will promptly advise the Contractor when a Request for Information being processed will be delayed beyond three (3) working days due to a need for additional information, research or coordination. The Contractor should allow sufficient review time so that the work will not be delayed as a result of the time required to process RFI's. No extension of contract time will be authorized because of failure by the Contractor to transmit RFI's to the Architect sufficiently in advance of work to permit processing.
 - 2. Deductions for Unnecessary or Redundant RFI's: Should the Contractor or the Contractor's subcontractor submit unnecessary or redundant RFI's to the Architect for review, the Architect shall be entitled to bill the Owner at his (Architect's) hourly rate for the additional work generated by the Contractor's inefficiency. The Owner shall then deduct the comparable dollar amount from the payments due the Contractor.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

3. Unnecessary and/or Redundant RFI's Include (But Are Not Limited To):
 - a. RFI's questioning items or information clearly noted in the contract documents.
 - b. RFI's generated as a result of a Contractor's substitution or construction error which requires additional coordination with other related items or a revision to the contract documents.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 3060
SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittal Log
- B. Preparing and processing of submittals for review and action.
- C. Preparing and processing of informational submittals.

1.02 DEFINITIONS

- A. "Shop drawings" are drawings and other data prepared, by the entity who is to do the work, specifically to show a portion of the work.
- B. "Product data submittals" are standard printed data which show or otherwise describe a product or system, or some other portion of the work.
 - 1. Product data submittals also include:
 - a. Performance curves, when issued by the manufacturer for all products of that type.
 - b. Selection data showing standard colors.
 - c. Wiring diagrams, when standard for all products of that type.
- C. "Samples" are actual examples of the products or work to be installed.
- D. Informational Submittals: Submittals identified in the contract documents as to be submitted for information only.

1.03 SUBMITTAL LOG

- A. Contractor shall prepare submittal log in format approved by the Architect and School District.
- B. As a minimum the submittal log shall list all submittals required by the contract documents, with assigned submittal number, corresponding specification section and description of submittal.

1.04 SUBMITTALS FOR REVIEW

- A. Submit the following for the architect's review and action:
 - 1. Shop drawings.
 - 2. Structural design information required by the contract documents.
 - 3. Product data.
 - 4. Samples.
 - 5. Submittals indicated as "for approval."
 - 6. Submittals for which procedures are not defined elsewhere.
- B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed only for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01780 - Closeout Submittals.

1.05 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Certificates.
 - 2. Coordination drawings.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Qualification statements from manufacturers / installers.
 - 8. Verified Reports in accordance with Title 24, Part 1, Article 47336, C.C.R.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

1.06 SUBMITTALS FOR PROJECT CLOSEOUT

- A. When the following are specified in individual sections, submit them at project closeout:
 - 1. Project record documents.
 - 2. Operation and maintenance data.
 - 3. Warranties.
 - 4. Bonds.
 - 5. Other types as indicated.
- B. Submit for Owner's benefit during and after project completion.

1.07 SUBMITTAL REQUIREMENTS

- A. Do not commence work that requires review of any submittals until receipt of returned submittals with an acceptable action.
- B. Do not allow submittals without an acceptable action marking to be used for the project.
- C. Submit all submittals to the Architect.
- D. All Submittals for the project shall be delivered to the Architect's office within five (5) days from the Notice to Proceed.
- E. Do not submit substitute items that have not been approved by means of the procedure specified elsewhere.
- F. Do not include requests for substitution (either direct or indirect) on submittals; comply with procedures for substitutions specified elsewhere.
- G. Related Sections: The following are specified elsewhere in Division 1:
 - 1. 01200 - PRICE AND PAYMENT PROCEDURES
 - a. Payment, modification, and completion submittals.
 - 1) Applications for payment.
 - 2) Schedule of values.
 - 3) Change proposals.
 - 2. 01325 - CONSTRUCTION PROGRESS SCHEDULE
 - a. Progress of work submittals:
 - 1) Contractor's construction schedules.
 - 3. 01400 - QUALITY REQUIREMENTS
 - a. Quality control submittals:
 - 1) Inspection reports.
 - 2) Test reports.
 - 4. 01600-PRODUCT REQUIREMENTS
 - a. Product submittals:
 - 1) Requests for Substitution.
 - 2) Maintenance materials and tools.
 - 5. 01780 - CLOSEOUT SUBMITTALS
 - a. Contract closeout submittals:
 - 1) Equipment and systems demonstration reports.
 - 2) Operating and maintenance data.
 - 3) Request for determination of substantial completion.
 - 4) Project record documents.
 - 5) Warranties.
 - 6) Bonds.

1.08 NUMBER OF COPIES OF SUBMITTALS

- A. Documents for Review:
 - 1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches: Submit the number of copies which the Contractor requires, plus [four] copies which will be retained by the Architect.
 - 2. Larger Sheets, Not Larger Than 36 x 48 inches: Submit the number of opaque reproductions which Contractor requires, plus [four] copies which will be retained by

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- Architect.
3. In lieu of hard copy submittals, electronic submittals are acceptable except for material and/or color selection samples.
- B. Documents for Information: Submit [three] copies.
 - C. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.
 - D. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
 1. After review, produce duplicates.
 2. Retained samples will not be returned to Contractor unless specifically so stated.
 - E. Copies in excess of the number requested will not be returned.
 - F. Provide additional copies, if required for operating and maintenance data, marked to indicate their purpose.

1.09 SUBMITTAL PROCEDURES

- A. Coordination:
 1. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - a. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
 - b. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - c. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
- B. Processing:
 1. Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
 - a. For each submittal for review, allow 5 days excluding delivery time to and from the Architect. Allow additional time if processing time must be delayed to permit coordination with subsequent submittals. The Architect shall promptly advise the General Contractor when a submittal being processed must be delayed for coordination.
 - 1) Exceptions:
 - (a) Deferred Approval Submittal through the Division of the State Architect's office. Due to the nature of these submittals, no estimated return date can be given.
 - (b) Complicated Shop Drawings may require more than ten days for proper review time and coordination.
 - (c) If numerous Submittals are provided within a short period of time, the review time may not be able to be met. In these cases, the Contractor should clearly identify on the Submittal Transmittal which Submittals have the highest priority in terms of the Project Schedule and related construction activities.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow two weeks for reprocessing each submittal.
 - d. When revised for resubmission, identify all changes made since previous submission.
 - e. No extension of Contract Time will be authorized because of the failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing and review.
- C. Submittal Preparation:
 1. Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- a. Provide a space approximately 4" x 5" on the label or besides the title block on Shop Drawings to record the Architect's/Engineer's review and approval markings and the action taken.
 - b. Include the following information on the label for processing and recoding action taken:
 - 1) Project Name.
 - 2) Date.
 - 3) Name and address of Architect.
 - 4) Name and address of District.
 - 5) Name and address of Subcontractor.
 - 6) Name and address of Supplier.
 - 7) Name of manufacturer.
 - 8) Number and title of the appropriate Specification Section.
 - 9) Drawing number and detail references, as appropriate.
- D. Submittal Transmittal:
1. Package each submittal appropriately for transmittal and handling. Transmit each submittal from District or General Contractor to Architect using a standard "Submittal Transmittal" form in a format that is acceptable to the Architect and District. Submittals received from sources other than the District or General Contractor will be returned without action.
 2. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
 3. On the transmittal, record relevant information and requests for data.
 4. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
 5. Deliver submittals to Architect at business address.
 6. Schedule submittals to expedite the Project, and coordinate submission of related items.
 7. Identify all variations from Contract Documents, and all Product or system limitations which may be detrimental to successful performance of the completed Work.
 - a. Failure to identify all variations and limitations will be cause for retroactive rejection of submittals previously approved.
- E. Distribution:
1. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

1.10 COORDINATION OF SUBMITTALS

- A. Coordinate submittals and activities that must be performed in sequence, so that the architect has enough information to properly review the submittals.
- B. Coordinate submittals of different types for the same product or system so that the architect has enough information to properly review each submittal.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 TIMING OF SUBMITTALS

- A. Transmit each submittal at or before the time indicated on the approved schedule of submittals.
 1. Prepare and submit for approval a schedule showing the required dates of submittal of all submittals.
 2. Organize the schedule by the applicable specification section number.
 3. Incorporate the contractor's construction schedule specified elsewhere.
 4. ALL SUBMITTALS FOR THE PROJECT SHALL BE DELIVERED TO THE ARCHITECT'S OFFICE WITHIN FIVE (5) DAYS FROM THE NOTICE TO PROCEED.
- B. Deliver each submittal requiring approval in time to allow for adequate review and processing time, including resubmittals if necessary; failure of the contractor in this respect will not be

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

considered as grounds for an extension of the contract time.

- C. Deliver each informational submittal prior to start of the work involved, unless the submittal is of a type which cannot be prepared until after completion of the work; submit promptly.
- D. Allow a minimum of 5 business days for the first processing of each submittal. Allow more time when submittals must be coordinated with later submittals, or are more technical in nature and require more review and coordination time.
- E. Allow a minimum of 3 business days for processing of resubmittals.
- F. If a submittal must be delayed for coordination with other submittals not yet submitted, the architect may at his option either return the submittal with no action or notify the contractor of the other submittals, which must be received before the submittal can be reviewed.

3.02 SUBMITTAL PROCEDURES - GENERAL

- A. Contractor Review: Sign each copy of each submittal certifying compliance with the requirements of the contract documents.
- B. Notify the architect, in writing and at time of submittal, of all points upon which the submittal does not conform to the requirements of the contract documents, if any. All deviations from the Contract Documents must be clearly indicated on the submittal. All submittals for materials or equipment other than that specified must be submitted with properly completed Substitution Request Form.
- C. Preparation of Submittals:
 - 1. Label each copy of each submittal, with the following information:
 - a. Project name.
 - b. Date of submittal.
 - c. Contractor's name and address.
 - d. Architect's name and address.
 - e. Subcontractor's name and address.
 - f. Manufacturer's name.
 - g. Specification section where the submittal is specified.
 - h. Numbers of applicable drawings and details.
 - i. Other necessary identifying information.
 - 2. Pack submittals suitably for shipment.
 - 3. Submittals to receive architect's action marking: Provide blank space on the label or on the submittal itself for action marking; minimum 4 inches wide by 5 inches high.
- D. Transmittal of Submittals:
 - 1. Submittals will be accepted from the contractor only. Submittals received from other entities will be returned without review or action.
 - 2. Submittals received without a transmittal form will be returned without review or action.
 - 3. Transmittal form: Use a form matching the sample form attached to this section.
 - 4. Fill out a separate transmittal form for each submittal; also include the following:
 - a. Other relevant information.
 - b. Requests for additional information.

3.03 SHOP DRAWINGS

- A. Content: Include the following information:
 - 1. Dimensions, at accurate scale.
 - 2. All field measurements that have been taken, at accurate scale.
 - 3. Names of specific products and materials used.
 - 4. Details, identified by contract document sheet and detail numbers.
 - 5. Show compliance with the specific standards referenced.
 - 6. Coordination requirements; show relationship to adjacent or critical work.
 - 7. Name of preparing firm.
- B. Preparation:
 - 1. Reproductions of contract documents are not acceptable as shop drawings.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

2. Space for architect's action marking shall be adjacent to the title block.

3.04 PRODUCT DATA

- A. Content:
 1. Submit manufacturer's standard printed data sheets.
 2. Identify the particular product being submitted; submit only pertinent pages.
 3. Show compliance with properties specified.
 4. Identify which options and accessories are applicable.
 5. Show compliance with the specific standards referenced.
 6. Show compliance with specified testing agency listings; show the limitations of their labels or seals, if any.
 7. Identify dimensions which have been verified by field measurement.
 8. Show special coordination requirements for the product.

3.05 SAMPLES

- A. Samples:
 1. Provide samples that are the same as proposed product.
 2. Where unavoidable variations must be expected, submit "range" samples, minimum of 3 units, and describe or identify variations among units of each set.
 3. Where selection is required, provide full set of all options.
- B. Preparation:
 1. Attach a description to each sample.
 2. Attach name of manufacturer or source to each sample.
 3. Where compliance with specified properties is required, attach documentation showing compliance.
 4. Where there are limitations in availability, delivery, or other similar characteristics, attach description of such limitations.
 5. Where selection is required, the first submittal may be a single set of all options; after return of submittal with selection indicated, submit standard number of sets of selected item.
- C. Keep final sample set(s) at the project site, available for use during progress of the work.

3.06 REVIEW OF SUBMITTALS

- A. Submittals for approval will be reviewed, marked with appropriate action, and returned.
 1. Informational submittals: Submittals will be reviewed.

3.07 RETURN, RESUBMITTAL, AND DISTRIBUTION

- A. Submittals will be returned to the contractor by mail. Perform resubmittals in the same manner as original submittals; indicate all changes other than those requested by the architect.
- B. Perform resubmittals in the same manner as original submittals; indicate all changes other than those requested by the architect.
 1. Exception: Transmittal number for resubmittals shall be the number of the original submittal plus a letter suffix; example: 05500-1 would become 05500-1 A.
- C. Distribution:
 1. Distribute returned submittals to all subcontractors and suppliers involved in work covered by the submittal.
 2. Make one copy for project record documents.

END OF SECTION

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

SECTION 01 3216 CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.02 REFERENCES

- A. AGC (CPSM) - Construction Planning and Scheduling Manual 2004.

1.03 SUBMITTALS

- A. Within 10 days after date of Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 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 10 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.
- F. Submit the number of opaque reproductions that Contractor requires, plus three copies that will be retained by Architect. Electronic copies will also be accepted.
- G. Submit under transmittal letter form specified in Section 01 3000.

1.04 QUALITY ASSURANCE

- A. Scheduler: Contractor's personnel or specialist Consultant specializing in CPM scheduling with one years minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.

1.05 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. Sheet Size: Multiples of 8-1/2 x 11 inches.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a horizontal bar chart.

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. Provide sub-schedules for each stage of Work identified in Section 01 1000.
- E. Provide sub-schedules to define critical portions of the entire schedule.
- F. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- G. Provide legend for symbols and abbreviations used.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

3.03 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

3.04 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.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.

3.05 DISTRIBUTION OF SCHEDULE

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

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Control of installation.
- B. Testing and inspection Testing services.
- C. Manufacturers' field services.

1.02 RELATED REQUIREMENTS

- A. Section 01305 - Submittals: Submittal procedures.
- B. Section 01 4219 - Reference Standards.

1.03 SUBMITTALS

- A. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
 - 1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- B. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- C. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
 - 1. Submit report in duplicate within 30 days of observation to Architect for information.
 - 2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- D. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
 - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.04 REFERENCES AND STANDARDS - SEE SECTION 01 4219

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

1.05 TESTING AND INSPECTION AGENCIES

- A. Owner will employ and pay for services of an independent testing agency to perform other specified testing. Refer to Section 01900 - Testing and Inspection Requirements.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TESTING AND INSPECTION

- A. See Specification Section 01900 for testing required.
- B. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 - 4. Notify Architect and laboratory 48 hours prior to expected time for operations requiring testing/inspection services.
 - 5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- C. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.
- D. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by the Architect. Payment for re-testing will be charged to the Contractor by deducting testing charges from the Contract Sum/Price.

3.03 MANUFACTURERS' FIELD SERVICES

- 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

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

balance of equipment and [] as applicable, and to initiate instructions when necessary.

- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.04 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 4219
REFERENCE STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements relating to referenced standards.

1.02 QUALITY ASSURANCE

- A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.
- C. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

PART 2 CONSTRUCTION INDUSTRY ORGANIZATION DOCUMENTS

2.01 AASHTO -- AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

- A. AASHTO GDPS - Guide for Design of Pavement Structures 1993, with Supplement (1998).
- B. AASHTO GDPS-3 - Guide for Design of Pavement Structures, Volume 2; 1986.
- C. AASHTO T 27 - Standard Specification for Sieve Analysis of Fine and Course Aggregates; 2006.

2.02 ACI -- AMERICAN CONCRETE INSTITUTE INTERNATIONAL

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).
- B. ACI 308R - Guide to External Curing of Concrete 2016.

2.03 AGC -- ASSOCIATED GENERAL CONTRACTORS OF AMERICA

- A. AGC (CPSM) - Construction Planning and Scheduling Manual 2004.

2.04 ASTM B SERIES -- ASTM INTERNATIONAL

- A. ASTM B88 - Standard Specification for Seamless Copper Water Tube 2020.

2.05 ASTM D SERIES -- ASTM INTERNATIONAL

- A. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)) 2012 (Reapproved 2021).
- B. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method 2015, with Editorial Revision (2016).

2.06 ASTM E SERIES -- ASTM INTERNATIONAL

- A. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings 2021.

2.07 ASTM F SERIES -- ASTM INTERNATIONAL

- A. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile 2004 (Reapproved 2018).
- B. ASTM F1292 - Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment 2018, with Editorial Revision (2020).
- C. ASTM F1303 - Standard Specification for Sheet Vinyl Floor Covering with Backing 2004 (Reapproved 2021).

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

2.08 NAAMM -- THE NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS

- A. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames 2017.

2.09 SCAQMD -- SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

- A. SCAQMD 1168 - Adhesive and Sealant Applications 1989, with Amendment (2017).

2.10 UL -- UNDERWRITERS LABORATORIES INC.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary sanitary facilities.
- C. Temporary Controls: Barriers.
- D. Security requirements.
- E. Vehicular access and parking.
- F. Waste removal facilities and services.

1.02 TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Electrical power, consisting of connection to existing facilities.
 - 2. Water supply, consisting of connection to existing facilities.
- B. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization through to project completion.
- B. Maintain daily in clean and sanitary condition.

1.04 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.05 INTERIOR ENCLOSURES

- A. Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
- B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.06 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.07 VEHICULAR ACCESS AND PARKING

- A. Coordinate access and haul routes with governing authorities and Owner.
- B. Provide and maintain access to fire hydrants, free of obstructions.
- C. Provide means of removing mud from vehicle wheels before entering streets.
- D. Comply with 2019 C.F.C., Chapter 14 during all phases of construction.

1.08 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site weekly.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

unless otherwise approved by the authorities having jurisdiction.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations and procedures.
- F. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 01 4000 - Quality Requirements: Product quality monitoring.

1.03 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.
- D. Indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.
- B. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site. However, The Owner has the first right of refusal on all existing materials and equipment indicated to be removed, but not to be re-used.

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. Do not use products having any of the following characteristics:
 - 1. Made using or containing CFC's or HCFC's.
- C. Provide interchangeable components of the same manufacture for components being replaced.

2.03 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

2.04 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTIONS DURING THE BIDDING PERIOD

- A. Substitution requests submitted later than 7 days prior to the Bid Date will not be considered.
- B. Acceptable substitutions will be added to the contract documents by addendum; no verbal approvals will be valid.

3.02 SUBSTITUTIONS AFTER AWARD OF THE CONTRACT

- A. Substitutions will not be considered between the Bid date and the Award of the Contract.
- B. Substitutions will not be allowed after Award of the Contract except when, through no fault of the Contractor, none of the specified products are available.
 - 1. Architect will consider requests for substitutions only within 30 days after date of Agreement.

3.03 SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- C. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner, including:
 - a. Redesign.
 - b. Additional components and capacity required by other work affected by the change.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
- D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- E. Substitutions will not be considered when submitted directly by subcontractor or supplier.
- F. Substitution Submittal Procedure: Submit written request with complete data substantiating compliance of the proposed product with the requirements of the Contract Documents, utilizing the form provided at the end of this section.
 - 1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 3. Substitutions shall be considered as a Change Order, and shall be approved by DSA prior to fabrication or use.
 - 4. The Architect will notify Contractor in writing of decision to accept or reject request.
- G. Data Required with Substitution Request: Provide at least the following data:
 - 1. Identify product by specification section and paragraph number.
 - 2. Manufacturer's name and address, trade name and model number of product (if applicable), and name of the fabricator or supplier (if applicable).
 - 3. Complete Product Data.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

4. A list of other projects on which the proposed product has been used, with Project Name, the Design Professionals name, and Owner contact.
 5. A itemized side-by-side comparison of the proposed product to the specified product.
 6. Net amount of change to the contract sum.
 7. List of maintenance services and replacement materials available.
 8. Statement of the effect of the substitution on the construction schedule.
 9. Description of changes that will be required in other work or products if the substitute product is approved.
- H. The Architect will determine the acceptability of the proposed substitution.
- I. There are certain items and/or products that are specified for this project that are District Standards, where no substitutions will be accepted. If this is the case, the Substitution Request related to a District Standard shall be responded to stating such fact.
- J. When the proposed substitution is accepted, provide the product (or one of the products, as the case may be) specified.

3.04 TRANSPORTATION AND HANDLING

- A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- B. Transport and handle products in accordance with manufacturer's instructions.
- C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.05 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- G. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- H. Prevent contact with material that may cause corrosion, discoloration, or staining.
- I. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- J. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

SECTION 01 7000 EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Cleaning and protection.
- F. Starting of systems and equipment.
- G. Demonstration and instruction of Owner personnel.
- H. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 01305 - Submittals: Submittal procedures.
- B. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

1.03 SUBMITTALS

- A. See Section 01305 - Submittals, for submittal procedures.
- B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.

1.04 PROJECT CONDITIONS

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- C. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- D. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
- E. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- F. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

1.05 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect seven days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

- A. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
- B. Periodically verify layouts by same means.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 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 shown.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- C. Services (Including but not limited to irrigation and irrigation): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 - 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 - 3. 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.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. Provide temporary connections as required to maintain existing systems in service.
 - 4. Verify that abandoned services serve only abandoned facilities.
 - 5. Remove abandoned pipe, ducts, conduits, and equipment ; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- D. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

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.
- E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- G. Refinish existing surfaces as indicated:
- H. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
- I. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
1. Patch as specified for patching new work.
- J. Clean existing systems and equipment.
- K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- L. Do not begin new construction in alterations areas before demolition is complete.
- M. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
 2. Fit products together to integrate with other work.
 3. Match work that has been cut to adjacent work.
 4. Repair areas adjacent to cuts to required condition.
 5. Repair new work damaged by subsequent work.
 6. Remove samples of installed work for testing when requested.
 7. Remove and replace defective and non-conforming work.
- D. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non-conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit products together to integrate with other work.
- E. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- F. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- G. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- H. Restore work with new products in accordance with requirements of Contract Documents.
- I. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 2. Match color, texture, and appearance.
 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

substrate prior to repairing finish.

- J. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
- K. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.
- L. Patch or replace surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. Repair substrate prior to patching finish. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.08 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.09 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.10 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.
- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.11 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.12 FINAL CLEANING

- A. Execute final cleaning after Substantial Completion but before making final application for payment.
- B. Use cleaning materials that are nonhazardous.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean site; sweep paved areas, rake clean landscaped surfaces.
- F. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.13 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty,

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

whichever is longer.

- C. Furnish service and maintenance of components indicated in specification sections for one year from date of Substantial Completion.
- D. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- E. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- F. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 7450
CLEANING

PART 1 GENERAL

1.01 SCOPE

- A. Throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in this Section.

1.02 RELATED WORK

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

1.03 QUALITY ASSURANCE

- A. Conduct daily inspections, and more often if necessary, to verify that requirements for cleanliness are being met.
- B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

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

2.02 COMPATIBILITY

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

PART 3 EXECUTION

3.01 PROGRESS CLEANING

- A. General:
 - 1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
 - 2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
 - 3. At least twice each month, and when requested by the District Representative, completely remove all scrap, debris, and waste material from the job site.
 - 4. Provide adequate storage for all 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 such items to the place designated for their storage.
 - 2. Weekly, and more often, if necessary, inspect all arrangements of materials stored on the site. Restack, tidy, or otherwise service arrangements to meet the requirements of subparagraph 3.01 A above.
 - 3. Maintain the site in a neat and orderly condition at all times.

3.02 FINAL CLEANING

- A. "Clean", for the purpose of this Article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.
- B. 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 in Article 3.01 above.
- C. Site:
 - 1. Unless otherwise specifically directed by the Construction Manager, broom clean paved areas on the site and public paved areas adjacent to the site.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- 2. Completely remove resultant debris.
- D. Schedule final cleaning as approved by the Architect to enable the District to accept a completely clean Work.

3.03 CLEANING DURING DISTRICT'S OCCUPANCY

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

3.04 TRADE CONTRACTOR RESPONSIBILITY FOR MISUSE OF MATERIALS

- A. Should construction materials or debris created by the construction process not be properly stored in a secure area or placed in the proper secured debris containers and such materials are used in acts of vandalism, the contractor shall be responsible to the District and adjacent property Districts for the repair or replacement of items damaged in such vandalism.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 7750
PROJECT CLOSEOUT

PART 1 GENERAL

1.01 SUMMARY

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Requirements preparatory to Final Inspection.
 - 2. Final Inspection Procedures.
- B. The work includes performing all operations necessary for and properly incidental to closing out the project and assisting in Owner's final inspection as hereinafter specified. The Conditions of the Contract and the other sections of Division 1 apply to this section as fully as if repeated herein.
- C. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 16.

1.02 RELATED SECTIONS

- A. 01200 - Price and Payment Procedures; Procedures for preparation and submittal of application for final payment.
- B. 01700 - Execution Requirements; Starting of systems and equipment and demonstration and instruction of Owner personnel.
- C. 01740 - Cleaning; Final cleaning requirements.
- D. 01780 - Closeout Submittals; Project Record Documents, Operation and Maintenance Data and Warranties and Bonds.

1.03 REQUIREMENTS PREPARATORY TO FINAL INSPECTION

- A. All temporary facilities shall be removed from the site as specified in Division 01500 sections.
- B. The site shall be thoroughly cleaned as specified in Section 01740.
- C. Record (As-built) Drawings shall be completed, signed, and submitted to the Architect as specified in Section 01780 - Closeout Submittals.
- D. The Material and Equipment maintenance instructions, as specified in the body of the Specifications, shall be submitted to the Architect.
- E. All guarantees and warranties shall be submitted to the Architect as specified in the General Conditions, and Section 01780 - Closeout Submittals.

1.04 FINAL INSPECTION PROCEDURES

- A. After all requirements preparatory to the final inspection have been completed as herein before specified, the Contractor shall notify the Architect to perform the final inspection. Notice shall be given at least one week of the time the final inspection is to be performed.
- B. On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfulfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor by preparing a punch list of construction that must be completed or corrected before the certificate will be issued.
- C. The Contractor or his principal superintendent, authorized to act in behalf of the Contractor, shall accompany the Architect, Consultants and Owner on the final inspection tour, as well as principal subcontractors that the Architect, Consultants or Owner may request to be present.
- D. If the work has been completed in accordance with the Contract Documents, and no further corrective measures are required, the Owner will accept the Project and will include the Notice of Completion on the next Board Agenda for approval by the Board of Trustees.
- E. Failure to include an item on the Punch List does not alter the responsibility of Contractor to complete all Work in accordance with the Contract Documents.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- F. If the work has not been substantially completed in accordance with the Contract Documents, and numerous corrective measures are still required, the Owner will not accept the Project nor file for the Notice of Completion. Instead, a Punch List will be prepared, based on the information gathered from the final inspection, and the Contractor will be required to complete this work and then call for another final inspection, following the procedures outlined above.
- G. The Architect will repeat inspection when requested and assured that the Work has been substantially completed. If the re-inspection discloses any item not included on the initial Punch List the Contractor shall add these items to the Punch List.
- H. Results of the completed inspection will form the basis of requirements for final acceptance.

1.05 FINAL ACCEPTANCE

- A. PRELIMINARY PROCEDURES:
 - 1. Submit final payment request in compliance with Article 37 of the General Conditions.
 - 2. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.
 - 3. Submit consent of surety to final payment.
 - 4. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 5. Submit evidence that DSA Form 6-C Contractor's Verified Report has been filed with the Division of the State Architect.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Section 01305 - Submittals: Submittal procedures, shop drawings, product data, and samples.
- B. Section 01 7000 - Execution and Closeout Requirements: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates utilized.
 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
1. Prepare a full set of transparencies of contract drawings with all record changes marked.
 - a. The architect will furnish to the contractor transparencies (erasable vellums) of the original contract drawings at the cost of \$10.00 (ten dollars) per sheet.
 2. Measured depths of foundations in relation to finish first floor datum.
 3. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 4. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 5. Field changes of dimension and detail.
 6. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

- A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 1. Product data, with catalog number, size, composition, and color and texture designations.
 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 1. Description of unit or system, and component parts.
 2. Identify function, normal operating characteristics, and limiting conditions.
 3. Include performance curves, with engineering data and tests.
 4. Complete nomenclature and model number of replaceable parts.
- B. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- C. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- D. Provide servicing and lubrication schedule, and list of lubricants required.
- E. Include manufacturer's printed operation and maintenance instructions.
- F. Include sequence of operation by controls manufacturer.
- G. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- H. Additional Requirements: As specified in individual product specification sections.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

3.05 OPERATION AND MAINTENANCE MANUALS

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- B. Prepare data in the form of an instructional manual.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
- F. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- H. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
- I. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Photocopies of warranties and bonds.
- J. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

3.06 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

SECTION 01 9100 TESTING AND INSPECTION REQUIREMENTS

PART 1 GENERAL

1.01 RELATED SECTIONS

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

1.02 QUALITY ASSURANCE

- A. Testing Laboratory Services:
 - 1. The owner will engage an independent testing agency to conduct tests and perform other services required for quality assurance.

1.03 TESTS

- 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.

1.04 TEST REPORTS

- A. One copy of all test reports shall be forwarded to the Owner, Architect, Structural Engineer, Inspector of Record (IOR), and Contractor by the testing agency. Such reports shall include all 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 the requirements.

1.05 VERIFICATION OF TEST REPORTS

- A. Each testing agency shall submit to the Architect a verified report in duplicate covering all of the tests which are required to be made by that agency during the progress of the project. Such reports shall be furnished each time that work on the project is suspended, covering the tests up to that time, and at the completion of the project, covering all tests.

1.06 INSPECTION BY THE OWNER

- A. The Owner and his representatives shall at all times have access for the purpose of inspection to all parts of the work and to the shops wherein the work is in preparation. The Contractor shall at all times maintain proper facilities and provide safe access for such inspection. The Owner shall have the right to reject materials and workmanship, which are defective, or 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 same and charge the expense to the Contractor. 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 all necessary facilities, labor and materials. If such work is found to be defective in any respect due to fault of the Contractor or his subcontractor, he shall defray all 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 shall be allowed the Contractor.

1.07 INSPECTOR - OWNER'S

- A. An Inspector employed by the Owner will be assigned to the work. The work of construction in all stages of progress shall be subject to the personal continuous observation of the Inspector. He/she shall have free access to any or all parts of the work at any time. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

to keep him/her fully informed respecting the progress and manner of the work and character of the materials. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 02 4100
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of building elements for alteration purposes.

1.02 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction Current Edition.

1.03 PROJECT CONDITIONS

- A. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- B. Comply with other requirements specified in Section 01 7000.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SCOPE

- A. Remove building components as indicated on drawings, within these specifications, and/or as required to accomplish new work, if reasonably identifiable through visual observation whether specifically identified or not.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with other requirements specified in Section 01 7000.
- B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Comply with California Building Code Chapter 33 and California Fire Code Chapter 14.
 - 2. Obtain required permits.
 - 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.
 - 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 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.
- C. Do not begin removal until receipt of notification to proceed from Owner.
- D. 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.
- E. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- F. 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.
- G. Perform demolition in a manner that maximizes salvage and recycling of materials.
 - 1. Dismantle existing construction and separate materials.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

3.03 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. 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.
- E. 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.
- F. 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. Contractor shall be responsible and shall pay for all services required for locating all existing underground utilities within the area of work.
- G. 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 only.
 1. Contractor shall be responsible and shall pay for all services required for locating all existing underground utilities within the area of work.
 2. Verify that construction and utility arrangements are as shown.
 3. Report discrepancies to Architect before disturbing existing installation.
 4. 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 required to prevent passage of debris and dust.
- 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 items indicated on drawings.
- E. Services (Including but not limited to Plumbing, Electrical, and Telecommunications): Remove existing systems and equipment as indicated or required to complete new improvements.
 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, including those above accessible ceilings; 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.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- B. Remove from site all materials not to be reused on site; do not burn or bury.
- 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

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-structural dimension lumber framing.
- B. Rough opening framing for doors, windows, and roof openings.
- C. Miscellaneous framing and sheathing.
- D. Concealed wood blocking, nailers, and supports.

1.02 REFERENCE STANDARDS

- A. 2019 California Building Code, Chapter 23.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- C. AWPA U1 - Use Category System: User Specification for Treated Wood 2022.
- D. PS 1 - Structural Plywood 2009 (Revised 2019).
- E. PS 20 - American Softwood Lumber Standard 2021.
- F. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17 2018.
- G. WWPA G-5 - Western Lumber Grading Rules 2021.

1.03 QUALITY ASSURANCE

- A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
 - 1. Acceptable Lumber Inspection Agencies: WCLB and WWPA.
- B. Exposed-to-View Rough Carpentry: Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. Species: Douglas Fir-Larch, unless otherwise indicated.
- B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Grading Agency: Western Wood Products Association (WWPA).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry or MC19.
- D. Stud Framing (2 by 2 through 2 by 6):
 - 1. Species: Douglas Fir-Larch.
 - 2. Grade: No. 2.
- E. Miscellaneous Blocking, Furring, and Nailers:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Species: Douglas Fir-Larch.

2.03 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

B. Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.

PART 3 EXECUTION

3.01 FRAMING INSTALLATION

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA Wood Frame Construction Manual.
- D. Provide Fire Blocks and Draft Stops per the 2019 California Building Code, Section 718.
- E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.
- F. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.02 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. Specifically, provide the following non-structural framing and blocking:
 - 1. Joints of rigid wall coverings that occur between studs.

3.03 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.04 CLEANING

- A. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

SECTION 06 4100 ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Specially fabricated cabinet units.
- B. Countertops.
- C. Cabinet hardware.

1.02 REFERENCE STANDARDS

- A. ANSI A208.1 - American National Standard for Wood Particleboard; 2009.
- B. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.
- C. PS 1 - Construction and Industrial Plywood; 2007.
- D. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.
- E. WI (MAN) - Manual of Millwork; Woodwork Institute, 11th Edition; 2003.

1.03 SUBMITTALS

- A. See Section 01300 - Submittals, for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.
- C. Product Data: Provide data for hardware accessories.
- D. Samples: Hardware and laminate samples.

1.04 QUALITY ASSURANCE

- A. ALL MILLWORK SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE ARCHITECTURAL WOODWORK STANDARDS OF THE WOODWORK INSTITUTE IN THE GRADE OR GRADES HEREINAFTER SPECIFIED OR SHOWN ON THE DRAWINGS.
 - 1. Perform work in accordance with WI Manual of Millwork Custom quality.
 - 2. Perform cabinet construction in accordance with WI Manual of Millwork Custom quality.
 - 3. Perform countertop construction in accordance with WI Manual of Millwork, Premium quality.
- B. ADDITIONALLY, THE CSI THREE PART FORMATTED WI GUIDE SPECIFICATIONS LOCATED AT THE FRONT OF EACH WI PRODUCT SECTION SHALL BE REVIEWED AND INCLUDED AS APPLICABLE .
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- D. Manufacturer and Installer Qualifications: Member in good standing of the Woodwork Institute

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all materials only when project is ready for installation and the general contractor has provided a clean storage area as defined in the Manual of Millwork.

PART 2 PRODUCTS

2.01 SEE WI "MANUAL OF MILLWORK", SECTION 15 - CASEWORK - LAMINATED PLASTIC.

2.02 LUMBER MATERIALS

- A. Softwood Lumber: NIST PS 20; Graded in accordance with WI Manual of Millwork , Grade II/Custom; average moisture content of 4-9 percent.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

2.03 PANEL MATERIALS

- A. Softwood Plywood: NIST PS 1; Graded in accordance with WI Manual of Millwork, core materials of veneer, formaldehyde-free; species.
- B. Wood Particleboard: NIST PS 1; WI Manual of Millwork standard, composed of wood chips, medium density, formaldehyde-free, made with moisture resistant; of grade to suit application; sanded faces.

2.04 LAMINATE MATERIALS

- A. Manufacturers:
 - 1. Formica Corporation: www.formica.com/#sle.
 - 2. Panolam Industries International, Inc/Nevarmar: www.nevarmar.com/#sle.
 - 3. Wilsonart International, Inc: www.wilsonart.com/#sle.
- B. Plastic Laminate: WIC (MAN), 0.048 inch General Purpose quality; matte surface texture, color and pattern as selected by Architect from manufacturer's full standard color and pattern ranges.
- C. Laminate Backing Sheet: NEMA LD 3 BK20 backing grade, undecorated plastic laminate.
 - 1. Semi-exposed surfaces shall be in accordance with WI Manual of Millwork requirements. Interior surfaces in open cabinets or behind glass doors shall be in accordance with WI Manual of Millwork requirements or match exposed surfaces.

2.05 ACCESSORIES

- A. Adhesive: Type recommended by WI to suit application.
- B. Fasteners: Size and type to suit application.
- C. Concealed Joint Fasteners: Threaded steel.

2.06 COMPONENTS

- A. Casework shall be WI Manual of Millwork Construction Style A - Frameless, WI Construction Type I - Multiple Self Supporting Units.
- B. Casework numbers on the Plan or Elevation view reference the WI Manual of Millwork - Cabinet Design Series, cabinets are to be fabricated to the size indicated, as adjusted to fill the intended area.
- C. Countertops shall be constructed with Self-Edge, unless indicated otherwise.
- D. Backsplash shall be square butt joint with a square self-edge, 4" high off the deck surface, unless indicated otherwise.
- E. Door and drawer front style shall be Flush Overlay and match WI Manual of Millwork door and drawer edge Type A.
- F. Adjustable shelves shall be in accordance with WI Manual of Millwork requirements subject to a 50 pound per square foot uniformly spaced load not to exceed 200 pounds per shelf. Shelving thickness shall conform to WIC requirements, Table 15-1.
- G. Adhesive used shall be Type I.

2.07 HARDWARE

- A. Provide finish hardware for all casework included in the work of this section. Select cabinet hardware from WI "Manual of Millwork," most current listings of approved products; if not selected, shall be option of fabricator from this supplement. All cabinet hardware shall be installed by casework fabricator.
- B. Adjustable Shelf Standards and Clips: Provide adjustable shelf standards and clips per WI "Manual of Millwork," most current listings of approved products, Finish Hardware.
 - 1. Shelf supports shall be provided with metal ledge clips set in drilled holes spaced 32mm on center in two rows at each support.
 - 2. Adjustable Cabinet Shelf Supports (Pin Type) shall be equal to the following):
 - a. "Hettich" #1005-767 (seismic).

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- C. Drawer and Door Pulls: "U" shaped wire pull, aluminum with satin finish, 4 inch centers. CBC Section 1125B.4.
- D. Sliding Door Pulls: Elongated shape for recessed installation, steel with satin finish.
- E. Catches: Magnetic.
- F. Drawer Slides: Galvanized steel construction, ball bearings separating tracks, full extension type.
- G. Hinges: Butt type, steel with satin finish Grade 1 as required for schools and hospitals.

2.08 FABRICATION

- A. Fabrication shall comply to First Class Workmanship, as defined by the Woodwork Institute, in their Manual of Millwork.
- B. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- C. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- D. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- E. Door and Drawer Fronts: 3/4 inch thick; overlay style.
- F. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- G. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
- H. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
- I. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

PART 3 EXECUTION

3.01 CONSTRUCTION

- A. Conform to the requirements of WI "Manual of Millwork," latest edition, for joinery requirements. Refer to included detail sheets for design criteria.

3.02 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section.

3.03 INSTALLATION

- A. Install work in this section as specified in WI "Manual of Millwork".
 - 1. Provide a WI Certified Compliance Certificate for installation at the completion of the project installation.
- B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- C. Use fixture attachments in concealed locations for wall mounted components.
- D. Use concealed joint fasteners to align and secure adjoining cabinet units.
- E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- F. Secure cabinets to floor using appropriate angles and anchorages.
- G. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.04 ADJUSTING

- A. Adjust installed work.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

B. Adjust moving or operating parts to function smoothly and correctly.

3.05 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

SECTION 08 1113 HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Steel frames for wood doors.

1.02 RELATED REQUIREMENTS

- A. Section 09 9000 - Paints and Coatings: Field painting.

1.03 REFERENCE STANDARDS

- A. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames 2019.
- B. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100) 2017.
- C. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames 2020.
- D. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames 2016.
- E. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames 2017.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.
- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.

1.05 QUALITY ASSURANCE

- A. Doors and frames shall conform to the requirements of ANSI A 250.8 (formally SDI-100), ANSI A 151.1, and other specifications herein named. Test reports shall be submitted upon request.
- B. Manufacturer Qualifications: Member of the Steel Door Institute, and National Association of Architectural Metal Manufacturers.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle, store and protect products in accordance with the manufacturers printed instructions and the provisions of ANSI A 250.8.
- B. Store frames under cover on 4 inch (102 mm) high wood sills to prevent rust and damage. Assembled frames shall be stored in a vertical position, five units maximum in a stack. Provide 1/4-inch (6 mm) space between frames to promote air circulation.
- C. Do not use non-vented plastic or canvas shelters.
- D. Should wrappers become wet, remove immediately.
- E. Store in accordance with NAAMM HMMA 840.
- F. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

1.07 COORDINATION

- A. Coordinate Work with other directly affected sections involving manufacture or fabrication of internal cutouts and reinforcement for door hardware, electric devices and recessed items.
- B. Coordinate Work with frame opening construction, door and hardware installation.
- C. Sequence installation to accommodate required door hardware.
- D. Verify field dimensions for factory assembled frames prior to fabrication.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

1.08 WARRANTY

- A. See section 01780 - Closeout Submittals for additional warranty requirements.
- B. Submit written warranty on Manufacturer's standard form signed by an official of the door and frame manufacturer, agreeing to repair or replace any door and/or frame found defective within the warranty period. Hollow metal doors and frames shall be supplied with a one (1) year warranty against defects in materials and workmanship.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Steel Doors and Frames:
 - 1. Assa Abloy Ceco, Curries, or Fleming: www.assaabloydss.com/#sle.
 - 2. Windsor Republic Doors: www.republicdoor.com.
 - 3. Steelcraft, an Ingersoll Rand Brand: www.steelcraft.com.
 - a. Product: "F" Frame
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOORS AND FRAMES

- A. Requirements for All Doors and Frames:
 - 1. Accessibility: Comply with California Building Code, Chapter 11B.
 - 2. Hardware Preparation: In accordance with BHMA A156.115 and SDI-107, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
 - 3. Galvanizing : All components hot-dipped zinc-iron alloy-coated (galvannealed), A60/ZF180.
 - 4. Finish: Factory primed, for field finishing.

2.03 STEEL FRAMES

- A. General:
 - 1. Comply with the requirements of grade specified for corresponding door, except:
 - a. Frames for Wood Doors: Comply with frame requirements specified in ANSI A250.8 for Level 1, 16 gage
 - 2. Finish: Factory primed, for field finishing.
- B. Interior Door Frames , Non-Fire-Rated: Fully welded type.

2.04 ACCESSORY MATERIALS

- A. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.
- B. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

2.05 FRAME ANCHORS

- A. Provide sufficient anchorage to attach to wall in accordance with ANSI/SDI-119 Test Compliance Level A of one million cycles, or anchorage as detailed on plans to specific wall conditions.
 - 1. All frame jamb anchors to be provided: one each jamb per 30 Inches of frame height or fraction thereof. Furnish anchors at headers exceeding 48 Inches.
- B. Floor anchors - angle type:
 - 1. Minimum 16 gage.
 - 2. To receive 2 fasteners per jamb.
 - 3. Welded to the bottom of each jamb.
- C. Head struts: for frames not anchored to masonry or concrete construction provide ceiling struts spot welded to jambs each side extending to building structure where called for on schedule.

2.06 HARDWARE PREPARATION

- A. Reinforcements: reinforce components for hardware installation in accord with SDI-107 and ANSI-A115. Provide minimum gage hardware reinforcing for mortise or surface applied

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

hardware as follows:

1. Hinges - 10 gage or equivalent number of threads on doors.
 2. Hinges - 7 gage on frames.
 3. Locks - 12 gage or equivalent on threads.
 4. Panics - 12 gage.
 5. Surface Closer - 12 gage.
 6. Hold Open Device - 12 gage.
 7. Floor Check - 7 gage.
- B. Punch single leaf frames to receive three (3) silencers. Double leaf frames to receive one silencer per leaf at head.
- C. Factory prepared hardware locations to be in accord with "Recommended Locations for Builders' Hardware for Standard Steel Doors and Frames", as adopted by the Steel Door Institute.
- D. Supply welded in mortar guards at all hardware cutouts in frames build into masonry or grouted in full.

2.07 FINISH MATERIALS

- A. Primer: Rust-inhibiting, complying with ANSI A250.10 , door manufacturer's standard.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 INSTALLATION

- A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.
- B. Coordinate frame anchor placement with wall construction.
- C. Coordinate installation of hardware.

3.03 SETTING FRAMES

- A. Set frames in accord with SDI 105-91
- B. Set welded frames in position prior to beginning partition work. Brace frames until permanent anchors are set.
- C. Set anchors for frames as work progresses. Install anchors at hinge and strike levels.
- D. Use temporary settings spreaders at all locations. Use intermediate spreaders to assure proper door clearances and header braces for grouted frames.

3.04 TOLERANCES

- A. Clearances Between Door and Frame: As specified in ANSI A250.8.
- B. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.05 ADJUSTING & CLEANING

- A. Adjust for smooth and balanced door movement.
- B. Remove dirt and excess sealants, mortar or glazing compounds from exposed surfaces.
- C. Adjust for smooth operation as required. Install shims as required to allow for proper closing.
- D. Fill all dents, holes, and mounting bolts with metal filler and sand smooth and flush with adjacent surfaces- re-prime/paint to match finish.
- E. Replace or rehang doors that are hinge bound and do not swing freely. Replace and rehang doors which are warped, twisted, or which are not in true plane.
- F. Adjust door closers for full closure.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

3.06 SCHEDULE - SEE DRAWINGS

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 08 1416
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flush wood doors; flush configuration; non-rated.

1.02 RELATED REQUIREMENTS

- A. Section 08 1113 - Hollow Metal Doors and Frames.
- B. Section 09 9000 - Paints and Coatings: Site finishing of doors.

1.03 SUBMITTALS

- A. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

1.04 QUALITY ASSURANCE

- A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.05 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Interior Doors: Provide manufacturer's warranty for 2 years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Medium-Density Overlay (MDO) Faced Doors for Opaque Finish:
 - 1. Masonite Architectural: www.architectural.masonite.com/#sle.
 - 2. Haley Architectural Doors.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOORS

- A. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
 - 1. Provide solid core doors at all locations .
 - 2. Hardboard facing for field opaque finish at all new doors.

2.03 DOOR AND PANEL CORES

- A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated above.

2.04 DOOR FACINGS

- A. Hardboard Facing for Opaque Finish: AHA A135.4, Class 1 - Tempered, S2S (smooth two sides) hardboard, composition face, 1/8 inch thick.

2.05 DOOR CONSTRUCTION

- A. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- B. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
- B. Field-Finished Doors: Trimming to fit is acceptable.
- C. Adjust width of non-rated doors by cutting equally on both jamb edges.
 - 1. Trim maximum of 3/4 inch off bottom edges.
- D. Use machine tools to cut or drill for hardware.
- E. Coordinate installation of doors with installation of frames and hardware.

3.03 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

3.04 SCHEDULE - SEE DRAWINGS

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 09 2116
GYPSON BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Gypsum wallboard.
- B. Joint treatment and accessories.
- C. Textured finish system.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Building framing .

PART 2 PRODUCTS

2.01 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 - 1. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
 - 2. National Gypsum Company: www.nationalgypsum.com/#sle.
 - 3. USG Corporation: www.usg.com/#sle.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces, unless otherwise indicated.
 - 2. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
- C. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
 - 1. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - 2. Regular Board Thickness: 5/8 inch.

2.02 ACCESSORIES

- A. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless otherwise indicated.
- B. Beads: ASTM C1047, rolled zinc, unless noted otherwise.
 - 1. Rigid Corner Beads: Low profile, for 90 degree outside corners.
- C. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
 - 1. Tape: 2 inch wide, creased paper tape for joints and corners.
 - 2. Ready-mixed vinyl-based joint compound.
 - 3. Joint Compound: Drying type, vinyl-based, ready-mixed.
- D. Textured Finish Materials: Latex- or Vinyl-based compound; plain.
- E. Screws for Attachment to Steel Members Less Than 0.03 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 BOARD INSTALLATION

- A. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- B. Installation on Wood Framing: For non-rated assemblies, install as follows:
 - 1. Single-Layer Applications: Screw attachment.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- C. Moisture Protection: Treat cut edges and holes in moisture resistant gypsum board with sealant.

3.03 INSTALLATION OF TRIM AND ACCESSORIES

- A. Corner Beads: Install at external corners, using longest practical lengths.
- B. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.04 JOINT TREATMENT

- A. Paper Faced Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.

3.05 TEXTURE FINISH

- A. Apply finish texture coating by means of spraying apparatus in accordance with manufacturer's instructions and to match approved sample.

3.06 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

SECTION 09 6500 RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Resilient sheet flooring.
- B. Resilient base.

1.02 REFERENCE STANDARDS

- A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source 2019a, with Editorial Revision (2020).
- B. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile 2004 (Reapproved 2018).
- C. ASTM F1303 - Standard Specification for Sheet Vinyl Floor Covering with Backing 2004 (Reapproved 2021).

1.03 SUBMITTALS

- A. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- B. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- C. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of sub-floor is acceptable.
- D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect roll materials from damage by storing on end.

1.06 FIELD CONDITIONS

- A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
- B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 SHEET FLOORING

- A. Vinyl Sheet Flooring : Color and pattern throughout wear layer thickness, with backing, and:
 - 1. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648, NFPA 253, ASTM E 648, or NFPA 253.
 - 2. Sheet Width: 72 inch minimum.
 - 3. Static Load Resistance: 500 psi minimum.
 - 4. Heat welded seams.
 - 5. Manufacturers:
 - a. Armstrong World Industries, Inc. . Rejuvenations Classics.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
 - 6. Color: As selected from manufacturer's full standard color range.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- B. Vinyl Welding Rod: Solid vinyl bead produced by manufacturer of vinyl flooring for heat welding seams, in color matching field color.

2.02 RESILIENT BASE

- A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove, and as follows:
 1. Height: 4 inch.
 2. Thickness: 0.125 inch thick.
 3. Finish: Matte.
 4. Length: Roll.
 5. Color: Color as selected from manufacturer's standards.
 6. Manufacturers:
 - a. Burke Flooring: www.burkemerger.com.
 - b. Johnsonite, Inc: www.johnsonite.com.
 - c. Roppe Corp: www.roppe.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

2.03 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer.
- C. Moldings, Transition and Edge Strips: as detailed on drawings..

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

3.02 PREPARATION

- A. Remove existing flooring and flooring adhesives; follow the recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings.
- B. Prepare sub-floor surfaces as recommended by flooring and adhesive manufacturers.
- C. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Install in accordance with manufacturer's instructions.
- C. Adhesive-Applied Installation:
- D. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
 1. Resilient Strips: Attach to substrate using adhesive.
- E. Spread only enough adhesive to permit installation of materials before initial set.
- F. Fit joints tightly.
- G. Set flooring in place, press with heavy roller to attain full adhesion.
- H. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- I. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

1. Resilient Strips: Attach to substrate using adhesive.
- J. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.04 SHEET FLOORING

- A. Double cut sheet at seams.
- B. Lay flooring with tightly butted seams, without any seam sealer unless otherwise indicated.
- C. Finish seams in sheet vinyl by heat welding.
- D. Coved Base: Install as detailed on drawings, using coved base filler as backing at floor to wall junction. Extend sheet flooring vertically to height indicated, and cover top edge with metal cap strip.

3.05 RESILIENT BASE

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
- B. Scribe and fit to door frames and other interruptions.

3.06 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.

3.07 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

SECTION 09 7730 FIBER REINFORCED PLASTIC PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fiberglass reinforced composite panels.
- B. Trim and installation accessories..

1.02 REFERENCES

- A. ASTM C 177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 1985 (reapproved 1993).
- B. ASTM D 149 - Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies; 1995a.
- C. ASTM D 256 - Standard Test Methods for Determining the Pendulum Impact Resistance of Notched Specimens of Plastics; 1993a.
- D. ASTM D 543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents; 1995.
- E. ASTM D 570 - Standard Test Method for Water Absorption of Plastics; 1995.
- F. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics; 1996.
- G. ASTM D 696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 degrees C and 30 degrees C; 1991.
- H. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 1996.
- I. ASTM D 792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement; 1991.
- J. ASTM D 2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor; 1995.
- K. ASTM D 3841 - Standard Specification for Glass-Fiber-Reinforced Polyester Plastic Panels; 1992.
- L. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 1996a.

1.03 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard details and catalog data demonstrating compliance with referenced standards. Provide installation instructions..
- C. Samples:
 - 1. Submit 6 inch square samples of each surface and color required.
 - 2. Submit 6 inch long samples of each trim profile and trim color required.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

1.05 DELIVERY, STORAGE, AND PROTECTION

- A. Store products indoors and protect from moisture, construction traffic, and damage.
- B. Store panels flat on clean, dry surface. Do not stand on edge or stack on fresh concrete or other surfaces that emit moisture.
- C. Store panels for at least 24 hours at temperature and humidity conditions approximating the average environment of the finished room.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide fiberglass reinforced composite panels fabricated by Marlite.
- B. Substitutions: See Section 01600 - Product Requirements.

2.02 PANEL MATERIALS

- A. General:
 - 1. Composite plastic panels of random chopped fiber glass roving, modified polyester copolymer, inorganic fillers, and pigments.
 - 2. Resistant to rot, corrosion, staining, denting, peeling, and splintering.
- B. "Symmetrix SmartSeam".
 - 1. Surface burning classification: Class C.
 - a. Flame spread (ASTM E 84): 76-200.
 - b. Smoke developed (ASTM E 84): 450 or less.
 - 2. Flexural strength (ASTM D 790): 20,000 psi.
 - 3. Tensile strength (ASTM D 638): 8,000 psi.
 - 4. Impact strength, IZOD (ASTM D 256): 5.5 ft.lb/in.
 - 5. Barcol hardness (ASTM D 2583): 45.
 - 6. Water absorption (ASTM D 570): 0.16 percent in 24 hrs. @ 77 degrees F.
 - 7. Coefficient of linear thermal expansion (ASTM D 696): 0.00002 in/in/degrees F.
- C. Size:
 - 1. Wall panel width: 48 inches.
 - 2. Wall panel length: As indicated on the drawings.
 - 3. Wall panel length: Provide full-length panels unless substrate dimensions exceed available fabricated size.
 - 4. Thickness:
 - a. "Tile-Look" panels: 0.09 inch.
 - 5. Dimensional Tolerances:
 - a. Width and length: +/- 1/8 inch.
 - b. Thickness: +/- 10 percent.
 - c. Squareness: Not more than 1/8 inch out of square.

2.03 FINISHES

- A. Exposed Surface: Semi-smooth finish with a sandstone appearance, 4" x 4" tile-look simulated grout lines.
- B. Back Surface: Smooth. Imperfections that do not affect functional properties are not cause for rejection.
- C. Color: To be chosen by Architect from manufacturer's standard colors.

2.04 TRIM ACCESSORIES

- A. Provide panel manufacturer's standard vinyl moldings to meet project conditions.
- B. 1/8 inch Heavy Duty trim: Match panel color.
 - 1. Division bar.
 - 2. Inside corner.
 - 3. Outside corner.
 - 4. End cap.
- C. Fasteners: Non-staining nylon drive rivets.
 - 1. Match panel colors.
 - 2. Length to suit project conditions.
- D. Adhesive: Structural construction adhesive as recommended by manufacturer.
- E. Sealant: Clear silicone sealant as recommended by manufacturer.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates that will receive panels to ensure that surfaces are smooth, dry, true, and free of dirt, dust, oil, or grease.
- B. Remove high spots. Fill low spots.
- C. Apply leveling coat of plaster to concrete block walls, if required to bring surface to a true plane.
- D. Verify that substrate construction is completed and approved.
- E. Correct deficiencies in substrate before installing panels.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's printed installation instructions, using both mechanical fasteners and adhesive.
- B. Cutting Panels:
 - 1. Cut panels with carbide-tipped saw blade or swivel head shear.
 - 2. Allow 1/2 inch clearance in length per 8 foot panel length.
 - 3. Allow 1/8 inch clearance at cut-outs for penetrations.
- C. Pre-drill fastener holes before applying adhesive. Use carbide-tipped drill.
 - 1. Drill 3/8 inch holes for 1/4 inch nominal fasteners.
 - 2. Space at 8 inches maximum on center at perimeter, approximately 1 inch from panel edge.
 - 3. Space at in field in rows 16 inches on center, with fasteners spaced at 12 inches maximum on center.
- D. Apply adhesive at temperature between 50 and 90 degrees F, unless otherwise approved.
 - 1. Spread adhesive 1/4-inch deep over entire back side of panel to achieve 100 percent coverage.
 - 2. Do not use beads of adhesive.
 - 3. Do not use mechanical fasteners or adhesive alone.
 - 4. Allow open time recommended by adhesive manufacturer before setting panels into position.
 - 5. Once in position, apply sufficient pressure to make full contact between panel and wall.
 - 6. Roll panel surface to ensure complete contact.
 - 7. If necessary, install bracing to maintain intimate contact until adhesive cures in accordance with manufacturer's instructions.
- E. Panel Fasteners:
 - 1. Apply silicone sealant in pre-drilled fastener holes.
 - 2. Drive fasteners for snug fit. Do not over-tighten.
 - 3. Fasten leading edge of each panel after installing moldings.
- F. Moldings:
 - 1. Trim division bar to accommodate ceiling and base moldings.
 - 2. Apply bead of silicone sealant to one side of division bar and install on leading edge of first panel.
 - 3. Push molding all the way onto panel and pull back to allow 1/8 inch clearance.
 - 4. Check plumb.
 - 5. Fasten molding with coated lath nails, installed to leading edge of molding, only.
 - 6. Complete fastening of panel, and remove excess sealant.
 - 7. Apply sealant to leading edge of molding to receive next panel. Allow 1/8 inch clearance when installing panel.
 - 8. Remove excess sealant from panels and moldings.
- G. Sealants: Seal corner seams, ceiling and base junctures, around door frames and other openings, and between penetrating items and panel cut-outs.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

3.03 CLEANING

- A. Remove scraps and debris from the site, and leave in a neat and clean condition.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 09 9000
PAINTS AND COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish all interior and exterior surfaces exposed to view that are either new improvements or surfaces affected by the work of the contract, unless fully factory-finished and unless otherwise indicated, including the following:
 - 1. Mechanical and Electrical:
 - a. In finished areas, paint all insulated and exposed pipes, unless otherwise indicated.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
 - 5. Floors, unless specifically so indicated.
 - 6. Glass.
 - 7. Concealed pipes, ducts, and conduits.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of all products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. MPI product number (e.g. MPI #47).
 - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.
- D. Certification: By manufacturer that all paints and coatings comply with VOC limits specified.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.05 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- C. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- D. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
- B. Paints:
 - 1. Base Manufacturer: Dunn Edwards.
- C. Primer Sealers: Same manufacturer as top coats.
- D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

- A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
 - 1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Supply each coating material in quantity required to complete entire project's work from a single production run.
 - 3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Volatile Organic Compound (VOC) Content:
 - 1. Provide coatings that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Colors: To be selected from manufacturer's full range of available colors.
 - 1. Selection to be made by Architect after award of contract.
 - 2. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.

2.03 PAINT SYSTEMS - EXTERIOR

- A. Paint WE-OP-3L - Wood, Opaque, Latex, 3 Coat:
 - 1. One coat of latex primer sealer, EZ-Prime Premium.
 - 2. Semi-gloss: Two coats of latex enamel; Spartashield.
- B. Paint ME-OP-3L - Ferrous Metals, Unprimed, Latex, 3 Coat:
 - 1. One coat of latex primer, Bloc-Rust Primer.
 - 2. Semi-gloss: Two coats of latex enamel; Spartashield.
- C. Paint ME-OP-2L - Ferrous Metals, Primed, Latex, 2 Coat:
 - 1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
 - 2. Semi-gloss: Two coats of latex enamel; Spartashield.
- D. Paint MgE-OP-3L - Galvanized Metals, Latex, 3 Coat:

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

1. One coat galvanize primer. Ultra-Grip.
2. Semi-gloss: Two coats of latex enamel; Spartashield.

2.04 PAINT SYSTEMS - INTERIOR

- A. Paint MI-OP-3L - Ferrous Metals, Unprimed, Latex, 3 Coat:
 1. One coat of latex primer, Bloc-Rust Premium.
 2. Semi-gloss: Two coats of latex enamel; Spartawall.
- B. Paint MI-OP-2L - Ferrous Metals, Primed, Latex, 2 Coat:
 1. Touch-up with latex primer.
 2. Semi-gloss: Two coats of latex enamel; Spartawall.
- C. Paint Mgl-OP-3L - Galvanized Metals, Latex, 3 Coat:
 1. One coat galvanize primer. Ultra-Grip Premium.
 2. Semi-gloss: Two coats of latex enamel; Spartawall.
- D. Paint GI-OP-3L - Gypsum Board/Plaster, Latex, 3 Coat:
 1. One coat of latex primer sealer, Vinylastic Select.
 2. Semi-gloss: Two coats of latex enamel; Spartawall.
 3. Eggshell: Two coats of latex enamel; Spartawall.

2.05 ACCESSORY MATERIALS

- A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 1. Gypsum Wallboard: 12 percent.
 2. Plaster and Stucco: 12 percent.
 3. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to coating application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.
- G. Plaster Surfaces to be Painted: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- H. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- I. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.
- J. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
- K. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.
- L. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.
- C. Apply products in accordance with manufacturer's instructions.
- D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- E. Apply each coat to uniform appearance.
- F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- G. Sand wood surfaces lightly between coats to achieve required finish.
- H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

- A. Protect finished coatings until completion of project.
- B. Touch-up damaged coatings after Substantial Completion.

END OF SECTION

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

SECTION 10 2800 TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Accessories for toilet rooms.
- B. Grab bars.

1.02 REFERENCE STANDARDS

- A. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service 2015a (Reapproved 2019).
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.
- C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

1.03 SUBMITTALS

- A. See Section 01305 - Submittals, for submittal procedures.
- B. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.
- C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Products listed are made by Bradley Corporation: www.bradleycorp.com unless noted otherwise.
- B. Other Acceptable Manufacturers:
 - 1. American Specialties, Inc: www.americanspecialties.com/#sle.
 - 2. Bobrick Washroom Equipment Inc.: www.bobrick.com.
 - 3. Substitutions: Section 01 6000 - Product Requirements.
- C. All items of each type to be made by the same manufacturer.

2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Keys: Provide two keys for each accessory to Owner ; master key all lockable accessories.
- C. Stainless Steel Sheet: ASTM A666, Type 304.
- D. Stainless Steel Tubing: ASTM A269, Type 304 or 316.
- E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- F. Mirror Glass: Float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
- G. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof , security type.

2.03 FINISHES

- A. Stainless Steel: No. 4 satin brushed finish, unless otherwise noted.

2.04 TOILET ROOM ACCESSORIES

- A. General Requirements:

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

1. Toilet Accessories required to be accessible shall be mounted at heights according to C.B.C. Section 11B.
 2. Toilet paper and feminine napkin dispensers located on the grab bar side of an accessible toilet room or stall shall not be located closer than 1-1/2" clear of the tangent point of the grab bar. The grab bar cannot project more than 3" into the required clear floor space (C.B.C. Section 11B-609). The accessory shall not be located closer than 1-1/2" clear of the tangent point of the grab bar.
- B. Toilet Paper Dispenser: Dual Roll Dispenser, recessed, stainless steel unit with pivot hinge, tumbler lock.
1. Located at all accessible restroom stalls and single occupancy restrooms.
 2. Product: 5412 manufactured by Bradley.
- C. Paper Towel Dispenser: Multi-fold paper type, stainless steel, fully-recessed, with viewing slots on sides as refill indicator .
1. Product: 235 manufactured by Bradley.
- D. Soap Dispenser: Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and vertical stainless steel tank and working parts; push type soap valve, check valve, and window gage refill indicator, tumbler lock.
1. Minimum Capacity: 40 ounces.
 2. Product: 6563 manufactured by Bradley.
- E. Mirrors: Stainless steel framed, 6 mm thick float glass mirror.
1. Size: 18 x 30 inches.
 2. Frame: 0.05 inch angle shapes, with mitered and welded and ground corners, and tamperproof hanging system; No.4 finish.
 3. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
 4. Product: 780 manufactured by Bradley.
- F. Grab Bars: Stainless steel, 1-1/2 inches outside diameter, minimum 0.05 inch wall thickness, nonslip grasping surface finish, concealed flange mounting; 1-1/2 inches clearance between wall and inside of grab bar.
1. Length and configuration: As indicated on drawings.
 2. Product: 812 manufactured by Bradley.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. Verify that field measurements are as indicated on drawings.
- D. See Section 06100 - Rough Carpentry for installation of blocking in walls.

3.02 PREPARATION

- A. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights and Locations: As required by accessibility regulations and as indicated on drawings

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 26 0100
ELECTRICAL GENERAL PROVISIONS

ARTICLE 1 SUMMARY

- 1.1 This Division of the specification outlines the provisions of the contract work to be performed under this Division.
- 1.2 This Section applies to and forms a part of each section of specifications in Division 26 and all work performed under Division 26, 27 and 28.
- 1.3 In addition, work in this Division is governed by the provisions of the bidding requirements, contract forms, general conditions and all sections under general requirements.
- 1.4 These specifications contain statements which may be more definitive or more restrictive than those contained in the General Conditions. Where these statements occur, they shall take precedence over the General Conditions.
- 1.5 Where the words 'provide' or 'provision' are used, it shall be definitely interpreted as 'furnishing and installing complete in operating condition'. Where the words 'as indicated' or 'as shown' are used, it shall mean as shown on contract drawings.
- 1.6 Where items are specified in the singular, this Division shall provide the quantity as shown on drawings plus any spares or extras mentioned on drawings or specifications. All specified and supplied equipment shall be new.

ARTICLE 2 CONTRACTOR QUALIFICATIONS

- 2.1 The Contractor shall have a current California C-10 Electrical Contractor's license and all individuals working on this project shall have passed the Department of Industrial Relations Division of apprenticeship Standards – "Electrician Certification Program."

ARTICLE 3 CODES, PERMITS AND FEES

- 3.1 Comply with all applicable laws, ordinances, rules, regulations, codes, or rulings of governmental units having jurisdiction as well as standards of NFPA and serving utility requirements.
- 3.2 Obtain permits, fees, inspections, meter and the like, associated with work in each section of this Division.
- 3.3 Installation procedures, methods and conditions shall comply with the latest requirements of the Federal Occupational Safety and Health Act (OSHA).

ARTICLE 4 EXAMINATION OF PREMISES

- 4.1 Examine the construction drawings and premises prior to bidding. No allowances will be made for not being knowledgeable of existing conditions.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

ARTICLE 5 STANDARDS

- 5.1 The following standard publications of the latest editions enforced, and supplements thereto shall form a part of these specifications. All electrical work must, as a minimum, be in accordance with these standards.
 - 5.1.1 2019 California Electrical Code (CEC), Part 3 Title 24 CCR.
 - 5.1.2 National Fire Protection Association.
 - 5.1.3 Underwriters' Laboratories, Inc. (UL).
 - 5.1.4 Certified Ballast Manufacturers' Association (CBM).
 - 5.1.5 National Electrical Manufacturers' Association (NEMA).
 - 5.1.6 Institution of Electrical Electronics Engineers (IEEE).
 - 5.1.7 American Society for Testing Materials (ASTM).
 - 5.1.8 National Board of Fire Underwriters (NBFU).
 - 5.1.9 National Board of Standards (NBS).
 - 5.1.10 American National Standards Institute (ANSI).
 - 5.1.11 Insulated Power Cable Engineers Association (IPECS).
 - 5.1.12 Electrical Testing Laboratories (ETL).
 - 5.1.13 National Electrical Safety Code (NESC).
 - 5.1.14 2019 California Building Code (CBC), Part 2, Title 24 CCR.
 - 5.1.15 2019 California Fire Code (CFC), Part 9, Title 24, CCR.
 - 5.1.16 2016 NFPA 72 with California State Amendments
 - 5.1.17 National Electrical Testing Association (NETA), 2010 or most current

ARTICLE 6 DEFINITIONS

- 6.1 Concealed: Hidden from sight, as in trenches, chases, hollow construction, or above furred spaces, hung ceilings - acoustical or plastic type, or exposed to view only in tunnels, attics, shafts, crawl spaces, unfinished spaces, or other areas solely for maintenance and repair.
- 6.2 Exposed, Non-Concealed, Unfinished Space: A room or space that is ordinarily accessible only to building maintenance personnel, a room noted on the 'finish schedule' with exposed and unpainted construction for walls, floors, or ceilings or specifically mentioned as 'unfinished'.
- 6.3 Finish Space: Any space ordinarily visible, including exterior areas.

ARTICLE 7 WORK AND MATERIALS

- 7.1 Unless otherwise specified, all materials must be new and of the best quality. Materials previously incorporated into other projects, salvaged, or refurbished are not considered new. Perform all labor in a thorough and workmanlike manner.
- 7.2 All materials provided under the contract must bear the UL label where normally available. Note that this requirement may be repeated under equipment specifications. In general, such devices as will void the label should be provided in separate enclosures and wired to the labeled unit in proper manner.

ARTICLE 8 SHOP DRAWINGS AND SUBMITTALS

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 8.1 Submit shop drawings and all data in accordance with Division 1 of these specifications and as noted below for all equipment provided under this Division.
- 8.2 Shop drawings submittals demonstrate to the Architect that the Contractor understands the design concept. The Contractor demonstrates their understanding by indicating which equipment and material they intend to furnish and install and by detailing the fabrication and installation methods of material and equipment he intends to use. If deviations, discrepancies, or conflicts between submittals and specifications are discovered either prior to or after submittals are processed, notify the Architect immediately.
- 8.3 Manufacturer's data and dimension sheets shall be submitted giving all pertinent physical and engineering data including weights, cross sections and maintenance instructions. Standard items of equipment such as receptacles, switches, plates, etc., which are cataloged items, shall be listed by manufacturer.
- 8.4 Index all submittals and reference them to these specifications. All submittal items shall be assembled and submitted, one for each specification section. (Multiple specification sections may be grouped together in one common submittal binder, as long as each individual section is clearly identified.) Partial or incomplete submittal sections will not be reviewed.

ARTICLE 9 EQUIPMENT PURCHASES

- 9.1 Arrange for purchase and delivery of all materials and equipment within 20 days after approval of submittals. All materials and equipment must be ordered in ample quantities for delivery at the proper time. If items are not on the project in time to expedite completion, the Owner may purchase said equipment and materials and deduct the cost from the contract sum.
- 9.2 Provide all materials of similar class or service by one manufacturer.

ARTICLE 10 COOPERATIVE WORK

- 10.1 Correct without charge any work requiring alteration due to lack of proper supervision or failure to make proper provision in time. Correct without charge any damage to adjacent work caused by the alteration.
- 10.2 Cooperative work includes: General supervision and responsibility for proper location and size of work related to this Division, but provided under the other sections of these specifications, and installation of sleeves, inserts, and anchor bolts for work under each section in this Division.

ARTICLE 11 VERIFICATION OF DIMENSIONS

- 11.1 Scaled and figured dimensions are approximate only. Before proceeding with work, carefully check and verify dimensions, etc., and be responsible for properly fitting equipment and materials together and to the structure in spaces provided.
- 11.2 Drawings are essentially diagrammatic, and many offsets, bends, pull boxes, special fittings, and exact locations are not indicated. Carefully study drawings and premises in order to determine best methods, exact location, routes, building obstructions, etc. and install apparatus and equipment in manner and locations to avoid obstructions, preserve headroom, keep openings and passageways clear, and maintain proper clearances.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

ARTICLE 12 CLOSING-IN OF UNINSPECTED WORK

- 12.1 Cover no work until inspected, tested, and approved by the Architect. Where work is covered before inspection and test, uncover it and when inspected, tested, and approved, restore all work to original proper condition at no additional cost to Owner.

ARTICLE 13 EXCAVATION AND BACKFILL

- 13.1 All excavation and backfill shall be in accordance with Division 1 of these specifications and as noted below.
- 13.2 Perform all necessary excavation, shoring, and backfilling required for the proper laying of all conduits inside the building and premises, and outside as may be necessary.
- 13.3 Excavate all trenches open cut, keep trench banks as nearly vertical as practicable, and sheet and brace trenches where required for stability and safety. Excavate trenches true to line and make bottoms no wider than necessary to provide ample work room. Grade trench bottoms accurately. Machine grade only to the top line of the conduits, doing the remainder by hand. Do not cut any trench near or under footings without first consulting the Architect. All trenches shall be done in accordance with OSHA standards and regulations.
- 13.4 Backfilling shall be done with each layer compacted before another layer is added. No stones or coarse lumps shall be laid directly on a conduit or conduits.
- 13.5 Trenches shall be filled with the specified material. Sod, if any, shall be removed in cut sections and replaced in same manners.
- 13.6 Provide pumps and drainage of all open trenches for purposes of installing electrical duct and wiring.
- 13.7 Perform all backfilling in accordance with the requirements of and under the direction of the Geotechnical Engineer.
- 13.8 Where new underground trenching is required on sites or in any area where existing underground utilities exist, the Contractor shall provide an independent professional utility locating service to locate exact vertical and horizontal locations of all existing utilities. Where existing utilities are found the Contractor shall hand dig those areas to avoid disruption. The Contractor shall be responsible for immediate repairs to existing underground utilities damaged during construction. The Contractor shall repair all existing asphalt, concrete and landscape surfaces damaged or removed during construction to match their original conditions. Where trenching extends through public streets or roadways, the Contractor shall notify underground service alert in addition to the independent locating service 48 hours before start of construction to determine location of existing utilities by calling (800) 422-4133.

ARTICLE 14 CONCRETE

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 14.1 Where used for structures to be provided under the contract such as bases, etc., concrete work, and associated reinforcing shall be as specified under Division 3 of these specifications.
- 14.2 See other sections for additional requirements for underground vaults, cable ducts, etc.

ARTICLE 15 ACCESSIBILITY

- 15.1 Install all control devices or other specialties requiring reading, adjustment, inspection, repairs, removal, or replacement conveniently and accessibly throughout the finished building.
- 15.2 All required access doors or panels in walls and ceilings are to be furnished and installed as part of the work under this Section. Refer to Division 1 of these specifications and as noted below.
- 15.3 Where located in fire rated assemblies, provide doors which match the rating of the assembly and are approved by the jurisdictional authority.
- 15.4 Refer to 'finish schedule' for types of walls and ceilings in each area and the architectural drawings for rated wall construction.
- 15.5 Coordinate work of the various sections to locate specialties requiring accessibility with others to avoid unnecessary duplication of access doors.

ARTICLE 16 FLASHING

- 16.1 Flash and counter flash all conduits penetrating roofing membrane as shown on Architectural drawings. All work shall be in accordance with Division 7 of these specifications.

ARTICLE 17 IDENTIFICATION OF EQUIPMENT

- 17.1 All electrical equipment shall be labeled, tagged, stamped, or otherwise identified in accordance with the following schedules:
 - 17.1.1 General:
 - 17.1.1.1 In general, the installed laminated nameplates as hereinafter called for shall also clearly indicate its use, areas served, circuit identification, voltage and any other useful data.
 - 17.1.1.2 All auxiliary systems, including communications, shall be labeled to indicate function.
 - 17.1.2 Lighting and Local Panelboards:
 - 17.1.2.1 Panel identification shall be with white and black micarta nameplates. Letters shall be no less than 3/8" high.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

17.1.2.2 Circuit directory shall be two column typewritten card set under glass or glass equivalent. Each circuit shall be identified by the room number and/or number of unit and other pertinent data as required.

17.1.3 Distribution Switchboards and Feeders Sections:

17.1.3.1 Identification shall be with 1" x 4" laminated white micarta nameplates with black lettering on each major component, each with name and/or number of unit and other pertinent data as required. Letters shall be no less than 3/8" high.

17.1.3.2 Circuit breakers and switches shall be identified by number and name with 3/8" x 1-1/2" laminated micarta nameplates with 3/16" high letters mounted adjacent to or on circuit breaker or switch.

17.1.4 Disconnect Switches, Motor Starters and Transformers:

17.1.4.1 Identification shall be with white micarta laminated labels and 3/8" high black lettering.

17.1.5 All communication system terminal boxes including T.V., telephone/intercom, security, fire alarm, clock, and computer networking shall be provided with white micarta laminated labels and 3/8" high black lettering.

ARTICLE 18 CONSTRUCTION FACILITIES

18.1 Furnish and maintain from the beginning to the completion all lawful and necessary guards, railings, fences, canopies, lights, warning signs, etc. Take all necessary precautions required by City, State Laws, and OSHA to avoid injury or damage to any persons and property.

18.2 Temporary power and lighting for construction purposes shall be provided under this Section. All work shall be in accordance with Division 1 of these specifications.

ARTICLE 19 GUARANTEE

19.1 Guarantee all material, equipment and workmanship for all sections under this Division in writing to be free from defect of material and workmanship for one year from date of final acceptance, as outlined in the general conditions. Replace without charge any material or equipment proven defective during this period. The guarantee shall include performance of equipment under all site conditions, conditions of load, installing any additional items of control and/or protective devices, as required.

ARTICLE 20 PATENTS

20.1 Refer to the General Conditions for Contractor's responsibilities regarding patents.

ARTICLE 21 PLUMBING (DIVISION 22) HEATING, VENTILATING, AND AIR CONDITIONING (DIVISION 23) ELECTRICAL – COORDINATION REQUIREMENTS

21.1 All electrical work performed for this project shall conform to the California Electrical Code, to Local Building Codes and in conformance with Division 22, 23, and 26 of these specifications, whether the work is provided under the "Plumbing", "Heating, Ventilating, and Air Conditioning", or the "Electrical" Division of these specifications. Where the

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

Division 22 and/or Division 23 Contractor is required to provide electrical work, he shall arrange for the work to be done by a licensed Division 26 Contractor, using qualified electricians. The Division 22 and/or Division 23 Contractor shall be solely and completely responsible for the correct functioning of all equipment regardless of who provided the electrical work.

- 21.2 The work under Division 22 and/or Division 23 shall include the following:
 - 21.2.1 All motors required by mechanical equipment.
 - 21.2.2 All starters for mechanical equipment which are not provided under the electrical division as part of a motor control center or otherwise indicated on the electrical drawings.
 - 21.2.3 All wiring interior to packaged equipment furnished as an integral part of the equipment.
 - 21.2.4 All control for mechanical control systems.
 - 21.2.5 All control systems required by mechanical equipment.
- 21.3 The work under Division 26 shall include the following:
 - 21.3.1 All power wiring and conduit; and conduit only for EMS control conductors between each building and the main control panel.
 - 21.3.2 Electrical disconnects as shown on the electrical drawings.
 - 21.3.3 Starters forming part of a motor control center.
- 21.4 All power wiring and conduit to equipment furnished under Division 22 and/or Division 23 shall be provided under Division 26. Control wiring and conduit, whether line voltage or low voltage, shall be provided under the division which furnishes the equipment.
- 21.5 Power wiring shall be defined as all wiring between the panelboard switchboard overcurrent device, motor control center starter or switch, and the safety disconnect switch or control panel serving the equipment. Also, the power wiring between safety disconnect switch and the equipment line terminals.
- 21.6 Control wiring shall be defined as all wiring, either line voltage or low voltage, required for the control and interlocking of equipment, including but not limited to wiring to motor control stations, solenoid valves, pressure switches, limit switches, flow switches, thermostats, humidistats, safety devices, smoke detectors, and other components required for the proper operation of the equipment.
- 21.7 All motor starters which are not part of motor control centers and which are required for equipment furnished under this Division shall be furnished and installed by the Division furnishing the equipment and power wiring connected under Division 26. Motor starters and control devices in motor control centers shall be furnished and installed under Division 26.
- 21.8 Division 26 Contractor shall make all final connections of power wiring to equipment furnished under this Division.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 21.9 Wiring diagrams complete with all connection details shall be furnished under each respective Section.
- 21.10 Motor starters supplied by Plumbing and/or Heating, Ventilating and Air Conditioning shall be fused combination type minimum NEMA Size 1, and conform to appropriate NEMA standards for the service required. Provide NEMA type 3R/12 gasketed enclosures in wet locations. Provide all starters with appropriately sized overload protection and heater strips provided in each phase, hand/off auto switches, a minimum of 2 NO and NC auxiliary contacts as required, and an integral disconnecting means. For horsepower motors and below, when control requirements do not dictate the use of a starter, a manual motor starter switch with overload protection in each phase may be provided. Acceptable manufacturers are Allen Bradley, General Electric, Square D, Furnas and Cutler Hammer.

ARTICLE 22 EQUIPMENT ROUGH-IN

- 22.1 Rough-in all equipment, fixtures, etc. as designed on the drawings and as specified herein. The drawings indicate only the approximate location of rough-ins. Mounting heights of all switches, receptacles, wall mounted fixtures and such equipment must be coordinated with the Architectural Designs. The Contractor shall obtain all rough-in information before progressing with any work for rough-in connections. Minor changes in the contract drawings shall be anticipated and provided for under this Division of the specifications to comply with rough-in requirements.

ARTICLE 23 OWNER FURNISHED AND OTHER EQUIPMENT

- 23.1 Rough-in and make final connections to all Owner furnished equipment shown on the drawings and specified, and all equipment furnished under other sections of the specifications.

ARTICLE 24 EQUIPMENT FINAL CONNECTIONS

- 24.1 Provide all final connections for the following:
- 24.1.1 All equipment furnished under this Division.
 - 24.1.2 Electrical equipment furnished under other sections of the specification.
 - 24.1.3 Owner furnished equipment as specified under this Division.

ARTICLE 25 INSERTS, ANCHORS, AND MOUNTING SLEEVES

- 25.1 Inserts and anchors must be:
- 25.1.1 Furnished and installed for support of work under this Division.
 - 25.1.2 Mounting of equipment that is of such size as to be free standing and that equipment which cannot conveniently be located on walls, such as motor starters, etc., shall be rigidly supported on a framework of galvanized steel angle of Unistrut or B-line systems with all unfinished edges painted.
 - 25.1.3 Furnish and install all sleeves as required for the installation of all work under all Sections of this Division and for all communication systems including any communication systems described in this Section which are bid to the General

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

Contractor. Sleeves through floors, roof, and walls shall be as described in "Conduit and Fittings" Section 26 05 33.

ARTICLE 26 SEISMIC ANCHORING

- 26.1 All switchgear and other free-standing electrical equipment or enclosures shall be anchored to the floor and braced at the top of the equipment to the structure. The Contractor shall submit drawings signed by the Contractors registered structural Engineer indicating method of compliance prior installation.
- 26.2 All sound systems, communication, signal or data networking equipment or enclosures shall be anchored to the structure. The Contractor shall submit drawings signed by the Contractors registered Structural Engineer indicating method of compliance prior to installation.

ARTICLE 27 RUST PROOFING

- 27.1 Rust proofing must be applied to all ferrous metals and shall be in accordance with Section 05500 of these specifications and as noted below.
 - 27.1.1 Hot-dipped galvanized shall be applied and after forming of angle-iron, bolts, anchors, etc.
 - 27.1.2 Hot-dipped galvanized coating shall be applied after fabrication for junction boxes and pull boxes cast in concrete.

ARTICLE 28 GENERAL WIRING

- 28.1 Where located adjacent in walls, outlet boxes shall not be placed back to back, nor shall extension rings be used in place of double boxes, all to limit sound transmission between rooms. Provide short horizontal nipple between adjacent outlet boxes, which shall have depth sufficient to maintain wall coverage in rear by masonry wall.
- 28.2 In those instances where outlet boxes, recessed terminal boxes, or recessed equipment enclosures are installed in a fire rated assembly, provide "Flamesafe FSD 1077" fire stopping pads or approved equal, over the outlet or box.
- 28.3 Complete rough-in requirements of all equipment to be wired under the contract are not indicated. Coordinate with respective trades furnishing equipment or with the Architect as the case may be for complete and accurate requirements to result in a neat, workmanlike installation.

ARTICLE 29 SEPARATE CONDUIT SYSTEMS

- 29.1 Each electrical and signal system shall be contained in a separate conduit system as shown on the drawings and as specified herein. This includes each power system, each lighting system, each signal system of whatever nature, telephone, standby system, sound system, control system, fire alarm system, etc.
- 29.2 Further, each item of building equipment must have its own run of power wiring. Control wiring may be included in properly sized conduit for equipment feeders of #6 AWG and smaller, having separate conduit for larger sizes.

ARTICLE 30 CLEANUP

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 30.1 In addition to cleanup specified under other sections, thoroughly clean all parts of the equipment. Where exposed parts are to be painted, thoroughly clean off any spattered construction materials and remove all oil and grease spots. Wipe the surface carefully and scrape out all cracks and corners.
- 30.2 Use steel brushes on exposed metal work to carefully remove rust, etc., and leave smooth and clean.
- 30.3 During the progress of the work, keep the premises clean and free of debris.

ARTICLE 31 PAINTING

- 31.1 Paint all unfinished metal as required in accordance with Division 1 of these specifications. (Galvanized and factory painted equipment shall be considered as having a sub-base finish.)

ARTICLE 32 GENERAL DEMOLITION REQUIREMENTS

- 32.1 Remove existing work and items which are required to be removed in such manner that minimum damage and disturbance is caused to adjacent and connection work scheduled to remain. Repair or replace existing work schedule.
- 32.2 Include preparation of existing areas to receive new materials and removal of materials and equipment to alter or repair the existing building as indicated and as specified.
- 32.3 Perform demolition exercising proper care to prevent injury to the public, workmen and adjoining property.
- 32.4 Perform the removal, cutting, drilling of existing work with extreme care and use small tools in order not to jeopardize the structural integrity of the building.
- 32.5 Rebuild to existing condition or better, existing work which has to be removed to allow the installation of new work as required.
- 32.6 Remove, protect and reinstall existing items as indicated. Replace materials scheduled for reuse which are damaged by the Contractor to the extent that they cannot be reused, with equal quality material, and installation.
- 32.7 Do not reuse in this project materials and items removed from existing site or building, except with specific written approval by the Architect in each case, unless such removed material or item is specifically indicated or specified to be reused.
- 32.8 Remove materials and equipment indicated to be salvaged for reinstallation and store to prevent damage and reinstall as the work progresses. Do not reuse in this project, other materials and equipment removed from existing site or building, except with specific written approval by the Architect in each case.
- 32.9 Patch areas requiring patching, including damage caused by removing, relocating or adding fixtures and equipment, damages caused by demolition at adjacent materials.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 32.10 Do not stockpile debris in the existing building, without the approval of the Architect. Remove debris as it accumulates from removal operations to a legal disposal area.
- 32.11 Contractor to assume existing oil filled and dry transformers, oil switches, ballasts, lamps, wooden poles, cross arms, computers, computer monitors, and conductor insulation containing materials considered hazardous. Comply with local, state and federal regulations, laws, and ordinances concerning removal, handling and protection against exposure or environmental pollution. Contractor shall be responsible for removal of the above hazardous materials where encountered. Include all costs for such removal as part of this contract.
- 32.12 All fluorescent, compact fluorescent, high intensity discharge, metal halide, mercury vapor, high and low-pressure sodium, and neon lamps are to be disposed of as required by the California Waste Rule Regulations as described in the California Code of Regulations, Title 22, Division 4.5 and Chapter 23.
- 32.13 **C**ommunication **S**ystems Where new communication systems, (including telephone, intercom, clock, security, fire alarm, data, multimedia, CATV or lighting controls) are installed to replace existing systems, unless where otherwise directed the existing systems shall remain fully operational until the new system has been installed and tested. Demolition of the existing systems shall include removal of all equipment and associated wiring and exposed conduits and providing new blank covers for all abandoned device locations.
- 32.14 **S**witchboards **P**anelboards **E**quipment The Contractor shall carefully remove all existing switchboards, panelboards, transformers, and confirm in writing which items the Owner wishes to keep. These items shall be transported to the Owner's maintenance facilities by the Contractor. All remaining items shall be disposed of by the Contractor.
- 32.15 **S**witchboards **L**ighting **E**quipment The Contractor shall confirm in writing which items the Owner wishes to keep. These items shall be transported to the Owner's maintenance facilities by the Contractor. All remaining items shall be disposed of by the Contractor.
- 32.16 **S**witchboards **C**ommunication **E**quipment The Contractor shall carefully remove all communication devices (telephone, intercom, clock, security, fire alarm, data, multimedia, CATV or lighting controls) and box each type of devices separately. The Contractor shall deliver all items to the Owner's maintenance facility.

ARTICLE 33 PROJECT CLOSEOUT

- 33.1 Prior to completion of project, compile a complete equipment maintenance manual for all equipment supplied under sections of this Division, in accordance with Division 1 of these specifications and as described below.
- 33.2 Equipment Lists and Maintenance Manuals:
 - 33.2.1 Prior to completion of job, Contractor shall compile a complete equipment list and maintenance manuals. The equipment list shall include the following items for every piece of material equipment supplied under this Section of the specifications:
 - 33.2.1.1 Name, model, and manufacturer.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 33.2.1.2 Complete parts drawings and lists.
- 33.2.1.3 Local supply for parts and replacement and telephone number.
- 33.2.1.4 All tags, inspection slips, instruction packages, etc., removed from equipment as shipped from the factory, properly identified as to the piece of equipment it was taken from.

33.3 Maintenance manuals shall be furnished for each applicable section of the specifications and shall be suitably bound with hard covers and shall include all available manufacturers' operating and maintenance instructions, together with "as-built" drawings to properly operate and maintain the equipment. The equipment lists and maintenance manuals shall be submitted in duplicate to the Architect for approval not less than 10 days prior to the completion of the job. The maintenance manuals shall also include the name, address, and phone numbers of all subcontractors involved in any of the work specified herein. Four copies of the maintenance manuals bound in single volumes shall be provided.

ARTICLE 34 RECORD DRAWINGS

- 34.1 The Division 26 Contractor shall maintain record drawings as specified in accordance with Division 1 of these specifications, and as noted below.
- 34.2 Drawings shall show locations of all concealed underground conduit runs, giving the number and size of conduit and wires. Underground ducts shall be shown with cross section elevations and shall be dimensioned in relation to permanent structures to indicate their exact location. Drawing changes shall not be identified only with referencing CORs and RFIs, the drawings shall reflect all of the actual additions or changes made. All as-built drawing information shall be prepared by the contractor in AutoCAD, updating the contract computer files as needed to reflect actual installed conditions for all site plans, lighting, power, communication, networking, audio visual, security or fire alarms systems included in the scope of work for this project.
- 34.3 One set of these record drawings shall be delivered to the Architect. The engineer will review documents for completeness and will not be responsible for editing contractor computer files.

ARTICLE 35 CHANGES AND EXTRA WORK

- 35.1 When in work are requested, the Division 26 Contractor shall provide unit prices for the work involved in accordance with Division 1 of these specifications, and the following:
 - 35.1.1 The material Costs shall the latest edition of the "Trade Service" end column "C" price list. The materials prices may be higher only where the Contractor can produce invoices to substantiate higher material costs. The Contractor shall submit a print out copy of the trade service sheets with the change order to substantiate these values.
 - 35.1.2 The labor Costs shall the latest edition of the "NECA Manual of Labor Units" .

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

35.2 When in work are requested, the Division 26 Contractor shall provide unit prices for the work involved in accordance with Division 1 of these specifications, and the following:

35.2.1 The Material Costs shall **80** the latest edition of the "Trade Service" end column price list. The materials prices may be lower only where the Contractor can produce invoices to substantiate lower material costs. Restocking fees may also be included in this amount where applicable.

35.2.2 The Labor Costs shall **80** the latest edition of the "NECA Manual of Labor Units" .

35.3 Conduit pricing for conduits of all types sized 3" or smaller.

When changes in the scope of work require the Contractor to estimate conduit Installations, they shall **NOT** () for any of the below items. The labor values for conduit installation represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.

35.3.1 Couplings.

35.3.2 Set Screw or Compression Fittings, locknuts, Bushings and washers.

35.3.3 Conduit straps and associated screws or nails.

35.3.4 LB fittings or other specialty fittings or specialty mounting hardware may be included where needed.

35.4 Wire pricing for all types and sizes.

When changes in the scope of work require the Contractor to estimate wire installations, they shall **NOT** () for any of the below items. The labor values for wire installation represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.

35.4.1 Locknuts, Bushings, tape, wire markers.

35.5 When changes in the scope of work require other equipment installations such as lighting fixtures, panelboards, switchboards, wiring devices, communications equipment etc. the Contractor shall **NOT** () for any of the below items. The labor values for these equipment items represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.

35.5.1 Associated screws, nails, bolts, anchors or supports.

35.5.2 Locknuts, washers, tape.

35.6 The total labor hours for extra work will be required to be calculated as follows:

35.6.1 Change orders with 1 to 30 total labor hours

General Laborer 10 of total labor hours

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

Journeyman	10	of total labor hours
Foreman	80	of total labor hours

35.6.2 Change orders with 31 to 100 total labor hours

General Laborer	20	of total labor hours
Journeyman	40	of total labor hours
Foreman	40	of total labor hours

35.6.3 Change orders with over 100 total labor hours

General Laborer	30	of total labor hours
Journeyman	50	of total labor hours
Foreman	20	of total labor hours

35.7 When change orders are issued which allow the work to be completed in the normal sequence of construction, the labor rates shall be based on the most current "Prevailing Wage" – straight time total hourly rate. When change orders require the Contractor to work out of sequence the "Prevailing Wage"– daily overtime hourly rate shall apply. Special condition situations shall be reviewed on an individual basis for alternate hourly rate schedules.

35.8 Costs be permitted for additional supervision on site or office time for processing any change order other than the 10 overhead allowance as described in Division 1. Cost for special equipment required to install items for an individual change order are permitted and must be individually identified. Lump Sum cost for small tools or any other cost not specifically required for the change order are not permitted.

35.9 Contractor estimates shall be formatted to clearly identify each of the following:

35.9.1 Line item description of each type of material or labor item.

35.9.2 Description of quantity for each item.

35.9.3 Description of (material cost per / quantity).

35.9.4 Description of (labor cost per / quantity).

35.9.5 Description of total labor hour breakdown per Foreman, Journeyman or General Laborer as described above.

ARTICLE 36 ELECTRONIC FILES

36.1 The Contractor shall make a **written** request directly to Johnson Consulting Engineers for electronic drawing files. As a part of the written request, please include the following information:

36.1.1 Clearly indicate each drawing sheet needed (i.e., E1.1, E2.1, etc.).

36.1.2 Identify the name, phone number, mailing address and e-mail address of the person to receive the files.

36.1.3 Provide written confirmation and agreement with the requirements described for payment of computer files, as described below.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 36.2 Detail or riser diagram sheets, or any other drawings other than floor plans or site plans, **will not be made available to the Contractor.**
- 36.3 Files will only be provided in the AutoCAD format in which they were created.
- 36.4 Requests for files will be processed as soon as possible; a minimum of 7 working days should be the normal processing time. The Contractor shall be completely responsible for requesting the files in time for their use.
- 36.5 CAD files will be made available via e-mail or on disk, depending on the quantity of files requested. The Contractor requesting the files will be required to pay \$50.00 per drawing plan, or \$300.00 maximum, whichever is **less.**

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 26 0519
POWER CONDUCTORS

PART 1 – GENERAL

- 1.1 Furnish and install wire and cable for branch circuits and feeders specified herein and as shown on the electrical drawings.
- 1.2 Submittals: Submit manufacturers' data for the following items:
 - 1.2.1 All cables and terminations
- 1.3 Cables and terminations
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining, or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed

PART 2 – PRODUCTS

- 2.1 Wire and cable Rated 120 volt to 600 volt.
 - 2.1.1 All wire and cable shall be new, 600 volt insulated copper, of types specified below for each application. All wire and cable shall bear the UL label and shall be brought to the job in unbroken packages. Wire insulation shall be the color as specified herein and shall be type THWN-2. Insulated conductors shall be installed in all exterior exposed raceways. Conductors for branch circuit lighting, receptacle, power and miscellaneous systems shall be a minimum of No. 12 AWG. Increase conductor size to No. 10 AWG for 120 volt circuits greater than 100 feet from the panel to the load and for 277 volt circuits greater than 200 feet from the panel to the load. Circuit home-runs indicated to be larger than No. 12 must be increased the entire length of the circuit, including equipment grounding conductor. Wire sizes No. 14 through No. 10 shall be solid. No. 8 and larger shall be stranded.
 - 2.1.2 Aluminum conductors will not be permitted.
 - 2.1.3 MC type armored cable reference Section 26 05 33.
- 2.2 Wire and cable for systems below 120 volts.
 - 2.2.1 All low voltage and communications systems cables routed underground shall be provided with a moisture resistant outer jacket, West Penn "Aquaseal" or equal, unless otherwise specified.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

PART 3 - EXECUTION

- 3.1 Wire and cable shall be pulled into conduits without strain using powdered soapstone, mineralac, or other approved lubricant. In no case shall wire be repulled if same has been pulled out of a conduit run for any purpose. No conductor shall be pulled into conduit until conduit system is complete, including junction boxes, pull boxes, etc.
- 3.2 All connections of wires shall be made as noted below:
- 3.2.1 Connections to outlets and switches: Wire formed around binding post of screw.
- 3.2.2 No. 10 wire and smaller: Circuit wiring connections to lighting fixtures and other hard wired equipment shall be made with pressure type solderless connectors, Buchanan, Scotchlock, Wing Nut, or approved equal. Alternate "WAGO" #773 series or "IDEAL" #32, 33, 34 and 39 series push wire style connectors are also acceptable.
- 3.3 All wiring shall be continuous without splicing unless where specifically noted on the drawings or where permitted below.
- 3.3.1 No. 10 wire and smaller above grade: Quantities as needed, connection made with pressure type solderless connectors, Scotchlock or equal.
- 3.3.2 No. 10 wire and smaller below grade: Quantities as needed, connection made with 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).
- 3.3.3 No. 8 wire and larger above grade: Quantities only where indicated, 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).
- 3.3.4 No. 8 wire and larger below grade: Quantities only where indicated, 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).
- 3.4 All wiring throughout shall be color coded as follows:
- | | <u>480 volt system</u> | <u>208 or 240 volt system</u> |
|---------|------------------------|-------------------------------|
| A Phase | Brown | Black |
| B Phase | Orange | Red |
| C Phase | Yellow | Blue |
| Neutral | Grey | White |
| Ground | Green | Green |
- 3.5 Wiring must be color coded throughout its entire length, except feeders may have color coded plastic tape at both ends and any other accessible point.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School


- 3.6 All control wiring in a circuit shall be color coded, each phase leg having a separate color, and with all segments of the control circuit, whether in apparatus or conduit, utilizing the same color coding.
- 3.7 At all terminations of control wiring, the wiring shall have a numbered T B or Brady plastic wire marker.
- 3.8 Cables when installed are to be properly trained in junction boxes, etc., and in such a manner as to prevent any forces on the cable which might damage the cable.
- 3.9 All conductors to be installed into a common raceway, shall be pulled into the raceway at the same time.
- 3.10 All conductors shall be installed in such a manner as to not exceed the manufacturers' recommended pulling tension and bending radius. The equipment used for pulling must be specifically designed for the purpose. Motorized vehicles such as pickup trucks, are not acceptable.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 26 0526
GROUNDING

PART 1 – GENERAL

- 1.1 Furnish and install grounding and grounding conductors and electrodes as specified herein and as shown on the drawings.
- 1.2 Submit catalog data for all components.
- 1.3 C 
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – EXECUTION

- 2.1 Grounding
 - 2.1.1 All panelboard cabinets, equipment, enclosures, and complete conduit system shall be grounded securely in accordance with pertinent sections of CEC Article 250. Conductors shall be copper. All electrically operated equipment shall be bonded to the grounded conduit system. All non-current carrying conductive surfaces that are likely to become energized and subject to personal contact shall be grounded by one or more of the methods detailed in CEC Article 250. All ground connections shall have clean contact surfaces. Install all grounding conductors in conduit and make connections readily accessible for inspection.
 - 2.1.2 Provide an insulated equipment grounding conductor in all branch circuit and feeder raceway systems, sized in accordance with CEC 250-1122.
 - 2.1.3 Provide an additional individual insulated grounding conductor for each circuit which contains an isolated ground receptacle or surge suppression receptacle.
 - 2.1.4 Grounding of metal raceways shall be assured by means of provisions of grounding bushings on feeder conduit terminations at the panelboard, and by means of insulated continuous stranded copper grounding wire extended from the ground bus in the panelboard to the conduit grounding bushings.
 - 2.1.5 Except for connections which access for periodic testing is required, make grounding connections which are buried or otherwise inaccessible by exothermite type process.
 - 2.1.6 The following ohmic values shall be test certified for each item listed. A written report signed and witnessed by the project IOR shall be provided to the engineer.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

If the ohmic value listed cannot be obtained additional grounding shall be installed to reach the value listed.

2.1.6.1 Service.10 ohms.

2.1.6.2 Step down transformers and non-current carrying metal parts
. 25 ohms.

2.1.6.3 Manholes, handholes, etc.
. 10 ohms.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 26 0533
CONDUIT AND FITTINGS

PART 1 – GENERAL

- 1.1 Furnish and install conduit and fittings as shown on the drawings and as specified herein.
- 1.2 Submit Manufacturer's data on the following:
 - 1.2.1 Conduit.
 - 1.2.2 Fittings
 - 1.2.3 Fire stopping Material.
 - 1.2.4 Surface Raceways.
 - 1.2.5 Type MC cable, provide construction details and UL "E" number.
- 1.3 Cable Tray
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 Rigid steel conduit, intermediate metal conduit (IMC), electrical metallic tubing (EMT) and flexible metallic conduit shall be steel, hot dipped galvanized after fabrication.
- 2.2 PVC conduit shall be Carlon or approved equal.
- 2.3 Liquid tight flexible metal conduit shall be Anaconda Sealtite type UA or approved equal. Fittings shall be Appleton, Crouse-Hinds, Steel City, T B, or equivalent.
- 2.4 MC type armored cable, when utilized, shall be provided with the following:
 - 2.4.1 Comply with UL 1479 and CEC 330-22(c).
 - 2.4.2 90°C, copper, THHN conductors.
 - 2.4.3 Minimum #12 insulated grounding conductor.
 - 2.4.4 Conductors sized No. 10 and smaller shall be solid, No. 8 and larger shall be stranded.
 - 2.4.5 Oversized (150%) neutrals or separate neutrals shall be provided.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 2.4.6 Increase phase conductors to No. 10 AWG for 120 volt circuits greater than 100 feet from panel to load and for 277 volt circuits greater than 200 feet from panel to load. Where required increase conductor sizes for entire length of circuit.
- 2.4.7 Interlocked armored □□□□□□□□ sheath.
- 2.4.8 AC or B type armored cable shall □□□ be substituted in lieu of MC type cable.
- 2.4.9 Color code cable according to cable type and configuration.
- 2.4.10 Acceptable manufacturers are AFC and Alflex.
- 2.5 Fire stopping material shall provide an effective seal against fire, heat, smoke and fire gases. Fire stopping material shall be tested to comply with ASTM E 814 and UL 1479. The submittal for this product shall include the UL listed system number and installation requirements for each type of penetration seal required for this project.
- 2.6 Each length of conduit shall be stamped with the name or trademark of the manufacturer and shall bear the UL label.
- 2.7 All plastic conduit shall be rigid, schedule 40, heavy wall PVC. All PVC conduit shall be UL listed. Underground utility company conduits shall comply with local utility co. requirements.
- 2.8 Plastic conduit shall be stored on a flat surface and protected from the direct rays of the sun.
- 2.9 Where branch circuit or communication raceways cannot be concealed in ceilings or walls and are required to be exposed in interior spaces, provide nonmetallic surface raceway system sized per the manufacturer capacity requirements. A full complement of nonmetallic fittings must be available and matching device boxes and cover plates must be provided. The color of the raceway system, components and boxes shall be (white). Where data networking cabling is to be installed, all raceway fittings shall meet Category 5 radius requirements. Where specific raceway types have been noted on the drawings they shall be as follows:

2.9.1	System 'SR'	Hubbell Wiremold Panduit Hellerman-Tyton	WALLTRAK 1 series ECLIPSE PN05series LD5 series TSR2 series
2.9.2	System 'SR2'	Hubbell Wiremold Panduit Hellerman-Tyton	WALTRAK 22 2300D Series D2P10 TSR3 series
2.9.3	System 'SR3'	Hubbell Wiremold Panduit Hellerman-Tyton	BASETRAK series 5400 - series 70 series MCR Infostream" series

Provide with offset boxes, inline boxes may only be used where specifically shown on the drawings.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

PART 3 – FITTINGS

- 3.1 All metallic fittings, including those for EMT, flexible conduit, or malleable iron. Die cast fittings of any other material are not permitted.
- 3.2 Locknuts shall be steel or malleable iron with sharp clean-cut threads.
- 3.3 Entrance seals shall be O.Z. type FSK or equivalent.
- 3.4 Bushings and locknuts: Where conduits enter boxes, panels, cabinets, etc., they shall be rigidly clamped to the box by locknuts on the outside, and a lock nut and plastic bushing on the inside of the box. All conduits shall enter the box squarely.
- 3.5 Furnish and install insulated bushings as per CEC article No. 300 - 4 (F) on all conduits. The use of insulated bushings does not exclude the use of double locknuts to fasten conduit to the box.
- 3.6 Transition from plastic to steel conduits shall be with PVC female threaded adaptors.
- 3.7 Couplings and connectors for rigid steel or IMC conduit must be threaded, or compression type (set screw fittings are not permitted).
- 3.8 Couplings and connectors for EMT shall be compression, watertight. Set screw connectors are not acceptable, except for systems below 120 volts.
- 3.9 MC type armored cable shall be provided with listed clamp type die cast zinc set screw connectors. Anti-short bushings shall be provided at all cable ends.
- 3.10 Connectors for flexible metal conduit shall be steel or malleable iron with screw provided to clinch the conduit into the adapter body. For sizes up to □" a screw-in, "Jake type," fitting may be used.
- 3.11 Install approved expansion fittings, or liquid tight flex conduit with a minimum 6" slack for conduits passing through all expansion and seismic joints.

PART 4 - EXECUTION

- 4.1 All branch circuits shall be installed concealed in walls or above ceilings or in concrete floor slabs. PVC conduits installed in concrete floor slabs shall transition to PVC coated rigid steel where conduits penetrate above finished grade or finished floor.
- 4.2 Conduit sizes for various numbers and sizes of wire shall be as required by the CEC, but not smaller than □" for power wiring and □" for communications and fire alarm systems unless otherwise noted. Conduit in slab or below grade shall be □" minimum trade size, unless otherwise identified.
- 4.3 Conduit size shall be such that the required number and sizes of wires can be easily pulled in and the Contractor shall be responsible for the selection of the conduit sizes to facilitate the ease of pulling. Conduit sizes shown on the drawings are minimum sizes in accordance with appropriate tables in the CEC. If because of bends or elbows a larger conduit size is required, the Contractor shall so furnish without further cost to the Owner.
- 4.4 The Contractor shall be entirely responsible for the proper protection of this work from the other trades on the job. When conduit becomes bent or holes are punched through same, or outlets moved after being roughed-in, the Contractor shall replace same, without additional cost to the Owner.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 4.5 Rigid steel conduit or IMC shall be used as follows:
 - 4.5.1 Exposed exterior locations.
 - 4.5.2 Exposed interior locations below eight feet above floor, except in electrical rooms and closets.
 - 4.5.3 In hazardous or classified areas as required by CEC.
- 4.6 EMT conduit shall be used for areas as follows:
 - 4.6.1 All interior communications, signal, and data networking systems.
 - 4.6.2 All interior power wiring systems where not required to be in rigid steel, IMC or flexible conduit.
- 4.7 Flexible conduit shall be used for areas as follows:
 - 4.7.1 To connect motors, transformers, and other equipment subjected to vibration or where specifically detailed on the drawings.
 - 4.7.2 Flexible conduit shall not be used to replace EMT in other locations where the conduit will be exposed.
 - 4.7.3 Flexible metal conduit shall be ferrous. Installation shall be such that considerable slack is realized. The conduit shall contain separate code sized grounding conductor.
 - 4.7.4 Liquid tight flexible conduit shall be used in conformance with CEC in lengths not to exceed 4'. For equipment connections, route the conduit at 90 degrees to the adjacent path for point of connection. The conduit shall contain separate code sized grounding conductor. Use liquid tight flexible conduit for all equipment connections exposed in possible wet, corrosive or oil contaminated areas, e.g., shops and outside areas.
- 4.8 MC armored cable may be used as follows:
 - 4.8.1 All branch circuit wiring for lighting and power circuits where permitted and installed in compliance with UL 1569 and CEC 330.
- 4.9 MC armored cable shall be used for the following areas:
 - 4.9.1 Home runs shall not be MC cable.
 - 4.9.2 Any exterior, underground or buried in concrete circuits.
 - 4.9.3 Any circuits feeding HVAC equipment or pumps or any circuit with 30 AMPs or greater overcurrent protection.
 - 4.9.4 Any exposed interior locations except in electrical, communication or mechanical equipment rooms.
 - 4.9.5 Any exposed interior damp/wet locations, kitchens, science classrooms, shop areas, or concealed in science classroom casework, unless provided with approved PVC jacket.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 4.9.6 Any hazardous rated area.
- 4.10 Plastic conduit shall be used for all exterior underground, in slab, and below slab on grade conduit installations. Install bell ends at all conduit terminations in manholes and pull boxes. Where plastic conduit transitions from below grade to above grade, no plastic conduit shall extend above finished exterior grade, or above interior finished floor level.
- 4.11 Plastic conduit joints shall be made up in accordance with the manufacturer's recommendations for the particular conduit and coupling selected. Conduit joint couplings shall be made watertight. Plastic conduit joints shall be made up by brushing a plastic solvent cement on the inside of a plastic fitting and on the outside of the conduit ends. The conduit and fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly.
- 4.12 All underground conduit depths shall be as detailed on the drawings or a minimum of 30" below finished grade (when not specifically detailed otherwise), for all exterior underground conduits. Where concrete slurry or concrete encasement is provided, include "Red" color dye in mixture.
- 4.13 All underground conduits for power systems (600v and higher), shall be concrete encased and a minimum of 48" below grade or as detailed on the drawings. Where concrete slurry or concrete encasement is provided, include "Red" color dye in mixture.
- 4.14 Conduit shall be continuous from outlet to outlet, cabinet or junction box, and shall be so arranged that wire may be pulled in with the minimum practical number of junction boxes.
- 4.15 All conduits shall be concealed wherever possible. All conduit runs may be exposed in mechanical equipment rooms, electrical equipment rooms, electrical closets, and in existing or unfinished spaces. No conduit shall be run exposed in finished areas without the specific approval of the Architect.
- 4.16 All raceways which are not buried or embedded in concrete shall be supported by straps, clamps, or hangers to provide a rigid installation. Exposed conduit shall be run in straight lines at right angles to or parallel with walls, beams, or columns. In no case shall conduit be supported or fastened to other pipes or installed to prevent the ready removal of other trades piping. Wire shall not be used to support conduit.
- 4.17 It shall be the responsibility of the Contractor to consult the other trades before installing conduit and boxes. Any conflict between the location of conduit and boxes, piping, duct work, or structural steel supports, shall be adjusted before installation. In general, large pipe mains, waste, drain, and steam lines shall be given priority.
- 4.18 Conduits above lay-in grid type ceilings shall be installed in such a manner that they do not interfere with the "lift-out" feature of the ceiling system. Conduit runs shall be installed to maintain the following minimum spacing wherever practical.
- 4.18.1 Water and waste piping not less than 3".
- 4.18.2 Steam and steam condensate lines not less than 12".
- 4.18.3 Radiation and reheat lines not less than 6".
- 4.19 Provide all necessary sleeves and chases required where conduits pass through floors or walls as part of the work of this section. Core drilling will only be permitted where approved by the Architect.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 4.20 All empty conduits and surface mounted raceways shall be provided with a 1/4" polypropylene plastic pull cord and threaded plastic or metal plugs over the ends. Fasten plastic "Dymo" tape label to exposed spare conduit to identify "power" or "communication" system, and to where it goes.
- 4.21 The ends of all conduits shall be securely plugged, and all boxes temporarily covered to prevent foreign material from entering the conduits during construction. All conduit shall be thoroughly swabbed out with a dry swab to remove moisture and debris before conductors are drawn into place.
- 4.22 Bending: Changes in direction shall be made by bends in the conduit. These shall be made smooth and even without flattening the pipe or flaking the finish. Bends shall be of as long a radius as possible, and in no case smaller than CEC requirements.
- 4.22.1 For power conduits for conductors (600v and below), provide minimum 36" radius (vertical) and 72" radius (horizontal) bends.
- 4.22.2 For power conduits for conductors (greater than 600v), provide minimum 72" radius (vertical) and 72" radius (horizontal) bends.
- 4.23 Supports: Conduit shall be supported at intervals as required by the California Electrical Code. Where conduits are run individually, they shall be supported by approved conduit straps or beam clamps. Straps shall be secured by means of toggle bolts on hollow masonry, machine screws or bolts on metal surfaces, and wood screws on wood construction. **N**o conduits shall be supported by nails or staples. **W**here conduits are run in parallel, they shall be supported by approved conduit hangers. Conduits installed exposed in damp locations shall be provided with clamp backs under each conduit clamp, to prevent accumulation of moisture around the conduits.
- 4.24 Where a number of conduits are to be run exposed and parallel, one with another, they shall be grouped and supported by trapeze hangers. Hanger rods shall be fastened to structural steel members with suitable beam clamps or to concrete inserts set flush with surface. A reinforced rod shall be installed through the opening provided in the concrete inserts. Beam clamps shall be suitable for structural members and conditions. Rods shall be galvanized steel 3/8" diameter minimum. Each conduit shall be clamped to the trapeze hanger with conduit clamps.
- 4.25 All concrete inserts and pipe clamps shall be galvanized. All steel bolts, nuts, washers, and screws shall be galvanized or cadmium plated. Individual hangers, trapeze hangers and rods shall be prime-coated.
- 4.26 Openings through fire rated floors/walls and/or smoke walls through which conduits pass shall be sealed by Fire stopping material to comply with Division 1 to seal off flame, heat, smoke and fire gases. Sleeves shall be provided for power or communication system cables which are not installed in conduits, and shall be sealed inside and out to comply with manufacturers UL system design details. Where multiple conduits and/or cable tray systems pass thru fire-rated walls at one location, the Contractor shall submit copies of the manufacturers UL system design details proposed for use on this project. All Fire stopping material shall have an hourly fire-rating equal to or higher than the fire rating of the floor or wall through which the conduit, cables, or cable trays pass.
- 4.27 Provide cap or other sealing type fitting on all spare conduits. Conduits stubbed into buildings from underground where cable only extends to equipment, the conduit/cable end shall be sealed to prevent moisture from entering the room or space.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 4.28 All conduits which are part of a paralleled feeder or branch circuit shall be installed underground.
- 4.29 All conduits which are required as a part of systems specified in Divisions 27 or 28, or any other low voltage communication systems, shall be furnished and installed by the Division 26 Contractor.
- 4.29.1 The Contractor shall coordinate all conduit requirements with each system supplier prior to bid to determine special conduit system requirements.
- 4.29.2 The Contractor shall provide a pull rope in all conduits for these systems.
- 4.29.3 The Contractor shall provide conduit sleeves for all open cable installations thru rated walls or block walls. Provide conduit from each building main termination cabinet or backboard to the nearest accessible ceiling for access into all electrical or communications rooms.
- 4.30 In addition to the above requirements, the following requirements shall apply to all data networking conduits:
- 4.30.1 Flexible metal conduit may only be used where required at building seismic and/or expansion joints.
- 4.30.2 All underground conduits shall be provided with minimum 24" radius elbows (vertical) and 60" (horizontal).
- 4.30.3 No length of conduit above grade shall be installed to exceed 150 feet between pull boxes, or points of connection, unless where specifically detailed on the drawings.
- 4.30.4 No length of conduit shall be installed to exceed two 90 degree bends between pull boxes, or points of connection, unless where specifically detailed on the drawings.
- 4.31 Where surface raceways are installed in interior spaces, the Contractor shall take care to route in straight lines at right angles to or parallel with walls, beams, or columns. All raceways and device boxes shall be securely screwed to the finish surface with zinc screw "Auger" anchors Stk #ZSA1K by Gray Bar Electric or equal. Tape adhesive application will not be permitted.
- 4.32 The Contractor who installs surface raceway systems shall provide and install complete with wire retention clips, one for every (8) vertical feet or (5) horizontal feet or portion thereof. This Contractor shall also provide each raceway channel with pull strings.
- 4.33 It shall be the responsibility of the Contractor installing the raceway to coordinate the installation of raceway device plates and inserts with the communications or data contractors.
- 4.34 MC cable shall be cut using a specific metallic sheath armor stripping tool. The use of hacksaws, dikes or any other tools not specifically designed to remove the armor sheath will not be permitted.
- 4.35 MC cables installed in attic spaces or above lay-in ceilings shall be installed to be protected from physical damage. The cable shall be mounted along the sides or bottom of joists, rafters or studs.

PRESCHOOL IMPROVEMENTS

Pine Valley Middle School

- 4.36 Support wires used for supporting ceilings, lighting fixtures or other equipment items shall not be used to support MC cables. Conduits, duct work, piping or any other equipment shall not be used to support or mount MC cables.
- 4.37 MC cable supports, fasteners and clips shall be designed specifically for use with MC cables. Standard conduit supports, fasteners and clips, nails or other items are not permitted for installing MC cables.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 26 0534
OUTLET AND JUNCTION BOXES

PART 1 – GENERAL

- 1.1 Furnish and install electrical wiring boxes as specified and as shown on the electrical drawings.
- 1.2 Submit manufacturer's data for all items.
- 1.3 C
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 Boxes shall be as manufactured by Steel City, Appleton, Raco, or approved equal.
- 2.2 All boxes must conform to the provisions of Article 370 of the CEC. All boxes shall be of the proper size to accommodate the quantity of conductors enclosed in the box. Minimum box size shall be 4" square x 1-1/2" deep.
- 2.3 Boxes generally shall be hot dipped galvanized steel with knockouts. Boxes on exterior surfaces or in damp locations shall be corrosion resistant, cast ferrous and shall have threaded hubs for rigid conduit and neoprene gaskets for their covers. Boxes shall be Appleton Type FS, Crouse-Hinds, or the approved equal. Conduit bodies shall be corrosion resistant, cast malleable iron. Conduit bodies shall have threaded hubs for rigid conduit and neoprene gaskets for their covers. Conduit bodies shall be Appleton Unilets, Crouse-Hinds, or the approved equal. Where recessed, boxes shall have square cut corners.
- 2.4 Deep boxes shall be used in wall covered by wainscot or paneling and in walls or glazed tile, brick, or other masonry which will not be covered with plaster. Through the wall type boxes shall not be used unless specifically called for. All boxes shall be nongangable. Boxes in concrete shall be of a type to allow the placing of conduit without displacing the reinforcing bars. All lighting fixture outlet boxes shall be equipped with the proper fittings to support and attach a light fixture.
- 2.5 All light, switch, receptacle, and similar outlets shall be provided with approved boxes, suitable for their function. Back boxes shall be furnished and installed as required for the equipment and/or systems under this contract.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 2.6 Pull and junction boxes shall be code gauge boxes with screw covers. Boxes shall be rigid under torsional and deflecting forces and shall be provided with angle from framing where required. Boxes shall be 4" square with a blank cover in unfinished areas and with a plaster ring and blank cover in finished areas. Covers for flush mounted oversize boxes shall extend 1/2" past boxes all around. Covers for 4" square boxes shall extend 1/2" past box all around.
- 2.7 All terminal cabinets and junction boxes or equipment back boxes which are required as a part of systems specified in Divisions 27 or 28, or any other low voltage communication systems, shall be furnished and installed by the Division 26 Contractor.
- 2.7.1 The Division 26 Contractor shall coordinate all box requirements with each system supplier prior to bid to determine special cabinet or back box requirements. The Contractor shall also provide stainless steel blank cover plates for all low voltage systems installed for future equipment.
- 2.7.2 The Contractor shall provide all plywood backboards indicated on walls or inside equipment enclosures. All backboards shall be a minimum of 1/2" thick fire rated type plywood.
- 2.7.3 The Contractor shall coordinate exact rough in locations and requirements with each system supplier.
- 2.8 In addition to the above requirements, boxes for data networking wiring and equipment shall comply with the following:
- 2.8.1 All boxes shall be a minimum of 4-11/16" square x 2-1/8" deep.
- 2.8.2 Where pull boxes are required on individual conduits 1-1/2" or smaller, provide 4-11/16" square x 2-1/8" deep boxes. Where pull boxes are required on conduits larger than 1-1/2" for straight pull through, provide eight times the conduit trade size for box length. Where pull boxes are required on conduits larger than 1-1/2" for an angle or a U-pull through installation, provide a minimum distance of six times the conduit trade size between the entering and exiting conduit run for each cable.
- 2.9 Recessed boxes installed in fire rated floors/walls and /or smoke walls shall be sealed by Fire stopping material to comply with Division 1 to seal off flame, heat, smoke and fire gases. The Contractor shall submit copies of the manufacturers UL system design details proposed for use on this project. All Fire stopping material shall have an hourly fire-rating equal to or higher than the fire rating of the floor or wall through which the conduit, cables, or cable trays pass.

PART 3 – EXECUTION

- 3.1 Boxes shall be installed where required to pull cable or wire, but in finished areas only by approval of the Architect. Boxes shall be rigidly attached to the structure, independent of any conduit support. Boxes shall have their covers accessible. Covers shall be fastened to boxes with machine screws to ensure continuous contact all around. Covers for surface mounted boxes shall line up evenly with the edges of the boxes.
- 3.2 Outlets are only approximately located on the plans and great care must be used in the actual location of the outlets by consulting the various detailed drawings and specifications. Outlets shall be flush with finished wall or ceiling, boxes installed symmetrically on such trim or fixture. Refer to drawings for location and orientation of all outlet boxes.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 3.3 Furnish and install all plaster rings as may be required. Plaster rings shall be installed on all boxes where the boxes are recessed. Plaster rings shall be of a depth to reach the finished surface. Where required, extension rings shall be installed so that the plaster ring is flush with the finished surface.
- 3.4 All cabinets and boxes shall be secured by means of toggle bolts on hollow masonry; expansion shields and machine screws or standard precast inserts on concrete or solid masonry; machine screws or bolts on metal surfaces and wood screws on wood construction. All wall and ceiling mounted outlet boxes shall be supported by bar supports extending from the studs or channels on either side of the box. Boxes mounted on drywall or plaster shall be secured to wall studs or adequate internal structure.
- 3.5 Boxes with unused punched-out openings shall have the openings filled with factory-made knockout seals.
- 3.6 Where standby power and normal power are to be located in the same outlet box or 480V in a switch box, install partition barriers to separate the various systems.
- 3.7 All outlet boxes and junction boxes for fire alarm system shall be painted red.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 26 2726
SWITCHES AND RECEPTACLES

PART 1 – GENERAL

- 1.1 Furnish and install all wiring devices as shown on drawings and as herein specified. Unless otherwise noted, device and plate numbers shown are Hubbell and shall be considered the minimum standard acceptable. Other acceptable manufacturers are Pass and Seymour, Leviton, General Electric and Bryant.
- 1.2 Submit manufacturers' data on all items.
- 1.3 C o n n o t c o r r e c t l y i n d i c a t i n g a m p a c i t y r a t i n g o f p r o p o s e d d e v i c e s .
 - 1.3.1 Not correctly indicating ampacity rating of proposed devices.
 - 1.3.2 Not including all items listed in the above itemized description.
 - 1.3.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.4 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 All switches shall be of the quiet mechanical type, Specification Grade, 20 amp, 120/277 volt AC as follows:

	<u>HUBBELL</u>	<u>LEVITON</u>	<u>PASS</u> <u>SEYMOUR</u>
Single Pole	CS120	CS1202	CS20AC1
Two Pole	CS1222	CS2202	CSB20AC2
Three-way	CS320	CS3202	CS20AC3
Key Switch	HBL1221L	1221-2L	PS20AC1-L

- 2.2 All switches shall have the "on" and the "off" position indicated on the handle. If switches of higher ampere ratings are required, they shall be of similar type and quality as those shown above. Groups of switches shown at one location shall be installed under a single plate up to a maximum of six where more than six switches are shown coordinate arrangement with the Architect.
- 2.3 All convenience receptacles and special outlets throughout shall be grounding type. Convenience receptacles shall be side wired, parallel slot, two pole, three wire, 20 amp as follows:

	<u>HUBBELL</u>	<u>LEVITON</u>	<u>PASS</u> <u>SEYMOUR</u>
Duplex	5352	5362	PS5362
GFCI	GFR5352A	8899	2094

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

Isolated Ground Tamper Proof	IG5362	5362IG 8300SG	IG6300 TR63H
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- 2.4 All safety or tamper proof receptacles shall have no exposed external current carrying metal parts, and shall have integral wiring leads suitable for two or three wire installations.
- 2.5 Special receptacles shall be as noted on the drawings.
- 2.6 Weatherproof plates shall be designed to meet CEC Article 410-57, wet location listed with cover "open." Where weatherproof receptacles have been identified to be provided with locking covers, the cover shall be as manufactured by Pass Seymour #4600-8 or Cole Lighting 310 Series. Rough-in requirements vary between manufacturers. Contractor to field verify requirements prior to installation.
- 2.7 All plates throughout shall be stainless steel. Where wiring devices are installed in concrete block walls, provide oversized 3-1/2" x 5" coverplates. All plates shall have a label indicating circuit number fastened to the wall plate.
- 2.8 All devices shall be white unless otherwise noted or a special purpose outlet.

PART 3 – EXECUTION

- 3.1 Switches for room lighting shall be located no more than 12" center line from door jamb at plus 48" center line above finished floor or +46" to top of devices where located over casework, reference CBC Figure 11B-5D.
- 3.2 All receptacles shall be mounted at plus 18" to center line above finished floor unless noted or shown otherwise. All receptacles shall be installed with the ground pin up, at the top of the receptacle to comply with IEEE 602-1986.
- 3.3 Furnish and install wall plates for all wiring devices, and outlet boxes, including special outlets, sound, communication, signal, and telephone outlets, etc. as required. All cover plates shall be appropriate for type of device.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 26 2816
DISCONNECTS

PART 1 – GENERAL

- 1.1 Furnish and install all disconnect switches as shown on the drawings and as required by the CEC.
- 1.2 Submit manufacturers' data for all disconnects and fuses.
 - 1.2.1 Disconnects
 - 1.2.2 Fuses
- 1.3 Cut sheets of disconnect switches and fuses shall be submitted for review and approval by the architect and the engineer before installation.
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 Acceptable manufacturers shall be Square D, Cutler Hammer, Siemens or General Electric.
- 2.2 Equipment manufactured by any other manufacturers not specifically listed in Section 2.1 are not considered equal, or approved for use on this project.
- 2.3 All switches shall be heavy-duty type, externally operated, quick-make, quick-break, rated 600 volts or 240 volts as required, with the number of poles and ampacity as noted. All switches for motors shall be HP rated. Switches shall have NEMA-Type 1 enclosures, except switches located where exposed to outdoor conditions shall have NEMA Type 3R enclosure. Switches generally shall be fused except where noted to be non-fused on the drawings.
- 2.4 Where fuses are indicated, fuses shall be Bussman or Littlefuse (no known equal). Fuses shall be current limiting type with time delay characteristics to suit the equipment served.

PART 3 – EXECUTION

- 3.1 Mount all switches to structure or U-channel support. U-channel supports shall be cleaned and painted to prevent rust.
- 3.2 Switches shall be accessible with proper clearances in front per CEC 110-16.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 3.3 All lugs shall be torque tested in the presence of the inspector of record.
- 3.4 Arc Flash and Shock Hazard
 - 3.4.1 The contractor is to provide, and submit to the engineer for approval, incident energy level calculations as determined using the methodologies described in NFPA 70E or IEEE standard 1584-2002.
 - 3.4.2 A warning label, as specified in the above standard, shall be placed on each switchboard, panelboard, and safety switch indicating the incident energy levels on the equipment to warn qualified personnel in accordance with NFPA 70E, section 110.16 Labels shall be laminated white micarta with black lettering on each. Letters shall be no less than 3/8" high.
 - 3.4.3 The incident level calculations for each piece of equipment shall be given to the owner and maintained on file by the maintenance department.
 - 3.4.4 The design goal is to minimize the incident energy to which a maintenance employee may be exposed and in no case more than 8 cal./cm²

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 26 5113
LED LIGHTING FIXTURES AND LAMPS

PART 1 – GENERAL

- 1.1 Furnish and install all lighting fixtures with lamps as specified and as shown on the drawings. Fixtures shall be complete including canopies, hanger, diffusers, ballasts, etc.
- 1.2 Submit manufacturer's data for each fixture type including the following:
 - 1.2.1 Lighting fixture catalog data and photometry.
 - 1.2.2 Lamp catalog data for each fixture type.
 - 1.2.3 Driver catalog data for each fixture type.
 - 1.2.4 Fixture warranty.
- 1.3 C o n t i n c l u d i n g l a m p a n d d r i v e r i n f o r e a c h l i s t i n f i x t u r e t y p e .
 - 1.3.1 Not including lamp and driver information for each fixture type.
 - 1.3.2 Not including all items listed in the above itemized description.
 - 1.3.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.4 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PRODUCT SUBSTITUTION

- 1.4 All substitutions or alternate fixtures to those indicated on the project fixture schedule shall be submitted for approval (7) business days prior to the project bid date. Approvals when accepted will be issued in the form of an addendum. No consideration for substitutions will be provided after the award of the contract.
 - 1.4.1 The substitution request must include a statement indicating the difference in price of both the specified and alternate product, both contractor and list price. The substitution request must include a comparison of the total fixture wattage, total fixture lumens, fixture efficiency and warranty comparison.
 - 1.4.2 When proposing to substitute lighting fixture and/or fixture retrofit, a point by point photometric calculation of a typical application as used in this project shall be included. A calculation of the specified and the proposed alternate shall be included.

PART 2 – PRODUCTS

- 2.1 All catalog numbers are given for manufacturer's identification and shall not relieve Contractor from responsibility of full conformance to all applicable written description requirements governing material and fabrication, either in the general or specific sections. Where catalog numbers are indicated as modified, no modification will be required if the

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 3.2 Furnish and install supplementary blocking and support as required to support fixture from structural members. Contractor shall submit proposed blocking method for all suspended lighting fixtures for approval prior to rough in.
- 3.3 Suspended and/or pendant mounted fixtures shall be provided with four aircraft safety cables extending in opposite directions, attached to the fixture, and supported from a structural member. The contractor shall submit proposed fixture mounting and aircraft cable attachment methods for approval prior to fixture rough in.
- 3.4 Class 1 wiring to the fixture must be installed either conduit or type MC-PCS cabling no open wiring shall be permitted.
- 3.5 Chain suspension may be used only where specifically permitted on the drawings. Chain shall be heavy duty, nickel or cadmium plated, suitable for weight of specific fixture.
- 3.6 Shop drawings shall be furnished for each fixture type. Catalog cuts, illustrating conformance with specifications, will be acceptable for standard units. Shop drawings shall indicate materials, assembly, finish and dimensions.
- 3.7 Photometric data shall be furnished for any fixture substituted for those listed on the schedule.
- 3.8 Any driver which produces a greater than normal amount of noise shall be replaced by the contractor. Normal will be determined by the level of sound produced by other similar fixtures operating in the area.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 26 9090
ELECTRICAL CLOSEOUT

PART 1 – GENERAL

- 1.1 Upon completion of the electrical work, the entire installation shall be tested by the Contractor, and demonstrated to be operating satisfactorily to the Architect, Engineer, Inspector and Owner.
- 1.2 All testing and corrections shall be made prior to demonstration of operation to the Architect, Engineer, Inspector and Owner.
- 1.3 In addition to the demonstration of operation, the Contractor is also required to review the content and quality of instructions provided on items demonstrated with the Architect, Engineer, Inspector and Owner.

PART 2 – EXECUTION

- 2.1 Wiring shall be tested for continuity, short circuits and/or accidental grounds. All systems shall be entirely free from “grounds,” “short circuits,” and any or all defects.
- 2.2 Motors shall be operating in proper rotations, and control devices functioning properly. Check all motor controllers to determine that properly sized overload devices are installed, and all other electrical equipment for proper operation.
- 2.3 Tests and adjustments shall be made prior to acceptance of the electrical installation by the Architect, and a certificate of inspection and acceptance of the electrical installation by local inspection authorities shall be provided.
- 2.4 All equipment or wiring provided which tests prove to be defective or operating improperly shall be corrected or replaced promptly, at no additional cost to the Owner.
- 2.5 Test all motor and feeder circuits with a “megger” tester to determine that insulation values conform to Section 110-20, California Electrical Code (CED). Test reports must be submitted and approved by the engineer before final acceptance.
- 2.6 Test all grounding electrode connections to assure a resistance of no more than 10 ohms is achieved. Augment grounding until the ohmic value stated above is achieved. Provide certified test results to the Architect, Engineer and Inspector.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 28 0100
ELECTRONIC SAFETY AND SECURITY
GENERAL PROVISIONS

ARTICLE 1 - SUMMARY

- 1.1 This Division of the specifications outlines the provisions of the contract work to be performed as a sub contract under the Division 26 scope of work. Reference the Division 26 Electrical General Provisions for scope of work and general requirements.
- 1.2 In addition, work in this Division is governed by the provisions of the bidding requirements, contract forms, general conditions and all sections under Division 1 requirements.

END OF SECTION

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

SECTION 28 3000
FIRE ALARM SYSTEM

PART 1 – GENERAL

- 1.1 Work Included:
 - 1.1.1 Furnish and install all equipment, accessories, and materials in accordance with these specifications and drawings to provide a complete and operating fire alarm system.

- 1.2 Related Work:
 - 1.2.1 Division 26 01 00: Electrical General Provisions
 - 1.2.2 Division 26 05 33: Conduit and Fittings
 - 1.2.3 Division 26 05 34: Outlet and Junction Boxes

- 1.3 The equipment and installation shall comply with the current applicable provisions of the following standards:
 - NFPA 72-2016. National Fire Alarm Code with California Amendments.
 - CBC - 2019. California Building Code (CBC), Part 2, Title 24, CCR.
 - CEC - 2019. California Electrical Code, (CEC), Part 3, Title 24, CCR.
 - CFC - 2019. California Fire Code (CFC), Part 9, Title 24, CCR.

- 1.4 The system and all components shall be listed by Underwriters Laboratories, Inc. for use in Fire Protective Signaling Systems under the following standards as applicable:
 - UL 38 Manually Actuated Signaling Boxes.
 - UL 50 Cabinets and Boxes.
 - UL 268 Smoke Detectors for Fire Protective Signaling Systems.
 - UL 268A Smoke Detectors for Duct Applications
 - UL 346 Waterflow Indicators for Fire Protective Signaling Systems.
 - UL 464 Audible Signaling Appliances.
 - UL 521. Heat Detectors for Fire Protective Signaling Systems.
 - UL 864 Control Units for Fire Protective Signaling Systems.
 - UL 1481. Power supplies for Fire Protective Signaling Systems.
 - UL 1971. Visual Signaling Appliances.

- 1.5 Only Fire Alarm Control Panel Equipment and Peripheral Field Devices have been shown on the Contract Bid Single Line Block Diagram. Specific and complete wiring between Control Equipment and Peripheral Equipment has been deleted for clarity.

- 1.6 Fire Alarm system and installation shall meet all of the following DSA Requirements:
 - 1.6.1 Applicable Standard NFPA 72, as adopted and amended in CBC Chapter 35
 - 1.6.2 A stamped set of approved fire alarm design documents shall be on the job site and used for installation.
 - 1.6.3 Any discrepancies between the drawings and the code or recognized standards shall be brought to the attention of DSA and the architect/engineer of the project.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 1.6.4 Wall mounted visible notification devices shall have their bottoms mounted at 80" minimum and 96" maximum from finished floor.
- 1.6.5 Wall mounted Audible devices shall have their tops mounted at 90" minimum and 100" maximum from finished floor and no closer than 6" to a horizontal structure.
- 1.6.6 Audible devices shall provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level or five dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, in every occupiable space within the building.
- 1.6.7 Audible devices shall be synchronized temporal code 3 pattern.
- 1.6.8 The contractor shall adjust/install all devices to maximize performance and minimize false alarms.
- 1.6.9 Visible devices shall not exceed two flashes per second and should not be slower than one flash every second. The device shall have a pulsing light source not less than 15 candela. Visible devices within 55' from each other shall be synchronized.
- 1.6.10 Underground and exterior conduits to have watertight fittings and wire to be approved for wet locations.
- 1.6.11 All fire alarm wiring shall be FPLOR FPLP (fire power limited or fire power limited plenum) as required for application. Wiring in conduit above grade may be type THHN or THWN.
- 1.6.12 Smoke detectors shall not be any closer than 1' from fire sprinklers or 3' from any supply diffuser. In area of construction or possible damage/contamination on newly installed fire alarm, devices shall be covered until that area is ready to be turned over to owner.
- 1.6.13 Fire alarm panel, remotes, and components shall be secured to mounting surfaces per manufacturers specifications. No single device shall exceed 20 lbs without special mounting details.
- 1.6.14 A dedicated branch circuit shall be provided for fire alarm equipment. This circuit shall be energized from the common use area panel and shall have no other outlets. The breaker shall have a red locking device to block the handle in the "on" position. The circuit breaker shall be labeled "Fire Alarm Circuit Control" Circuit ID to be labeled at fire alarm panel/extendere.
- 1.6.15 The installing contractor shall provide a completed "System Record of Completion" per NFPA 72, figure 17.8.2.
- 1.6.16 Fire alarm control panels and remote annunciators shall be installed with their bottoms mounted at 48" above the finished floor.
- 1.6.17 Microphones associated with emergency voice alarm communication systems (EVAC) shall be accessible for use. Installed in compliance with CBC sections 11B-305 and 11B-308.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 1.6.18 The installing contractor shall provide system programming for supervisory monitoring per CBC section 901.6.2.
- 1.6.19 Supervisory monitoring shall be tested and verified as sending correct signals in conjunction with final acceptance test.
- 1.6.20 Owner shall be responsible for establishing a fire system monitoring contract or provisions.

1.7 Submittal shall be made in accordance with Division 26 01 00 – Signage and Identification. This submittal shall include the following:

- 1.7.1 Complete bills of quantities, including all materials, components, devices, wiring and equipment required for this work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each item listed:
 - 1.7.1.1 Quantity of each type of equipment item.
 - 1.7.1.2 Quantities of 10 spare devices as per 1.16.
 - 1.7.1.3 Description of each item.
 - 1.7.1.4 Manufacturer's Name and Model Number.
 - 1.7.1.5 Manufacturer's Specification Sheet.
 - 1.7.1.6 Back box type and dimensions per device type.
 - 1.7.1.7 California State Fire Marshall Listing Sheets for all components.
 - 1.7.1.8 Equipment items which have individual components, will require that all component parts be listed individually.

1.8 Shop drawings shall not be provided, all work shall be installed as designed as a part of the DSA approved set of plans.

1.9 Contractor shall provide the following information:

- 1.9.1 Not including the qualifications of the installing contractor.
- 1.9.2 Not including all items listed in the above itemized description.
- 1.9.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
- 1.9.4 Not including actual manufacturer's catalog information of proposed products.
- 1.9.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

1.10 All equipment and material shall be new and unused, and listed by Underwriter's Laboratories for the specific intended purpose. All control panel components and field peripherals shall be designed for continuous duty without degradation of function or performance. All equipment covered by this specification or noted on Installation. Drawings shall be equipment suited for the application and shall be provided by a single manufacturer or be recognized and UL listed as compatible by both manufacturers.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 1.11 It will be the responsibility of the Contractor to ensure proper specification adherence for system operation, final connection, test, turnover, warranty compliance, and after-market service. The distributor of the equipment specified must be factory-trained and certified.
- 1.12 Basic System Functional Operation, upon operation of any automatic, manual or other initiation device the following shall occur:
 - 1.12.1 The system alarm LED shall flash.
 - 1.12.2 A local piezo electric signal in the control panel shall sound.
 - 1.12.3 A backlit 80-character LCD display shall indicate all information associated with the fire alarm condition, including the alarm point and its location within the protected premises.
 - 1.12.4 History storage equipment shall log the information associated with each new fire alarm control panel condition, along with time and date of occurrence.
 - 1.12.5 All system output programs assigned via control by event equations to be activated by the particular point in alarm shall be executed, and the associated system outputs (alarm notification appliances and/or relays) shall be activated.
 - 1.12.6 Automatic retransmission to a UL central station for fire department notification.
 - 1.12.7 Automatic shut down of air conditioning units shall be performed by control modules at each unit when required as part of a complete area coverage design scheme. Each building shall shut down all A/C units and dampers within that building as one zone.
- 1.13 All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approval agency for use as part of a protective signaling system.
- 1.14 All equipment and components shall be installed in strict compliance with manufacturer's recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
- 1.15 All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place. Fasteners and supports shall be adequate to support the required load.
- 1.16 All wiring shall be installed in a conduit system.
- 1.17 The contractor shall provide as a part of this contract additional control modules, heat detectors, smoke detectors, manual pull stations, strobes, horn strobes, etc. along with all required programming, to equal 10% of the total quantity of devices shown on the drawings, or a minimum of three (3) for each type, whichever is greater. Installation of 50' of conduit, boxes and all wiring for each of the devices shall be included, and required locations coordinated with CSFM final approved shop drawings. Any devices not required to be included during construction shall be delivered to the District at the completion of the project. The quantities of these devices shall be listed as a part of the Phase I submittals.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 1.18 The installing contractor shall provide a copy of current documentation, indicating that the contractor installing the fire alarm systems or devices and wiring, is certified by Underwriters Laboratories (UL) in its product directories under the listing category "PROTECTIVE SIGNALING SERVICES - LOCAL, AUXILIARY, REMOTE STATION, AND PROPRIETARY." The contractor shall be certified by the manufacturer to install and program the system. The contractor must also provide complete installation of all wiring and equipment, and software programming. Supervised installation of the wiring, devices and/or any software programming shall not be permitted.
- 1.18.1 The installing contractor must also be an "authorized dealer" by the equipment manufacturer and must have completed all required training prior to the bid of this project.
- 1.18.2 The fire alarm system installation shall be warranted by the manufacturer's representative.
- 1.18.3 The Contractor shall have a current California C-10 or C-7 Contractor's License, and all individuals working on this project shall have passed the Department of Industrial Relations Division of Apprenticeship Standards – "Fire / Life Safety Certification Program."
- 1.18.4 The installing contractor shall provide, at the time of submittal, a letter of intent to provide an extended service warranty. This warranty shall extend for a total of three (3) years, starting at the completion, testing, and training of this project. The service warranty shall cover all material and labor to keep operational all system devices installed under this project and shall include two (2) complete U.L. system's tests and cleaning of all devices at year two (2) and year three (3) of the warranty. Routine cleaning of devices, other than at the two (2) specified U.L. system's testing periods, will not be included as a part of this warranty.
- 1.18.5 The installing contractor shall provide, at the time of submittal, a letter indicating that the installation crew for this project meets the following NICET certifications:
- 1.18.5.1 25 of the installing field personnel must have completed NICET Level 2 Certification.
- 1.18.5.2 One of the installing field personnel and /or supervisor must have completed NICET Level 3 Certification.
- 1.18.5.3 Contractor shop drawings shall be signed by an individual who has completed NICET Level 4 Certification.
- 1.19 All conduit and standard backboxes will be furnished and installed by the Division 26 Contractor. Specialty boxes will be furnished by the equipment supplier to be installed by the Division 26 Contractor.
- 1.20 Equipment and materials shall be the standard product of **FCL**.
- 1.21 Alternate equipment as manufactured by any other manufacturer not specifically listed above will not be approved for use on this project.
- 1.22 D.S.A approved drawings are included as a part of the drawing set.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

PART 2 - PRODUCTS

- 2.1 Main Fire Alarm Control Panel:
 - 2.1.1 Main fire alarm control panel is E ISTECH FCI 7100 in existing Building 'E'.
- 2.2 With the exception of the manually operated report station required at the master fire alarm panel and large assembly areas, the remainder of the school facility shall be equipped with approved, electronically supervised, automatic fire detection devices, such that every room, space, including concealed spaces, such as the attic spaces above ceilings, etc., is provided with approved coverage.
- 2.3 MANUAL FIRE ALARM STATIONS shall be addressable test-reset lock in order that they may be tested, and so designed that after actual emergency operation, they cannot be restored to normal, except by use of a key. An operated station shall automatically condition itself so as to be visually detected, as operated, at a minimum distance of 100 feet, front or side. Manual stations shall be constructed of die-formed, satin-finished aluminum, with operating directions provided on the cover in depressed red letters. The word FIRE shall appear on each side of the stations in depressed letters, 1/2-inch in size or larger. Stations shall be suitable for semi-flush mounting on a standard single-gang box or switch plate, and shall be provided with a terminal block for connection of fire alarm system wiring. Manual pull stations must comply with CBC sections 11B-309 and 11B-403.
- 2.4 STROBES. The strobe unit shall have a meantime between failure (MTBF) of 1,000 hours or greater. The strobe section shall have a minimum flash rate of approximately one flash per second, with candela rating as per UL standard 1971. Housing shall be white.
 - 2.4.1 In areas containing two or more audible devices, or three or more visual devices, these devices shall be synchronized, per NFPA 72, Chapter 18 California Amendments (2019).
 - 2.4.2 Maximum pulse duration to be 0.20 of a second with an ADAAG 4.28.3(3). Visual alarms maximum duty cycle of 40 .
 - 2.4.3 Capable of providing minimum candela. Intensity as shown on plans (effective strength measured at the source).
 - 2.4.4 The flash rate to be a minimum of 1 Hz and a maximum of 2 Hz per NFPA 18.5.3.1.
 - 2.4.5 Fire Alarm Strobes used for Carbon Monoxide alarm must not reflect the word FIRE or have any fire symbol thereon.

PART 3- EXECUTION

- 3.1 All wiring shall be (min) #18 AWG copper or as noted on drawings. All underground conductors shall be UL wet location rated for use in wet locations, West Penn "Aquaseal" or equal. There shall be no splices in underground handholes or vaults. A multi-conductor cable rated for use in wet locations will also be acceptable. It must be labeled "FIRE ALARM" in all pull boxes, using a water-tight labeling system.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 3.2 Interior, dry location wiring for low voltage initiating circuits shall be #18 AWG copper, twisted shielded pair minimum, signaling circuits shall be No. 14 AWG minimum, and wiring for 120 volt circuits shall be No. 12 AWG minimum. All wiring shall be color coded, solid copper conductor. Use of power limited cable shall be restricted to controls listed for this purpose. Single conductors shall be type THHN/THWN-2 insulated copper.
- 3.3 Wire markers shall be provided for each wire connected to equipment. The marker shall be of the taped bank type, of permanent material, and shall be suitable and permanently stamped with the proper identification. The markers shall be attached in a manner that will not permit accidental detachment. Changing of wire colors within circuits shall be unacceptable.
- 3.4 A terminal cabinet shall be installed in the electric room for the fire alarm systems at each building. All fire alarm wiring shall terminate on UL approved strips in this terminal cabinet. All wiring shall be labeled at each termination strip. Wiring shall be configured such that all end-of-line resistors will be installed at the terminal cabinet.
- 3.5 Fire Sprinkler Activation detecting System(s) shall each be indicated on a separate zone in the fire alarm control panel.
- 3.6 Fire Alarm Control Panel and all other equipment shall be mounted with the center of all operable reset buttons, located a maximum of 48" front approach / 54" side approach above floor level.
- 3.7 Contractor shall provide complete wiring between all equipment.
- 3.8 The Fire Alarm/Life Safety Installation shall comply fully with all Local, State and National Codes, and the Local Authority Having Jurisdiction (AHJ) DSA.
- 3.9 The Fire Alarm Control Panel and power supply shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the Panelboard as FIRE ALARM CIRCUIT.
- 3.10 The Control Panel Cabinet shall be grounded securely to a power system ground conductor. Provide a 1/2-inch conduit and 1#12 grounding conductor to the building electrical service ground bus.
- 3.11 Conduit shall enter into the Fire Alarm Control Panel back box only at those areas of the back box which have factory conduit knockouts.
- 3.12 All field wiring shall be completely supervised. In the event of a primary power failure, disconnected standby battery, removal of any internal modules, or any open circuits in the field wiring; an audible and visual trouble signal will be activated until the system and its associated field wiring are restored to normal condition.
- 3.13 All cables and wiring shall be listed for Fire Alarm/Life Safety use, and shall be of the type as required by and installed per CEC Article 760.
- 3.14 The Fire Alarm Control Panel shall be programmed to produce both 3-pulse temporal pattern and 4-pulse temporal pattern where Carbon Monoxide audible and visual notification devices are installed as part of the Fire Alarm System.
- 3.15 Final System Acceptance

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

- 3.15.1 Provide an NFPA Certificate of Compliance to DSA and the engineer of record. Complete fire alarm system shall comply with Chapter 14 of NFPA for testing and inspection and be sound-tested for audibility in all spaces requiring voice evacuation. This testing shall be performed in the presence of the project electrical engineer. Adjust speaker taps or provide additional speakers as required to provide correct audibility.
- 3.15.2 The system will be accepted only after a satisfactory test of the entire system has been accomplished by a Factory-Trained Distributor in the presence of a representative of the authority having jurisdiction and the Owner's representative. This contractor shall provide all personnel, ladders and testing equipment to assist the local authority in completing this test. Actuate each device and verify that the system performs as specified.
- 3.15.3 The Contractor will present a complete set of "as-built" Fire Alarm/Life Safety system drawings, and the factory supplied Operator's Manuals as required by the General Provisions section of this specification.
- 3.15.4 Once the system has been tested and the certificate of compliance completed, the contract shall not be considered complete until after owner training has been completed. The contractor shall notify in writing their intent to provide the training for the system. This notification shall be given to the Division 21 Contractor, Architect and the Project Engineer a minimum of 2 weeks prior to the scheduled training session. The Division 21 Contractor and/or the architect shall be responsible for notifying the owner to confirm that the appropriate District personnel will be made available for this training session. If the Division 21 Contractor does not receive confirmation that the training session can be performed on the proposed date, then another time shall be provided. The training shall consist of the following:
 - 3.15.4.1 Provide a minimum of one (1) four-to-six -hour training period located at the project site, to instruct District personnel in proper operation of all systems.
 - 3.15.4.2 Provide a minimum of three (3) complete owner operation manuals for the District records.
 - 3.15.4.3 Provide a minimum of two (2) complete as built sets of drawings for the District records.
 - 3.15.4.4 Provide all spare parts as described in part 1 of these specifications
 - 3.15.4.5 Provide written confirmation and proposed scheduled dates for follow up training and 1-year complete system test.
- 3.16 Follow up Training
 - 3.16.1 Provide as a part of this contract, the follow up instructional training period within six (6) months after the final acceptance of the systems. This training shall include a minimum of one four-to-six-hour training period to instruct District personnel in proper operation of all systems and shall instruct the District technicians how to repair any non-operational parts of the system as required. All defective parts shall be replaced at no cost to the owner.

PRESCHOOL IMPROVEMENTS
Pine Valley Middle School

END OF SECTION