Muir Elementary School

Shade Structure and Playground Improvements

Prepared by Architecture 9 PLLLP

Architecture 9 PLLLP

SPECIFICATIONS

Project:	Muir Elementary School Shade Structure & Playground Improvements
District:	Glendale Unified School District GLENDALE UNIFIED SCHOOL DISTRICT 223 North Jackson Street Glendale, California 91206
Architect:	Architecture 9 PLLLP 8816 Foothill Boulevard #103-224 Rancho Cucamonga, California 91730

Steven M. Gelsinger
Architect

TABLE OF CONTENTS

ARCHITECTURAL SPECIFICATIONS

GLENDALE UNIFIED SCHOOL DISTRICT

MUIR ELEMENTARY SCHOOL
SHADE STRUCTURE & PLAYGROUND IMPROVEMENTS

AUGUST 28, 2017

END OF SECTION

PART 1 - GENERAL

1.01 WORK OF THE CONTRACTOR:

A. Scope of Work: Contractor shall perform, within the time stipulated, the Contract, including all of its component parts, and everything required to be performed, and to provide and furnish any and all of the labor, materials, tools, expendable equipment, and all applicable taxes, and all utility and transportation services necessary to perform the Contract and complete, in a workmanlike manner, all of the Work required in connection with the following titled Project in strict conformity with the Contract Documents:

Muir Elementary School
Shade Structure & Playground Improvements
correct address
Glendale, California 91208

B. Phasing: Refer to Section 01 11 25 Phasing for Project Phasing Requirements, including milestones.

C. This school is on a traditional School year calendar, August through June. During the period of this contract, school events and educational requirements will limit or prevent access, and will affect Contractor work hours for a portion or all of the school building (s) pertinent to the contract. Contractor shall maintain schedule with full knowledge of these times and dates to be determined. A site-specific calendar will include currently known dates of limited access, or times of the school day that noise will have to be limited, or ceased. These shall include during the time of the project, but not be limited to:

1. No work after 6:00 p.m. on six (6) weekday evenings for back-to-school, open house, and other events per school year at each school site.
2. No work between 8:00 a.m. and 10:00 a.m. on five (5) student attendance weekdays for assembly events per school year.
3. NO NOISE/WORK will be allowed on an Elementary school site between 8:00 a.m. and 12:30 p.m. on twelve (12) student attendance weekdays for testing (four (4) consecutive weekdays, three times) per school year. Second shift work may be accommodated with the request pre-approved by the District Project Manager.
4. NO NOISE/WORK will be allowed on a Middle School or High School site between 8:00 a.m. and 1:30 p.m. on twenty (20) student attendance weekdays for testing (four (4) consecutive weekdays during the first semester; sixteen (16) consecutive weekdays during the second semester) per school year. Second shift work may be accommodated with the request pre-approved by the District Project Manager.

D. It shall be noted that there are students in the Early and Extended Education Learning Program in attendance on the Elementary school sites from 6:00 a.m. through 6:00 p.m. on a daily basis throughout the school year, and on each day that Classified Staff are assigned working hours (see specific EEELP calendar for each site, per each school year).

E. Work hours for the Project shall be from 7:00 a.m. until 10:00 p.m. Monday through Saturday, unless advance permission to deviate from these hours is obtained from the City of Glendale per Glendale Municipal Code, Title 8, Chapter 36, and this request is also approved in writing five working days beforehand by the District Project Manager.

F. Article 3 of the Bid General Conditions requires preparation of a Cost-loaded time logic schedule with a single critical path. If the Board approved lowest responsive and responsible bid Contractor and the Project Manager, on behalf of the District, cannot agree on the contract construction schedule and the project single critical path within fifteen (15) days after Notice to Proceed, the District may terminate the Contract, for convenience, as outlined in the Project General Conditions. In the event this is necessary, compensation to the General Contractor and all subcontractors or material men shall be limited to Mobilization costs only.

G. The liquidated damages shown in the Supplementary General Conditions shall apply to each phase of the phased construction plan, as defined by and within the plans and specifications.

H. No warranties or guarantees shall go into effect, for any trade, regardless of when completed in the sequence of the project erection, until one (1) day after the Board of Education has accepted the project at a noticed meeting. Attention: Bidders. This will require certain trades to bid for, and provide, a warranty of longer than one (1) year in length from the time of installation or furnishing of their materials to the project, depending upon the sequencing of their work within the overall schedule.

I. All project close-out/punch list items, project record documents, submittals, and operations manuals and spare parts, warranties and guarantees and Contractor's Final Verified Report (DSA6) shall be reviewed and accepted prior to the Architect/District agreed upon authorization to file the Notice of Completion with the Los Angeles County Recorder.

J. In the event that any materials requiring DSA Inspection (steel, concrete, masonry grout, etc.) are manufactured in an area located more than one hundred miles (100 miles) by air radius from the project site, all round-trip travel and all per diem costs incurred by the District on behalf of the Deputy Inspector who must perform on-site examination of the materials shall be borne 100% by the Contractor as an added expense. This charge shall be subtracted from

the monthly "Application for Payment" submitted to the District on behalf of the project.

K. In the event the General Contractor or any subcontractor or material man (on or off site) voluntarily accelerates the schedule for their own purposes, and/or voluntarily performs work in excess of eight (8) hours per day, or on the weekends or holidays, the additional cost of the Inspectors' overtime premiums which are required to inspect the work during these hours shall be paid 100% by the Contractor. This charge shall also be subtracted from the monthly "Application for Payment" submitted to the District on behalf of the project.

L. In the event that the Contractor fails to complete all punch list items and turn over all "deliverables, warranties, As-builts, etc." within sixty (60) days after acceptance of completion by the Board of Education, the full salary costs of one (1) construction Project Manager (16 hours per week @ $120.00/hour) and one DSA Inspector of record (actual hours spent @$80.00/hour) shall be backcharged to the Contractor, in addition to the liquidated damages, if any, imposed upon the Contractor for late performance. THIS PARAGRAPH WILL BE STRICTLY ENFORCED.

M. The submission of complete project record documents, as required by the specifications, is critical. A value of Thirty Thousand Dollars ($30,000.00) shall be assigned to these record documents within the Schedule of Values and will not be paid or released until the documents are approved by the Architect and turned over to the District's Administrator of Planning, Development and Facilities.

N. The intent of these contract documents is that the work of alteration, rehabilitation or construction is to be accordance with Title 24, California Code of Regulations. Should any existing conditions such as deterioration or non-complying construction be discovered which is not covered by the Contract Documents wherein the finished work will not comply with Title 24, California Code of Regulations, a change order, or a separate set of plans and specifications, detailing and specifying the required repair work shall be submitted to and approved by DSA before proceeding with the repair work.

1.02 RELATED WORK BY DISTRICT:

A. General: All such work indicated in Contract Documents and/or specified herein.

B. Coordination:

1. Contractor shall schedule and coordinate Owner work with his work; give 5 days min. advance notice of all dates; verify that Owner work has been accomplished prior to beginning his work

C. Owner-Furnished Items or Products (IF ANY):
   1. Owner Responsibilities:
      a. Delivery of items or products to site.
      b. Schedule delivery date with supplier in accord with Contractor's schedule.
      c. Obtain installation drawings and instructions.
      d. Submit claims for transportation damages.
      e. Arrange guarantees, warranties.
   2. Contractor's Responsibilities:
      a. Schedule required delivery date for each product, and inform Owner.
      b. Promptly inspect delivered products, report damaged or defective items.
      c. Unload; handle at site, including uncrating and storage.
      d. Protect from exposure to elements, from damage.
      e. Repair or replace items damaged as result of Contractor's operations.
      f. Install, connect, finish products.

D. The Contractor shall provide adequate storage within his fenced staging area, to store the equipment. The Contractor is solely responsible for the storage of this equipment within his staging area and all subsequent movement of this equipment. The Contractor shall be solely responsible for the maintenance and protection of all material.

E. Bidders submitting under this Contract shall include the price for all necessary coordination with the District and the equipment manufacturer, as required for proper and complete coordination between all trades and all Contractors, within their bid.

1.03 WORK BY OTHERS

A. The District reserves the right to do other work in connection with the project or adjacent thereto by contract or otherwise, and Contractor shall at all times conduct the work so as to impose no hardship on District or others engaged in District's work nor to cause any unreasonably delay or hindrance thereto.

B. Where two or more Contractors are employed on related or adjacent work, each shall conduct their operation in such a manner as not to cause delay or additional expense to the other.

C. Contractor shall be responsible to others engaged in the related or adjacent work for all damage to work, to persons, or for loss by failure to finish the work within the specified time for completion. Contractor shall coordinate his work with the work of others so that no discrepancies shall result in the project.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Product List

1. Within ten (10) working days after date of Contract, submit to the Architect five (5) copies of complete lists of all products which are proposed substitutions and those proposed as "or equal:" to products specified, and in accordance with Contract documents.
2. For products specified only by reference standards, select any product meeting standards, by any manufacturer.
3. For products specified by naming several products or manufacturers, select any products and manufacturer named.

1.02 SUBSTITUTIONS

A. Requests for substitutions shall be made only in writing on the "SUBSTITUTIONS REQUEST" form attached with all blanks completed except those reserved for the Design Consultant. All substitution requests shall be made by the Contractor.

B. In connection with the use of any substitute item approved by the Architect it shall be the Contractor's responsibility to see that such items meet all space requirements, and that any alterations to connecting items necessitated by use of the alternate items are properly made, at no increase in cost to the District.

C. In making request for substitutions, Bidder/Contractor represents that:

1. He has investigated the proposed products or method and determined that it is equal or better in all respects to that specified and that it fully complies with all requirements of the Contract Documents.
2. He will meet all contract obligations with regards to this substitution;
3. He will coordinate installation of accepted substitutions into the work, making all such changes and any required schedule adjustments, at no additional cost to the District, as may be required for the work to be completed in all respects;
4. He waives all claims for additional costs and additional time related to substitutions which consequently become apparent. He also agrees to hold the District and Architect harmless from claims for extra costs and time incurred by other subcontractors and suppliers, or additional services which may have to be performed by the Architect, for changes or extra work that may, at some time or date, be determined to be necessary in order for the work to function in the manner intended in the Contract Documents.
5. He shall provide the same warranty and guarantee, and perform any work required in accordance therewith, for the substitution that is applicable to the specified item for which the substitution is requested;

6. Material shall be installed, handled, store, adjusted, tested, and operated in accordance with the manufacturer's recommendation and as specified in the Contract Documents.
7. In all cases, new materials shall be used unless this provision is waived by written notice from the Architect or unless otherwise specified in the Contract Documents; and
8. All material and workmanship shall in every respect be in accordance with and in conformity with approved modern and accepted industry practices, and shall conform to all applicable codes, regulations, laws, ordinances, and Contract Documents.

1.03 DESIGN PROFESSIONAL OPTIONS

A. The Architect will be sole judge of acceptability of any proposed substitutions, and only approved substitutions that are accepted in writing may be used on contract work.

B. Each request for substitution approval shall include:
1. "Substitution Request" form with all required data completed, and accompanying specifications, etc., in triplicate.
2. Identity of product for which substitution is requested; include specifications page and paragraph number.
3. Identity of substitution; include complete product description, drawings, photographs, performance and test data, and any other information necessary for evaluation.
4. Quality and technical specification comparison of proposed substitution with specified products.
5. A description of changes required in other work because of substitution.
6. Effect on construction progress schedule.
7. Cost comparison of proposed substitution with specified product.
8. Any required license fees or royalties.
9. Availability of local maintenance service within a 50 mile air radius of the project.
10. Source of replacement material or spare parts; if necessary, within a 50 mile air radius of the project.

1.04 SUBSTITUTION REQUESTS DURING BIDDING PERIOD

No request for substitution approval will be considered unless written request in triplicate has been submitted on the "Substitution Request" form included herein, and has been received by the Architect at least ten (10) working days prior to bid opening date. The Architect will issue addenda prior to bid opening listing all approved substitutions, should there be any approved.

1.05 SUBSTITUTION REQUESTS AFTER CONTRACT AWARD

A. Approval will be granted only when:
   1. Specified product cannot be delivered without project delay, or
   2. Specified product has been discontinued, or,
   3. Specified product has been replaced by superior product, or
   4. Specified product cannot be guaranteed as specified, or
   5. Specified product will not fit within designated space, or
   6. Substitution otherwise determined by the District to be in its best interest.

B. The Contractor's request for substitution shall be accompanied by evidence documenting the reason for the substitution falls within one or more of the cases listed in A1 through A6 above.

C. A Construction Change Document authorizing substitutions and revising Contract Sum where appropriate will be issued for approved substitutions.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

SUBSTITUTION REQUEST (in triplicate)

TO: _____

PROJECT: _____

SPECIFIED ITEM: _____
SECTION PAGE PARAGRAPH DESCRIPTION

The undersigned requests consideration for the following:

PROPOSED SUBSTITUTION: _____

STATE THE REASON(S) FOR PROPOSED SUBSTITUTION: (REASON MUST CONFORM TO ONE OR MORE CASES LISTED IN PARAGRAPH 1.05 A1 THROUGH 1.0A6.)

_____

_____

_____

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request and applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents which the proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments are correct:

1. The proposed substitution does not affect dimensions shown on drawings:
2 The undersigned will pay for changes to the building design, including Architect's and engineering design, detailing, and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse affect on other trades, the construction schedule or specified warranty requirements.
4. Maintenance and service parts will be locally available (<50 miles from project) for the proposed substitution.

The undersigned further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item.

Submitted by:

Signature: _____

Firm: _____

Address: _____

_____

Date: _____

Telephone: _____

For use by the Architect:

☐ Accepted ☐ Accepted as noted

☐ Not Accepted ☐ Received too late

By: _____

Date: _____

Remarks: _____

_____

Attachments: _____

_____

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Procedure for requesting clarification of the intent of the Contract Documents.

1.02 RELATED SECTIONS

A. Section 01 11 00: Summary of the Project

B. Section 01 32 16: Schedules and Reports

C. Section 01 77 00: Project Closeout

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 PROCEDURE

A. Contractor shall prepare a Request for Information on the form provided and approved by the Architect and District. Prior to the submission of any RFI Contractor is responsible for thoroughly reviewing all contract documents to insure that the answer to the question is not contained therein. Contractor shall transmit the Request for Information to the Architect and Construction Manager with any supporting information.

B. Contractor shall maintain a log of all RFI's that he submits to the Architect on a weekly basis at the weekly project meetings. RFI's shall be identified with a sequential number and be dated. Reference your company's name and the name of the subcontractor asking the question, if applicable, as well as the scope of work.

C. RFI question and location shall be specific and clear. Indicate reference to construction documents sheet and detail number, as well as specification section.

D. ARCHITECT response is a clarification of the intent of the Contract Documents and does not authorize changes in the Contract Amount, Milestones and/or Contract Time.

E. A Request for Information may be returned with a stamp or notation "Not Reviewed", if, in the opinion of ARCHITECT:
   1. The requested clarification is ambiguous or unclear to ARCHITECT.
   2. The requested clarification is equally available to the requesting party by researching and/or examining the Contract Documents.
   3. Prime Contractor has not reviewed the Request for Information prior to submittal to Architect.

F. Allow a minimum of seven (7) calendar days for review and response time, after receipt by ARCHITECT. Architect will forward response to Contractor and Project Manager and DSA Inspector.

END OF SECTION

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Coordination of Work of Contract.

1.02 RELATED REQUIREMENTS

A. General Conditions

B. Section 01 73 29 - Cutting and Patching

C. Section 01 31 19 - Project Meetings

D. Section 01 33 00 - Shop Drawings, Product Data and Samples

E. Section 01 25 13 - Substitutions and Product Options

F. Section 01 77 00 - Contract Closeout

1.03 SUBMITTALS

A. Coordination Drawings: Submit in accordance with Section 01 33 00, as specified herein.

B. Work Plans: Submit as specified herein.

1.04 DESCRIPTION

A. Coordinate scheduling, work activities, submittals, including deferred approvals, District separate contracts and work of the various sections of Specifications in accordance with the Master Project Schedule.

B. Coordinate sequence of Work to accommodate District's separate contract and District's Occupancy as specified in Section 01 11 00.

C. Set up control procedures so that the Master Project Schedule is adhered. Contractor's responsibility is to properly notify District's Project Manager of anticipated and actual time delays. Refer to General Conditions.

D. Coordinate the Work and do not delegate responsibility for coordination to any Subcontractor.

E. Anticipate the interrelationship of all Subcontractors, District separate contracts, and their relationship with the Work

F. Resolve differences or disputes between Subcontractors concerning coordination, OR interference of Work between SECTIONS.

1.05 NOT USED

1.06 NOT USED

1.07 COORDINATION

A. General: Work of the Contract includes coordination of the entire work of the Project, from beginning of construction activity through Project close-out and warranty periods.

B. Mechanical/Electrical Requirements of General Work: Comply with applicable requirements of Division 23 Sections for Mechanical Provisions within units of General Work, and comply with applicable requirements of Division 26 for Electrical provisions within units of General Work.

C. Service Connections: Except as otherwise indicated, final connection of mechanical services to general work is defined as being mechanical work, and final connection of electrical services to general work is defined as electrical work.

D. Coordination: The Project will require close cooperation and coordination with the school site administration, the Architectural team, District Project Manager, and Contractor and Subcontractors. The Contractor shall consider all such coordination in his work inclusive, but not limited to, scheduling and proper sequencing of the Work with subcontractors and the District school site calendar and times that work cannot be, or occupied areas of the project school site that cannot be undertaken, during the entire project. In particular, the coordination of work before District's substantial completion of each project phase, and ensuring the site administration, the Architectural team, Inspector, and District Project Manager are fully advised of his activities to complete the Work in accordance with the Master Project Schedule.

E. Coordination/Engineering Drawings:

1. Contractor shall prepare and submit complete 1/4 " = 1'0" coordination drawings, Including plans, sections, details, etc., indicating the complete layout and all mechanical and electrical materials and equipment in all areas and within the ceiling spaces for new and existing conditions, including bottom of duct, pipe, conduit and elevations to allow District Architectural team to review with other Prime Trade Contractors' work that Contractor ensures will be coordinated properly.
2. Mechanical, plumbing and electrical Prime Trade Contractors shall be responsible for providing all vertical sections through floors showing structural physical restraints, architectural restraints, plenum spaces and all other physical obstructions that may affect work.
3 Electronic reproduction or photo reproduction of the project's Architectural, Structural, or MEP drawings will not be acceptable.

F. Mechanical, plumbing and electrical Prime Trade Contractors shall prepare a 1/4" sleeving layout indicating size and location of sleeves. Provide copies to applicable trades and District Architectural team.

G. Coordination/Engineering Drawings: These drawings are for the Contractor's and District's Representative's use during construction and shall not be construed as replacing any shop drawings, "as-built", or Record Drawings required elsewhere in these Contract Documents.

H. Debris Removal and Material Access: An area will be designated for debris removal and material access as agreed by the Contractor and Architectural team at the school site.

1.08 EQUIPMENT COORDINATION

A. Equipment Coordination: With respect to mechanical and electrical features of Contractor and/or District supplied equipment, complete data must be exchanged directly between the Contractor and those vendors and subcontractors involved as the progress of the Project requires. The person requesting the information shall advise when it will be required.

B. The Prime Trade Contractor's for casework and equipment are expressly required to provide large scale layout drawings for casework and equipment showing the required rough-in locations of all services (dimensioned from building features) service characteristics, and locations of studs where the location is critical to mounting or otherwise installing equipment and casework. Furnish sizes and spacing required for Mechanical and Electrical cutouts, and a complete brochure of fittings, sinks, outlets, or other information to provide complete data on the items and accessories being furnished.

C. In the event of incorrect, incomplete, delayed or improperly identified information, the entity causing the delay or error shall be responsible and pay for any modifications or replacements necessary to provide a correct, proper and new installation, including relocations required.

1.09 MEETINGS

A. In addition to progress meetings specified in Section 01 31 19, attend coordination meetings and pre-installation conferences with requisite personnel to assure coordination of Work when scheduled with the Architectural, Engineer, Inspector, or Project Manager.

1.10 COORDINATION OF SUBMITTALS

A. Schedule and coordinate submittals as required and as specified in Section 01 33 00.

B. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such materials and equipment.

C. Coordinate requests for substitutions to assure compatibility of space, of operating elements, and effect on work of other sections.

D. Prime Trade Contractors shall submit the following drawings for review and approval:
   1. Fire Alarm System: Refer to Division 28.

1.11 COORDINATION OF SPACE

A. Mechanical, plumbing and electrical Prime Trade Contractors shall coordinate use of Project space and sequence of installation of mechanical, and electrical work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

B. In finished areas, except as otherwise shown, conceal pipes, ducts, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.

C. Off-Site Fabrication: Off-site fabrication is encouraged as much as possible and deliveries scheduled so materials and equipment can be installed immediately after delivery. The Contractors shall alert and advise material men of the need to hold deliveries until they are notified the materials are required on the site.

1.12 ELECTRICAL COORDINATION

A. Provide supervision, communications, and coordination necessary to meet the requirements of electrical power connection as set forth by the designated power company (e.g. Glendale Water and Power; SoCal Edison).

B. Provide reasonable and convenient staging and access areas near buildings to permit the respective Utility or its vendors or subcontractors, to install, modify or remove equipment and other components of the electrical power system furnished and installed by the designated power company.

1.13 COORDINATION OF CONTRACT CLOSEOUT

A. Coordinate completion and cleanup of work of separate sections in preparation of District school site occupancy with approval of final cleanup by the Inspector and Project Manager.

B. After District occupancy of premises, coordinate access to site by various sections for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of District/school activities.

C. Assemble and coordinate closeout submittals specified in Section 01 77 00.

1.14 NOT USED

1.15 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. The Drawings show, if applicable, existing above and below grade structures, drainage lines, storm drains, sewers, water, gas, electrical, hot water, and other utilities which are known to the District.

B. Locate all known existing installations before proceeding with construction operations which may cause damage to such installations. Existing installations shall be kept in service where possible and damage to them shall be repaired with no adjustment of Contract Sum. District archives as-built drawings, and Contractor shall be responsible to request to view any and all drawings for the areas that may be affected in the construction before the work begins.

C. If any unforeseen structures or utilities are encountered, request District's Architectural Team to provide direction on how to proceed with the Work.

D. If any structure or utility is damaged, take appropriate action to ensure the safety of persons and property and report the same to the District's Architectural Team, and begin immediate remediation of any safety-related condition.

PART 2 - PRODUCTS - NOT USED.

PART 3 - EXECUTION - NOT USED.

END OF SECTION

PART 1-GENERAL

1.01 SUMMARY

A. Work Included in this Section:

1. The Contractor's participation in preconstruction conference, application for payment, and guarantees, bonds, service and maintenance contracts review meetings.
2. The Contractor's administration and participation in project weekly progress meetings, pre-installation conferences and other meetings, as necessary.

1.02 PRE-CONSTRUCTION CONFERENCE

A. Prior to commencement of Work, attend a pre-construction conference at time and a place selected by the School District to discuss procedures to be followed during the course of the work.

B. The purpose of the conference is to introduce the District Project with the Architectural Team, the Inspector, the Construction/Project Managers, and the School's Representative key personnel, to review the contract provisions, project procedures, and other items pertaining to the Project; distribute documents including sample forms referenced in the Contract Documents; answer any questions related to construction contract administration; and establish schedule and procedures for future meetings. (This meeting is NOT to discuss any construction related specific specifications and drawings, nor address any requests for substitutions, etc.)

C. Attending shall be:

1. District Representatives from Planning, Development and Facilities, Facility and Support Operations, and/or the Business Office.
2. School Site Representatives, including the Construction Liaison
3. The Project Inspector of Record
4. The Architect of Record, and Architect's Construction Architect
5. The Engineering Consultants
6. The Contractor's Contracts Representative/Project Manager
7. The Contractor's on Site Representative/Superintendent
8. Representatives of the major subcontractors, as necessary

1.03 CONSTRUCTION PROGRESS MEETINGS

A. During the course of construction, progress meetings will be held to discuss and resolve field problems.

B. Meeting Schedule: At maximum one-week intervals or more often when required by the Architect/Inspector and/or Project Manager.

C. Meeting Location: As designated by the District's Project Manager, in conjunction with the School Site liaison.

D. Attending shall be:
   1. The District's Representative from Planning, Development and Facilities, Facility and Support Operations, and/or the Business Office
   2. The Project Inspector of Record
   3. The Architect's Construction Architect
   4. The Engineering Consultants as appropriate to the Meeting Minute format, and as agreed upon by the Contractor and the Project Manager beforehand
   5. The Contractor's On-Site Superintendent
   6. The Contractor's Representative/Project Manager
   7. Representatives of subcontractors/major suppliers as appropriate to a specific item of the Meeting Minute format, and at the time the specific item is reflected on the Meeting Minutes.
   8. Others as appropriate to the Meeting Minute format and as agreed upon by the Contractor and the Project Manager beforehand.

   NOTE: Representatives of the Contractor, subcontractors and suppliers attending Construction Progress Meetings shall be qualified and authorized to act on behalf of the entity each represents.

E. Suggested Agenda:
   1. Review and approve minutes of previous meeting.
   2. Review of work progress since previous meeting.
   3. Review of upcoming work to take place in project schedule.
   4. Discuss School Site concerns with regard to safety, paths of travel, and any upcoming events that may affect the work schedule.
   5. Discuss field observations, problems, and decisions, affecting the work.
   6. Review submittals schedule and status of submittals.
   7. Review status of proposed substitutions, if any.
   8. Review off-site fabrication and delivery schedules.
   9. Review maintenance of progress schedule.
   10. Agree on corrective measures to regain projected schedules, as necessary.
   11. Review planned progress during succeeding work period.
   12. Review coordination of projected progress.
   13. Review maintenance of quality and work standards.
   14. Review project safety of workers and practices.
   15. Review any Inspector of Record Field Notices, or Deviations logs.
   16. Other items relating to the Work.

F. The Architect, in coordination with the Project Manager, will make physical arrangements for project meetings, and the Architect shall prepare agenda, preside at meetings, record minutes, and distribute electronic draft copies of Minutes within three working days after Construction Project Meetings to the Project Manager, Inspector, conference participants and those affected by the decisions made at the conference. The Architect will record in the minutes significant discussions and agreements and disagreements.

1.04 PRE-INSTALLATION CONFERENCES

A. The Architect/Inspector may conduct a pre-installation conference at the site before each construction activity that the Architect/Inspector deems requires coordination with other construction or when required by the Construction documents.

B. Attendance will be required of parties directly affecting, or affected by, or involved in the installation, and its coordination or integration with other materials and installations that have preceded or will follow the particular item of work or activity under consideration. Parties attending the conference shall be qualified and authorized to act on behalf of entity each represents.

C. Conference Schedule: Schedule conference to assure a sufficient amount of time prior to the scheduled work or activity under consideration so that any concerns, problems or disagreements can be resolved without delaying the Project.

D. The Architect, on conjunction with the Inspector, will make physical arrangements for conferences, prepare the agenda, preside at conferences, record minutes, and distribute copies within two working days after a conference to the Project Manager, Inspector, conference participants and those affected by the decisions made at the conference. The Architect will record in the progress meeting minutes significant discussions and agreements and disagreements as takes place in pre-installation conferences.

E. Suggested Agenda: Review the progress of other construction activities and preparations for the particular activity under consideration, including requirements for:
   1. Contract Documents
   2. Options
   3. Related Change Orders
   4. Purchases
   5. Deliveries
   6. Shop Drawings, Product Data and quality control Samples
   7. Possible conflicts
   8. Compatibility problems
   9. Time Schedules
   10. Weather limitations
   11. Manufacturer's recommendations
   12. Compatibility of materials
   13. Acceptability of substrates
   14. Temporary facilities
   15. Space and access limitations
   16. Governing regulations
   17. Safety
   18. Inspection and testing requirements

19. Required performance results
20. Recording requirements
21. Protection

F. Do not proceed with the work or activity if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of work and reconvene the conference at the earliest feasible date.

1.05 OTHER REQUIRED MEETINGS

A. Project Closeout Meeting:
   1. Thirty (30) days prior to the estimated substantial completion the project/phase, the Architect, Inspector, and Project will coordinate a meeting to review required construction maintenance manuals, guarantees, closeout submittals, bonds, and service contracts for materials and equipment; review and implement repair and replacement of defective items, and extend service and maintenance contracts, and schedule site training for all equipment.
   2. Attending shall be:
      a. The District's Representative of Planning, Development and Facilities, Facility and Support Operations, and/or Business Office
      b. The Project Inspector
      c. The Construction/Project Manager
      d. The Engineering Consultants, as appropriate
      e. The Contractor's on-site Superintendent
      f. Subcontractors, as appropriate
      g. Suppliers, as appropriate
      h. Others, as appropriate

B. Guarantees, Bonds, and Service and Maintenance Review Meeting:
   1. Eleven months following the date of Substantial Completion, the District Project Manager will convene a meeting for the purpose of reviewing the guarantees, bonds, and service and maintenance contracts for materials and equipment.
   2. Attending shall be:
      a. The District's Representative
      b. The Architect
      c. The Engineering Consultants, as appropriate
      d. The Contractor's Representative
      e. Subcontractors and Suppliers, only as appropriate
      f. Others as appropriate

1.06 PRIME TRADE CONTRACTOR MEETINGS

A. Construction Progress Meetings:

1. To be held at maximum one-week intervals or more often when required by the Architect/Inspector/Construction Project Manager.
2. Meeting Location: Contractor Jobsite trailer
3. All Prime Trade Contractors shall attend in order to review progress of work, and submit any questions or requests to the Contractor in order to ensure coordination of installations during the work schedule.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Coordinate both the listing and timing of reports and other activities required by provisions of this and other Sections, so as to provide consistency and logical coordination between the reports. Maintain coordination and correlation between separate reports by updating at monthly or shorter time intervals. Make monthly distribution of the progress schedule and update to all parties involved in the work including the Architect, Inspector, and Project Manager, along with the Request/Application for Payment. In particular provide definition and coordination of the progress schedule, with phases, changes, schedule of values, funding sources and progress reports.

B. CPM Schedule: Secure critical time commitments for performing major elements of the work of no longer than 60-day increments. Within 30 days after the Notice to Proceed, submit a comprehensive CPM chart progress schedule indicating, by stage-coded symbols, milestones for each major specification section, category, or unit of work to be performed; include minor elements of work, which are, nevertheless, involved in overall sequencing of the work. Include dates for completion of each phase of work. Arrange schedule to show graphically the major sequences of work necessary for the completion of related elements of work. Arrange the schedule to allow for the Architect's review of submittals as well as procedure for certification of substantial completion. Prepare and maintain the schedule on a sheet of sufficient width (or a series of sheets) to show the required data clearly for the entire construction time. Prepare the schedule on sheets of stable transparency, or other reproducible material, to permit reproduction for the required distribution.

C. Daily Reports: Prepare a daily report, recording the following information concerning events at the site; make available to the Inspector for on-site review and submit duplicate copies to the Inspector and Architect upon request:

1. List of Contractor personnel at the site.
2. List of Subcontractors at the site.
3. Accurate Count of personnel at the site by trade, and Subcontractor.
4. Material and Equipment Deliveries.
5. High/low temperatures, and general weather conditions.
6. Accidents or injuries.
7. Meetings and significant decisions.
8. Unusual events.
9. Stoppages, delays, shortages, losses.
10. Emergency procedures, field orders.
11. Orders/requests by governing authorities, signed.
12. Services connected, disconnected.
13. Equipment or system tests and start-ups.
14. Partial completions, occupancies.

15. Substantial completion requested.
16. Substantial completion authorized.
17. Requests for Inspections.

D. Progress Reports: Contractor shall submit "Verified Reports", on prescribed form, of construction per requirements of Title 24, CCR.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION - NOT APPLICABLE

END OF SECTION

PART 1 - GENERAL

1.01 SECTIION INCLUDES:

A. Regulatory requirements pertaining to the Work and is supplementary to all other regulatory requirements mentioned or referenced elsewhere in the Contract Documents.

1.02 REQUIREMENTS OF REGULATORY AGENCIES:

All pertaining statutes, ordinances, laws, rules, codes, regulations, standards, and the lawful orders of all public authorities having jurisdiction of the Work are hereby incorporated into these Contract Documents the same as if repeated in full herein and such are intended where any reference is made in either the singular or plural to Code or Building Code unless otherwise specified including, without limitation, those in the list below. Contractor shall make available at the site such copies of the listed documents applicable to the Work as the Architect or Owner may request including mentioned portions of the California Administrative Code (CAC).

A. With respect to the Division of the State of Architect and State Fire Marshal, most-recent adopted Edition.

B. California Building Standards Code (CBSC), Title 19 CBSC (Public Safety, State Fire Marshal Regulations) Latest Edition and Amendments.

C. Building Standards Administrative Code, Part 1, Title 24 CBSC, Latest Edition.

D. California Building Code (CBC), Part 2, Title 24, CBSC (International Building Code with California Amendments) Latest Editions.

E. California Electrical Code (CEC), Part 3, Title 24, CBSC (National Electrical Code and California Amendments) Latest Editions.

F. California Mechanical Code (CMC), Part 4, Title 24 CBSC (Uniform Mechanical Code and California Amendments) Latest Editions.

G. California Plumbing Code (CPC), Part 5, Title 24 CBSC (Uniform Plumbing Code and California Amendments) Latest Editions.

H. California Energy Code, Part 6, Title 24 CBSC, Latest Edition.

I. California Fire Code, Part 9, Title 24 C.C.R. (International Fire Code and California Amendments) Latest Editions.

J. California Green Building Standards (CALGREEN), Part 11, Title 24 CBSC, Latest Edition.

K. California Referenced Standards, Part 12, Title 24, C.C.R., Latest Edition.

L. State and Local Public Health Codes, Latest Editions and Amendments.

M. Other statutes, ordinances, laws, regulations, rules, orders, and codes specified in other Sections of the Specifications or bearing on the Work.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This section lists the abbreviations, symbols and acronyms used in these specifications.

1.02 ABBREVIATIONS:

ac	Alternating current
BTU	British thermal unit
cfh	Cubic feet per hour
cfm	Cubic feet per minute
cm	Centimeter
Co.	Company
COP	Coefficient of performance
Corp.	Corporation
d.	Penny
db.	Decibel
DB	Dry bulb
dc	Direct current
EER	Energy efficiency ratio
F	Degrees Fahrenheit
fpm	Feet per minute
gap	Gallons per hour
GPM	Gallons per minute
HP	Horsepower
HVAC	Heating, ventilating and air conditioning
Hz	Hertz
Inc.	Incorporated
KHz	Kilohertz
lb	Pound
LED	Light emitting diode
MBH	100 BTUs per hour
MHz	Mega hertz
mil	Thousandth of an inch
mm	Millimeter
mph	Miles per hour
oz.	Ounce
pH	Acidity-alkalinity balance
psf	Pounds per square foot
psi	Pounds per square inch
psig	Pounds per square inch, gauge
RF	Radio frequency

rpm	Revolutions per minute
V	Volt
WB	Web bulb
#	Number
'	Foot/Feet
"	Inch (es)
%	Percent

1.03 ACRONYMS:

ABMA	American Boiler Manufacturers Association
ABMS	American Bureau of metal Statistics
ABPA	American Board Products Association
ACI	American Concrete Institute
AGA	American Gas Association
AHAM	Association of Heating and Air Conditioning Manufacturers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association, Inc.
ANSI	American National Standards Institute
APA	American Plywood Association
AQMD	Air Quality Management District
ARI	Air-Conditioning and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Institute of America
CAC	California Administrative Code
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CQC	California Quality Control (CMA Standards)
CRA	California Redwood Association

CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards, U.S. Department of Commerce
CTI	Ceramic Tile Institute
CTI	Cooling Tower Institute
DHI	Door and Hardware Institute
FCC	Federal Communication Commission
FGMA	Flat Glass Marketing Association
FM	Factory Mutual
FS	Federal Specifications
HPMA	Hardwood Plywood Manufacturers Association
IAMPO	International Association of Plumbing and Mechanical Officials
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical & Electronic Engineers, Inc.
IES	Illuminating Engineering Society
IMI	International Masonry Institute
IRI	Industrial Risk Insurers
MIA	Marble Institute of America
MIA	Masonry Institute of America
MLSFA	Metal Lath/Steel Framing Association
MS	Military Specifications
MSS	Manufacturers Standardization Society of the Valve & Fittings Industry.
NAAMM	National Association of Architectural Metal Manufacturers
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NOFMA	National Oak Flooring Manufacturers Association
NPCA	National Paint and Coatings Association
NSF	National Sanitation Foundation
NTMA	National Terrazzo & Mosaic Association
NWMA	National Woodwork Manufacturers Association
OSA	Office of the State Architect

PCA	Portland Cement Association
PCI	Pre-stressed Concrete Institute
PDCA	Painting and Decorating Contractors of America
PDI	Plumbing and Drainage Institute
PEI	Porcelain Enamel Institute
PS	Product Standard, U.S. Department of Commerce
RCSB	Red Cedar Shingle and Hand split Shake Bureau
RIS	Redwood Inspection Service
RFCI	Resilient Floor Covering Institute
SCMA	Southern Cypress Manufacturers Association
SDI	Steel Deck Institute
SDI	Steel Door Institute
SFPA	Southern Forest Products Association
SIGMA	Sealed Insulating Glass Manufacturers Association
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractor National Association
SPIB	Southern Pine Inspection Bureau
SPR	Simplified Practice Recommendations, U.S.
SSPC	Steel Structure Painting Council
SWI	Steel Window Institute
TCA	Tile Council of America
UBC	Uniform Building Code
UCI	Uniform Construction Index
UL	Underwriters' Laboratories, Inc.
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code
WCLIB	West Coast Lumber Inspection Bureau
WIC	Woodwork Institute of California
WWPA	Western Wood Products Association

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. General requirements for reference standards pertaining to the Work and is supplementary to all other regulatory requirements mentioned or referenced elsewhere in the Contract Documents.

1.02 REFERENCE AND STANDARD TYPE SPECIFICATIONS:

Specifying by reference to a reference and standard type specification document or to another portion of the Contract Documents shall be the same as if the referenced document or portion of the Contract Documents referred to were exactly repeated at the place where such reference is made. In case of a conflict between the requirements of regulatory agencies and the referenced and standard type specification documents, Contractor shall conform to the most restrictive requirement if such conformance is legal.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. All inspection and testing required to establish compliance with Contract Documents and Title 24 CCR requirements, except as may be otherwise specified, shall be made by an independent professional testing agency or firm selected and paid by the Owner/District (or as otherwise noted). All work prior to the call out of the inspection services shall be approved by the Inspector of Record as ready for the inspection services.

B. The cost of most services for testing and inspection in compliance with Contract Documents requirements will be paid by the Owner. If initial tests indicate non-compliance with Contract Document requirements, any non-compliance testing shall be performed by the same inspection service and back charged to the General Contractor. Schedule portions of the work requiring testing and inspection services so that the time of the agency on the work is as continuous and brief as possible. Should an inspection service be called out without proper pre-inspection and approval by the Inspector of Record, and the Contractor causes the inspection service to be on site for longer than the minimum call-out costs, or the Contractor causes the inspection service to make a return call to the site for the same inspection, the additional costs shall be back-charged to the Contractor.

C. Concrete Coring Procedures: Prior to the start of any concrete coring, the Contractor shall submit a detailed coring plan, indicating the size and precise locations of the cores, for approval by the Architectural Team/Structural Engineer. Proposed coring locations must be marked in the field and verified by the District IOR. The project Architectural Team/Structural Engineer may also request to perform a field inspection if deemed necessary. The Contractor SHALL arrange for and bear the costs of all Pachometer tests of the areas to be cored.

1.02 CONTRACTOR'S RESPONSIBILITY

A. Coordination: The Contractor shall initiate and coordinate testing and inspections required by the Contract Documents and public authorities having jurisdiction over the work through the Architect and/or Inspector of Record.

B. Access: Furnish free and safe access to the various parts of the work and assist testing and inspection personnel in the performance of their duties at no additional cost to the Owner.

C. Data: Furnish records, drawings, certificates, and similar data as may be required by the testing and inspection personnel to assure compliance with the Contract Documents.

D. Notification: Provide the Architect and/or Inspector of Record and Testing Laboratory with at least 72 hours advance notification of required testing.

E. Defective work: Remove and replace any work found defective or not complying with Contract Document requirements at no additional costs to the Owner (shall apply to 1, 2, and 3 immediately below). Where testing personnel take cores or cut-outs to verify compliance, repair prior to acceptance and as approved by the District IOR.
   1. Concrete: If test cylinders for concrete fail to meet design stresses, make core and load tests as may be directed by the Design Professional; make core tests in accordance with an ASTM C42 or most recent update and load tests in accordance with ACI 318 or most recent update. Correct all deficiencies found in forms, reinforcing steel and embedded items.
   2. Structural Steel: Should any weld or structural connection fail to meet design stresses, provide sonic or x-ray examination of all structural connections as directed by the Architect/engineer. Replace or repair all defective connections as directed.
   3. Roofing membrane work: Should roofing membrane, including associated flashing and jointing, indicate non-compliance with Contract Document requirements, provide corrective work as directed.

F. Lead Levels in Water: The domestic water piping system shall be protected during tie-ins or other construction activities that have the potential to elevate the lead levels in the water. The water in the domestic water piping shall be tested prior to the start of work and the lead levels documented. Testing shall also be performed upon the completion of all work and any lead contamination, above the levels documented prior to the start of work shall be the Contractors responsibility to reduce the levels to the pre-project levels.
   1. If the domestic water system is contaminated as a result of construction activities, the Contractor shall decontaminate the domestic water system. The procedures shall comply with applicable regulatory requirements.

1.03 TESTING LABORATORY RESPONSIBILITY

A. Taking Specimens: Specimens and samples for testing, unless otherwise provided in the Contract Documents, will be taken by the testing personnel. Sampling equipment and personnel will be provided by the testing laboratory. Deliveries of specimens and samples of the testing laboratory will be performed by the testing laboratory.
   1. When the testing laboratory is ready to test, but is prevented from testing or taking specimens due to incompleteness of the work or other scheduling lapses, all extra charges for testing attributable to the delay may be back-charged to the Contractor and shall not be borne by the Owner.

B. Test Reports: Reports shall include all tests made, regardless of whether such tests indicate that material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Reports shall state which requirements with which the material or materials were sampled and tested. Test reports shall show the indicated or specified design strength(s) and state definitely whether or not the materials tested comply with the specification requirements.

Report distribution shall be made as follows:

Owner's Rep	1 copy, and 1 electronic pdf
Architect	1 copy, and 1 electronic pdf
Structural Engineer	1 copy
Contractor	2 copies
DSA	2 copies (or as req'd by DSA)

C. The inspection agency shall cooperate with the Contractor so as to cause no delay in the progress of the work, but shall be directly responsible to the Owner for his actions. The inspection agency shall have no authority to direct the work of the Contractor.

D. Submittals: Promptly submit copies of reports of inspections and tests, mill analysis, concrete mix designs and certifications per applicable sections of the specification.
1. Comply with requirements of each technical specification section and DSA requirements.
2. Reports shall include all tests made, regardless of whether such test 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 samples and tested in accordance with the requirements of the Title 24 and with the approved specifications. Test reports shall show the specified design strength. They shall also state definitely whether or not the material or materials tested comply with requirements.
3. Testing Agency is not authorized to:
   a. Release, revoke, alter, or enlarge on, requirements of Contract Documents.
   b. Perform any duties of the Contractor.

1.04 REQUIRED INSPECTIONS & TESTS

The following are inspection services and tests required of but not limited to the Inspection and Testing Agency.

A. Sitework inspections & tests: Perform the following services as required to assure compliance with requirements of Division 2 of the technical specifications.

Compaction & bearing: Test and verify bearing capacity of all load bearing earth, test compaction fills for compliance with required densities.

B. Concrete work inspections & tests: Perform the following services as required to assure compliance with requirements of Division 3 of the technical specifications.
   1. Cast-in-place concrete: Make slump tests for each batch delivered or at least 1 test per hour during continuous pours in accordance with requirements of ASTM C143/C143M-12; check and verify batch consistency. Inspect forms and verify sizes and conditions. Inspect reinforcing and verify its proper placement. Furnish continuous inspection during replacement, repair and patching operations, and curing of concrete. Make cure, and test at least 3 test cylinders of each strength, of concrete for each 50 cubic yards (38.23 m3) placed or for each day's pour, whichever is greater. Report exact mix tested, minimum size aggregate, location of pour in the work, cylinder identification, data of receipt of cylinder in laboratory, slump data, cement brand and type, admixtures used, dates and records offset cylinders, names of inspectors and laboratory personnel, and evaluation or analysis of cause, in case of test failure, and recommendations of remedial action.
   2. Cure specimens under laboratory conditions except when there is possibility of surrounding air temperature falling at project below 40F. In this case, additional specimens will be required to be cured under job conditions. For all test unless otherwise directed, break 1 cylinder at 7 days, 2 at 28 days.
   3. If 7 day tests appear to be marginal or fall below normal requirements, concrete shall be tested with an approved impact hammer. Should these readings verify low test cylinders, procedure of work beyond this point will be Contractor's responsibility until decision is reached as to removal of substandard concrete at each of 28 day period.

C. Metal work inspection & tests: Perform the following services as required to assure compliance with requirements of Division 5 of the technical specifications.
   1. Structural steel fabrication: Furnish visual inspection of all shop fabricated parts including joists and joist girders. This inspection may be done in shop or in field after delivery. Furnish inspection and testing of shop welds in accordance with requirements for welding specification hereinafter. Check shapes, sizes, classes, and types of steel. Verify conformance of structural steel materials with requirements of Contract Documents. Test end welded studs, replace studs damaged by test.
   2. Structural steel field inspection & tests: Check location and fit of all anchorage and inserts. Verify adjustments to fit inaccuracies. Furnish visual inspection of erection of all structural steel components of the work. Furnish inspection and testing of all field welding in accordance with requirements for welding in accordance with requirements for bolting specific hereinafter. Inspect and test all bolted connections in accordance with requirements for welding specified hereinafter. Inspect for compliance with AISC Code of Standard Practice with requirements

of the Contract Documents; other duties and responsibilities as may be noted on drawing.

3. Welding requirements: Furnish visual inspection of all field fillet welding. Furnish inspection of fillet welds in accordance with requirements of AWS D1.1 (Rev. I): allow for inspection of a minimum of 15% of fillet welds by magnetic particle or dry penetrant methods
4. Bolting requirements: Furnish visual inspection of structural joints where ASTM A325-10e1 bolts are used; verify the applicable requirements of AISC specifications are met.

D. Thermal and moisture protection work testing & inspection: Perform services as required to assure compliance with requirements of Division 7 of the technical specification.

E. Roofing: Check deck surfaces prior to application of roofing materials and verify that substrate is in satisfactory conditions to receive roofing. Furnish continuous inspection during application of roofing, including application of vapor barriers, insulation and roofing. Inspect all sheet metal flashings, counterflashing and reglets for satisfactory and waterproof installation.

F. Wood: Check framing lumber moisture content prior to framing.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES:
A. Tests and inspections.

1.02 RELATED SECTIONS:
A. Work to be tested or inspected: Respective Sections.

1.03 TESTS AND INSPECTIONS; GENERAL:
A. General:
1. See General Conditions and Supplementary General Conditions.
2. Inspection: Per Title 24, 108 & 1701.

B. Contractor: Shall furnish labor, materials, and equipment and perform all operations required to take and prepare test samples, and required to permit inspection of all work.

C. Contractor responsibility: Each contractor responsible for the construction of a main wind- or seismic-force-resisting system, designated seismic system or a wind- or seismic-resisting component listed in the statement of special inspections shall submit a written statement of responsibility to the building official and the owner prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain acknowledgment of awareness of the special requirements contained in the statement of special inspection, per Section 1704A.4, 2013 CBC.

D. Payment of Tests & Inspections Costs:
1. District: District will pay all costs for required testing and inspection of both on-site and off-site work; except where specifically noted otherwise.
2. Costs to be reimbursed to District by Contractor:
a. Cost of testing materials, which fail to meet requirements of Contract Documents.
b. Overtime Costs: Whenever Contractor elects to work during hours other than normal work week and laboratory inspection is required, District will pay normal cost of laboratory inspection and Contractor shall pay that portion of laboratory inspection cost due to "overtime".
c. Where specifically noted.

1.04 TESTING AGENCY:
A. All tests shall be made by a well-established, independent Testing Laboratory(s) selected by District and satisfactory to the Architect and the Division of the State Architect.

1.05 RESULTS:
A. Test Reports:
1. Testing Laboratory to report results of all tests in writing.

2. Reports shall state that:
   a. Tests were made under responsible charge of a Testing Engineer, licensed to practice Civil/Structural Engineering, State of California.
   b. Material(s) were tested per requirements of Contract Documents and Division of the State Architect.
   c. Material(s) PASSED or FAILED TO PASS requirements.
3. Report (s), Distribution:

Architect	1 hard copy;1 electronic pdf
Inspector	1 hard copy
Contractor	1 hard copy
District	1 electronic pdf
DSA	2 copies (or as req'd by DSA)

B. Certificate: Each time work on this project is suspended and upon completion of the work, the Testing Laboratory shall furnish a notarized certificate in duplicate to the Division of the State Architect stating:
1. Tests for the work were made per requirements of Contract Documents and Division of State Architect.
2. All such tests and reports made for the work were reported.
3. A list of all tests performed.

1.06 REQUIRED TESTS AND INSPECTIONS (CRC, 1998):

A. General: Tests and inspections are referenced to Specification Divisions and Sections.

B. Excavation, Foundations and Retaining Walls – CBC, Chapter 18A:
1. Inspection:
   a. Earth Fill.

C. Division 3, CONCRETE - CBC Chapter 19A:
1. General Requirements: Apply to all Division 3 work.
   a. Concrete "Design Mixes":
      1) By District designated Testing Laboratory, per Section 1903A and Section 1905A.1 through 1905A.1.21, Title 24, by Method B or C.
      2) District will pay cost of one direct-pour mix and/or one pump mix for each specified concrete strength in each aggregate type.
   b. Batch Plant Inspection: Continuous inspection by Testing Laboratory for all "structural concrete", per Title 24, Section1929A.4. The Contractor shall notify the Laboratory 24 hours in advance of the time concrete is to be mixed, and shall promptly notify the Laboratory of postponement or cancellation of mixing. The Contractor shall reimburse the District for costs incurred resulting from failure to give adequate notification of postponement or cancellation.

c. Cement:
   1) Testing: Where not accompanied by a D.S.A. acceptable manufacturer's mill analysis and test certificates, test per Section 1903A Title 24.
   2) Contractor to reimburse District for testing costs.
d. Concrete Consistency: Measure consistency by the "Standard Method of Test for Slump of Portland Cement Concrete", ASTM C143/C143M-12. The District Inspector shall make this test twice each day or partial day's run of the mixer.
e. Aggregate: Test in accordance with ASTM C33/C33M-13 and ASTM Method C227-12. Tests shall be less than one year old.
f. Concrete Test Cylinders: District's Inspector to make and cure per ACI 318.
g. Concrete Testing:
   1) Test per Section 1903A, Title 24.
   2) Make one test at 7 days, and one test at 28 days; except, do not make 28-day test when 7-day test meets final design strength.
   3) Where concrete does not meet design strength, take core samples; and test per ASTM C42/C42M-13 and as follows:
      a) The cores shall be taken at representative places throughout the structure as designated by the Structural Engineer and shall be at least 4" in diameter.
      b) In general, sufficient cores shall be taken so that knowledge will be had for all pours made. At least three cores shall be taken for each 4000 square feet of building. Not less than three cores shall be taken from each building.
      c) Where cores have been cut from the work, the Contractor shall fill the void with drypack and patch the finish to match the adjacent existing surfaces.
h. Inspection:
   1) General: Conform to Title 24, Section 1701A.
   2) Steel Reinforcement: By District's Inspector for proper size and location, prior to placing concrete.
   3) Concrete: Continuous inspection of all concrete placements by District's Inspector. Keep a "placing record" of pours per Title 24, Section 1913A.

2. Cast-In-Place Concrete:
   a. Test all structural concrete.
   b. Two (2) molded cylinders for testing for each truck load and for each grade of concrete. Not less than one test/day/each grade of concrete.
   c. Slump test each truck load of concrete delivered to the job site.

D. Division 3, STEEL REINFORCEMENT:
   1. Testing:
      a. Conform to Title 24, Section 1903A and 1913A.2.
      b. Test for conformity with ASTM A615/A615M-13.
      c. Tests:
         1) Where identifiable by manufacturer's heat number and mill analysis report: one tension and one bend test/each 10 tons or fraction thereof for #5 and larger bars.
         2) When not identifiable: one tension and one bend test/each 2 ½ tons, or fraction thereof, for all bar sizes.
   2. Inspection: See Paragraphs C and D above. Welding shall conform to Title 24.

E. Division 4, MASONRY – CBC Chapter 21A:
   1. Materials:

a.	Masonry Units	2103A
b.	Portland Cement	2103A.11.7
c.	Mortar and Grout Aggregates	2103A.9
d.	Reinforcing Bars	2103A.14, 1913A.2

   2. Quality:

a.	Portland Cement Tests	1903A
b.	Mortar and Grout Tests	2105A
c.	Masonry Core Tests	2105A.4
d.	Reinforcing Bars	

   3. Inspection:

a.	Reinforced Masonry	2105A
b.	Reinforcing Bar Welding Inspection	1913A.2, 1913A.7.4

F. Division 5, METALS:
   1. Testing; Structural Steel:
      a. General:
         1) Conform to Title 24, Section 2213A.
         2) Contractor to obtain manufacturer's certified mill analysis and test report for each heat.
         3) Identification: Conform to Title 24, Section 2203A.
         4) Testing Lab to verify steel identification, per ASTM A6, at fabricator's shop.
      b. Tests:
         1) Where not accompanied by acceptable identification, test material.
         2) Contractor to reimburse District for testing costs.
         3) Structural Steel; Title 24, Section 2213A.
   2. Field Testing; Wedge-Type Expansion Anchor Bolts:
      a. Conform to Title 24, and D.S.A. requirements. Inspector shall witness all tests.
      b. All tests to be made with suitable, properly calibrated devices.

c. Tension test 50% of the anchor bolts for pull-out using twice the bolts allowable capacity.
d. If any bolt fails, all adjacent bolts must be tested.

3. Inspectors, General: All Inspectors shall be specially qualified and approved by DSA for the particular type of work they are inspecting.
4. Inspection, Welding:
   a. Conform to Title 24, Section 2213A. Keep a systematic record of all welds.
   b. AWS certified Welding Inspector from Testing Lab approved by DSA, shall inspect all shop and field welding for structural steel.
   c. Welding Inspector shall check qualifications and ability of all welders to perform satisfactory work.
      1) Inspector shall spend first fabrication day in shop observing specific techniques, welds, and welders to be used on the work.
   d. Welding Inspector shall check and approve the type and capacity of all welding equipment, which shall conform to manufacturers' recommendations.
5. Testing, Welds: By Testing Lab.
   a. Ultra Sonic Tests: Perform for all full penetration welds of 1/4" or greater.
   b. Other Tests: As noted or required.
6. Inspection, Shop Fabrication: Conform to Title 24, Section 2213A by specially qualified Inspector from Testing Lab.
7. Certificates: Testing Lab and its Inspectors shall certify that all material, equipment, fabrication, installation, welding, procedures, and work observed and/or tested by them is satisfactory and conforms to requirements of Contract Documents and Division of State Architect; and that they have used all means necessary to determine quality of welds.

G. Wood - CBC, Chapter 23:
1. Materials:
   a. Lumber and Plywood Grading 2303
   b. Glue - Laminated Members 2303.1.3

2. Inspection:
   a. Glue-Laminated Fabrication 2303.1.3
   b. Timber Connectors 2304.9
   c. Manufactured Trusses 2303.4

H. Exterior Wall Coverings - CBC, Chapter 14:
1. Materials:
   a. Portland Cement Plaster Chapter 25
2. Inspection:
   a. Veneer Inspection Chapter 14

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. The Contractor shall ensure that all employees, visitors, subcontractors, subcontractor employees, and suppliers, while on the worksite, comply with the requirements of OSHA, these requirements, and the safety precautions contained in the several Specification Sections.

B. The Contractor shall promptly and fully comply with and execute, without separate charge thereof to the District, shall enforce compliance with the provisions of the Williams Steiger Occupational Safety Health Act of 1970 (Public Law 91-596 with most recent updates and amendments) with particular attention paid, but not limited to, Title 29-Labor, Chapter XVII - Occupational Safety and Health Administration, Department of Labor Part 1926 - (Safety and Health Regulations for Construction), and part 1910 - (Occupational Safety and Health Standards), as printed, respectively, in the June 24, 1974, and June 27, 1974, Federal Register, and latest adopted amendments and changes thereto.

1.02 PRELIMINARY WORK

A. Prior to the start of and during the course of the work (above and below ground) the Contractor shall make a thorough survey of the entire worksite to determine all potential hazards. Workmen shall be made aware of those hazards and shall be instructed in procedures and the use of equipment for their protection. The Contractor shall verify the location and condition ("live" or "dead") of all utilities on and near the worksite and take precautions to protect his employees, subcontractors, material men, the general public, and the property.

1.03 IMMINENT DANGER

A. The District may stop those operations which create an imminent danger to employees (as defined by OSHA), to the public and to property.

B. The Contractor shall be wholly responsible for any accident (including death) occurring at any time during the progress of the work and until the final acceptance of the work by the District which may happen to any of his employees/workmen or those of any Subcontractor employed on the building, the property, or for any damage or injuries (including death) which his work and operations may cause to the work being constructed, or to existing buildings, or to any tenants and occupants of the property, or of the adjoining properties, or to the public, or to any public or private property.

1.04 COOPERATION:

A. The Contractor shall cooperate with the safety representatives of the District, District's Insurance Managers and the District's Insurance Company in any and all inquiries before, during, and after the project.

1.05 SAFETY RESPONSIBILITIES:

A. Contractor's Superintendent shall:
   1. Ensure compliance with these requirements, OSHA requirements and other safety requirements, and provide and implement an Injury and Illness Prevention Program (IIPP) at the project site.
   2. Provide, supervise, and support a Contractor's Project Safety Supervisor and enable him/her to execute effectively their duties and responsibilities.
   3. Authorize immediate action to correct substandard safety conditions.
   4. Review and act to ensure compliance with safety procedures with his supervisors, subcontractors and suppliers.
   5. Take an active part in all supervisory safety meetings.
   6. Cooperate with safety representatives of the District, District Insurance Managers, and the District's insurance company.
   7. Ensure that all security and temporary fencing has been secured to prevent any movement or causal action that could contribute to any hazardous or unsafe condition, or which ultimately may cause harm.

B. Contractor's Project Safety Supervisor shall:
   1. Make thorough daily safety inspections of the worksite and immediately act to eliminate unsafe acts and unsafe conditions, and record all suggestions make and corrective action taken.
   2. Investigate worksite accidents and recommend immediate corrective action.
   3. Weekly safety meetings shall be conducted and documented in the daily report of activity by the contractor. Weekly safety meeting notes shall be recorded, noting the contractors and trades on site, the topics that were discussed and the attendance by contractor name, workmen name and trade, in attendance on the project that day.
   4. Review safety meetings reports submitted by job foremen and act to ensure that meaningful weekly safety meetings are held by the job foremen.
   5. Attend foremen "tool box" safety meetings and evaluate effectiveness.

6. Assist in the preparation of accident investigation and reporting procedures.
7. Implement training programs for supervisors and employees as they apply to their specific responsibilities.
8. Be responsible for the control, availability, and use of safety equipment, including employee personal protective equipment.
9. Coordinate his activities with those of the District's Inspector and/or Project Manager, and immediately implement their safety suggestions.
10. Coordinate public relations aspects of the Contractor's safety program.

C. Contractor's Job Foreman shall:
1. Instruct workmen regarding safe work practices and work methods at the time workmen are given work assignments.
2. Furnish and enforce the use of personal protective equipment and suitable tools that are equipped with all the manufacturer's supplied safety features, and have not been altered in any way, for the job.
3. Continuously check to see that no unsafe practices and conditions are allowed to exist on this portion of the work.
4. Set a good example for his personnel.
5. Make a complete investigation of accidents to determine facts necessary to take corrective action to prevent a recurrence, and record the facts in a written report to accompany the daily report as set forth in the IIPP.
6. Promptly supply information for, or complete, an Accident Report and Investigation Form as directed by the Contractor Safety Supervisor and Contractor's Superintendent/Project Manager.
7. Hold weekly "tool box" safety meetings with his personnel to:
   a. Discuss observed unsafe work practices and unsafe conditions.
   b. Review the accident experience of his crew and discuss correction of the accident causes.
   c. Encourage safety suggestions from his crew and report those suggestions to the Safety Supervisor.
8. Ensure that first aid is promptly administered to an injured employee.
9. Report immediately, to Contractor's Superintendent/Project Manager, or Safety Supervisor, any injuries, or violations of job safety and security.

D. Subcontractor's Job Superintendent shall:
   1. Plan and execute his work so as to comply with the Construction Safety Program.
   2. Furnish and enforce the use of personal protective equipment.
   3. Attend supervisory personnel safety meetings schedule by the Contractor.
   4. Schedule and attend weekly "tool box" safety meetings to be held by job foremen for all employees.
   5. Report to the Contractor's Project Safety Supervisor or Contractor's Superintendent all observed unsafe conditions, unsafe practices, and violations of job security.
   6. Cooperate with the District's safety representative.

1.06 CONTRACTOR'S SAFETY SUPERVISOR:

A. Contractor shall designate a full-time employee as Contractor Project Safety Supervisor.

B. Qualifications must be approved by the District. Supervisor shall:
   1. Have heavy construction experience of not less than three (3) years, one of which must have been in a supervisory capacity.
   2. Be familiar with job safety laws and regulations.
   3. Have accident prevention experience.

C. Duties: Project Safety Supervisor shall conduct regular inspections of the work, shall ensure compliance with job safety requirements, shall maintain the Contractor's safety program IIPP on site and available for review by the District's Inspector and/or Project Manager and shall enforce safe practices, use of safety equipment and personal protective equipment, and other such activities as may be required by OSHA, the safety requirements, and the safety precautions contained in the several Specification Sections.

D. If the Project Safety Supervisor is not effective in executing the duties assigned him, the District may request, in writing, that the Contractor furnish a new Project Safety Supervisor.

E. If the Contractor desires to replace the Project Safety Supervisor, he shall so notify the District and the District's Insurance Managers, in writing and shall submit the name, experience and qualifications of the proposed Project Safety Supervisor for approval.

1.07 REQUEST FOR VARIANCES

A. Request for variances to deviate from OSHA requirements must follow the current established procedures by that Agency.

1.08 FAILURE TO COMPLY

A. If the Contractor fails to comply with the requirements of OSHA, the safety requirements, and the safety precautions contained in the Specifications Sections, or to provide an on-site IIPP, the District may modify or stop the work and portions thereof, until such failure is remedied. Willful and repeated failure to comply could result in the shutdown of the work, and portions thereof. No part of the time lost due to any such modification of operations or stop orders shall be made the subject of a claim for extension of time or for increased costs of damage by the Contractor.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

PART 1 - GENERAL

The District will provide a Project Inspector, or Inspector of Record (IOR) for this project.

Contractor shall submit an Inspection Request Form to the Project Inspector (IOR) at least 48 hours prior to the time the inspection is needed, and on the form required. Contractor shall not cover any work requiring inspection until the Project Inspector (IOR) has inspected and approved the subject work.

For work not in conformance with the Contract Documents, the Project Inspector (IOR) shall submit to the Contractor a Deviation/Nonconforming Notice.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Temporary utilities, construction trailers/facilities and project sign(s) which are to be provided and maintained by the Contractor.

B. Dust and noise control.

C. General temporary items including staging area for material delivery and safety and security lighting.

1.02 TEMPORARY UTILITIES:

A. Water:

1. Arrange for water with District Construction/Project Manager and install all necessary water lines, connections and metering devices for project, and upon completion of the work, remove such temporary facilities.
2. District will pay for all water needed for construction. Water conservation techniques are to be observed by all workmen. Contractor is to provide and maintain all water conveyance equipment, hoses, nozzles, hose bib connections, free from leaks, and equip all hoses with positive closing, hand-squeeze-type operating nozzles - - it is not permitted to operate a hose without a positive closing nozzle.
3. Provide suitable drainage system, subject to the approval of the Architect/Engineer and as indicated on the approved SWPPP, to carry construction waste water from site to an approved disposal location.

B. Electricity:

1. District will pay for all electricity needed for construction. Contractor is to arrange for and install all necessary temporary poles, wiring and metering devices and, upon completion of the work, remove such temporary facilities. Electricity conservation best management practices shall be observed by all workmen, and any unnecessary lighting, or electrical discharge shall be turned off at the end of each shift. Only safety lighting is allowed after each shift is concluded.
2. Furnish and install area distribution boxes, so located that the individual trades may use 100 foot maximum length extension cords to obtain adequate power and work task lighting, at points where required for the work, for inspection and for safety.
3. Provide all electricity needed for construction including connections for construction equipment requiring power.
4. Lighting in the construction work area shall be sufficient to allow safe travel for workmen and the Architectural team during normal working hours of the project, and shall be shut down to conserve energy after normal construction working hours.

C. Natural Gas: The Contractor shall provide and install gas equipment and piping necessary to perform his work, and shall remove same upon completion of the work. The Contractor shall pay for the Natural gas used in the work.

D. Telephone/Communications/Data:
   1. Make necessary arrangements and pay costs for installation and operation of telephone, communication, or data service to the Contractor's office at the site.

E. Use all means necessary to maintain temporary facilities and controls in proper and safe condition throughout progress of the work.

F. Make required connections to existing utility systems with minimum disruption to services in the existing utility systems. When disruption of the existing service is required, do not proceed without the Architect and/or Inspector's approval with at least 72 hours written request and approval. When required, provide alternate temporary service, should it be necessary as deemed by the Architect and/or Inspector, or Project Manager.

1.03 CONTRACTOR'S FACILITIES:

Contractor shall provide temporary offices, storage sheds, fencing, barricades, signage, hoists, scaffolds, railings and other facilities as required and specified. Installation and maintenance of such items shall be the responsibility of the Contractor.

A. Temporary Offices for Contractor, the District Project Manager and District Inspector of Record.
   1. The contractor shall provide and maintain two trailers on the site for the duration of the project, up to and including the date the Certificate of Occupancy will be filed by the District with the Board of Education.
   2. One trailer shall be for the use of the general contractor, and the other trailer shall be for the use of both the District Project Manager, and the District IOR.
   3. Both trailers shall have ample headroom; shall be properly lighted, heated and ventilated, and supplied with air conditioning sufficient to properly heat and cool the trailer between 68 and 76 degrees Fahrenheit on any day during construction.
   4. The trailer for the District Project Manager, and the District IOR shall have a minimum of two separate entrances with an office space for each separated by an interior wall and lockable door, and each space shall be provided with a telephone line, fax line, and high speed internet service, with a new or refurbished office desk at least 30" x 60" in size, with drawers that operate, with a drawer for miscellaneous office supplies, a drawer to accommodate 8 1/2 x 11 size file folders, one drawer to accommodate bulk office supplies, one new or refurbished office chair with casters, one new or refurbished side chairs with casters, a worktable or drawing table in sufficient size to lay out a full size set of project

drawings, and one shelf at least 12" deep by 48" in length and secured for safely storing project specifications, project binders, and code books..

5. The Contractor shall provide temporary toilet facilities and wash sinks within close proximity (no more than 30 feet) to the trailer for the District Project Manager, and the District IOR, which facilities shall be maintained as recommended by the supplier and common industry standards.
6. The trailers, equipment and the furniture shall remain the Contractor's property. Contractor shall remove such property upon completion of the work and the filing of the Certificate of Occupancy by the District.

B. Sanitary Facilities:
   1. The Contractor shall provide temporary toilet facilities which may consist of portable chemical toilets, and hand washing equipment. Number of toilets shall be based on number of workers with a minimum of 1 toilet facility per 10 workers. Placement of temporary toilet facilities shall be agreed upon at the site with the District Construction/Project Manager.
   2. Toilet facilities shall be kept supplied with toilet paper, and kept in a clean and sanitary condition until completion of the work, and then be removed from the work site. Upon removal, that portion of the site shall be properly cleaned and graded/repaired.

C. Contractor's Security Barricade:
   1. The Contractor shall erect the temporary security barricades for the purpose of defining construction lay-down areas, staging area and work zones. Temporary security barricades shall be provided on school site at exterior locations, and at building interiors, as necessary to provide a clear, obvious separation between school users and construction personnel. New or used material may be used.
   2. Unless otherwise indicated or specified, barricade shall be constructed of 6'-0" high chain link fence material with T-post condition at bottom for stability, shall have top rails, and 6 gauge minimum wire support at the bottom, BLACK screen material securely attached to the chain link material. Space posts not to exceed 10 feet on centers. Posts shall be of the following nominal pipe dimensions: terminal, corner, and gate posts 2-1/2", line posts 2", with diagonal supports at each corner. Chain link fabric shall be not less than 13 gauge, 2" mesh, and in one width. Posts, fabric and accessories shall be galvanized. Some fencing may require terminal posts to be sunk in the ground, or with appropriately placed concrete footings, and/or may require sandbags for ballast, as determined by the Inspector and/or Project Manager.
   3. Chain link fencing shall be free from barbs, icicles or other projections resulting from the galvanizing process, and shall be knuckle-knuckle. Fence fabric having such defects will be rejected even though it has been erected.

4. Gates shall be fabricated of steel pipe with welded corners, and horizontal and diagonal bracing as required to prevent flexing. Fabric to be attached to the frame at 12 inch centers. Provide all gate hardware of a strength and quality to perform satisfactorily until the barricade is removed upon completion of the work. Provide locks sufficient to secure the area, and that can be opened with one hand (e.g. combination locks).
5. At the completion of the work, remove barricade and concrete post footings from the site; backfill and compact fence footing holes by patching with like materials. Existing surface paving that is cut into or removed shall be patched and sealed to match the surrounding areas with like materials, and in the same finishes.
6. Contractor shall maintain all fencing and gates in good order on a daily basis, including the masking of graffiti as deemed necessary by the Inspector, and/or Project Manager, and shall secure the project fencing and gates at the end of every work day.

D. Other Enclosures:
1. Provide temporary weather-tight enclosures at openings in exterior walls to create acceptable working conditions, and/or to allow for temporary heating and for necessary security.
2. Provide protective barriers that shall be at least 4' in height, and extend to protect all areas at tree drip lines, around plants and other improvements designated to remain, as determined by the Inspector and/or Project Manager and related specification sections.

E. Storage Yards and Storage Containers:
1. The Contractor shall fence and maintain storage yards in an orderly manner.
2. Provide steel storage containers, lockable, free from graffiti, and in good condition for materials and equipment that cannot be stored offsite or in a bonded and agreed-upon warehouse.
3. Exact location, size and access of storage yards and steel storage containers shall be approved by the District Construction/Project Manager.
4. Remove storage yards and containers as rapidly as progress of the work will permit.

1.04 REQUIRED SIGNS AT GATES
A. Contractor shall post at the work site signs not greater than twenty-five feet (25') apart at all gates stating "Authorized Personnel Only – Construction Area" and "No Parking – Fire Lane," as determined by the contract specifications and drawings, and/or as designated by the Inspector and/or Project Manager

1.05 HARD HAT SIGN

A. Contractor shall post a sign at each gate and/or entry to any area of construction, identifying the job site as a "hard hat area". No person without a hard hat shall be allowed in the sections of the project under construction. This shall be the responsibility of the Contractor's Project Safety Inspector to enforce.

1.06 DUST AND NOISE CONTROL

A. Throughout the entire construction period, Contractor shall maintain dust control by use of water or other environmental controls as may be approved by the Architect, Inspector, and/or Project Manager.

B. Noise Control: Muffle all equipment to a maximum of 85 Dba at 5' from equipment. Noise control is to be kept to a minimum to perform the operations of construction. NO Radios or projected sound will be allowed on the job site.

1.07 GENERAL ITEMS

A. Staging areas for delivery of materials and equipment will be at locations designated by the drawings and specifications, and/or as approved by the Architect, Inspector, and/or Project Manager.

B. Safety and Security Lighting: Provide 5 foot candles outside.

C. Noise Control: Muffle all equipment to a maximum of 85 Dba at 5' from equipment.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Protection for Products, including District - Provided Products, After Installation.

B. Protection of Existing Utilities and Interference.

1.02 EXISTING UTILITIES

A. The known existing utilities are shown on the drawings in their approximate location and the Prime Trade Contractor shall exercise care in avoiding damage to these facilities as the Prime Trade Contractor will be held responsible for their repair if damaged. Hand excavation shall be utilized when digging in close proximity to existing utilities. The District's Architectural Team does not guarantee that all utilities or obstructions are shown or that the locations indicated are accurate.

B. No work shall be performed on energized electrical equipment unless scheduled with the District Inspector of Record. The District Inspector of Record reserves the right to specify specific conditions for all work involving energized high voltage electrical equipment, and its scheduled modification proposal.

C. If interferences occur at locations other than the general locations shown on the plans, and such utilities are damaged before their locations have been established, or create an interference, the Prime Trade Contractor shall notify the District's Construction/Project Manager and a method for correcting said interference shall be supplied by the District's Engineering representatives. Payment for additional work due to interferences not shown on the plans shall be in accordance with the General Conditions.

D. Drawings showing location of equipment, piping, etc., are diagrammatic and job conditions will not always permit their installation in location shown. When this situation occurs, bring to the District Architect's, and/or Inspector's attention immediately to determine relocation in joint conference.

E. Information shown relative to existing power and signal service is based upon available records and data but shall be regarded as approximate only. Minor deviations found necessary to conform to actual locations and conditions shall be made without extra cost to the District.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 PROTECTION AFTER INSTALLATION

A. Adequately protect all installed equipment and materials until completion and acceptance by the Architect, Inspector, and Project Manager.

B. Protect installed products and control traffic in immediate area to prevent damage in subsequent operations.

C. Provide protective coverings at walls, projections, corners, and jambs, sills, and stiff openings in and adjacent to traffic areas.

D. Cover walls and floors of elevator cabs, and jambs of cab doors, when elevators are used by construction personnel. Protect elevator area until final acceptance.

E. Protect finished floors and stairs from dirt, wear, and damage:
   1. Secure heavy sheet goods or similar protective materials in place, in areas subject to construction foot traffic, and/or material deliveries.
   2. Lay planking or similar rigid materials in place, in areas subject to movement of heavy objects over existing surfaces.
   3. Lay planking or similar rigid materials in place in areas where storage of products will occur.

F. Protect waterproofed and roofed surfaces:
   1. Restrict use of surfaces for traffic of any kind, and for storage of products.
   2. When an activity is mandatory, obtain recommendations for protection of surface from manufacturer. Install protection and remove on completion of activity. Restrict use of adjacent unprotected areas.

G. Restrict traffic of any kind across planted lawn and landscape areas through the use of temporary barricades, fencing, signage, and until final acceptance and maintenance period.

H. Care shall be exercised to prevent damage to adjacent facilities including walks, curbs, and gutters, etc. Where equipment will pass over these obstructions, suitable planking and protection shall be placed, and damaged facilities, due to the Contractor(s) operations, shall be removed and replaced at the Prime Trade Contractor's expense.

I. Prime Trade Contractor shall be responsible for overloading of any part or parts of structures beyond their safe calculated carrying capacities by placing of materials, equipment, tools machinery or any other item thereon.

J. All existing improvements and facilities shall be protected from damage of any type resulting from the operations, equipment or workers of the Contractor(s) during the time the project.

K. All damaged work shall be replaced, repaired and restored to its original condition with no additional cost to the District.

L. Where existing utilities are damaged or disrupted on account of any act, omission, neglect or misconduct by the Contractors in the manner or method of executing the work, or due to non-execution of work, such damage shall be immediately repaired to maintain operation regardless of the time of occurrence with no cost to the District.

M. Provide temporary construction necessary for protection of the building and their parts. Close buildings as soon as possible as protection from the weather and vandalism. Protect existing buildings and controlled temperature areas from excessive temperature variances below 68 degrees Fahrenheit, and above 76 degrees Fahrenheit, and from any damage.

N. Protect doors, millwork and mill counters and cases and hardware from damage, including abrading and scratching of finishes.

O. Protect doors and frames and hardware from mechanical damage and damage to finish coatings.

P. Remove protective coatings, wrappings, temporary coverings, etc., as required to leave work in condition for painting and finishing, final cleaning, etc.

Q. Protect all exterior work, including existing asphalt paving, concrete flatwork, common sidewalk, and City curb, gutter, and aprons. Protect all existing and newly placed landscaping and irrigation systems.

R. Repair or replace all damaged work promptly as directed by District Construction/Project Manager, District IOR, or District Architect at no cost to the District.

END OF SECTION

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Security Program.

B. Entry Control.

C. Personnel Identification.

D. Miscellaneous Restrictions

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 SECURITY PROGRAM

A. Protect work, existing premises, and School operations from theft, vandalism and unauthorized entry.

B. Security of the job area shall be strictly maintained. The Prime Trade Contractor shall be responsible for keeping areas involved in the work locked and secure at all times when work is not in progress, and no Contractor representative is on site.

3.02 ENTRY CONTROL

A. Restrict entrance of persons and vehicles into Project site and existing facilities under construction. Allow entrance only to authorized persons with proper identification, and appropriate footwear, and hard hats, as determined by the Contractor Project Safety Inspector, and/or District Inspector.

B. Prime Trade Contractor shall control entrance of own persons and vehicles related to construction operations in accordance with the conditions during work, and not allow intrusion by others.

3.03 BADGES AND ESCORT REQUIREMENTS

A. All personnel shall wear badges distinguishing personnel requiring an escort (YELLOW badges) to areas of the campus outside of the work area from those not requiring an escort (GREEN badges).

B. Personnel without fingerprint and acceptable background check on file with the District shall require an escort to any area outside of the work area.

C. The Contract and Pre-Construction meeting wording lays out the appropriate procedures for Contractor and Subcontractor personnel in working on the school site.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. The Environmental Mitigation requirement for this project is recorded in this Specification Section 01 56 40. The measures mitigations may include, but are not limited to, procedures and standards to control:
   1. Dust
   2. Noise
   3. Fumes
   4. Timing of work activities
   5. Erosion
   6. Archaeological resources found during excavation
   7. Preservation of trees
   8. Demolition process and materials.

1.02 EXECUTION

A. The Contractor shall comply with the mitigation below in terms of what is to be controlled, acceptable methods, and standards (e.g. equipment must be muffled and noise levels may not exceed specified decibel levels).

B. The Contractor shall provide documentation of having met the mitigation requirements as described below to the Inspector and/or Project Manager within five (5) working days of the Notice to Proceed and at each phase of the project.

C. To reduce dust emissions and noise during construction by implementing the following:
   1. Exposed surfaces should be watered twice daily.
   2. Stockpiles of excavated materials should be covered.
   3. Trucks carrying excavated materials from the site should be covered and should have their tires and undercarriages washed prior to exiting the site.
   4. Streets affected by fugitive sand and dust are to be swept regularly by Prime Trade Contractors responsible for tracking of mud and/or sand to these streets.
   5. Uncovered soil should be bound (by grass or similar groundcover) as soon as is reasonably possible.
   6. Excavation should not be conducted when surface winds exceed 11 mph.
   7. Unnecessary idling of construction vehicles and equipment should be avoided adjacent to areas of instruction, or adjacent to fresh air ductwork, or where noise will affect the areas of instruction.
   8. Limit construction activities to a schedule that minimizes disruption as much as possible to area residences surrounding the project site property boundaries.
   9. Schedule activities with the highest noise potential for the times when disruption of any instruction, or area of residences surrounding the project site will be at a minimum.

10. Require contractors to employ the lowest-decibel level equipment, or employ alternative equipment or to muffle/control noise from available equipment to the maximum extent possible.
11. Perform noisy operations (e.g., mixing concrete, hydraulic/mechanical demolition) off-site or on portions of the site furthest from noise sensitive receptors whenever possible, and in consult with the Inspector and/or Project Manager.

END OF SECTION

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Surveying and Field Engineering Services.

1.02 QUALITY CONTROL

A. Land Surveyor: Registered in the State of California and acceptable to the District's Architect, Inspector, and/or Project Manager.

1.03 LINES AND GRADES

A. The Contractor shall provide all construction survey work required for the accurate location of the work. Horizontal and vertical control for the work shall be from the project reference marks as shown on the Drawings. In all questions arising as to the proper location of the work, the District's A&E teams, and the Inspector's decision shall be final.

B. The Contractor shall verify final configuration of the project during demolition work. Minor adjustments of the work to accommodate existing field conditions shall be the responsibility of the Contractor.

C. Replace, at no increase in Contract Sum, control points which may be lost or destroyed; base requirements on original survey control.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify locations of survey control points prior to starting work. Promptly notify District Architect and Inspector of any discrepancies discovered.

3.02 SURVEY REFERENCE POINTS

A. Protect survey control points prior to starting site work; preserve permanent reference points during construction. Make no changes without prior written notice to the Architect and Inspector.

B. Promptly report to the Architect and the Inspector the loss or destruction of any reference point or relocation required because of changes in grades or other reasons. Replace dislocated survey points based on original survey control.

3.03 SURVEY REQUIREMENTS

A. Establish a minimum of three (3) permanent bench marks on site, referenced to establish control points. Record locations, with horizontal and vertical data, on Project Record Documents.

B. Establish 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; and utility locations, slopes and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, and ground floor elevations.
   4. Controlling lines and levels required for mechanical and electrical work.
   5. Verify layouts as Work proceeds to assure compliance with required lines, levels and tolerances.

C. Periodically certify layouts by same means, with same approvals by the Architect and Inspector.

3.04 RECORDS

A. Maintain a complete and accurate log of all control and survey Work as it progresses.

B. On completion of foundation walls and major site improvement, including underground utilities, prepare a certified survey showing all dimensions, locations, angles, and elevations of construction to the Architect and Inspector for review and approval of the final survey for the Project record.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED SECTIONS

A. Section 01 31 13: Project Coordination

B. Section 01 31 19: Project Meetings

C. Section 01 33 00: Submittals

D. Section 01 32 16: Schedule and Reports

E. Section 01 43 00: Testing Laboratory Services

F. Section 01 78 36: Warranties & Bonds

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 SUBMITTALS

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

B. Cutting and Patching Proposal: CONTRACTOR shall submit a proposal describing procedures well in advance of the time cutting and patching will be performed if the Contract Documents requires approval of these procedures before proceeding. The Contractor shall be responsible for locating existing utilities within the Limits of Work, whether shown or not, prior to any excavation. Contractor shall protect in place all utilities not identified to be removed, relocated or abandoned. Include the following information, as applicable, in the proposal:
   1. Describe the extent of cutting and patching required. Denote how it will be performed and indicate why it cannot be avoided.
   2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building's appearance or other significant visual elements.
   3. List products to be used and firms or entities that will perform this Work.
   4. Indicate dates when cutting and patching will be performed.

5. Utilities: List utilities that cutting and patching operations will disturb or affect. List utilities to be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.
7. Review by ARCHITECT/Engineer and DSA INSPECTOR prior to proceeding with cutting and patching does not waive ARCHITECT/Engineer right to later require complete removal and replacement of defective Work.

3.02 QUALITY ASSURANCE

A. Requirements for structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
   1. Obtain approval from ARCHITECT/Engineer and DSA Inspector of the cutting and patching proposal before cutting and patching the following structural elements:
      a. Foundation construction
      b. Bearing and retaining walls
      c. Structural concrete
      d. Structural steel
      e. Lintels
      f. Timber and primary wood framing
      g. Miscellaneous structural metals
      h. Equipment supports
      i. Piping, ductwork, vessels, and equipment
      j. Structural systems of special construction in Division 13 Sections.

B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safely.
   1. Obtain review of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
      a. Primary operational systems and equipment
      b. Air or smoke barriers
      c. Water, moisture, or vapor barriers
      d. Membranes and flashings
      e. Fire protection systems
      f. Noise and vibration control elements and systems
      g. Control systems
      h. Communication and/or data systems
      i. Electrical wiring systems
      j. Operating systems of special construction in Division 13 Sections.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the opinion of ARCHITECT/Engineer/District, or DSA Inspector reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually satisfactory manner.
   1. If possible, retain the original installer or fabricator to cut and patch the exposed Work listed below. If it is impossible to engage the original installer or fabricator, engage another recognized experienced and specialized firm.
      a. Firestopping
      b. Acoustical ceilings
      c. Acoustical panels
      d. Carpeting
      e. HVAC enclosures, cabinets, or covers
      f. Ceramic and quarry tile
      g. Gypsum board
      h. Masonry (exterior and interior where exposed)
      i. Tack boards
      j. Casework
      k. Finish carpentry

3.03 WARRANTY

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

3.04 INSPECTION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.
   1. Before proceeding, meet at the Project site with District Inspector, District Project Manager and District Maintenance Supervisors and all contractors involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding. ENSURE THAT ALL AVAILABLE AS-BUILT DRAWINGS ARE PULLED AND REVIEWED PRIOR TO ANY CUTTING.

3.05 PREPARATION

A. Temporary support: Provide adequate temporary support of existing improvements or Work to be cut, with prior approval by the Structural Engineer and/or DSA Inspector.

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

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

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

3.06 PERFORMANCE

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

B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining Work. Where possible, review proposed procedures with the original installer; comply with the original installer's recommendations.
   1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
   3. Cut through concrete and masonry using a cutting machine, such as a carborundum saw or a diamond-core drill. Saw cut reinforcing bars and paint ends with bituminous paint except where bonded into new concrete or masonry.
   4. Comply with requirements of applicable Division 2 Sections where cutting and patching requires excavating, backfill, and/or recompaction.
   5. Woodwork: Cut and or remove to a panel or joint line.
   6. Sheet Metal: Remove back to joint, lap, or connection. Secure loose or unfastened ends or edges and seal watertight.
   7. Glass: Remove cracked, broken, or damaged glass and clean rebates and stops of setting materials.
   8. Plaster: Cut back to sound plaster on straight lines, and back bevel edges of remaining plaster. Trim existing lath and prepare for new lath.
   9. Gypsum Wallboard: Cut back on straight lines to undamaged surfaces with at least two opposite cut edges centered on supports.

10. Acoustical ceilings: Remove hanger wires and related appurtenances where ceilings are not scheduled to be installed.
11. Tile: Cut back to sound tile and backing on joint lines.
12. Flooring: Completely remove flooring and clean backing of prior adhesive. Carefully remove wood flooring for patching and repairing of existing wood flooring scheduled to remain.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with required tolerances.
1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation. Verify conditions of existing substrates prior to executing Work.
2. Restore exposed finishes of patched areas and extend finish restoration into retaining adjoining construction in a manner that will eliminate all evidence of patching and refinishing.
3. Concrete: Maintain cut edges in a moist condition for twenty four (24) hours prior to the placement of new concrete. In lieu of this an epoxy adhesive may be provided. Finish placed concrete to match existing unless noted otherwise. Concrete shall have a minimum compressive strength of 3,000 psi where installed to repair and/or match existing improvements, unless noted otherwise, and approved by the Structural Engineer, in conjunction with review by the DSA Inspector.
4. Metal Fabrications: Items to remain exposed shall have their edges cut and ground smooth and rounded.
5. Sheet Metal: Replace removed or damaged sheet metal items as required for new Work.
6. Glass: Install matching glass and re-seal exterior window assemblies.
7. Lath and Plaster: Install new lath materials to match existing and fasten to supports at 6"centers. Provide a 6" lap where new lath to adjoins existing lath. Fasten new lath as required for new Work. Restore paper backings as required. Apply a bonding agent on cut edges of existing plaster. Apply three coat plaster of the type, thickness, finish, texture, and color to match existing.
8. Gypsum Wallboard: Fasten cut edges of wallboard. Install patches with at least two opposite edges centered on supports and secure at 6" centers. Tape and finish joints and fastener heads. Patching shall be non-apparent when painted or finished.
9. Acoustical Ceilings: Comply with the requirements for new Work specified in related sections of the Contract Documents.
10. Resilient Flooring: Completely remove flooring and prepare substrate for new material.
11. Painting: Prepare areas to be patched, patch and paint as specified under related sections of the Contract Documents.

3.07 CLEANING

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

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES.

A. Maintain premises and adjacent public and private properties free from accumulations of waste, debris, and rubbish, caused by operations during the project.

B. At completion of Work, remove waste materials rubbish, tools, equipment, machinery and surplus materials, and clean all exposed surfaces; leave project clean and ready for occupancy.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Use only cleaning materials recommended by the manufacturer of surface to be cleaned.

B. Use cleaning materials only on proper surfaces recommended by the manufacturer.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION:

A. Execute daily cleaning plans from each trade to ensure that buildings, grounds, and public and private properties are maintained free from accumulations of waste materials, rubbish and trash on a daily basis.

B. Wet down dry materials and rubbish to prevent blowing dust and debris on and from the construction work.

C. Daily, during progress of work, clean construction site and utilized public properties, and dispose of waste materials, debris and rubbish.

D. Provide on-site steel dump containers and appropriately sized trash containers for collection of waste materials, debris and rubbish.

E. Remove waste materials, debris and rubbish from site and legally dispose of at public or private dumping areas off the District's property.

F. Vacuum clean and wet wipe interior building walls, floors, doors, windows, and hardware in preparation for and when ready to receive finish preparation and painting. Continue vacuum cleaning on an as-needed basis until building is ready final inspection by the Architect, Inspector, and Project Manager and determined to be ready for substantial completion and occupancy.

G. Handle materials in a controlled manner to minimize any unnecessary waste or debris emanating from the construction areas. Do not drop or throw materials from heights: rather, a closed chute shall be used, to minimize unnecessary dust, waste or debris from the construction area.

H. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not migrate into new equipment or furniture, or onto wet, newly painted surfaces.

3.02 FINAL CLEANING:

A. Employ experienced workmen, or professional cleaners, for final cleaning.

B. Exterior: Clean surfaces of the construction and site including, but not limited to, fixtures, walls, soffits, floors, hardware, roofs, window and opening ledges and sills, horizontal projections, steps and platforms, walkways, rails and all like surfaces, and adjoining private and public property to the extent soiled by the Contractor's operations.

C. Interior: Leave all horizontal and vertical surfaces in vacuum cleaned, wet-wiped condition with all dust, dirt, stains, hand marks, paint spots, droppings, and other blemishes and defects completely removed, and conform to the following requirements:

1. Hard Floors: Freshly administer specified product sealants, and Wet mop/wash and dry, concrete, portland cement flooring, tile, elastomeric, epoxy, refinished and colored concrete, and similar hard floor surfaces free of dust, streaks or stains.
2. Resilient Flooring: Freshly wax and buff as specified in Section 09650.
3. Wood Flooring: Remove defects and blemishes by sanding surface and painting according to Section 09900.
4. Resilient Bases: Clean off adhesive smears and wipe clean with wet-wipe methods.
5. Unpainted and Painted Surfaces: Clean of dust, lint, streaks or stains, utilizing wet-wipe methods as necessary.
6. Tile Walls: Clean and polish per manufacturer's specifications.
7. Hardware and Metal Surfaces: Clean and polish all exposed surfaces using non-corrosive and nonabrasive materials.
8. Glass: Wash and polish both sides, and leave free of dirt, spots, streaks, and labels. Clean and polish mirrors.
9. Ceilings: Clean and free of stains, hand marks, and defacing.
10. Replace air conditioning filters as specified in Mechanical Specifications.
11. Clean ducts, blowers and coils, if air conditioning units were operated without filters during construction, and after final inspection.
12. Lighting fixtures: Replace lamps and clean fixtures and lenses if fixtures or lamps are dirty or have smudges or dust.

13. Fixtures and Equipment: Clean and polish mechanical and electrical fixtures and like items. Leave lighting fixtures free of dust, dirt, stains or waste material. Clean and service equipment and machinery, leaving ready for use.
14. Surfaces Not Mentioned: Clean according to the intent of this Section and as required for Architect's approval.

D. Contaminated Earth: Final clean-up operation includes the removal and disposal of earth that is contaminated or unsuitable for support of plant life in planting areas, and filling the resulting excavations with suitable soil as directed and approved by the Architect, Inspector, and/or Project Manager.

Contaminated areas include those used for disposal of waste concrete, mortar, plaster, masonry, paints, and similar materials, and areas in which washing out of concrete and plaster mixers or washing of tools and like cleaning operations have been performed, and all areas and adjacent areas that have been oiled, paved, or chemically treated.

Do not dispose of waste, oil, solvents, paints, solutions, or like penetrating material by depositing or burying on School property; dispose of such material in a lawful manner.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Procedures for closing-out Project.

1.02 RELATED SECTIONS

A. Closeout Submittals: See Respective Specification Sections.

1.03 GENERAL

A. As a prerequisite for final payment release, Contractor shall complete the work of this Section.

B. Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the Work.

1.04 PRE-FINAL INSPECTION; SUBSTANTIAL COMPLETION

A. Pre-final Inspection:

1. Upon "substantial completion" of the Work AS AGREED TO BY Contractor, Architect/Engineer, DSA Inspector of Record and District Project Manager, Contractor shall notify Architect/Engineer, and DSA Inspector and request a "pre-final inspection" of the Work.
2. If Architect/Engineer, Inspector, and Project Manager concur that work of the contract project/phase is "substantially complete", he will review and list any items that need to be corrected on a punch list. List will be amended as required to include items on the correction or punch list subsequently observed.

B. Substantial Completion Defined: "Substantial Completion" of the Work is the status, as approved by the Architect/Engineer when construction is sufficiently complete, in accordance with the Contract Documents, so the District/Owner can occupy or utilize the Work for the use for which it is intended.

1.05 FINAL INSPECTION

A. Reference: See Supplementary Conditions.

B. Final Inspection: When Contractor has complied with above Article at the end of the final phase, Architect/Engineer and DSA Inspector and Project Manager will review the Work and list any items that are not completed or need to be corrected.

C. Contractor shall complete and/or correct the Work in a timely manner as outlined in the contract documents.

1.06 GUARANTEES

A. General: Contractor shall guarantee in writing to District/Owner that:

"Contractor will repair or replace any or all of such work, together with any other adjacent work which may be displaced in connection with such replacement, that may prove to be defective in workmanship or material within a period of one year from the date of acceptance of the above mentioned structure by the Glendale Unified School District, ordinary wear and tear, and unusual abuse or neglect excepted."

B. Format: Contractor shall submit guarantees typed in the format indicated in "Guarantee Form".

C. Number of Copies: Submit in triplicate (3) to Architect/Engineer with one electronic pdf.

D. Required Guarantees:
1. General: Submit all guarantees listed herein or required by various Spec. Sections.
2. General Guarantee:
a. By General Contractor; For the Entire Work: 1 Year.
3. Specific Guarantees:

SPEC DIVISION	ITEM	TIME PERIOD
a. Division 7	All Flashing & Sheet Metal, in connection with roof coverings	5 Years
	All Joint Sealants	5 Years
	Damp proofing	2 Years
b. Division 26 and 27	All Electrical Work	1 Year

1.07 WARRANTIES

A. General: Comply with Section 017836. Submit all warranties required by various Specification Sections.

1.08 CERTIFICATES

A. General: Submit in triplicate (3) all certificates required by various Specification Sections or listed herein, notarized as required.

B. Certificates:
1. Division 8: Finish Hardware installation acceptance.
2. Division 28: Fire Alarm System testing and approval.

1.09 OPERATION AND MAINTENANCE DATA

A. General: Submit all manuals required by various Specification Sections or listed herein; three (3) copies each, and one electronic pdf. Provide durable binders, no less than 8-1/2" x 11" in size and provide the following information:
   1. Identification on, or readable through, the front cover stating general nature of the manual.
   2. Neatly typewritten index at the front of the Manual, furnishing immediate information as to location in the Manual of all data or equipment included.
   3. Complete instructions regarding operation and maintenance of all equipment included.
   4. Complete nomenclature of all replaceable parts, their part numbers, current cost, and name and address of nearest vendor of parts.
   5. Copy of all Guarantees and Warranties issued.
   6. Copy of the approved Shop Drawings with all data concerning changes made during construction.

B. Extraneous data: Where contents of Manuals include Manufacturers' catalog pages, clearly indicate the precise items included in this installation by clouding, or highlighting, and delete, all manufacturers' data with which this installation is not concerned.

1.10 RECORD DRAWINGS

A. Procedures:
   1. Promptly following contract award, General Contractor shall secure from the District one complete set of Drawings. Identify the set as "Record."
   2. Timing of Entries: Make entries within 24 hours after receipt of information on any changes by Contractor or Sub Contractors.
   3. Contractor shall be responsible for maintaining and recording the changes on the set, and by affixing any related RFI, COR, and/or ASI applicable to the changes.
   4. Do not use the "Record" set for any purpose except entry of new data and for review by the Architect. Maintain separate job sets for subcontractors and workers daily use.
   5. Maintain the "Record" set at the job site where designated by the Architect/Engineer, in conjunction with the DSA Inspector.
   6. Use all means necessary to protect the "Record" set from deterioration, loss or damage until completion of the work.
   7. Making entries on Drawings: Using an erasable colored pencil, other than blue or black, not ink or indelible pencil, and clearly describe the change by note and by graphic line as required. Date all entries. Call attention to the entry by a "cloud" around the area or areas affected. In the event of overlapping changes, different colors may be used for each of the changes.
      a. Changes due to approved change orders may be indicated by referencing the change order number and scope of change in lieu of revising the Drawings.

b. The location and depth below finish grade or above ceilings and attic spaces of utilities shall be fully dimensioned and indicated on Drawings. Dimensions shall be taken to building lines or permanent landmarks.

8. The architect's approval of the current status of the "Record" drawings will be a prerequisite to the Architect/Engineer's and DSA Inspector's approval of requests for progress payments and request for final payment release.
   a. Progress approvals: Prior to submitting each request for progress payments, secure the District DSA Inspector's approval of the status of the "Record" Drawings.
   b. Prior to submitting request for final payment and final inspection, General Contractor shall submit the "Record Drawing" set to the District DSA Inspector, with transmittal letter, in duplicate, for approval and further processing through the Architect/Engineers for their approval and acceptance, and delivery to the District.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Assembly and submission of operating and maintenance data and manuals.

B. Submission of preliminary draft of final data and manuals.

C. Instruction of Owner's personnel in operation, adjustment and maintenance of products, equipment and systems.

1.02 MANUALS

A. General: Where manuals are required to be submitted covering items included in this Work prepare all such manuals in durable plastic 3-ring binders no less than 8-1/2 by 11 inches in size and with at least the following:
   1. Identification on, or readable through, the front cover stating general nature of the manual;
   2. Neatly typewritten index near the front of the manual, furnishing immediate information as to location in the manual of all data;
   3. Copy of all guarantees and warrantees issued.

B. Maintenance and operation instructions:
   1. Procure or prepare and include in manuals, operating and/or maintenance instruction for all equipment and/or materials that will require any adjustment, servicing, or attention for its proper operation or use.
   2. These instructions shall set forth all of the information necessary for the District to operate and make full and efficient use and perform such maintenance and servicing, as would ordinarily be done by the District or maintenance personnel.
   3. Write instructions in simple, non-technical language when possible, with sufficient diagrams and explanation where necessary to be readily understandable by average layman. Possible hazards shall be particularly pointed out with instruction cautioning against mistakes that might result in damage or danger to equipment, building, or personnel.

C. Extraneous data: Where contents of manuals include manufacturer's catalog pages, clearly indicate the precise items included in this installation and delete or otherwise clearly indicate all manufacturer's data with which this installation is not concerned.

1.03 MANUAL CONTENT

A. Neatly typewritten table of contents for each volume, arrange in systematic order.

B. List:
   1. Contractor, name of responsible principal, address, telephone number, and email address of the company contact.

2. Each product including name, telephone number, and email address of:
   a. Subcontractor or installer.
   b. Recommended maintenance contractor.
   c. Local source for replacement parts (within 50 mile radius of site).
3. Product name and other identifying symbols set forth in Contract Documents.
4. Product Data:
   a. Include only those sheets which are pertinent to specific product.
   b. Annotate each sheet to:
      1) Clearly identify specific product or part installed.
      2) Clearly identify data applicable to installation.
      3) Delete references to inapplicable data.
5. Drawings:
   a. Supplement product data with drawings where necessary to clearly illustrate:
      1) Relations of component parts.
      2) Control and flow diagrams.
   b. Do not use "Project Record Documents" as maintenance drawings.
6. Written Test:
   a. Provide where necessary to supplement Product Data and drawings.
   b. Organize in consistent format under separate headings for different procedures.
   c. Provide logical sequence of instruction for each procedure.
7. Warranties, Bonds, and Maintenance Contracts:
   a. Provide copies of each of the following:
      1) Proper procedures in event of failure.
      2) Instances which might affect validity of warranties, bonds, or contracts.

1.04 MANUAL FOR ARCHITECTURAL MATERIALS AND FINISHES

A. Include the following manufacturer's data:
   1. Catalog number, size, composition.
   2. Color and texture designations.
   3. Required reordering information.
   4. Recommend cleaning materials and methods.
   5. Cautions against detrimental cleaning materials and methods.
   6. Recommend cleaning and maintenance schedule.

B. Submit specified information for the following:
   1. Irrigation System: Section 328000.
   2. Landscaping: Division 32.
   3. Fire Extinguishers: Section 104416.13.

1.05 MANUAL FOR ROOFING MATERIALS

A. Include the following manufacturer's data:
   1. Instructions for inspection, maintenance and repair.

1.06 MANUAL FOR MECHANICAL EQUIPMENT AND SYSTEMS

A. Include the following manufacturer's data:
   1. Function, normal operating characteristics, and limiting conditions.
   2. Performance curves, engineering data, and tests.
   3. Complete nomenclature and commercial number of replaceable parts.

B. Operating procedures including:
   1. Start-up, break-in routine, and normal operating instructions.
   2. Regulations, control, stopping, shut-down, and emergency instructions.
   3. Summer and winder operating instructions.
   4. Special operating instructions.

C. Maintenance procedures including:
   1. Routing operations.
   2. Trouble shooting guide
   3. Disassembly, repair, and reassemble.
   4. Alignment, adjusting, and checking.
   5. Servicing and lubricating schedule, including recommended lubricants.

D. Manufacturer's printed operating and maintenance instructions.

E. Control system operation sequences.

F. Parts list, illustrations, assembly drawings, and diagrams necessary for maintenance including:
   1. Life expectancy of parts subject to wear.
   2. Items recommended to be stocked as spare parts.

G. As-installed control systems diagrams.

H. Color-code legend, if any.

I. Valve tag number chart, with location and function of each valve, in typewritten format, clearly indicating location on a room, area, or building diagram in sufficient size to readily identify the item.

J. Submit specified information for the following; Mechanical equipment specified in the Mechanical Equipment schedules and Specifications.

1.07 MANUAL FOR ELECTRICAL EQUIPMENT AND SYSTEMS

A. Include the following manufacturer's data:
   1. Description of unit and component parts including:
      a. Function, normal operating characteristics and limiting conditions.
      b. Performance curve, engineering data and tests.
      c. Complete nomenclature and commercial number of replaceable parts.

2. Panel board circuit directories indicating:
   a. Electrical service.
   b. Controls.
   c. Communications, if any.
3. As-installed wiring color-code legend, if any.
4. Operating procedures including:
   a. Routine and normal operating instructions.
   b. Sequences required.
   c. Special operating instructions.
5. Maintenance procedures, including:
   a. Routine operations.
   b. Trouble-shooting guide.
   c. Disassembly, repair, and reassembly.
   d. Adjustment and checking.
6. Manufacturer's printed operating and maintenance instructions.
7. Parts list, including current prices, and recommended spare parts to be maintained in storage.

B. Submit specified information for the following:
   1. Electrical equipment specified in Mechanical and Electrical Equipment Schedules and Specifications.

1.08 ADDITIONAL DATA

A. Prepare and include the following:
   1. Additional data when need becomes apparent during instruction of District's personnel.
   2. Additional data specified in other Sections of Specifications to be included.

1.09 SUBMITTAL SCHEDULE

A. Preliminary Draft:
   1. Submit two copies of the proposed format, approximately fifteen (15) days before substantial completion to the Architect and Inspector and/or Project Manager for review and comments.
   2. Architect and Inspector will review, and return one copy with any comments.

B. Final Submittal:
   1. Submit, in final form, one copy of complete data seven (7) days prior to final inspection. Copy will be returned with comments.
   2. Submit four (4) copies in approved final form prior to final inspection and acceptance, and occupancy.

1.10 INSTRUCTION OF OWNER'S PERSONNEL

A. Prior to Substantial Completion, instruct District's personnel in necessary operation, adjustment, and maintenance of products, equipment and systems. District's personnel will consist of on-site School site personnel laypersons; Facility and Support Operations maintenance technicians; other District personnel. Instruction sessions (minimum of two) will be at a time and date convenient and pre-approved by the District Project Manager.

B. Operating and Maintenance Manuals, as well as knowledgeable installer(s) shall conduct the instruction, which SHALL BE VIDEOTAPED by the contractor, to constitute basis of instruction.

C. Review manual contents with District's personnel in detail to explain all aspects of operations and maintenance, and conduct hands-on demonstrations where appropriate, and conduct a question and answer session before the end of the training session. Training sessions will be as long as necessary to satisfy the personnel in attendance.

D. A listing of all personnel receiving instructions, complete with a sign-in sheet indicating the printed name, and the signature of those attending, dates and times of instruction, and pertinent data regarding the training specific equipment or system, shall be delivered to the Architect/Engineer/Inspector and/or Project Manager upon completion of instruction session(s).

E. The District's designated Facility and Support Operations (FASO) Representative will be instructed as to the proper operations of all environmental equipment and fire and life safety, and security systems prior to Substantial Completion and Occupancy of a project phase or building, or building area. This instruction will be provided to the District's FASO and School Site personnel with the basic working knowledge of all equipment systems.

F. Contractor shall perform all testing, adjusting, etc., as outlined in the specifications and/or as recommended by the manufacturer.

G. All HVAC equipment shall be operated a minimum of two (2) weeks or no less than 80 hours, with District specified MERV 7 or higher rating pleated filters, prior to Substantial Completion approval.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION - NOT APPLICABLE

END OF SECTION

PART 1 - GENERAL

1.01 SUBMITTAL REQUIREMENTS:

A. Assemble Warranties, Bonds, and Service and Maintenance Contract, executed by each of the respective Manufacturers, Suppliers, and Subcontractors, and submit to the Architect/Engineer for review and approval before Final Payment will be approved and released.

B Number of original signed copies required: Three (3) each and one electronic pdf.

C. Table of Contents Neatly typed in orderly sequence.

D. Provide complete information for each item:
   1. Product or work Item.
   2. Firm, with name of principal, address and telephone number.
   3. Beginning date of Warranty, Bond, or Service and Maintenance Contract.
   4. Duration of Warranty, Bond of Service, and Maintenance Contract.
   5. Provide the following information for District/Owner's Personnel:
      a) Procedure in case of failure or malfunction.
      b) Instances which affect Warranty or Bond validity.
   6. Contractor, name of responsible principal, address, telephone number and email address.

1.02 SUBMITTAL FORM:

A. Punch sheets for standard 3-ring binder.

B. Size: 8-1/2 x 11 inches.

C. Fold larger sheets to fit into binder.

D. Cover: Identify each packet with typed or printed title 'WARRANTIES AND BONDS" 1st:
   1. Title of Project.
   2. Name of Contractor.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Work Includes:
   1. Remove designated items for relocation.
   2. Remove items to clear path for installation and subsequent removal of Relocatable housing units.
   3. Remove excavated soil spoils from site.
   4. Cap existing irrigation devices at designated Relocatable housing locations.

B. Related Work:
   1. Requirements in Addenda, Alternates, Conditions and Division 1 collectively apply to this work.

1.02 QUALITY ASSURANCE

A. Demolition shall be in compliance with Title 24 of the California Code of Regulations and conform to the California Building Code, 2013 edition.

B. Utilities disconnection, capping and re-installation shall be by workmen licensed to perform such work.

1.03 SUBMITTALS

A. Two (2) copies of permits and notices.

B. Upon completion of work in this Section, submit record documents recording the extent of active and abandoned underground utilities.

1.04 EXISTING CONDITIONS

A. Contractor shall contact the local underground service alert company for information on buried utilities and pipelines.

B. Conduct demolition to minimize interference with adjacent structures, trees and properties.

C. Provide, erect and maintain temporary barriers and security devices.

D. Conduct operations with minimum interference to public or private thoroughfares. Maintain egress and access at all times.

E. Traffic: Conduct site-clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.

F. Prior to demolition or heavy vehicular activity, examine structures adjacent to the designated demolition, including concrete walks and asphaltic concrete paving. Obtain District Inspector's confirmation by signature for the following:
   1. Record on the Project Record Documents any pre-existing conditions that could later be construed as Contractor damage.
   2. Document each recorded pre-existing condition with a supporting photograph.

G. Protection of Existing Utilities: Protect existing utilities, including irrigation system from damage.
   1. Contact the local underground service alert company and the District prior to any trenching for determining location of underground utilities/irrigation lines.
   2. Contact the District for repair instructions for damaged lines.
   3. REPAIR OF HIDDEN DAMAGED PRODUCTS, DISCOVERED BY THE DISTRICT, WILL BE CHARGED DIRECTLY TO THE CONTRACTOR.

H. Protection of Existing Improvements: Provide protection necessary to prevent damage to existing improvements not indicated to be demolished and/or removed.
   1. Protect improvements on adjoining properties and on Owner's property.
   2. Restore damaged improvements to their original condition, as acceptable to property owners.

I. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.
   1. Water trees and other vegetation to remain within limits of Contract Work as required to maintain their health during course of construction operations.
   2. Replace damaged trees that are damaged by construction activities.

PART 2 - PRODUCTS
Not Used.

PART 3 - EXECUTION

3.01 PREPARATION
A. Verify that structures to be demolished are unoccupied and discontinued in use.

B. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.

C. Protect existing landscaping materials, appurtenances and structures, which are noted to remain.

D. Notify School maintenance personnel and utility authorities to locate and flag underground lines. Disconnect, remove and cap designated utility lines within demolition areas. Obtain release from respective utility companies that utilities have been capped in a safe manner.

E. Mark location of disconnected utilities. Identify utilities and indicate capping locations on project record documents.

3.02 EXECUTION

A. Remove excavated soil/rocks in association with the installation of the asphaltic sidewalks and building bases. Dispose of rocks and excavated debris to off-site dump. Top soil shall be stockpiled or spread in accordance with District's wishes at each indicated site.

B. Asphaltic concrete paving shall be saw cut to a straight line on the demolition border, prior to paving demolition.

C. Cease operations and notify Architect immediately if adjacent structures appear to be endangered. Do not resume operations until corrective measures have been taken.

D. Remove and promptly dispose of contaminated, vermin infested or dangerous materials encountered.

E. Do not burn or bury materials on Site.

F. Keep work sprinkled to minimize dust. Provide hoses and water main or hydrant connections for this purpose.

3.03 SITE CLEARING

A. General: Remove shrubs, grass, and other vegetation, improvements, or obstructions, as required, to permit installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. Removal includes digging out and off-site disposal of stumps and roots. Removal of trees are not permitted, unless prior approval has been obtained from the Architect and District.

B. Removal of Improvements: Remove existing above-grade and below-grade improvements as indicated and as necessary to facilitate new construction. Saw cut existing paving at boundary of areas to be removed.

3.04 DISPOSAL OF WASTE MATERIALS

A. Burning on Owner's Property: Burning is not permitted on Owner's property.

B. Removal from Owner's Property: Remove waste materials and unsuitable or excess topsoil from Owner's property.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the following:
   1. Demolition and removal of buildings and structures.
   2. Demolition and removal of site improvements adjacent to a building or structure to be demolished.
   3. Abandoning in place or removing below-grade construction.
   4. Disconnecting, capping or sealing, and abandoning in place or removing site utilities.

1.02 RELATED DOCUMENTS

A. Drawings and general provision of the Contract, including Addenda, Alternates, General and Supplementary Conditions and Division 1 Specification Sections, collectively apply to this work.

B. Related Sections include the following:
   1. Section 01 50 00 - Construction Facilities and Temporary Controls for temporary construction, protection facilities, and environmental-protection measures for building demolition operations.
   2. Section 31 10 00 - Site Clearing for site clearing and removal of above- and below-grade improvements not part of building demolition.
   3. Division 23 Sections for demolishing or relocating site mechanical items.
   4. Division 26 Sections for demolishing or relocating site electrical items.

1.03 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or recycled.

B. Remove and Salvage: Detach items from existing construction and deliver then to Owner ready for reuse.

C. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or recycled.

1.04 MATERIALS OWNERSHIP

Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during building demolition shall remain the Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.05 SUBMITTALS

A. Submit demolition and removal procedures and schedules as per Section 01 33 00.

B. Proposed Environmental-Protection, Dust-Control, and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.

C. Schedule of Building Demolition Activities: Indicate the following:
   1. Detailed sequence of demolition and removal work, with starting and ending dates for each activity.
   2. Interruption of utility services.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Locations of temporary protection and means of egress, including for other tenants affected by building demolition operations.
   5. Coordination of Owner's continuing occupancy of adjacent buildings and partial use of premises.

D. Inventory: After building demolition is complete, submit a list of items that have been removed and salvaged.

E. Pre-demolition Photographs Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by building demolition operations. Submit before Work begins.

F. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

G. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.06 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Section 01 31 19 Project Meetings. Review methods and procedures related to building demolition including, but not limited to, the following:
   1. Inspect and discuss condition of construction to be demolished.
   2. Review structural load limitations of existing structures.
   3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Review and finalize protection requirements.

1.07 PROJECT CONDITIONS

A. Buildings to be demolished will be vacated and their use discontinued before start of Work.

B. Owner will occupy other buildings immediately adjacent to demolition area. Conduct building demolition so Owner's operations will not be disrupted.
   1. Provide not less than 72 hours notice to Owner of activities that will affect Owner's operations.
   2. Maintain access to existing walkways, exits, and other adjacent occupied or used facilities.
      a. Do not close or obstruct walkways, exits, or other occupied facilities or used facilities without written permission from authorities having jurisdiction.

C. Owner assumes no responsibility for buildings and structures to be demolished. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
   1. Hazardous materials will be removed by Owner before start of the Work.
   2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

1.08 COORDINATION

A. Arrange demolition schedule so as not to interfere with Owner's on-site operations.

B. Submit schedule of days and times when demolition activities are scheduled. Such schedule shall require Owner's written approval prior to start.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS
Satisfactory Soils: Comply with requirements in Section 31 00 00 - Earthwork.

PART 3 - EXECUTION

3.01 EXAMINATION
A. Survey existing conditions and correlate with requirements indicated to determine extent of building demolitions required.

B. Review Project Record Documents of existing construction provided by Architect. Owner does not guarantee that existing conditions are the same as those in Project Record Documents.

C. Inventory and record the condition of items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element. Promptly submit a written report to Architect.

E. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.

F. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

3.02 PREPARATION
A. Refrigerant: Remove and store refrigerant according to 40 CFR 82 and regulations of authorities having jurisdiction.

B. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings and structures to be demolished.
1. Contractor shall arrange to shut off indicated utilities when necessary.
2. Arrange to shut off indicated utilities with utility companies.
3. If utility services are required to be removed, relocated, or abandoned, before proceeding with building demolition provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
4. Cut off pipe conduit a minimum of 24" below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

C. Existing Utilities: Refer to Division 23 and 26 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start demolition work until disconnecting and sealing have been completed and verified in writing. Remove and recycle refrigerant from air-conditioning equipment before starting demolition.

D. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished. Strengthen or add new supports when required during progress of demolition.

E. Removed and Salvaged Items: Comply with the following:
   1. Clean salvaged items of dirt and demolition debris.
   2. Pack and crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

3.03 PROTECTION

A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations.

B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during demolition and cleaned and reinstalled in their original locations after demolition operations are complete.

C. Existing Utilities: Maintain utility services indicated to remain and protect them against damage during demolition operations:
   1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
   2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction. Provide at least 72 hours notice to Owner if shutdown of service is required during changeover.

D. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 01 50 00 - Construction Facilities and Temporary Controls.
   1. Protect existing site improvements, appurtenances, and landscaping to remain.
   2. Erect a plainly visible fence around drip line of individual tress or around perimeter drip line of groups of trees to remain.

3. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
4. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
5. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that re exposed to building demolition operations.
6. Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise from occupied portions of adjacent buildings.

E. Comply with provisions of CBC Chapter 33 and CFC Article 87, latest edition of each.

3.04 DEMOLITION, GENERAL

A. General: Demolish indicated existing buildings and structures and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Do not use cutting torches until work area is cleared of flammable materials. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
2. Maintain adequate ventilation when using cutting torches.
3. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Engineering Surveys: Perform surveys as the Work progresses to detect hazards that may result from building demolition activities.

C. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

D. Use of explosives is not permitted.

3.05 TOTAL STRUCTURE DEMOLITION

A. Remove buildings and structures and site improvements intact when permitted by authorities having jurisdiction.

B. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.

C. Remove debris from elevated portions by chute, hoist, or other device that will convey debris to grade level in a controlled descent. Remove structural framing members and lower ground by method suitable to minimize ground impact or dust generation.

D. Concrete: Cut concrete full depth at junctures with construction indicated to remain, using power-driven saw, then remove concrete between saw cuts.

E. Masonry: Cut masonry at junctures indicated to remain, using power-driven saw, then remove masonry between saw cuts.

F. Concrete Slabs-on Grade: Saw-cut perimeter of areas to be demolished at junctures with construction indicated to remain, then break up and remove.

G. Structural Steel: Dismantle field connections without bending or damaging steel members. Do not use flame-cutting torches unless otherwise authorized by authorities having jurisdiction. Transport steel trusses and joists as whole units without dismantling them further.

H. Carpet and Pad: Remove in large pieces and roll tightly after removing demolition debris, trash, adhesive, and tack strips.

I. Building Component: Remove metal gratings, metal ladders, door, windows, door hardware, cabinets, mirrors, chalkboards and marker boards, tackboards, toilet accessories, plumbing fixtures, and light fixtures, as whole units, intact and undamaged.

J. Elevators: Remove as whole units as much as practical.

K. Equipment: Disconnect equipment at nearest fitting connection to services, complete with service valves. Remove as whole units, complete with controls.

L. Below-Grade Construction: Abandon foundation walls and other below-grade construction. Cut below-grade construction flush with grade.

M. Below-Grade Construction: Demolish foundation walls and other below-grade construction that is within 5' outside of footprint indicated for new construction. Abandon below-grade construction outside this area. Remove below-grade construction, including basements, foundation walls, and footings, to at least 12" below grade or depths indicated.

N. Below-Grade Construction: Demolish foundation walls and other below-grade construction. Remove below-grade construction, including basements, foundation walls, and footings, to at least 12" below grade or depths indicated.

O. Existing Utilities: Abandon existing utilities and below-grade utility structures. Cut utilities flush with grade.

P. Existing Utilities: Demolish existing utilities and below-grade utility structures that are within 5' outside of footprint indicated for new construction. Abandon utilities outside this area.
   1. Fill abandoned utility structures with satisfactory soil materials according to backfill requirements in Section 31 00 00 - Earthwork.
   2. Piping: Disconnect piping at unions, flanges, valves, or fittings.
   3. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.

Q. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.
   1. Piping: Disconnect piping at unions, flanges, valves, or fittings.
   2. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.

3.06 SELECTIVE DEMOLITION ON STRUCTURES TO REMAIN

A. General Selective Demolitions Requirements:
   1. Refer to drawings for extent of selective demolition work on existing buildings:
      a. Remove building components, equipment, fixtures, as designated on the drawings.
      b. Identify and cap discontinued utilities.
   2. Carefully demolish and remove from the site those items scheduled to be so demolished and removed. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the Contract, including, but not limited to, the following items:
      a. Protection of existing work to remain. Repair areas scheduled to remain that have been damaged by demolition activities. Repair to original conditions or compensate Owner for loss.
      b. Barricades, lights, signs, and safety precautions required by the governing code.
   3. Removal and disposition of material resulting from this work, except items identified by Owner to be salvaged and delivered to School District.
   4. Unforeseen Conditions: Include in the base bid miscellaneous cutting and patching necessitated as a result of unforeseen conditions, and the rework of abutting surfaces as required to make new work join and match existing surfaces to remain. No extra payments based on the pleas of unforeseen conditions will be allowed.

5. Noise Control: Carry on work in a manner which will produce the least amount of noise. Instruct workmen in noise control procedures.
6. Avoid cutting existing pipe, conduit, or ductwork serving the building but then scheduled to be removed or relocated until provisions have been made to bypass them.
7. In the event of demolition of items not so scheduled to be removed and replaced, promptly replace such items to the acceptance of the Architect and at no additional cost to the District.
8. Damages: Promptly repair damages caused to adjacent facilities by demolition operations at no additional cost to the District.

B. Selective Demolition Procedures:
1. By careful study of the Contract Documents, determine the location and extent of selective demolition to be performed. In company with the Architect, visit the site and verify the extent and location of selective demolition to be performed.
   a. Carefully identify limits of selective demolition.
   b. Mark interface surfaces as required enabling workmen to identify items to be removed and items to be left in place intact.
2. Prepare and follow an organized plan for demolition and removal of items.
   a. Shut off, cap, and otherwise protect existing public utility lines in accordance with the requirements of the public agency or utility having jurisdiction. Review plans, and confer with the Architect, to determine which lines are to be abandoned and which are to be kept active.
   b. Completely remove items scheduled to be demolished and removed, leaving surfaces clean, solid, and ready to receive new materials specified elsewhere.
   c. Comply with pertinent regulations of governmental agencies having jurisdiction.
   d. Remove materials to be re-installed or retained in a manner to prevent damage.
3. Demolish in an orderly and careful manner. Protect existing supporting structural members and finished which are not to be demolished. Unless shown on the drawings, no structural elements such as rafters, joists, columns, or studs shall be cut without written permission form the Architect and Division of the State Architect (DSA).

C. Utilities:
1. Maintain existing utilities; keep in service, and protect against damage during demolition operations.
2. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.

3. Owner will shut-off utilities serving structures. Disconnecting and sealing indicated utilities before starting demolition operations is part of this work.
4. Locate and protect irrigation devices within the area of demolition or workers' vehicular traffic throughout the entire period of the project.
5. Building that house public address systems and fire alarms, typically in Administration Buildings are to have power maintained at all times. If power must be interrupted, Contractor must give two (2) weeks prior notice for approval and schedule with District for interruption over weekends or when school is not in session.

3.07 SITE RESTORATION

A. Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.

B. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements in Section 31 00 00 - Earthwork.

C. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surfaces changes. Provide a smooth transition between adjacent existing grades and new grades.

3.08 REPAIRS

A. General: Promptly repair damage to adjacent construction caused by building demolition operations.

B. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

C. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.09 RECYCLING DEMOLISHED MATERIALS

A. General: Separate recyclable demolished materials from other demolished materials to the maximum extent possible. Separate recyclable materials by type.
1. Provide containers or other storage method approved by Architect for controlling recyclable materials until they are removed from Project site.
2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from demolition area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Transport recyclable materials off Owner's property and legally dispose of them.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling building demolition materials shall accrue to Owner.

C. Asphalt:
   1. Grind asphalt to maximum 4" size.
   2. Break up and transport asphalt to asphalt recycling center.

D. Concrete: Remove reinforcement and other metals from concrete and sort with other metals. Pulverized concrete to maximum 1-1/2" size.

E. Masonry: Remove metal reinforcement, anchors, and tires from masonry and sort with other metals.
   1. Pulverize masonry to maximum 1" size.
   2. Clean and stack undamaged, whole masonry unit son wood pallets.

F. Wood Materials: Sort and stack members according to size, type, and length. Separate dimensional and engineered lumber, panel products, and treated wood materials.

G. Metals: Separate metals by type.
   1. Structural Steel: Stack members according to size, type of member, and length.
   2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

H. Roofing: Separate organic and glass-fiber shingles and felts. Remove nails, staples, and accessories.

I. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

J. Carpet and Pad: Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency.

K. Equipment: Drain tanks, piping, and fixtures. Seal opening with caps or plugs.

L. Piping: Reduce piping to straight length and store by type and size. Separate supports, hangers, valves, sprinkler heads, and other components by type and size.

M. Lighting Fixtures: Separate lamps by type and protect from damage.

N. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

O. Conduit: Reduce conduit to straight lengths and store by type and size.

3.10 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
   1. Do not allow demolished materials to accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials and dispose of at designated spoil areas on Owner's property.

D. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.11 CLEANING

Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Remove designated building equipment and fixtures.

B. Remove designated partitions and components.

C. Identify and cap discontinued utilities.

D. Carefully demolish and remove from the Site those items scheduled to be so demolished and removed. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the Contract, including, but not limited to, the following items:
   1. Protection of existing items to remain.
   2. Barricades, lights, signs and safety precautions required by the governing code.

E. Removal and disposition of material resulting from this work, except items identified by Owner to be salvaged and delivered to School District. Such items shall include, but not be limited to, existing chalkboards, markerboards, clocks, telephones, speakers, that the Owner may wish to retain.

F. Inventory and removal of existing door hardware and lock cylinders to be delivered to District.

1.02 RELATED WORK

A. Documents affecting work of this Section include, but are not limited to, General Conditions, Supplementary Conditions, and Division 1 of these Specifications.

B. Relocation of utility lines and mechanical structures scheduled to remain active.

C. Site Demolition: Section 31 10 00.

D. Building Demolition: Section 02 41 16.

1.03 GENERAL REQUIREMENTS

A. Codes: Perform Work in accordance with appropriate Codes, and California Fire Code, latest edition, "Article 87 - FIRE SAFETY DURING CONSTRUCTION, ALTERATION, OR DEMOLITION OF A BUILDING."

B. Examine the Site, conditions, and limitations thereon and thereabouts. Bidding shall take into account such conditions and limitations, whether or not the same are specifically mentioned in the Contract Documents, and every bid shall be construed as including whatever sums are needed to complete the Work in every part as shown, described, or reasonably required or implied, and

attain the completed conditions contemplated by the Contract. The demolition drawings, including demolition work shown on construction drawings, shall be considered as a guide only. The exact extent of the demolition and reconstruction work shall be determined by a site visit and investigation.

C. Make note of existing asbestos, including asbestos lined pipes, ductwork and equipment. Removal of asbestos shall be executed by Contractor. Coordinate Work with trades contracted by Owner to execute the asbestos removal.

D. The use of explosives will not be permitted.

E. Partial Removal: Items scheduled to be removed and of salvageable value to Contractor may be removed from structure as work progresses. Salvaged items must be transported from site as they are removed. Partial removal is subject to the following conditions:
   1. Storage or sale of removed items on site will not be permitted.
   2. This excludes items and materials to be stored for Owner.

F. Unforeseen Conditions: Include in the base bid miscellaneous cutting and patching necessitated as a result of unforeseen conditions. No extra payments based on the pleas of unforeseen conditions will be allowed.

G. Noise control: Carry on work in a manner which will produce the least amount of noise. Instruct workmen in noise control procedures.

H. Removal of abandoned lines, vaults, the erasing of easements, and similar work is a responsibility of the local governmental authority having jurisdiction.

I. Conduct demolition to minimize interference with adjacent building areas. Maintain protected access at all times.

J. Provide and erect temporary barriers and security devices.

1.04 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.05 SUBMITTALS

A. Schedule: Submit proposed methods and operations of building demolition to Architect for review prior to start of Work. Include in schedule, coordination for shut-off, capping, and continuation of utility services, as required.

B. Submit five (5) copies of demolition and removal procedures and schedule for Architect's review.

C. Upon completion of the work in this Section, submit Record Drawings recording the extent of active and abandoned underground utilities. The drawings shall be signed and dated by the Contractor and shall be drawn on reproducible sepia. Submit drawings to Inspector of Record and/or transmittal to Architect.

PART 2 - PRODUCTS

2.01 SALVAGE CONTAINER

A. Provide one (1) lockable steel container, 8' x 8' x 20'.

B. Place container where directed by District.

PART 3 - EXECUTION

3.01 PREPARATION

A. Site Security: Erect chain link fence barricades, warning lights, and signs as required by the governing building code, to protect persons from injury, to prevent trespassing, and to prevent theft or damage due to vandalism.

B. Erect weatherproof closures for exterior openings as specified in Section 01 50 00.

C. Notify utility authorities to locate and flag underground lines. Disconnect, remove, and cap designated utility services within demolition areas.

D. Mark location of disconnect utilities. Identify and indicate capping locations on Project Record Documents.

E. Avoid cutting existing pipe, conduit, or ductwork serving the building but then scheduled to be removed or relocated until provisions have been made to bypass them.

F. Protect landscaping and irrigation systems unless scheduled to be altered.

G. Ensure safe passage of persons around area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons.
   1. Erect temporary covered passageways as required by authorities having jurisdiction.
   2. Provide interior and exterior shoring, bracing, or support as required to prevent movement, settlement, or collapse of building structure to remain.

3.02 SURFACE CONDITIONS

Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.03 DEMOLITION

A. By careful study of the Contract Documents, determine the location and extent of selective demolition to be performed.

B. In company with the Architect, visit the Site and verify the extent and location of selective demolition to be performed.
   1. Carefully identify limits of selective demolition.
   2. Mark interface surfaces as required enabling workmen to identify items to be removed and items to be left in place intact.

C. Prepare and follow an organized plan for demolition and removal of items.
   1. Shut off, cap, and otherwise protect existing public utility lines in accordance with the requirements of the public agency or utility having jurisdiction. Review plans, and confer with the Architect, to determine which lines are to be abandoned and which are to be kept active.
   2. Completely remove items scheduled to be demolished and removed.
   3. Comply with pertinent regulations of governmental agencies having jurisdiction.

D. Demolished material shall be considered to be property of the contractor and shall be completely removed from the job site. Burning of removed materials from demolished structures will not be permitted on Site.

E. Demolish in an orderly and careful manner. Protect existing supporting structural members and finishes which are not to be demolished. Unless shown on the Drawings, no structural elements such as rafters, joists, columns, or studs shall be cut without written permission from the Architect and Division of the State Architect (DSA).

F. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.

G. Walls:
   1. Remove all existing wall covering including but not limited to vinyl wall covering, wallpaper, ceramic tile, wood paneling, and wall carpet where new finishes are scheduled unless noted otherwise.
   2. Cut openings where shown, removing sufficient material for proper installation of repairs and new work. Remove any material chipped or otherwise damaged during demolition operations to neat straight line.
   3. Remove all existing chalkboards, markerboards and tackboards unless shown to remain.

4. Remove all miscellaneous wood trim and molding where new pinboard is scheduled to facilitate a smooth and continuous surface for the new finish application.
5. Refer to Section 26 05 00, Electrical Requirements.

H. Floors and Base:
1. Remove all existing floor covering and mastic including but not limited to carpet, ceramic tile, vinyl composition tile (VCT), sheet vinyl and wood where new finishes are specified unless otherwise noted. New carpeting may be installed over existing VCT. Damaged VCT to be patched and repaired prior to installation of carpet.
2. Remove sufficient finish flooring to a natural seam including adhesive to present smooth plane, ready for application of new material.

I. Ceilings:
1. Remove existing finished ceilings and wood furring where new ceilings are scheduled.
2. Remove all damaged ceiling tile and prepare substrate for new to match existing adjacent material.

J. Plumbing Fixtures: Remove indicated fixtures, including supplies and traps.

K. Lighting Fixtures: Remove indicated fixtures.

3.04 POLLUTION CONTROLS
A. Use water sprinkling, temporary enclosures and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.
1. Do not use water when it may create hazardous or objections such as ice, flooding, and pollution.
B. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations, as directed by Architect or governing authorities. Return adjacent areas to condition existing prior to start of Work.

3.05 TRAFFIC
A. Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.

B. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

3.06 UTILITY SERVICES
A. Maintain existing utilities; keep in service, and protect against damage during demolition operations.

B. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.

C. Owner will shut-off utilities serving structures. Disconnecting and sealing indicated utilities before starting demolition operations is part of this work.

D. Locate and protect those irrigation devices which are to remain in use and not be replaced or relocated within the area of demolition or workers' vehicular traffic throughout the entire period of the Project.

E. Buildings that house public address systems and fire alarm, typically in Administration Buildings are to have power maintained at all times. If power must be interrupted, Contractor must give two (2) weeks prior notice for approval and schedule with District for interruption over weekends or when school is not in session.

3.07 REPLACEMENTS

A. In the event of demolition of items not so scheduled to be removed and/or replaced, promptly replace such items to the acceptance of the Architect and at no additional cost to District.

B. Damages: Promptly repair damages caused to adjacent facilities by demolition operations at no additional cost to District.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

Forms for all cast-in-place concrete indicated on the drawings and subsequent removal of forms, except those earth forms described in this Section.

1.02 RELATED SECTIONS

A. Section 31 00 00 - Earthwork.

B. Section 03 21 00 - Steel Reinforcement.

C. Section 03 30 00 - Cast-in-place concrete.

1.03 QUALITY ASSURANCE

A. Qualifications of workmen: All workmen shall be experienced mechanics. Provide one person who shall be present at all time during execution of this portion of the work who shall be thoroughly familiar with the type of material being installed, the referenced standards and the requirement of this work and shall direct all work performed under this Section.

B. Codes and Standards: In addition to complying with all pertinent codes and regulations, comply with all pertinent recommendations contained in "Recommended Practice for Concrete Form work," publication 347R-88 and SP-4 of the American concrete institute.

C. Where provisions of pertinent codes and standards conflict with the requirement of this Section, the more stringent provision shall govern.

1.04 PRODUCT HANDLING

A. Protection: Contractor is to protect all form work materials before, during and after installation.

B. Damaged Forms: In the event of damage or misalignment, immediately make all repairs and replacement necessary at no additional cost to the School District.

PART 2- PRODUCTS

2.01 MATERIALS

A. Form lumber: All form lumber shall be new except as allowed for re-use of forms in Part 3 - EXECUTION of this Specification, and all form lumber shall be one of the following, a combination thereof, or an equal approved in advance by the Structural Engineer and DSA Structural Safety Section.
   1. Plywood forms may be Plyform, Plyron, and bearing the label of the Douglas Fir Plywood Association.
   2. Form lumber may be fir, larch hemlock or approved equal, seasoned lumber surfaced four sides.
   3. Form sealers shall be liquid form oil.

B. Other form materials and/or forming systems may be used if approved by the School District, Architect, Structural Engineer, and the Division of the State Architect (DSA). A complete list of materials, manufacturers and methods of application are to be submitted to the Architect, in accordance with Section 01 33 00 - Submittals and 01 25 13 - Product Options and Substitutions.

2.02 TIES AND SPREADERS

A. Form ties shall be of proven types and shall be a type which does not leave an open hole through the concrete and which permits patching at every hole.

B. When forms are removed, all metal ties shall be removed and shall be flush with the concrete surface. No metal ties shall be exposed on the exterior of the walls.

C. Wire ties and wood spreaders may be used only if approved by the Division of the State Architect (DSA).

2.03 ALTERNATE FORMING SYSTEMS

Alternate forming systems may be used if approved by the Division of the State Architect (DSA).

2.04 OTHER MATERIALS

All other form materials, not specifically described herein, but required for proper completion of concrete formwork, shall be as selected by the contractor subject to approval by the Division of the State Architect (DSA).

PART 3- EXECUTION

3.01 INSPECTION

A. Contractor shall verify and be responsible for all existing dimensions and elevations before any work is done.

B. Inspect the installed work of all other trades; verify that all such work is complete and that the installation of Formwork may begin.

C. Verify that forms have been constructed in accordance with all pertinent codes and regulations, referenced standards and the design.

D. Discrepancies: Do not proceed with installation in areas of discrepancy. Notify the Architect of all discrepancies. All discrepancies are to be fully resolved before proceeding with installation.

3.02 CONSTRUCTION FORMS

A. Forms are to be constructed sufficiently tight to prevent leakage of concrete, and able to withstand excessive deflection when filled with wet concrete. Forms shall be braced, anchored and properly aligned.

B. Layout and form all required cast-in-place concrete to the required dimensions indicated on the drawings.

C. Care shall be exercised in the layout of forms to avoid the necessity for cutting, patching or repair of concrete after it is in place.

D. Make provisions for all openings, offsets, recesses, anchorage, blocking and other requirements of the work.

E. Perform all forming required for work of other trades and do all cutting and repairing of forms required to permit such installations.

F. Carefully examine the drawing and specifications and verify with other trades for openings, reglets, chases, and other items that are required in the forms.

G. Forms for precast concrete shall be constructed to provide for shrinkage of the concrete, and shall be adequately braced. All edges shall have chamfer strips except as noted on drawings.

H. Construct all forms true, plumb, and square within a tolerance of 1/8" in 12 feet.

3.03 EMBEDDED ITEMS

Provide, install and check all required steel frames, angles, grilles bolts, inserts and other such items required to be anchored in the forms before the concrete is placed.

3.04 BRACING

A. Properly brace and tie the forms together so as to maintain size, shape, and alignment, and to provide safety to personnel.

B. Construct all bracing and supporting members of ample size and strength to safely support, without excessive deflection, all dead and live loads to which they may be subjected.

3.05 PLYWOOD FORMS

. Plywood forms shall be designed for loads imposed. Nail the plywood panels directly to studs and apply in a manner to minimize the number of joints.

B. Make all panel joints tight butt joints with all edges true and square, if necessary, use tape to prevent excessive leakage.

3.06 FOOTING FORMS

A. Foundation forms are to be wood unless otherwise approved by the Division of the State Architect (DSA).

B. Earth forms may be used for footings provided the soil will stand without caving and sides of the bank are made with a neat cut to the minimum dimensions indicated plus 2" wider than called for on the drawings. Comply with DSA mandatory minimum formwork requirements.

3.07 REUSE OF FORMS

A. Reuse of forms shall be subject to approval of the DSA Field Inspector.

B. Reuse of forms shall not delay of change the schedule for placement of concrete from the schedule if all forms were new.

C. Reuse of forms shall not affect the structural stability of the forms nor the appearance of the finished concrete.

3.08 REMOVAL OF FORMS

A. Side forms of foundations may be removed 48 hours after placement of concrete. Where foundations are supporting lateral loads, forms shall not be removed until approved by the DSA Field Inspector.

B. Use care and diligence, and protect workmen, passers-by, and the installed work and materials of other trades. Forms shall not be removed until the concrete can support all loads.

C. Cut nails, tie wires and form ties off flush, leave all surfaces smooth and clean.

D. Remove metal spreader ties and fill in the resulting pockets to match the surrounding areas with grout or dry pack. Sack all exposed faces.

E. Fill all holes resulting from the use of bolts, ties, spreaders and sleeve nuts with cement grout applied under pressure by means of a grouting gun; grout shall be one part portland cement, to two parts sand; apply grout immediately after removing forms.

3.09 CLEANING

A. Remove all forming material from the site and dispose of in approved dumps.

B. Clean area of all left over debris including stakes, ties, form boards, wires, concrete spills, etc. Leave area in a neat clean condition.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Principal Work Items Are:
   1. Rebar.

B. Related Work:
   1. Cast-In-Place Concrete, Section 03 30 00.

1.02 REFERENCES

A. Requirement in Addenda, Conditions and Division 1 collectively apply to this work.

B. ASTM A82/A82M-07 - Cold Drawn Steel Wire for Concrete Reinforcement.

C. ASTM A615/A615M-09b - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement and ASTM A706 Grade 60 for all reinforcing bars to be welded.

D. CRSI - Concrete Reinforcing Steel Institute Manual of Standard Practice.

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

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

1.03 SUBSTITUTIONS

Only written approval of Architect, by addenda or change order, will permit substitutions for materials specified. Refer to Sections 01 25 13 - Product Options and Substitutions procedures.

1.04 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:
   1. Codes: Conform to Title 24, CCR and CBC, 2013 Edition.
   2. Off-site Work: Conform to local governing agency requirements.

B. Source Quality Control: Refer to Section 01400, Quality Control and Testing Services for analyses and tests required.

C. Perform concrete reinforcement work in accordance with CRSI, CRSI 63, and CRSI 65.

1.05 SUBMITTALS

A. Submit reports for analyses and tests per Section 01 45 00.

B. Submit mill certificates of supplied concrete reinforcing, indicating physical and chemical analysis.

C. Certificate For Off-site Work: Provide for off-site work, per Section 01 77 00, Project Closeout.

D. Submit shop drawings per Section 01 33 00. Indicate sizes, locations and quantities of reinforcing steel, bending and cutting schedules, splicing, stirrup spacing, supporting and spacing devices.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver reinforcement to Site in bundles marked with metal tags indicating bar size, length, configuration and building location.

B. Handle and store materials to prevent injury or unwanted bends.

C. Store materials on blocking to prevent contact with ground. Do not store materials in water puddles.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Conform to applicable Codes; refer to Title 24, Section 1908A in particular.

B. Rebar: CBC, 2013 Edition, Section 1907A which is based on ASTM A615/615M-13; deformed; grade 60 typical, other stresses where noted.

C. Welded Wire Mesh: Refer to ASTM A185-79; 75,000 psi tensile strength for 10 gauge and larger wire, 70,000 psi tensile strength for 11 gauge and smaller wire. Flat sheets only.

D. Tie Wire: Refer to ASTM A82-79; annealed steel, 16 gauge minimum.

2.02 FABRICATION OF REBAR

A. General: Per CRSI Standards.

B. Fabricate to lengths and shapes required.

1. Bends: Bend cold around a pin; minimum diameter shall conform to Title 24, Section 1907A.2.
2. Do not bend or straighten bars in a manner which will injure material.
3. Do not re-bend bars.
4. Bending of reinforcement shall comply with ACI310, Section 7.1 through 7.4.

C. Locate reinforcing splices, not indicated on Drawings, at points of minimum stress. Indicate locations on shop drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install dowels in concrete, to match locations of masonry wall reinforcement.

B. Do not use rebar which has bends or kinks other than those required.

C. Do not heat, bend, cut, or alter rebar at Site without concurrence of Architect.

D. Place, support, and secure reinforcement against displacement. Do not deviate from alignment or measurement.

E. Spacing: Maintain following minimum clear distances between bars, or greater distances where required.
   1. All Cases: 1-1/2" minimum.
   2. Parallel Bars (except at splices): 1-1/2 times nominal diameter.

F. Clearances: Maintain following minimum clear distances to provide concrete coverage for protection of rebar, or greater distances where required.
   1. Footing surfaces poured directly on earth: 3".
   2. Walls against earth, but place in forms: 2".
   3. Other formed walls: 1-1/2".
   4. Columns: 2".
   5. Per CBC Section 1907A.6.
   6. Walls formed 3/4" from CMU walls.

G. Splices:
   1. Splice only at approved locations.
   2. Lap Splices: Wire tie securely together.
      a. Use typically for splices, corners, intersections.
      b. Minimum lap distance, unless otherwise required:
         1) Concrete: 40 bar diameters, but not less than 24".
   3. Other Splice Methods: Only with specific Architect approval.
   4. Separate splices: Code required distances.

3.02 FIELD QUALITY CONTROL

Inspection: Refer to Section 01 45 00, Quality Control and Testing Services.

3.03 ADJUSTMENT AND CLEANING

Prior to concrete placement, clean reinforcement coatings, rust, scale, that will reduce or destroy bond. Reinforcement appreciably reduced in section by cleaning shall be replaced as directed by Architect. Reposition misaligned reinforcement.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Cast-in-place concrete for the following:
      a. Curbs and footings
      b. Equipment pads
   2. Formwork.
   3. Curing and protection.
   4. Finishing.

B. Related Work:
   1. Requirements in Addenda, Conditions and Division 1 collectively apply to this work.
   2. Earthwork: Section 31 00 00.
   3. Asphaltic Concrete Paving: Section 32 12 16.
   4. Concrete Formwork: Section 03 11 00.
   5. Steel Reinforcement: Section 03 21 00.

1.02 SUBSTITUTIONS

Only written approval of Architect, by Addenda or Construction Change Document, will permit substitutions for materials specified. Refer to Section 01 25 13 - Product Options and Substitutions for procedure.

1.03 REFERENCES

A. ASTM C33/C33M-13 - Concrete Aggregates.

B. ASTM C94/C94M-13a - Ready-Mixed Concrete.

C. ASTM C150/CM150-12 - Portland Cement.

D. ASTM C260/C260M-10a - Air-Entraining Admixtures for Concrete.

E. ASTM C494/C494M-13 - Chemical Admixtures for Concrete.

1.04 QUALITY ASSURANCE

A. Design Criteria for Formwork:
   1. Contractor shall be solely responsible for formwork and shall:
      a. Design, construct and maintain formwork to safely support loads.
      b. Obtain governing agency approval.

B. Testing Agency:
   1. On-Site Work: District designated Testing Laboratory.
   2. Off-Site Work: Governing agency approved Testing Laboratory.

C. Requirements of Regulatory Agencies:
   1. Codes: Conform to Title 24 of the CCR and conform to CBC, 2013 Edition.
   2. Off-Site Work:
      a. Conform to local governing agency requirements.
      b. Obtain and pay for permits, licenses and fees.
      c. Arrange for tests and inspections.

D. Tests and Inspections: See Section 01 45 00, Quality Control and Testing Services.

E. Allowable Tolerances for Concrete Surface Smoothness: 1/8" maximum permissible variation from a true plane measured from a 10' straight edge placed anywhere on the surface.

F. Source Quality Control:
   1. Testing Laboratory shall provide continuous inspection at concrete batch plant for structural concrete, defined as follows: Footings, foundation walls, floor slabs-on-grade, and exterior reinforced slabs.
   2. Furnish Weighmaster's Certificates for all concrete.

1.05 SUBMITTALS

A. Concrete Design Mix: Reviewed by Testing Laboratory.
   1. Per ACI 318, Section 5.2 and 5.3.

B. Test Reports: Source and Field Quality Control tests.

C. Certificates:
   1. Weighmaster's Certificates: Per DSA requirements.
   2. Certificate for Off-Site Work: Provide for off-site work, per Section 01 77 00, Project Closeout.

D. Provide product data for specified products, under provisions of Section 01 33 00.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Storage:
   1. Cement: Store in weather-tight enclosures and protect against dampness, contamination and warehouse set.
   2. Aggregates:
      a. Stockpile to prevent excessive segregation or contamination with other materials or other sizes of aggregates.
      b. Use only one supply source for each aggregate stockpile.
   3. Admixtures:
      a. Store to prevent contamination, evaporation or damage.
      b. Protect liquid admixtures from freezing or harmful temperature ranges.
      c. Agitate emulsions prior to use.

B. Deliver Ready-Mixed Concrete in conformance with Title 24, Section 1905A.8 (which refers to ACI 318 Section 5.8).

C. Formwork Materials:
   1. On delivery to Site, place materials in area protected from weather.
   2. Store materials above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation or ventilation.
   3. Handle materials to prevent damage.

1.07 JOB CONDITIONS

A. Environmental Requirements:
   1. Allowable Concrete Temperatures:
      a. Cold Weather: When depositing concrete in freezing or near-freezing weather, concrete mix temperature shall be between 50°F and 90°F when cement is added. Maintain a concrete temperature of 50°F minimum for 72 hours after placing, or until concrete has thoroughly hardened. When necessary, heat concrete materials before mixing. Take necessary precautions to protect transit-mix concrete.
      b. Hot Weather: 90ºF maximum.

B. Protection:
   1. Do not place concrete during rain, sleet, or snow unless protection is provided.
   2. After placement, protect from injury by elements, traffic, construction operations and other causes.

C. Sequencing, Scheduling: Coordinate work with earthwork, trenching for foundations, underground utilities, plumbing, electrical, mechanical, imbedded items, steel reinforcement and related work of other sections.

PART 2 - PRODUCTS

2.01 MATERIALS; GENERAL

Conform to Codes and additional requirements stated herein.

2.02 BASIC CONCRETE MATERIALS

A. Portland Cement:
   1. Type II; per Title 24, Section 1903A.5 and modified ACI 318 Section 3.3.2.
   2. Use tested cement only per Section 1903A. Use same cement brand for all exposed work.
   3. Recycled content shall be maximum 15% (15% flyash per DSA IR 19-3 and 10% reclaimed aggregate per DSA IR 19-4).

B. Water: Clean, fresh, free of injurious amounts of minerals, organic, substances, salts, acids or alkali.

C. Aggregates:
   1. General: Per Title 24, Section 1903A.
   2. Aggregates: Per CBC Section 1903A.3.3.
      a. Fine: Sand; well graded from coarse to fine.
         1) 15% Flyash: Per CBC Section 1903A.4, ACI 318-05, ASTM C618-12a, ASTM C311/C311M-13 and ASTM C94/C94M-13a.
      b. Coarse: Uniformly graded from 1/4" to maximum permissible size. Maximum size per Title 24, Section 1903A.3, but not to exceed 1-1/4". See Structural Drawings.
      c. Combined grading shall meet Table 19A-J, Title 24, Part 2.
   3. The nominal maximum size of coarse aggregate shall not be larger than one-fifth the narrowest dimension between sides of forms, nor one-third the depth of slabs, nor three-fourths the minimum clear spacing between individual reinforcing bars or wires, bundles of bards, or Pre-stressing tendons or ducts.

2.03 ADMIXTURES
A. Inclusion of admixtures in concrete mix is at Contractor's Option and expense. Types shall conform to the following:
   1. Conform to Title 24, Section 1903A.5. Admixtures shall increase workability and reduce water demand.
   2. Acceptable Products:
      a. Floor slabs-on-grade: Red Label or Anti-Hydro International Inc. or approved equivalent. Mix per manufacturer's recommendations.

2.04 CONCRETE SURFACE TREATMENTS
A. Liquid Curing Compounds:
   1. General: Conform to ASTM C309-11.
   2. Acceptable Manufacturers: Hunt Process Co., Edoco/Burke Construction Chemicals, Scofield, Sonneborn (Degussa Construction Chemicals); US Spec (US Mix Products Co.).
   3. "Clear", Oxidizing Type (For exterior areas): Hunt "Clear #ARB" as a standard of quality.

B. Liquid Curing Compound (for interior slabs):
   1. General: Penetrating curing compound.
   2. Acceptable manufacturers: Curranseal, Innerseal.
   3. Acceptable Products:
      a. Curranseal PM 3300 (714) 641-1121.
      b. Innerseal DPS; 800-999-9385.
      c. No other substitutions allowed.
   4. Apply penetrating sealer within 24 hours of slab placement while concrete is still "green."

5. Application of compound shall be by a trained applicator acceptable to the compound manufacturer.
6. Provide manufacturer's standard 10 year warranty covering both labor and materials necessary to repair floor slab, repair or replace floor finish if repairs cannot be made.
7. Repair all cracks in interior slabs with "crack chaser" saw, fill crack with sealant. This requirement shall be provided prior to application of finish floor materials and is required to validate manufacturer's 10 year warranty.

2.05 WOOD FORMWORK

A. Grade Marks and Rules for Lumber and Plywood: Per Specifications Sections 03 11 00 - Concrete Formwork and 06 10 00 - Rough Carpentry.

B. Boards For Unexposed Concrete and Basic Forms: Douglas Fir, S4S; Standard Grade or better.

C. Form Coatings and Release Agents:
1. Per manufacturer's recommendations, suitable for type of form materials and finished concrete surface.
2. Materials shall not stain or change color of exposed concrete.
3. Materials shall be compatible with finishes to concrete.

2.06 ACCESSORIES AND MISCELLANEOUS

A. Non-Shrink Grout (Drypack Under Base Plates): Five Star high early strength grout by U.S. Grout Corporation. The grout shall be mixed and installed in accordance with manufacturer's recommendations. Tensile strength (ASTM C307-03(2012)): 2000 psi; Flexural strength (ASTM C580-02(2012)): 4000 psi.

B. Epoxy Adhesive: Simpson Epoxy-Tie ET-High Strength Adhesive or Hilti Equal. Two component solid epoxy system meeting minimum requirements of ASTM C881/C881M-10 specification for Type I, II, IV, and V, Grade 3, Class B and C.
1. Compressive Yield Strength: 13,390 psi minimum at 7 days per ASTM D695-10.
2. Heat Deflector Temperature: 168° (76°C) minimum per ASTM D648-07.
3. Bond Strength: 4,420 psi at 14 days per ASTM C882/C882M-13.
4. Codes: ESR-3372; SBCCI-94145; City of Los Angeles RR25185, RR25120.

C. Concrete Stair Nosing: Refer to Section 05 50 00 - Metal Fabrications.

D. Vapor Barrier Membrane under interior concrete slabs:
1. Membrane shall be Stego Wrap 15 mil as manufactured by Stego Industries (949) 257-4100.
a. Acceptable Manufacturer: Vaporguard by Reef Industries.

2. Vapor barrier membrane shall have the following properties.
   a. Permeance as tested after mandatory conditioning (ASTM E154/E154M-08a(2013)e1, Section 8, 11, 12, 13) less than 0.01 Perms.
   b. Strength: ASTM E1745 Class A.
   c. Thickness: 15 mils minimum.
   d. Installation shall be in accordance with ASTM E1643-11 and manufacturer's instructions.

2.07 MIXES, CONCRETE

A. Mix Proportioning:
   1. General:
      a. Non-designed Mix, per Title 24, Section 1905A.8 which refers to ACI 318 Section 2.
      b. Design shall include admixtures and/or additives. Use as approved by DSA.
      c. Do not add salt, chemicals, or other materials to prevent freezing.
   2. Strengths, Proportions and Criteria: Typical for all locations; except where higher strengths are indicated on the Drawings.
      a. Strength: 3,000 psi at 28 days; 1,800 psi at 7 days.
      b. Cement Content: Minimum 6 sacks (94#) cubic yard.
      c. Slump: Maximum four inches.

B. Mixing:
   1. General: Per Title 24, Section 1905A.8 which refers to ACI 318 Section 5.8 and Section 5.2.
   2. Batch Mixed: Use ASTM C94 batch mixer; or capacity to handle one or more full sack batches. No split-sack batches.
   3. Transit Mixed: Per CBC 2013 edition Section 1905A.9 which refers to ACI 318 section 5.9.
   4. Mix concrete only in quantities necessary for immediate use.
   5. Do not retemper concrete.
   6. Discharge wash water from mixer before reloading.
   7. Include additives and admixtures.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine excavations for foundations, footings, and structures and examine earthwork operations and subgrade for defects that will adversely affect the execution and quality of work.

B. Verify anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, held securely, and will not cause hardship in placing concrete.

C. Do not start work until unsatisfactory conditions are corrected.

3.02 PREPARATION

A. Layout: Accurately layout work to properly position elements to lines and levels.

B. Joining To Previous Pours or Existing Work: Sandblast, roughen and clean existing joining concrete and rebar surfaces to provide a proper bond to new work.

C. At locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels, and pack solid with epoxy cement.

D. Slabs-on-Grade:
   1. Refer to Section 31 00 00, Earthwork.
   2. Moisten surface sufficiently to prevent suction of water from concrete mix, except where a membrane is used.
   3. All interior slabs-on grade shall be poured over 6 mil visqueen vapor barrier membrane protected with 1" of sand overlay over crushed rock porous fill. Vapor barrier shall conform to ASTM E1745-09.

3.03 FORMWORK ERECTION

A. Scope:
   1. General: Concrete shall be cast in forms.
   2. Footings: When specifically approved by Architect/Engineer and DSA, earth banks may be used as forms in lieu of wood forms.

B. Form Face Types: Plywood or horizontal boards.

C. General Construction:
   1. Forms shall be substantial, unyielding, true to line and level; sufficiently tight to prevent leakage; adequately tied and braced; and conform exactly to dimensions of finish concrete.
   2. Forms shall provide adequate work clearances, temporary access openings necessary for concrete placement, provisions for attachment to previous work; and provide for stripping without injury to concrete work.
   3. Cleanouts: Provide continuous cleanouts on one side at bottom of vertical work (such as walls), and other openings as necessary to facilitate cleaning and inspection of the work.

D. Fabrication:
   1. Nail form faces securely to studs. Space studs to adequately support form faces and prevent bulging. Provide stud or solid backing at joints.
   2. Install chamfer strips at exposed corners and edges.
   3. Securely fasten chamfers, control joints and other detail work.

E. Erection:
   1. Erect formwork plumb and level; double walls; adequately brace, shore and support; set so finished concrete surfaces will drain.
   2. Footings and Foundation Walls: Form both sides; secure to stakes.

F. Form Coatings and Release Agents: Apply per manufacturer's recommendations to evenly coat contact surfaces.

3.04 EMBEDDED ITEMS

A. General:
1. Install per Title 24, Section 1906A.
2. Place accurately; anchor securely to prevent displacement.
3. No wood to be permanently embedded in concrete, except where indicated.
4. Coordinate, notify, and provide access for other Specifications Sections to set their required work.
5. Install doweling with epoxy adhesive per manufacturer's recommendations.
6. Install safety treads and nosing specified in Section 05 50 00 - Metal Fabrications, embedded in wet concrete mix per the manufacturer's recommendations in the exterior, cast-in-place concrete steps as located on the Drawings.

3.05 CONCRETE PLACEMENT

A. General: Comply with Title 24, Section 1905A.10 which refers to ACI 318, Section 5.10.

B. Notify Architect and the Inspector of Record minimum 48 hours prior to commencement of all concreting operations.

C. Preparation and Inspection Prior to Concrete Placement:
1. Do not place concrete until:
a. Footing excavations are clean and dry.
b. Steel reinforcement is correctly positioned, securely anchored and cleaned.
c. Forms are cleaned, coated, and ties are tightened.
d. Embedded items are positioned and anchored.
e. Construction joints are cleaned and prepared.
f. Subgrade is prepared and moistened.
g. Preparations for a pour are completed.
h. Work has been inspected.
2. Inspection: Formwork, steel reinforcement, footing excavations and preparation work, as stated above, to be examined by the IOR and/or Architect/Engineer, prior to pouring concrete.

D. Placement (per CBC Section 1905A.10):
1. Convey concrete from mixer to final position by method which will prevent separation or loss of material and cause minimum handling.
2. Place concrete continuously between predetermined construction and control joints.

3. Regulate rate of placement so concrete remains plastic and flows into position.
4. Do not use partially hardened or contaminated concrete; and do not use concrete which has been remised after initial set.

E. Consolidation:
1. Use hand rodding, spading and tamping.
2. Vertically insert and remove hand-held tools.
3. Work concrete thoroughly around reinforcement, embedded items and into all parts of forms.
4. Consolidate to a dense, uniform mass without voids, rock pockets, or entrapped air. Consolidate each layer.
5. Mechanically powered vibrators may be used. Such use shall be limited to vertical consolidation of concrete over 8" thick and all walls. Do not use to move concrete laterally or in any other means that may cause aggregate separation.

F. Slabs, Walks and Flatwork:
1. Lift reinforcement at placement progresses to proper position in slab.
2. Tamp and screed to required lines and levels.
3. Depress coarse aggregate with grille-blade tamper.

3.06 FINISHING
A. Provide concrete formed surfaces to be left exposed with smooth rubbed finish.

B. Interior Flatwork (Floor slabs):
1. Smooth trowel finish surface texture unless otherwise indicated to receive ceramic tile, terrazzo, a concrete topping, or other surfacing which would benefit from the additional bonding of a comparatively rough surface.
2. Grind smooth any irregularities or improper levels in finished work.

3.07 FINISHING WALLS AND VERTICAL CONCRETE SURFACES
A. Scope: Finish walls and vertical concrete surfaces as specified herein, except for school name and office signs. Provide concrete formed surfaces, to be left exposed, with smooth rubbed (sacked) finish.

B. Exposed Concrete At Tops of Forms:
1. Strike concrete smooth and level.
2. Float and/or trowel to texture comparable to formed surfaces.

C. Preparation, Formed Surfaces:
1. Remove fins and irregularities while concrete is green.
2. Tie Holes: Fill full and flush with compacted drypack.
3. Surface Defects:
a. Cut out blemished and defective areas as directed by Architect.
b. Patch flush with drypack, typically, or as directed by Architect.

D. Cleaning:
   1. Exposed Surfaces:
      a. Remove form coatings, bond breakers and other surface coatings.
      b. Scrub formed surfaces with solution of 1-1/2 lbs. caustic soda to one-gallon water.
      c. Scrub smooth wood or waste mold areas with 20% muriatic or hydrochloric acid solution.
      d. Wash surfaces clean with clear water, immediately after scrubbing.
      e. If above methods fail to remove all substances, lightly sandblast surfaces clean as directed by Architect.
   2. Surfaces With Finish Materials Applied Directly to Concrete: Clean as stated for Exposed Surfaces, except where uncleaned surface will not affect application, bond, performance, or appearance of finish materials.

E. Sacked Finish on Exposed Concrete:
   1. General: Schedule work to complete entire panel, element, or area in one continuous operation.
   2. Application:
      a. Wet surface to control suction of water from grout.
      b. Apply grout mix; uniformly spread and scour to fill depressions.
      c. While still plastic, sponge rubber float finish surface, and remove excess grout.
   3. Sacking: Allow surface to dry, but not completely harden. Then rub vigorously with clean dry burlap to remove loose excess material. Finished surface to have a smooth slick burnished finish (similar to a steel trowel finish) which is free of defects and blemishes.

3.08 PROTECTION AND CURING OF CONCRETE

A. Protection: Protect work from damage and defacement during construction operations.

B. Curing:
   1. Keep concrete surfaces wet until curing medium is applied.
   2. Flatwork:
      a. Spray apply specified liquid curing compounds to exterior flatwork (slabs, walks, and similar work).
      b. Application: Apply uniform, continuous, tightly adhered film, free from pinholes or defects at rate of 1 gallon per 250 sq. ft. Brush out puddles and runs.
   3. The length of time, temperature and moisture conditions for curing concrete shall be in accordance with Section 1905A.11 which refers to ACI 318 Section 5.11.

3.09 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 01 45 00, Quality Control and Testing Services.

B. Inspections:
   1. Steel reinforcement.
   2. Structural concrete.

C. Tests:
   1. Concrete slump.
   2. Making concrete compression test cylinders.
   3. Core tests of defective work.

3.10 ADJUSTMENT AND CLEANING

A. Correction of Defective Work:
   1. Work not conforming to Contract requirements shall be removed and replaced except where patching or other remedial work is specifically permitted by Architect. Contractor shall bear costs of correction of defective work.
      a. Surface patching materials and methods shall be as approved by Architect.
      b. Structural concrete replacement, strengthening, and repair methods and materials shall be as approved by Architect/Engineer and DSA.

B. Clean exposed joint surfaces to receive joint sealant per Section 07 92 00.

C. Clean exposed surfaces prior to acceptance.

3.11 CONSTRUCTION JOINTS

A. Comply with Section 1906A.4, CBC, latest edition.

END OF SECTION

PART 1 - GENERAL

1.01 REFERENCE

Title 24, California Code of Regulations requires that where high lifting is used the method is to be approved by the Division of the State Architect (DSA).

1.02 DESCRIPTION

A. The High Lift Grouting Method as developed for use in reinforced concrete block masonry is intended for use on wall construction where openings, block pattern arrangements, special reinforcing steel, or embedded structural steel details do not prevent the free flow of grout or inhibit the use of mechanical vibration to properly consolidate the grout fill in cells or horizontal grout spaces. Horizontal reinforcing should be positioned in a single vertical plane at each curtain steel to allow maximum accessibility to the cell spaces.

B. The procedure requires that masonry units, reinforcing steel and embedded items will be in place before grouting of the wall voids commences. The work should be so arranged that once grouting of a section of wall is started the grouting is to proceed in lifts without stopping except as noted below until the full height of the prepared section is poured. The waiting period between lifts is to be limited to the time required to obtain an initial consolidation of grout due to settlement shrinkage and absorption of excess water by the masonry units. This also allows for a reduction in hydrostatic pressure of the grout on the masonry unit and reduces the possibility of blowouts.

C. The grout shall be a high slump workable mix preferably placed by pumping to permit continuous pouring and is to be worked into all voids. Use mechanical vibrators for consolidation. Where job conditions preclude such use, other methods may be employed if approved by the DSA. Because of the high water-cement ratio used in this type of grout, it is essential that the grout be reconsolidated after it has taken on a plastic consistency but prior to taking an initial set. The reconsolidation is intended to overcome settlement shrinkage separations from the reinforcing steel and to promote bond to the masonry unit walls.

D. A pour is considered as the entire height of grout fill placed in one day and is composed of a number of successively placed grout lifts. A lift is the layer of grout placed in a single continuous operation.

E. The maximum height of pour is limited by the practical considerations of segregation of grout due to the height of free fall, effect of dry grout deposits left on block projections and reinforcing steel and the ability to effectively reconsolidate the grout. Unless specifically approved otherwise the maximum height of the continuous pour will be done in lifts not exceeding 4 feet up to 12' for 8" walls and 16' for 12" walls. Conform to requirements of CBC Section 2104A.6.1.2.3, and DSA IR 21-2.

1.03 QUALITY ASSURANCE

Materials are to conform to Section 2104A and 2103A, CBC, 2013 Edition, Title 24.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Gravel Aggregate: Gravel aggregate for grout is to conform to CBC, 2010 Edition, Section 2103A.12.3 which refers to ASTM C404-11, coarse aggregate, except when other gradings are specifically approved by the Architect or Structural Engineer, and the DSA.

B. Coarse Aggregate: Coarse aggregate is to conform to Section 1903A.3 CBC, Title 24, which refers to modified ACI 318, Section 3.3.2.

C. Admixture: Use an approved grout admixture of a type that reduces early water loss to the masonry units and produces an expansive action in the plastic grout sufficient to offset initial shrinkage and promote bonding of the grout to interior surfaces of the masonry units. Obtain approval for use of the admixture from the Architect/Engineer and the DSA.

D. Mortar: Mortar is to comply with the requirements of CBC Section 2103A.8, Title 24; and with the following additional requirements:
   1. Place approximately half the required water and sand into the mixer while running.
   2. Add cement and the remainder of the sand and water into the mixer in that order and mix for a period of at least two minutes.
   3. Add lime and continue mixing as long as needed to secure a uniform mass.
   4. The total mixing time may not be less than ten minutes.

E. Grout: The grout mix is to comply with the requirements of Title 24, CBC Section 2103A.12.
   1. Sufficient water may be added to make a workable mix that will flow into joints of the masonry without separation or segregation. When grout is to be placed in masonry units with typical rates of absorption, the slump of the grout should be approximately 9" to 10" depending on temperature and humidity conditions.
   2. Where the least lateral dimension of cells to be filled exceed 5", a coarser aggregate may be used in the grout fill of the mix if designed in accordance with Section 1904A, CBC. The maximum size of aggregate is not to exceed 1". The water per sack of cement shall conform to 1904A.1, which refers to ACI 318 Section 4.1, CBC Title 24 to allow for absorption by the masonry units and with sufficient workability to meet the requirements given in the paragraph above.
   3. Grout mixes are to contain an approved admixture conforming to the requirements of this Section and IR 21-2. Use such admixture in accordance with manufacturer's instructions.
   4. Mixing of Grout: The mixing of grout is to conform to the requirements for mixing of concrete, Section 2103A.12, CBC Title 24. Whenever possible mix and deliver grout in accordance with the requirements for transit-mixed concrete. Time the addition of the admixture in strict accordance with the manufacturer's instructions. The procedure used for adding it to the grout mix is to provide for good dispersion.
   5. Certification: The quality and quantities of materials used in transit-mixed grout are to be continuously checked by a qualified person at the location where the materials are measured.
   6. If specified by the Architect or Structural Engineer and approved by the Division of the State Architect, certification concerning quantity of materials may be accepted from a licensed weighmaster in lieu of continuous plant inspection if the following procedures are used to check the quality of the materials to be used in the grout.
      a. Test samples of the aggregate to be used in the grout are to be taken and tested by the testing laboratory in accordance with ASTM C1019-13.
      b. The transit-mixed grout supplier uses a mix design for the proportions of cement, sand, and pea gravel or coarser aggregate prepared or approved by the project Architect/Engineer.

c. On the first half-day transit-mixed grout is supplied to the job, and at such other times as may be required by the Architect/Engineer, the quantity and quality of materials used in the transit-mixed grout is continuously checked by an approved inspector at the batch plant location. In addition to the quality of the aggregates, the inspector is to verify the quality of the cement.
d. The licensed weighmaster will certify to each load on a load ticket transmitted to the District's Inspector and furnish an affidavit at the completion of the project.
e. Tests: Testing of mortar and grout is to conform to the requirements of Section 2105A.4 of CBC, Title 24.

PART 3 - EXECUTION

3.01 CONSTRUCTION

The construction of high lift concrete block masonry work is to conform to the requirements of CBC, Title 24, Section 2104A.5.1.2.3, with the following additional requirements:

A. Foundations: The contact surface of foundations and floors that are to receive masonry work are to be thoroughly cleaned and roughened in accordance with Section 1906A.4.1, Title 24, CBC before start of laying. Protect the roughened surface during construction to assure a good bond between the grout fill and the concrete surface.

B. Cleanouts: Conform to the requirements of Section 2104A.5.1.1.3.3, CBC. Provide for each pour by leaving out every other unit in the bottom tier of the section being poured or by cleanout openings in the foundation. The openings are to be made prior to the start of laying and be of sufficient size and location to allow thorough flushing away of mortar droppings and debris. After laying of masonry units is completed, the cells cleaned, the reinforcing positioned and inspection completed, close the cleanouts by inserting face shells of masonry units or covering the openings with forms. Face shell plugs are to have a two day minimum curing time and be adequately braced during grouting to resist the pressure of the fluid grout.

C. Reinforcement: Place reinforcing steel accurately in strict accordance with the approved Plans and Specifications. Both horizontal and vertical reinforcing are to be held in position by wire ties or spacing devices near ends and at intervals not exceeding 192 diameters of the reinforcement. Place the horizontal reinforcing as the work progresses. The vertical reinforcing may be dripped into position after the completion of the laying if adequate positioning devices are provided to hold the reinforcement in proper location.

D. Masonry Units: Use of open end concrete masonry units is preferred wherever possible and is required for stacked bond. Bond beam units are to be used wherever possible to facilitate the horizontal flow of grout and are required at all horizontal bars to provide a minimum vertical opening at cross web 3" high by 3" wide. The concrete masonry units shall not be wetted before laying except in hot, dry areas where the contact surfaces of the units shall be moistened immediately before laying to prevent excessive drying of mortar. Wetting shall be limited so as not to compromise the compressive strength of the mortar. Refer to ASTM C270-97a, Appendix XI, "Selection and Use of Mortar for Masonry Units."

E. Laying: Conform to the requirements of Section 2104A.5.1.2.1, CBC. Fill head and bed joints solidly with mortar for a distance in from the face of the unit not less than the thickness of the face shell. Care is to be taken in placing the mortar to keep a minimum of droppings from falling into the block cells. Arrange open end concrete masonry units used in stacked bond so the closed ends are not abutting.

F. Wall Ties and Bracing: Conform to the requirements of Section 2104A.5.1.2.1, CBC. When stacked bond is used or when adequate cross webs between face shells are not provided, ties of heavy gauge wire embedded in the horizontal mortar joints should be provided across continuous vertical joints or between face shells to prevent blowouts due to the hydrostatic pressure of the fluid grout. External ties or braces may also be used for this purpose. During construction, brace the ungrouted walls adequately to resist wind and other forces.

G. Mortar Droppings and Overhangs: Thoroughly remove mortar droppings and overhangs from the foundation or bearing surface, cell walls and reinforcing. Acceptable methods for this are by hosing with a jet stream at least twice a day (at mid-day and quitting time) or by providing a 2" or 3" blanket of dry sand over the exposed surface of the foundation, dislodging any hardened mortar from the cell walls and reinforcing with a pole or rod and removing the mortar debris with the sand cover prior to clean up and grouting.

H. Construction Joints: In the high lift grouting method, intermediate horizontal construction joints are not permitted. Plan the work for one continuous pour of grout to the top of the wall in 4' layers or lifts in the same working day. Should a blowout, a breakdown in equipment, or any other emergency occur, cease the grouting operation. An alternate procedure may be used with the approval of the Architect/Engineer and the DSA. The section of wall to be grouted in any one pour should be limited to a length in which successive lifts can be placed within one hour of the preceding lifts. Vertical control barriers shall be placed between pour sections in locations approved by the Architect/Engineer and the DSA.

I. Grouting: Conform to the requirements of Section 2104A.5.1.1.3, CBC. To prevent blowouts, pour no grout until the mortar has set and cured. However, grout the walls as soon as possible after mortar has cured to reduce shrinkage, and cracking of the vertical joints. Cleanout closures, reinforcing, bolts and embedded connection items are to be in position before grouting is started. Handle grout from the mixer to the point of deposit in the grout space as rapidly as practical by pumping and placing methods which will prevent segregation of the mix and cause a minimum of grout splatter on reinforcing and masonry unit surfaces not being immediately encased in the grout lift. The grout space in masonry shall be a minimum of 3-1/2 inches. Reinforcing and wire ties shall be embedded in the grout. The thickness of the grout between masonry units and reinforcing shall be a minimum of one bar diameter. Vertical grout barriers or dams shall be built of solid masonry across the grout space the entire height of the wall to control the flow of the grout horizontally. Grout barriers shall not be more than 30 feet apart. Depending upon weather conditions and absorption rates of the masonry units, the lift heights and waiting periods may be varied. Under normal weather conditions with typical masonry units, the individual lifts of grout are limited to 4' in height with a waiting period between lifts of

30 to 60 minutes. Place the first lift of grout to a uniform height within the pour section and mechanically vibrate thoroughly to fill voids. The grouting team should be organized to enable the vibration to follow closely behind and at the same pace as the pouring operation. After a waiting period sufficient to permit the grout to become plastic but before it has taken any set, the succeeding lift should be poured and alternate cells vibrate 12" to 18" into the preceding lift. Do this in such a manner as to reconsolidate the preceding lift and close any plastic shrinkage cracks or separations from the cell walls. If, because of unavoidable job conditions, the placing of the succeeding lift is going to be delayed beyond the period of workability of the preceding lift, reconsolidate each lift by reworking with the mechanical vibrator as soon as the grout has taken its settlement shrinkage. Repeat the waiting, pouring and reconsolidate steps until the top of the pour is reached. Reconsolidate the top lift also after the required waiting period to fill any space left by settlement shrinkage.

J. Cleaning Wall: Immediately after the wall has been fully grouted, hose off with water under pressure through a jet nozzle, the scum and stains which have percolated through the blocks and joints.

K. Curing: Attention should be given to proper curing of the mortar joints as well as the grout concrete pour. The concrete block work and top of grout pour should be kept damp to prevent too rapid drying during hot or drying weather, and drying winds.

3.02 INSPECTION AND CORE TESTS

A. Inspection: Masonry work is required to be continuously inspected during laying and grouting by an inspector specially approved for the purpose by the DSA. The inspector makes test samples and performs such tests as are required by this Section. The special masonry inspector is to check the materials, details of construction and construction procedure. He will furnish a verified report that, of his own personal knowledge, the work covered by the report has been performed and materials used and installed in every particular in accordance with and in conformity to the duly approved Drawings and Specifications.

B. Core Tests: Take core tests of the completed masonry construction in accordance with Section 2105A.4, CBC, Title 24. The Inspector of Record (IOR) or testing agency is to inspect the coring of the masonry walls and prepare a report of coring operations for the testing laboratory files and mail one copy to the DSA. Not less than two (2) cores having diameter of 6" shall be taken from each Project. Two (2) cores shall be taken from each building for every 5000 sq ft of masonry wall or floor area, whichever is greater, or a fraction thereof; conforming to Section 2105A.3.1, CBC. State in this report the number, the location and the condition of cores on the Project. Pay particular attention to the description of the bond between the grout fill and the cell walls of the masonry unit. The report should also include a description of any difficulties encountered in the coring operation which might impair the strength of the sample. Submit cores to the testing laboratory for examination. If specifically requested by the Architect/Engineer, 1/3 of the cores will be tested for the bond strength of the joint between the masonry units and the grout. This test determines the unit force required to shear the masonry unit face shells from the grout core for each face.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

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

B. Related Sections - the following Sections contain requirements that related to this Section:
   1. Section 02 30 00 - Subsurface Exploration.
   2. Section 31 22 13 - Rough Grading.
   3. Section 31 23 13 - Excavating, Backfilling, and Trenching.
   4. Section 32 12 16 - Asphaltic Concrete Paving.
   5. Section 32 13 13 - Portland Cement Concrete Paving.
   6. Section 33 00 00 - Site Utilities.
   7. Section 33 30 00 - Sewerage and Drainage for footings, underslab, and wall drainage.
   8. Section 03 30 00 - Cast-in-Place Concrete.
   9. Division 23 - Basic Mechanical Requirements.
   10. Division 26 - Basic Electrical Requirements.

C. Geotechnical Engineering Report - Refer to Section 02 30 00.

1.02 DESCRIPTION OF SYSTEM

A. The Contractor is solely responsible for determination of earthwork quantities.

B. The Contractor shall, at his own expense, provide fill material not obtainable from site work area(s).

C. If surplus soil is generated, the Contractor may spread it on-site in Architect designated and limited portions on the turfed playground area. It shall be placed as compacted fill in an even layer or layers with edges feathered at a 5% maximum slope to blend smoothly with adjacent grades.

1.03 SUMMARY

A. This Section includes the following:
   1. Preparing and grading subgrades for slabs-on-grade, walks, pavements, and landscaping.
   2. Excavating and backfilling for buildings and structures.
   3. Drainage and moisture control fill course for slabs-on-grade.

4. Subbase course for walks and pavements.
5. Excavating and backfilling trenches.
6. Fill in over excavation.
7. Rough and finish grading.

1.04 DEFINITIONS

A. Excavation consists of the removal of material encountered to subgrade elevation and the reuse or disposal of materials removed.

B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

C. Borrow: Soil material obtained off-site when sufficient approved soil material is not available from excavations.

D. Subbase Course: The layer placed between the subgrade and base course in a paving system or the layer placed between the subgrade and surface of a pavement or walk.

E. Base Course: The layer placed between the subbase and surface pavement in a paving system.

F. Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the Architect. Unauthorized excavation, as well as remedial work directed by the Architect, shall be at the Contractor's expense.

G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.

H. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within building lines.

1.05 SUBMITTALS

A. Section 01 33 00 - Submittals.

B. Product data for each type of plastic warning tape.

C. Samples of the following:
   1. 20 pound (9 kg) samples tested in air-tight containers, of each proposed fill and backfill soil material from on-site or borrowed sources.

D. Test Reports: In addition to test reports required under field quality control, submit the following:
   1. Laboratory analysis of each soil material proposed for fill and backfill from on-site or borrowed sources.
   2. One optimum moisture-maximum density curve for each soil material.
   3. Report of actual unconfined compressive strength and/or results of bearing tests of each stratum tested.

E. Photographs of existing adjacent structures and site improvements.

1.06 QUALITY ASSURANCE

A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.

B. Requirements of Regulatory Agencies:
   1. Codes: Conform to Title 24 and CBC, 2013 Edition; and State of California Safety Regulations.
   2. Off-Site Work:
      a. Conform to Local Governing Agency requirements.
      b. Obtain and pay for permits, licenses, and fees.
      c. Arrange for tests and inspections.

C. Testing and Inspection Services: Owner will employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing.

D. Testing Agency:
   1. On-Site Work: District designated Soils Engineer.
   2. Off-Site Work: Governing Agency approved testing laboratory.

E. Preinstallation Conference: Conduct conference at project site per Owner Construction Manager requirements. Before commencing earthwork, meet with representatives of the governing authorities, Owner, Architect, consultants, Geotechnical Engineer, independent

testing agency, and other concerned entities. Review earthwork procedures and responsibilities including testing and inspection procedures and requirements. Notify participants at least 3 working days prior to convening conference. Record discussions and agreements and furnish a copy to each participant.

1.07 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt existing utilities serving facilities occupied by the Owner or others except with permitted in writing by the Architect and then only after acceptable temporary utilities have been provided. Provide a minimum 48 hours notice to the Architect and receive written notice to proceed before interrupting any utility.

B. Environmental Requirements: Provide de-watering and drainage as required to accomplish this work. Discharge water at approved locations.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

A. General: Provide approved borrow soil materials from off-site when sufficient approved soil materials are not available from excavations.

B. Satisfactory Soil Materials: ASTM D2487-11 soil classification groups, GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soil Materials: ASTM D2487-11 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.

D. Backfill and Fill Materials: Satisfactory soil materials.

E. Subbase and Base Material: Naturally or artificially graded mixture or natural or crushed gravel, crushed stone, and natural or crushed sand, ASTM D2940, with at least 95% passing a 1-1/2" sieve and not more than 8 and passing a No. 200 sieve.

F. Engineered Fill: Subbase or base material.

G. Bedding Material: Subbase or base materials with 100% passing a 1" sieve and not more than 8" passing a No. 200 sieve.

H. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D448-12, coarse aggregate grading size 57, with 100% passing a 1-1/2" sieve and not more than 5% passing a No. 8 sieve.

I. Filtering Material: Evenly graded mixture of natural or crushed gravel or crushed stone and natural sand with 100% passing a 1-1/2" sieve and 0% to 5% passing a No. 50 sieve.

J. Impervious Fill: Clay gravel and sand mixture capable of compacting to a dense state.

K. Topsoil: Sand top material with 100% passing 1" sieve.

L. Concrete: Structural concrete with a compressive strength of 2,500 psi for fill to correct unauthorized excavation.

2.02 ACCESSORIES

A. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6" wide and 4 mils thick minimum, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30" deep.
   1. Tape Colors: Provide tape colors to utilities as follows:
      a. Red: Electric
      b. Yellow: Gas, oil, steam, and dangerous materials.
      c. Orange: Telephone and other communications.
      d. Blue: Water systems.
      e. Green: Sewer systems.

PART 3 - EXECUTION

3.01 PREPARATION (Refer to Section 31 00 00, 1.01C)

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Field Measurements: Verify that benchmark and intended elevations for the work are shown on the drawings.

C. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.02 DEWATERING

A. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

3.03 EXCAVATION

A. General:
   1. Grade, cut excavate, fill, and compact work areas.
   2. Fill local holes and depressions.
   3. Shape grades to drain water away from buildings, maintain flow lines, to prevent ponding of water.

3.04 STABILITY OF EXCAVATIONS

A. Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations.

B. Design Criteria; Bracing and Shoring:
   1. The Contractor shall be solely responsible for design, construction, and maintenance of bracing and shoring to safely support loads.

   2. Temporary unsurcharged excavations may be sloped at 1:1 ratio; permanent slopes shall not exceed 2:1 ratio when authorized by the Architect. In general, permanent slopes shall not exceed 3:1 ratio.

3.05 EXCAVATION FOR STRUCTURES

A. Coordinate all work with Section 02 30 00 - Subsurface Exploration, copy of which is available at Construction Manager's office.

B. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1.2" (30 mm). Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
2. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Appurtenances: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1.2" (30 mm). Do not disturb bottom of excavations intended for bearing surface.
3. Excavate subsoil required to accommodate building foundation and site structures.
4. Excavate a minimum 6" into formational material and to requirements on foundation plans for all buildings and pavilions.

3.06 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

B. Scarify subgrade under walks and pavements to a depth of 8", moisture condition to optimum moisture content and recompact.

3.07 EXCAVATION FOR UTILITY TRENCHES (Refer to Section 31 00 00, 1.01, C)

A. Excavate trenches to indicated slopes, lines, depths, and invert elevations.

B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12" (300 mm) higher than top of pipe or conduit, unless otherwise indicated.
   1. Clearance: 8" (300 mm) each side of pipe or conduit.
   2. Clearance: As indicated

C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove stones and sharp objects to avoid point loading.
   1. For pipes or conduit less than 6" (150 mm) in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.

2. For pipes and conduit 6" (150 mm) or larger in nominal diameter, shape bottom of trench to support bottom 90° of pipe circumference. Fill depressions with tamped sand backfill.
3. Where encountering rock or another unyielding bearing surface, carry trench excavation 6" (150 mm) below invert elevation to receive bedding course.
4. Utility trenching cut shall not interfere with critical bearing angle of foundations.

3.08 APPROVAL OF SUBGRADE

A. Notify Architect when excavations have reached required subgrade.

B. When it is determined that unforeseen unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed. Unforeseen additional excavation and replacement material will be paid according to the Contract provisions for changes in Work.

C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Architect.

3.09 UNAUTHORIZED EXCAVATION (Refer to Section 31 00 00 1.01, C)

A. Fill unauthorized excavation under foundations or wall footings by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position when acceptable to the Architect. Fill unauthorized excavations under other construction as directed by the Architect.

B. Where indicated widths of utility trenches are exceeded, provide stronger pipe, or special installation procedures, as required by the Architect.

3.10 STORAGE OF SOIL MATERIALS

Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent wind-blown dust. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL

A. Backfill excavations promptly, but not before completing the following:
   1. Acceptance of construction below finish grade including, where applicable, damp proofing, waterproofing, and perimeter insulation.
   2. Surveying locations of underground utilities for record documents.
   3. Testing, inspecting, and approval of underground utilities.
   4. Concrete from work removal.
   5. Removal of trash and debris from excavation.
   6. Removal of temporary shoring and bracing, and sheeting.
   7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.12 UTILITY TRENCH BACKFILL

A. Place and compact bedding course on rock and other unyielding bearing surfaces and to fill unauthorized excavations. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

B. Concrete backfill trenches that carry below or pass under footings and that are excavated within 18" (450 mm) of footings. Place concrete to level of bottom of footings.

C. Provide 4" (100 mm) thick concrete base slab support for piping or conduit less than 30" (750 mm) below surface of roadways. After installation and testing, completely encase piping or conduit in a minimum of 4" (100 mm) of minimum 2,000 psi concrete before backfilling or placing roadway subbase.

D. Place and compact initial backfill of satisfactory soil material or subbase material, free of particles larger than 1" (25 mm), to a height of 12" (300 mm) over the utility pipe or conduit. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.

E. Coordinate backfilling with utilities testing.

F. Fill voids with approved backfill materials as shoring and bracing, and sheeting are removed.

G. Place and compact final backfill of satisfactory soil material to final subgrade.

H. Install detectable warning tape directly above utilities, 12" (300 mm) below finished grade, except 6" (150 mm) below subgrade under pavements and slabs.

3.13 PLACING TOPSOIL

A. Subgrade to a depth of 6" prior to placing topsoil.

B. Place topsoil in turf areas and planter areas around and between buildings not indicated as paving.

C. Fine grade topsoil at eliminated rough or low areas. Maintain levels, profiles, and contours of subgrade.

D. Remove stones in excess of 1", roots, grass, weeds, debris, and foreign material while spreading.

E. Lightly compact placed topsoil.

F. Place 12" thickness of compacted topsoil at all planting areas.

3.14 FILL

A. Preparation: Remove vegetation, topsoil, debris, wet and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fills. Plow strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.

B. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil and recompact to required density.

C. Place fill material in layers to required elevations for each location listed below.
   1. Under grass, use satisfactory excavated or borrowed soil material.
   2. Under walks and pavements, use subbase or base material, or satisfactory excavated or borrowed soil material.

3.15 MOISTURE CONTROL (Refer to Section 31 00 00 1.01, C)

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2% of optimum moisture content.
   1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
   2. Remove and replace, or scarify and air-dry satisfactory soil material that is too wet to compact to specified density. Stockpile or spread and dry removed wet satisfactory soil material.

3.16 COMPACTION (Refer to Section 31 00 00 1.01, C)

A. Place backfill and fill materials in layers not more than 8" (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4" (100 mm) in loose depth for material compacted by hand-operated tampers.

B. Compaction, General:
   1. Compact work area, whether cut or fill, to required densities.
   2. Densities shall be stated percentages of the maximum dry soil densities as measured by ASTM Test Method D1557-12.
   3. Do not place additional lifts over a previous lift which has not been compacted to the required dry density, or when soil conditions are unstable.
   4. Preparation: Clear the area.
   5. Scarification:
      a. Scarify next 6" of exposed soils. Scarification shall continue until soils are broken down and free of large lumps or clods, and the working surface is reasonably uniform and free of features which would inhibit compaction.
      b. Bring to 2% to 4% above optimum moisture content.
   6. Excavating/Cutting: Where cutting is indicated, excavate to a plane 1' below final earth subgrade, unless otherwise specified.
   7. Compacted Soils:
      a. Soils: Use site soils and import soils.
      b. Place in successive 6" thick layers. Spread each layer evenly and mix thoroughly during spreading to attain uniformity of material and moisture in each layer.
      c. Bring existing clay site soils to 2% to 4% above optimum moisture content. Bring any import soils to optimum moisture content +2%.

d. Compact each layer, as required, using mechanical vibrating plate temper.
e. Bring to proper subgrade.

8. Field Quality Control: Test at Owner's option.

C. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to ASTM D1557-12:
1. Under structures, building slabs, steps, and pavements, compact the top 12" (300 mm) below subgrade and each layer of backfill or fill material at 95% maximum dry density.
2. Under walkways, compact the top 6" (150 mm) below subgrade and each layer of backfill or fill material at 95% maximum dry density.
3. Under lawn or unpaved areas, compact the top 6" (150 mm) below subgrade and each layer of backfill or fill material at 90% maximum dry density.

3.17 ADJUSTMENT AND CLEANING

A. Adjustment:
1. Over-Excavation: Remedy at Contractor's expense.
a. Fill and recompact to proper level.
2. Repair damaged subgrades or other work.
3. Adjust and rework as necessary until compaction and the Contract Document requirements are met.

B. Protection: Protect finished work from damage by traffic or continued use.

C. Cleaning: Work areas to be free of debris, weeds, and excess earth.

3.18 GRADING

A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
1. Provide a smooth transition between existing adjacent grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.

B. Finish Grading: Finish grades as required to provide contours and elevations as indicated.

3.19 FIELD QUALITY CONTROL

A. Testing Agency Services: Allow testing agency to inspect and test each subgrade and each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.

1. Perform field in-place density tests according to ASTM D1556-07 (sand cone method), ASTM D2167-08 (rubber balloon method), or ASTM D2937-10 (drive cylinder method), as applicable.
    a. Field in-place density tests may also be performed by the nuclear method according to ASTM D2922-05, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D1556-07. With each density calibration check, check the calibration curves furnished with the moisture gages according to ASTM D3017-05.
    b. When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at intervals as directed by the Architect.
2. Footing Subgrade: At footing subgrades, perform at least one test of each soil stratum to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of each subgrade with related tested strata when acceptable to the Architect.
3. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, perform at least one field in-place density test for every 2000 sq. ft. (186 sq. m) or less of paved area or building slab, but in no case fewer than three tests.
4. Foundation Wall Backfill: In each compacted backfill layer, perform at least one field in-place density test for each 100' (30 m) or less of wall length, but no fewer than two tests along a wall face.
5. Trench Backfill: In each compacted initial and final backfill layer, perform at least one field in-place density test for each 150' (45 m) or less of trench, but no fewer than two tests.

B. When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact and retest until required density is obtained.

3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

B. Transport surplus satisfactory soil to designated storage areas on the Owner's property. Stockpile or spread soil as directed by Architect. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

3.21 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions. Scarify or remove and replace material to depth directed by the Architect; reshape and recompact at optimum moisture content to the required density.

C. Settling: Where settling occurs during the Project correction period, test for proper compaction and materials, remove non-complying materials including surfacing. Backfill with additional approved material, compact, and reconstruct surfacing. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the following:
   1. Protecting existing trees and vegetation to remain.
   2. Removing trees and other vegetation.
   3. Clearing and grubbing.
   4. Topsoil stripping and stockpiling.
   5. Removing above-grade site improvements.
   6. Disconnecting, capping or sealing, and abandoning site utilities in place.
   7. Disconnecting, capping or sealing, and removing site utilities.

1.02 RELATED DOCUMENTS

A. Drawings and general provision of the Contract, including Addenda, Alternates, General and Supplementary Conditions and Division 1 Specification Sections, collectively, apply to this work.

B. Section 01 50 00 - Construction Facilities and Temporary Controls for temporary utilities, temporary construction and support facilities, temporary security and protection facilities, and environmental protection measures during site operations.

C. Section 02 41 16 Building Demolition for demolition of buildings, structure, and site improvement.

D. Section 31 00 00 - Earthwork for soil materials, excavating, backfilling, and site grading.

1.03 DEFINITIONS

Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2" (50 mm) in diameter; and free of weeds, roots, and other deleterious materials.

1.04 MATERIALS OWNERSHIP

Except for materials indicated to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site.

1.05 SUBMITTALS

A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

B. Record drawings according to Section 01 77 00 - Project Closeout. Identify and accurately locate capped utilities and other subsurface structural, electrical, and mechanical conditions.

C. Two (2) copies of permits and notices.

1.06 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Construction Conferences.

B. Source Quality Control: All demolition work conducted under this section shall be done by the same subcontractor for all demolition work on this project.

C. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this project.

D. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

E. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved program.

1.07 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
   1. Do not close or obstruct streets, walks or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
   3. Maintain egress and ingress for site traffic at all times.

B. Improvements on Adjoining Property: Authority for performing indicated removal and alteration work on property adjoining Owner's property will be obtained by owner before award of Contract.

C. Storage or sale of items scheduled for removal is not permitted.

D. Arrange for work to be scheduled so as to not interfere with Owner's on-site operations.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Section 31 00 00 - Earthwork. Obtain approved borrow soil materials off-site when satisfactory soil materials are no available on-site.

PART 3 - EXECUTION

3.01 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Locate and clearly flag trees and vegetation to remain or to be relocated.

D. Protect existing landscape and site improvements scheduled to remain from damage during construction. Restore damaged improvements to their original condition, as acceptable to Owner.

E. Contractor shall contact the local service alert company for information on buried utilities and pipelines prior to commencement of site clearing.

F. Conduct demolition to minimize interference with adjacent structures, trees, and properties.

G. Provide, erect, and maintain temporary barriers and security devices.

3.02 TREE PROTECTION

A. Erect and maintain a temporary fence around drip line of individual trees or around perimeter drip line of groups of trees to remain. Remove fence when construction is complete.
   1. Do not store construction materials, debris, or excavated material within drip line of remaining trees.
   2. Do not permit vehicles, equipment, or foot traffic within drip line of remaining trees.

B. Do not excavate within drip line of trees, unless otherwise indicated.

C. Where excavation for new construction is required within drip ling of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.
   1. Cover exposed roots with burlap and water regularly.
   2. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
   3. Coat cut faces of roots more than 1-1/2" (38 mm) in diameter with emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
   4. Cover exposed roots with wet burlap to prevent roots from drying out. Backfill with soil as soon as possible.
   5. Water trees and other vegetation to remain within limits of contract work as required to maintain their health during course of construction progress.

D. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.
   1. Employ a qualified arborist, licensed in jurisdiction where Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
   2. Replace trees that cannot be repaired and restored to full-growth status, as determined by the qualified arborist.

3.03 UTILITIES

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed or abandoned. Owner will arrange to shut off indicated utilities when requested by Contractor.

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

C. Excavate for and remove underground utilities indicated to be removed.

3.04 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.
   1. Do not remove tress, shrubs, and other vegetation indicated to remain or to be relocated.
   2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
   3. Completely remove stumps, roots, obstructions, and debris extending to a depth of 18" (450 mm) below exposed subgrade.
   4. Use only hand methods for grubbing within drip line of remaining trees.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated. Place fill material in horizontal layers not exceeding 8" (200 mm) loose depth, and compact each layer to a density equal to adjacent original ground.

3.05 TOPSOIL STRIPPING

A. Remove sod and grass before stripping soil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials. Strip surface soil of unsuitable topsoil, including trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   1. Limit height of topsoil stockpiles to 72" (1800 mm).
   2. Do not stockpile topsoil within drip line of remaining trees.
   3. Dispose of excess topsoil as specified for waste material disposal.
   4. Stockpile surplus topsoil and allow for respreading deeper topsoil.

3.06 SITE IMPROVEMENTS

A. Remove existing above and below grade improvements in conjunction with Building Demolition - Section 02 41 16, as indicated and as necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavements. Saw-cut faces vertically.

C. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

3.07 DISPOSAL

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off Owner's property. Do not allow materials and/or debris to accumulate on site.

B. Burning of materials and debris is not permitted on Owner's property.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Asphaltic concrete paving.

B. Surface sealer.

C. Weed control.

1.02 RELATED WORK

A. Requirements in Addenda, Alternates, Conditions, and Division 1 collectively apply to this work.

B. Section 31 22 13 - Rough Grading: Preparation of site for paving.

C. Section 31 23 10 - Excavating, Backfilling, and Trenching: Compacted fill for paving.

D. Section 32 17 23.13 - Pavement Marking.

E. Section 32 17 13.19 - Parking Bumpers.

1.03 REFERENCES

A. California Department of Transportation (CALTRANS), Division of Highways Standard Specifications, as last amended.

B. Definitions: Paving and base Type designations.
   1. Type A: Areas taking automobile traffic.
   2. Type B: Areas taking bus and/or truck traffic and fire lanes.
   3. Type C: Areas taking pedestrian traffic (hard-court/play areas).
   4. Type E: Areas where paving is to be replaced. Refer to 3.06.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with CALTRANS Standard Specifications.

B. Off-site work to conform to local governing agency requirements. Obtain and pay for required permits and licenses. Do required testing.

C. Allowable Tolerances:
   1. Material Weights: Weights of base course and paving materials delivered to Site shall be computed as follows:
      a. Asphalt Concrete Paving: 12 lbs/sf/inch of thickness.
      b. Rock Base Course: 9-1/2 lbs/sf/inch of thickness.
   2. Paving Surface Smoothness: 3/8" maximum permissible from a true plane measured from 10' straight edge placed on surface non-cumulative.

1.05 SUBMITTALS

A. Submit product data under provisions of Section 01 33 00.

B. Submit test reports of field quality control tests.

C. Submit Weighmaster's Certificates showing net weight of each load of base and paving materials.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Place asphalt when base surface temperature is above 40°F and dry, and when weather is stable.

B. Do not commence work until installation of underground pipes and utilities is complete.

1.07 ALTERNATIVES

A. Contractor's Option For Full-Thickness Paving: In lieu of providing rock base course, Contractor may, at his option and expense, install thickened paving section directly on compacted earth on the following basis:
   1. Substitute 1" of additional paving thickness for each 2" of specified base course thickness omitted.

1.08 GUARANTEE

A. In addition to guarantee specified in Contract Close-Out, Section 01 77 00, the Contractor shall repair or restore to first class condition any portion of asphaltic paving and surface coating in which weed growth, creeping, shoving, cracking, delamination, raveling, softening, excessive or uneven settlement due to improperly compacted subgrade, or other defects due to improper placing or defective materials, become apparent within one (1) year from acceptance date by the District.

B. Effectiveness of type of weed control is sole responsibility of the Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Weed Control:
   1. Herbicide: Only use of borates, sodium chlorate, or other nonpoisonous chemicals will be permitted.
   2. Option: The Contractor may, at his option and expense, use Nox-Weed 310 emulsion.

B. Base Course: Untreated rock using a pit run unwashed stream bar material, crusher run material, or blend of commercial products; graded as follows:
   1. Class 2 Aggregate Base, per Section 26, CALTRANS Standard Specifications.
   2. Mixing: Thoroughly blend material by blading or other suitable means.

C. Asphalt Concrete Paving:
   1. General: CALTRANS Standard Specifications, except as modified herein.
   2. Asphalt: 40 or 50 penetration.
   3. Aggregate: Graded mix as follows:

TOTAL PERCENTAGE PASSING SIEVES

Sieve Size	Percentage
3/4"	100%
1/2"	90%-100%
3/8"	74%-89%
No. 4	53%-67%
No. 8	40%-50%
No. 30	20%-30%
No. 200	3%-8%
Paving Asphalt	5-1/2 % to 7%by weight of total mix.

4. Mixing: Plant mix aggregate and asphalt, to produce a dense mixture with minimum of voids, per Section 39, CALTRANS Standard Specifications.

D. Surface Seal Coat For All Paving Areas:
1. Refer to Section 32 12 33 - Asphalt Pavement Seal Coat.
2. Sand: Clean, washed sand, 30 to 60 mesh.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify compacted subgrade is dry and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

C. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

A. Subgrade Preparation: After areas are brought to approximate required subgrade, finish by scarifying to depth of 3", moistening and rolling with a self-propelled tandem roller, weighting 8 tons minimum, until surface is firm and unyielding. Bring any depressions and high areas to required grade by scarifying, filling or cutting, and rolling to density and stability of adjoining material.

B. Weed Control: Just prior to paving work, apply herbicide to earth as per manufacturer's printed recommendations.

C. Coat surfaces of manhole catch basin metal surface frames with oil to prevent bond with asphalt paving.

3.03 INSTALLATION - BASE COURSE

A. Spread to uniform thickness; water and roll until firm enough to support material trucks without displacement or rutting.

B. Compacted Thicknesses:
1. Type A Areas: 6".
2. Type B Areas: 9".
3. Type C Areas: 4".
4. Type E Areas: 6" minimum. Refer to Paragraph 3.06.

C. Density Required: 90% minimum.

3.04 INSTALLATION - PAVEMENT WEARING COURSE

A. General: Conform to Section 39, CALTRANS Standard Specifications.

B. Placing: Spread to headers and/or temporary screeds, where required, with Barber-Greene self-propelled mechanical spreading and finishing equipment, or Architect-approved equal. Hand spread only in places inaccessible to mechanical spreader. Heat shovels, forks and rakes.

C. Edges: At headers, lay to a thickness 4" deep x 8" wide at bottom, forming a footing. Slope bottom up 3:1 to meet typical paving thickness. Where paving stops against buildings, walls, curbs, or concrete walks, thickened edges are not required.

D. Abutting Work: Where paving contacts rigid structures, thoroughly clean and coat contact surfaces with a film of asphalt emulsion and/or asphalt cement. Protect adjoining work from spotting and splashing or asphalt materials.

E. Rolling and Smoothness: Roll per Section 39, CALTRANS Standard Specifications. Finished surface to be even, smooth, of uniform texture free of roller welts, true to place and line, and drain as indicated. Paving to have a density such that water will not penetrate.

F. Compacted Paving Thicknesses:
1. Type A Areas: 3".
2. Type B Areas: 4-1/2".
3. Type C Areas: 3".
4. Type E Areas: 4" minimum. Refer to Paragraph 3.06.

3.05 APPLICATION - SURFACE SEAL

A. Preparation:
1. Clean paving surface removing all loose, foreign materials.
2. Contractor shall exercise one of the following procedures:
a. Remove existing concrete parking bumpers prior to seal coat application and replace all bumpers on the original manner after curing period.
b. Mask all bumpers completely to prevent seal coat from splashing onto bumpers.

3. Preventive measures shall be taken to protect existing concrete surfaces including curbs, walks, light pole mounting piers, etc, from over-splash by seal coat.

B. Application:
1. Per manufacturer's recommendations.
2. Protect adjacent structures from mixture.
3. Refer to Section 32 12 36.13 - Asphalt Pavement Slurry Seal.

C. Protect from traffic for three (3) days minimum after application.

3.06 TYPE E ASPHALT - PAVING REPLACEMENT

A. Stockpile pulverized material.

B. Establish subgrade elevations allowing for new asphalt layers and uniform layers of pulverized material.

C. Rip established subgrade surface to depth to 10 - 12" and bring to optimum moisture content and compact to 90% minimum.

D. Spread and compact pulverized material to 95% minimum compaction or better.

E. Prepare and sterilize new surface per CALTRANS Standards.

F. Place two lifts of hot asphalt for a finished thickness of 4". Top lift to be 3/8" fine asphalt paving 1-1/2" thick, lower lift 1/2" maximum, medium asphalt paving 2-1/2" thick. Place, compact, and test per current Caltrans Standards.

3.07 FIELD QUALITY CONTROL

A. On-Site Work:
1. Water Test: Flood test paving to show surfaces are free of standing puddles, and drain properly.
2. Material Tests:
a. Made at District's option, by District selected Testing Lab.
b. District's Inspector to select test sample locations.
c. The Contractor is to repair test areas at no additional cost to District.
d. Testing costs, as stated in Section 01 45 00.

3.08 CLEANING

Remove equipment, excess materials, debris, and material splashes from abutting work.

3.09 PATCHING EXISTING PAVEMENT

A. Remove new defective pavement and existing deteriorated paving in areas defined and all pavement disturbed by construction activity to minimum 6" in depth or until sound subgrade is obtained. Extend limits minimum 1' into sound pavement; make cuts in straight lines.

B. Apply tack coat to sides and bottom of excavated areas.

C. Place asphaltic concrete in maximum 4" high lifts thoroughly and evenly compact using equipment which will obtain maximum compaction without damage to surrounding pavement.

D. Contour and blend patches to lines and elevations of adjacent surfaces.

E. Determine location of "bird baths". Apply tack coat and blend new leveling asphalt to existing surface.

F. Repairing Existing Cracks:
   1. Less than 1/4": fill surface seal coat level with adjacent surfaces.
   2. Greater than 1/4" but less than 1": Remove asphalt a minimum of 2" down or to sound pavement and re-pack area with asphalt paving mix following procedures under paragraph 3.06.
   3. Greater than 1": Follow procedure under paragraph 3.06.
   4. Apply seal coat over entire surface and re-stripe.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. All asphalt pavement areas are to be slurry sealed as indicated in the Drawings.

1.02 RELATED SECTION

A. Section 01 45 00 - Quality Control Services.

B. Section 32 12 16 - Asphaltic Concrete Paving.

C. Section 32 17 23 - Pavement Marking.

1.03 QUALITY ASSURANCE

A. Qualification of workmen:
   1. Provide at least one person who shall be thoroughly trained and experienced in the skills required, who shall be completely familiar with the design and application of work described for this section, and who shall be present at all times during progress of the work of this section and shall direct all Work performed under this section.
   2. For actual slurry sealing and operation of the required equipment, use only personnel who are thoroughly trained and experienced in the skills required.

PART 2 - PRODUCTS

2.01 SLURRY SEAL

A. The surface Slurry Seal of existing and new Asphalt Pavement shall be a type I designed mixture of well-graded fine aggregate, mineral filler, emulsified asphalt, and water, complying with the following standards for type I Slurry grading.
   1. Asphalt Institute Manual Series No.4 (MS-4) 1989, Chapter 8.3, Emulsified Asphalt Slurry Seal, table 8.7.
   2. Standard Specifications for Public Works, Section 203-5 Emulsion - Aggregate Slurry.

2.02 OTHER MATERIALS

All other materials, not specifically described but required for proper and complete installation of pavement slurry seal, shall be provided to complete the Work of this Section.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

A. Inspection: Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
   1. Verify that slurry seal may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

B. Discrepancies:
   1. In the event of discrepancy, immediately notify the Architect.
   2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

C. New and existing Asphalt Paving: The surface shall be cleaned of all dirt, debris, oil, or foreign matter. After thoroughly cleaning, all areas should be tack coated with a SS1 H Bitmults application, using 1 part of SS1 H and 8 parts potable water, and shall be applied at the rate of 1 gallon per 100 square feet. Rough or irregular areas and small cracks are to be treated with a mastic mix consisting of two parts slurry seal, two parts 30 mesh silica sand and 1/2 part of SS1 H, prior to the applications of slurry seal.

D. New Asphalt Paving is not to be slurry sealed for a minimum of 45 days after installation of asphalt, to allow new paving to cure and prevent slurry seal blistering.

3.02 APPLICATION

A. Slurry seal shall be applied at the rate of approximately 20 gallons per 1000 square feet of pavement for application of one coat at 3 mils minimum thickness. Application may be made with squeegees, brooms, or mechanical applicators designed for applying slurry seal. Application is to be made by experienced technicians. Finished surface shall be smooth, without ridges, loops, and holidays.

B. Do not place slurry seal when the atmospheric temperature is below 65 degrees F, or during unsuitable weather.

C. Contractor shall be required to stripe parking lot areas immediately after placement of asphalt. Contractor shall re-stripe a second time, 45 days later after application of slurry seal coats.

3.03 CLEANING AND PROTECTION:

A. After completion of operations, clean surfaces of excess or spilled slurry material.

B. Do not allow any foot or vehicular traffic on paving for 24 hours minimum, or until paving slurry has dried.

C. Provide proper barricades and warning devices for slurry seal protection until it is opened to traffic.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

Painted lines, lettering, and symbols at parking and warning areas to conform to accessibility requirements, and as indicated on Drawings.

1.02 REFERENCE

Requirements in Addenda, Alternates, Conditions, and Division 1 collectively apply to this work.

1.03 SUBSTITUTIONS

Only written approval of the Architect, by addenda or Construction Change Document, will permit substitutions for materials specified. Refer to General Conditions and Section 01 62 00 for procedure.

1.04 JOB CONDITIONS

A. Environmental Requirements: Paint only in dry weather, on dry clean surfaces, when temperature is above 50°F.

B. Sequencing, Scheduling: Coordinate with paving work. Verify that paint type is compatible with paving surfaces.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Dunn-Edwards Corporation; Los Angeles, CA; 800-733-3866.

B. Sinclair Paint Company; Los Angeles, CA; 213-888-8888.

2.02 MATERIALS

A. Traffic Paint:
   1. Type: Water base, roadway traffic lane marking type; colors as selected.
   2. Acceptable Manufacturers and Products:
      a. Dunn-Edwards, Vin-L-Stripe No. W-801, vinyl-epoxy, or approved equivalent.
      b. Sinclair No. 160 Vinyl Traffic Line Paint, water base.
      c. Other manufacturers: As accepted by Architect per Section 01 62 00.

PART 3 - EXECUTION

3.01 INSPECTION

Inspection: Surfaces to be striped shall be clean and dry, and surface sealer thoroughly dry.

3.02 PREPARATION

Layout: Accurately measure and layout work. Use stencils for work; snap lines for straight work.

3.03 APPLICATION

A. General: Apply two coats, at the rate of 400 SF maximum per gallon per coat. Protect after application for 48 hours.

B. Painted Lines, Lettering, and Symbols at Parking Areas:
   1. Parking lines and markings on pavements shall be 3" minimum wide and blue in color equal to Color No 15090 per Federal Standard 595B.
   2. Parking spaces for the disabled shall be marked and have signage according to CBC Section No. 11B-502.
   3. Tactile warning lines shall be in conformance with to CBC Section 11B-705 and 11B-406.5.11.
   4. Pedestrian Crossing at Drives: 4" wide; color, yellow.
   5. Refer to Drawing for required stripping, lettering and symbols.

C. Painted Stripes at Exterior Steps: 2" warning stripes at step nosing as indicated on Drawings. Color as selected by Architect.

D. Fire Lane Curb Markings:
   1. Text to read as follows: "NO PARKING - FIRE LANE", per CMC 10.20.160.
   2. Text shall be 4" tall and centered on top of curb.
   3. Text shall be placed within 5' of the beginning and ending of the fire lane with a maximum spacing of 35' in between.
   4. Text to be painted white over red painted curbs.

E. Paint Game Court and Lines at Play and Sports Areas:
   1. Scope:
      a. Paint Game/Court configuration indicated.
   2. Color and Line Widths: As indicated or selected, or per Official Standards.

F. Protect after application for 48 hours.

G. Painted Arc at Exterior Doors: 2" wide arc, following swing of door as indicated on Drawings. Color as selected by Architect.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Contractor shall obtain and pay for all permits required for irrigation installation.

1.02 SUMMARY

A. Extent: Work in this Section includes the installation of an automatic irrigation system and connection to an existing system, including trenching, piping, equipment, electrical maintenance of the system, and incidentals related thereto.

B. Related Work:
   1. Earthwork: Section 31 00 00.
   2. Rough Grading: Section 31 22 13.
   3. Planting: Section 32 93 00.
   4. Soil Preparation: Section 32 91 13.
   5. Hydromulch and Seeding: Section 32 92 13.
   6. Landscape Maintenance: Section 32 01 90.
   7. Electrical: Division 26.

1.03 STANDARDS

A. Unless otherwise shown or specified, materials and methods shall conform to the appropriate current sections of:
   1. The State of California, Department of Transportation (CALTRANS) Standard Specifications (DTSS), except for measurement and payment requirements.
   2. Applicable ASTM Specifications as they reasonably apply to this work.
   3. California Plumbing Code (CPC)

1.04 CODES

Irrigation system and electrical power to controller shall be installed and tested in accordance with local codes and manufacturer's specifications.

1.05 REVIEWS

A. Contractor shall specifically request the following reviews at least 48 hours prior to progressing with work:
   1. Layout for the system
   2. All trenching
   3. Pressure testing of mainlines for leaks.

4. Coverage adjustment of heads, valve box inspection, and operation of the system
5. Location of controller.

1.06 QUALITY ASSURANCE

Materials shall be new and of the best quality available unless otherwise specified. Manufacturer shall be clearly marked on material, containers, or certificates of contents for inspection.

1.07 UTILITIES

Verify location of on-site utilities prior to trenching. Notify Architect by telephone and in writing of any conflicts prior to installation. Restoration of damaged utilities shall be made at the Contractor's expense to the satisfaction of the Architect.

1.08 AS BUILT DRAWINGS

A. Record accurately on one set of black and white prints (irrigation drawings), all changes in work constituting departures from the original contract drawings. Include changes in both pressure and non-pressure lines, wire locations and other noteworthy discoveries.

B. Upon completion of each increment of work, transfer all such information and dimensions to the prints. Record changes and dimensions in a legible and professional manner. When the drawings are approved, transfer all information to a set of reproducible drawings.

C. Upon completion of each increment of work, transfer all such information and dimensions to the prints. Record changes and dimensions in a legible and professional manner. When the drawings are approved, transfer all information to a set of reproducible drawings.

D. Dimension from two permanent points of reference (monuments, sidewalks, curbs, and pavement). Post information on as built drawings day-to-day as the work is installed. All dimensions noted on the drawings shall be 1/4" in size.

E. Show dimensional locations and depths of the following:
   1. Point of connection (POC).
   2. Backflow prevention assembly, master valve and flow sensor.
   3. Routing of irrigation pressure mainlines (dimension maximum 10 feet along routing and all directional changes).
   4. Ball and butterfly shut-off valves.

5. Irrigation control valves.
6. Automatic controller, rain sensors and electrical conduits.
7. Sleeves and pull boxes.
8. Other related equipment (as directed by the District Representative).

F. Maintain as-built drawings on site at all times. These drawings are subject to inspection at any time.

G. Make all changes to reproducible drawings in ink (no ballpoint pen). Erase or use eradicating fluid when revising drawings. Make changes in a manner equal to the original drawings.

H. Contractor must submit as-built drawings (sepia mylar and one set of bluelines) to the District Representative inspecting the site seven days prior to the start of the maintenance period for approval.

1.09 CONTROLLER CHARTS

A. The District Representative shall approve as-built drawings before charts are prepared.

B. Provide two controller charts for each controller supplied, showing the area covered by the automatic controller.

C. The chart shall be a reproduction of the as-built system drawing. If the controller sequence is not legible when the drawing is reduced, enlarge it to a size that will be readable when reduced.

D. Charts shall be blackline print with a different transparent color used to show area of coverage for each station.

E. When completed and approved, hermetically seal the chart between two pieces of plastic, each piece being a minimum of 10 mils thick.

F. Charts shall be completed and approved prior to final inspection of the irrigation system.

G. The District Representative reserves the right to have complete access to the controller clocks for monitoring and controlling system failures. The contractor shall provide the District Representative with two sets of all keys necessary for access to the controller clocks within the design area. The keys will then become the property of the _____ School District.

1.10 OPERATION AND MAINTENANCE MANUALS

A. Prepare and deliver to the District Representative, prior to the start of maintenance, all required and necessary descriptive material in complete detail and sufficient quantity, properly prepared in four individually bound copies. Describe the material installed in sufficient detail to permit qualified operating personnel to understand, operate and maintain all equipment. Each manual shall include the following:
   1. Index sheet stating contractor's address and telephone number.
   2. Duration of guarantee period with guarantee forms.
   3. List of equipment with names and addresses of manufacturer's local representatives.
   4. Complete operating and maintenance instructions on all major equipment.

B. In addition to the maintenance manuals, provide the maintenance personnel with instructions for major equipment and show written evidence to the District Representative at the conclusion of the work that this service has been rendered.

1.11 SPARE PARTS AND EQUIPMENT

A. Prepare and deliver to the District Representative, prior to the start of maintenance, all required spare parts, tools and equipment. Spare parts, tools and equipment shall include the following:
   1. Two (2) wrenches for disassembly and adjustment of each type of sprinkler head used in the sprinkler system.
   2. Two (2) screw drivers for adjustment of each type of sprinkler head used in the sprinkler system.
   3. Two quick coupler keys with 3/4" bronze hose bib, bent nose type with hand wheel and two coupler lid keys.
   4. One valve box cover key or wrench.
   5. One 5' tee wrench for operating butterfly valves (if used).
   6. Six extra sprinkler heads of each size and type used on the project.
   7. Six extra drip emitters of each size and type used on the project.
   8. Radio remote operating devices for irrigation system.

1.12 GUARANTEE

A. Submit written guarantee, in approved form, that all work showing defects in materials or workmanship will be repaired or replaced at no cost to the _____ School District for a period of one (1) year from date of acceptance by the District Representative.

B. The guarantee form shall be re-typed onto the contractor's letterhead and contain the following information.

Guarantee for irrigation system - (School Name).

We hereby guarantee that the irrigation system we have furnished and installed for the (School Name) School is free from defects in materials and workmanship, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse, or neglect expected. We agree to repair or replace any defects in material or workmanship which may develop during the period of one (1) year from date of acceptance and also to repair or replace any damage resulting from the repairing or replacing of such defects at no additional cost to the _____ School District. We shall make such repairs or replacements within a reasonable time, as determined by the _____ School District, after receipt of written notice. In the event of our failure to make such repairs or replacements within a reasonable time after receipt of such written notice from the _____ School District, we authorize the _____ School District to proceed to have said repairs or replacements made at our expense and we will pay for the costs and charges therefore upon demand.

Project Name: (School Name) _____

Landscape Architect: _____

Location: _____

Contractor Name: _____

Address: _____

Signed: _____ Title: _____

Date of Signature: _____ Telephone: ( ) _____

PART 2 - PRODUCTS

2.01 POINT OF CONNECTION

Point of connection shall be below grade. Tie into existing line at the quick coupler and plumb to new valves as shown on the Drawings.

2.02 GENERAL PIPING

A. At no time shall the water velocities in irrigation mainlines exceed 2.35' per second.

B. Minimum mainline pipe sizes shall be as follows:
   1. Irrigation mainlines shall be minimum size of 4".

C. Mainlines (pressurized) 4" and larger downstream of backflow unit shall be Class 315 solvent-weld P.V.C. unless otherwise noted.

D. Lateral lines (non-pressurized) 1-1/2" and smaller shall be Schedule 40 solvent-weld P.V.C. unless otherwise noted.

E. Lateral lines (non-pressurized) 2" and larger shall be Class 315 solvent-weld P.V.C. unless otherwise noted.

2.03 PLASTIC PIPE FITTINGS

A. Solvent weld pipe shall be extruded of an improved P.V.C. virgin pipe compound featuring high impact strength. Confirm to ASTM D1784-11 or D2241-09 to meet the requirements of cell classification 12454B for pipe. Compound shall have a 2,000 PSI hydrostatic design stress rating.

B. All pipe and fittings shall bear the following markings: Manufacturer's name, nominal pipe size, schedule or class, pressure rating PSI, NSF, and date of extrusion.

C. Make solvent cement joints for plastic pipe and fittings as prescribed by the manufacturer.

D. All P.V.C. fittings shall be Schedule 40 P.V.C. except for P.V.C. unions which shall be Schedule 80.

E. All fittings: Injection molded of an approved P.V.C. fitting compound featuring high tensile strength, high chemical resistance, and high impact strength. Fittings shall conform to ASTM D1784-11, and meet the requirements of cell classification 12454B. Where threads are required in plastic fittings, these shall be injection molded also.
   1. Type: Dura Plastic Products, CalAm, Spears, or District approved equal.

F. All threaded PVC nipples and unions shall be standard weight Schedule 80, with molded threads.

G. Use 3/4" size Teflon tape or Rectorseal No. 5 non-hardening pipe dope on all threaded connections.

2.04 COPPER PIPE AND FITTINGS

A. Copper Pipe shall be Type K, hard tempered, ASTM B88-09, with fittings of wrought solder joint type in accordance with ANSI B16.22-2001.

B. Solder joints with silver solder or silver solder compound conforming to ASTM B206/B206N-12 and FS QQB-655C.

2.05 BRASS PIPE AND FITTINGS

A. Brass pipe shall be 85% red brass, American National Standard Institute (ANSI), Schedule 40 screwed pipe.

B. Fittings shall be medium brass, screwed, 125 pound class.

2.06 GALVANIZED STEEL PIPE AND FITTINGS

A. Galvanized steel pipe shall be hot dip galvanized Schedule 40 screwed pipe.

B. Fittings shall be hot dip galvanized Schedule 40, screwed.

2.07 SHUT OFF VALVES

A. Ball valves 2" and smaller shall be a Hammond 867, Nibco 560, Wilkins 850 or District approved equal.

B. Gate valves 2" and smaller shall be a Hammond 867, Nibco 560, Wilkins 850 or District approved equal.

C. Gate valves 2-1/2" and larger shall be a Hammond 867, Nibco 560, Wilkins 850 or District approved equal.

D. Butterfly valves 2-1/2" and larger shall be Hammond 867, Nibco 560, Wilkins 850 or District approved equal.

E. Angle valves shall be Champion 200 or District approved equal.

2.08 QUICK COUPLING VALVES

A. Quick coupler valves shall be Rain Bird 44RC or District approved equal when the water supply is from potable sources.

B. Quick coupler assembly shall be a Dura Plastic Products Q. C. Standard Uni-body or District approved equal.

C. Locate all quick coupling valves within 12" - 18" of walks, curbs, header boards, or paved areas where applicable. Locate quick coupler valves inside shrub and ground cover areas when ever possible. When installed inside a valve box, the quick coupling valves top shall be 4" below the lid of the valve box. When installed without a valve box, the quick coupling valve top shall be 3" above finished grade.

2.09 REMOTE CONTROL VALVES

A. Remote control valves shall be Superior Controls Co, Inc. 950 series or District approved equal.

B. Remote control valves shall be installed in above grade assemblies covered by an expanded metal enclosure. The remote control valve assemblies shall have a minimum clearance above grade of 12" from the bottom of the valve.

C. Piping for remote control valve assemblies shall be Type K copper or brass.

D. Remote control valve enclosures shall be a LeMuer, Rainman, Strong Box or District approved equal.

E. Remote control valves shall be grouped together in watering zones. Allow a minimum of 16" clearance between valves.

2.10 LOW VOLTAGE CONTROL WIRING

A. Connections between the controller and remote control valves shall be made with direct burial AWG UL-UF wire, installed inside gray schedule 40 P.V.C. conduit sized at twice the diameter of the wire bundle carried the minimum size of the conduit being 2".

B. Wiring conduits shall be run from the wire access box in the field to the control valve clusters following the most direct route possible.

C. All splices shall be Spears Dri-Splice or District approved equal.

D. An expansion curl shall be provided at the wire access box in the field and at the control valve clusters. Expansion curls shall be sufficient length at the wire access box and valve clusters, so that in case of repair, the valve bonnet may be brought a minimum of 12" above the work area without disconnecting the control wires. Control wires shall be laid loosely in the valve cluster cage without stress or stretching of control wire conductors.

E. Sizing of wire shall be in accordance with irrigation drawings and manufacturer's recommendations; in no case shall the gauge of the wire be less than #14.

F. Use continuous wire between controller and remote control valves. Under no circumstances shall splices exist. Any splices allowed shall be installed in a pull box.

G. All control wires shall be black in color. When more than one controller is installed use a different color wire for each controller.

H. All common wires, and only common wires, shall be white in color. When more than one controller is installed use white colored wire with a different color stripe for each controller. Color of the stripe shall match the color of the control wire.

I. Flow sensor wires shall be #14 gauge as part of a two pair shielded cable. Cable shall be direct burial type.

J. All control wire conduits shall contain one extra common wire (white with a black stripe), one extra station wire (orange in color), and a pull rope for future additions.

2.11 VALVE BOXES

A. Round valve boxes shall be Carson Brooks #910-10-4B or District approved equal.

B. Rectangular valve boxes shall be Carson Brooks #1220-12-4B or District approved equal.

C. Identification letters or numbers shall be 2" high and heat branded onto the box cover. Identification shall be as indicated on the detail drawings.

D. Heat branding shall be accomplished using branding irons specifically designed for this purpose. Heat branding shall not weaken or in any way puncture the valve box cover.

E. All remote control valves shall be identified using plastic valve ID tags with the controller letter and station number. When irrigation water is from a potable source the tag shall be yellow with black lettering.

F. Valve box covers shall be green in color.

G. Valve box covers shall be locking type secured with a 3/8" stainless steel bolt, washer and nut.

H. Valve boxes used for irrigation equipment shall be as follows:
   1. Round valve boxes shall be used for butterfly valves, gate valves, and quick coupler valves.
   2. Rectangular valve boxes shall be used for wye filter assemblies, flow sensors, basket strainers, and pull boxes.

I. In high traffic areas within five feet of walkways and areas used for vehicular access, concrete valve boxes shall be used in place of plastic units. Concrete valve boxes shall be J&R Concrete Products or District approved equal.
   1. Round concrete boxes shall be #W3 with a single piece concrete lid.
   2. Rectangular concrete boxes shall be #W5 1/2 with a single piece concrete lid.
   3. All valve identification numbers and letters shall be painted on the valve box lids using a permanent black paint in lieu of heat branding.

2.12 SPRINKLER HEADS

A. Full circle, part circle and variable arc spray sprinkler heads shall be Rain Bird 1800 series or District approved equal.
   1. Pop-up spray sprinklers with built-in check valves shall be Rain Bird 1800-SAM series or District approved equal.
   2. Shrub adapter spray sprinklers shall be Rain Bird PA-8S series or District approved equal.
   3. The sprinkler shall have the appropriate screen under the nozzle to protect it from clogging and for easy removal for cleaning and flushing system.
   4. The plastic nozzles shall be Rain Bird 1800 series plastic or District approved equal.
   5. Where necessary spray sprinklers shall be equipped with pressure regulating units to eliminate overspray and fogging. Pressure regulating spray sprinkler heads shall be Rain Bird 1800-PRS-SAM series plastic or District approved equal.

B. Full circle or adjustable arc pop-up medium range stream rotor sprinklers shall be Hunter PGP, Hunter I-20 or District approved equal.

C. Full circle or adjustable arc pop-up large range stream rotor sprinkler shall be Hunter I-25 Plus, Hunter I-40 or District approved equal.

D. Bubblers
   1. Tree Bubbler heads shall be Rain Bird 1400 series or District approved equal.
   2. Tree bubblers to be installed inside 4" diameter x 36" long perforated drain pipe. A rubber drain cap top shall be secured on the top of the 4" pipe with a stainless steel hose clamp.
   3. The shrub stream bubblers shall be Rain Bird 5-B series or District approved equal.

2.13 CHECK VALVES

A. Provide check valves and/or anti-drain valves as may be required by the District Representative to prevent drainage of irrigation water from sprinkler system due to changes in elevation.

B. Swing Check Valve: Where water source is at the bottom of slope swing check valves are to be used. Swing check valves shall be constructed of heavy duty plastic and stainless steel internal parts. Swing check valve shall permit water to flow up slope not down. Install swing check valves in-line as designated on the irrigation drawings. As all sizes may

not be available from the manufacturer, use UVR-PVC Sch. 40 reducing bushings to adapt check valve to the line size as long as PVC swing check valve is larger than the line size. Swing check valves shall be Valcon, KBI, Flow Controls or District approved equal.

C. Spring Check Valve (adjustable): Where water source is at the top of slope adjustable spring check valves are to be used. Spring check valves shall be Valcon, KBI, Flow Controls or District approved equal. As all sizes may not be available from the manufacturer, use P.V.C. Schedule 40 reducing bushings to adapt check valve to the line size as long as spring check valve is larger than the line size.

2.14 MISCELLANEOUS EQUIPMENT

A. Hose Bibs shall be Champion B-402 or District approved equal.

B. Landscape fabric for valve box assemblies shall be DeWitt Pro 5 Weed Barrier or District approved equal.

C. Thrust Blocks: Thrust blocking shall be used on all irrigation mainlines 2" diameter and larger when soil conditions dictate the use of thrust blocking. Thrust blocks shall be minimum 1 cubic foot of 470-C-2000 concrete. All PVC pipe fittings shall be wrapped with black plastic tape prior to installation of thrust blocks. A pipe restraint system shall be used in lieu of thrust blocks for all bell and gasket pipe.

D. Gravel: All gravel used in valve boxes shall be washed crushed gravel of approximately 3/4" size. No pea gravel shall be used.

E. Stabilizing Rods: All assemblies requiring stabilization shall be equipped with #4 x 30" rebar stabilizer rods. Quantity of stabilizing rods shall be as indicated on the detail drawings.

F. Vandal-proof Clamps: All assemblies requiring stabilization shall be equipped with vandal-proof clamps constructed of stainless steel and be installed with a tool specifically for this purpose. Clamps shall be one-time-only use type and not be removable with screwdrivers or wrenches. Quantity of clamps shall be as indicated on the detail drawings.

G. Valve identification tags shall be Christy Tags (yellow background with black lettering) or District approved equal.

H. Swing Joint Assemblies: All sprinkler heads and multiple outlet drip emitters shall be installed with a pre-assembled single o-ring PVC swing joint. Inlet shall be PVC MIPT, outlet shall be PVC MIPT. Assembly shall be sized per the sprinkler inlet, with a 6" minimum lay length.

PART 3 - EXECUTION

3.01 INSPECTION SCHEDULE

A. Contractor is responsible for notifying the District Representative 48 hours in advance for the job card inspections.

B. AS-BUILT DRAWING MUST BE SUBMITTED PRIOR TO SITE INSPECTION, NO INSPECTION WILL COMMENCE WITHOUT AS-BUILT DRAWING APPROVAL. In the event the contractor calls for an inspection without as-built drawings, without completing previously noted corrections, or without preparing the system for inspection, he shall be responsible for reimbursing the _____ School District for the cost of the inspection per the current rate established by the _____ School District. No further inspections will be scheduled until this charge has been paid.

C. When performing the irrigation coverage test, the contractor shall be responsible for having a two-way communication system or sufficient personnel, so that the directions from the inspection area to the controller of the system can be readily accomplished.

D. P.V.C. Fitting Crush Testing:
1. A P.V.C. fitting crush test shall be performed by a _____ School District (School District) Irrigation Trades worker. The Irrigation Trades worker shall select at least one P.V.C. fitting from the irrigation system. The fitting shall be removed and crushed by the Irrigation Trades worker to determine the quality of the welded connection.
2. The fittings chosen for testing shall have been allowed to cure for a minimum of 24 hours prior to testing.
3. All work required to perform the crush tests, and subsequent repairs, shall be performed by (School District) employees at (School District) expense.
4. The Irrigation Contractor shall be notified of the time of the crush test and target fittings at least one working day in advance.

5. If the fittings selected fail the crush test the _____ School District has the option to reject acceptance of the irrigation installation.

3.02 WATER SUPPLY

Utilize water meter and provide connections to backflow prevention unit per the irrigation drawings and details.

3.03 LAYOUT

A. Lay out irrigation heads and make any minor adjustments required due to differences between site and the drawings. Any such deviations in layout shall be within the intent of the original drawings and approved by the District Representative.

B. Lay out all irrigation equipment using an approved staking method, and maintain the staking of approved layout.

C. All layouts shall be approved by the District Representative prior to equipment installation.

D. Before starting work on irrigation system, determine that work may proceed without disruption of activities of other trades.

E. The contractor shall carefully check grades to ensure that the area is safe to begin work.

F. Contractor is responsible for taking all reasonable investigative actions and precautions, when working around any utility system.

G. Contractor shall be responsible for verification of site conditions and minor revisions as approved by the District Representative to insure 100% irrigation coverage in all areas.

H. Contractor is responsible for adequately protecting the public and school personnel injury.

3.04 ASSEMBLIES

A. Routing of irrigation lines as indicated on drawings is diagrammatic. Install lines (and various assemblies) to conform to details on plans. Whenever possible, place all irrigation equipment in the planting areas. Irrigation elements drawn in hardscape areas on the plans is for graphic clarity only and are meant to be placed in planting areas.

B. Do not install multiple assemblies on plastic lines. Provide each assembly with its own outlet.

C. Install all assemblies specified herein according to the respective detail drawings or specifications, using the best standard practices with prior approval.

D. Assemble brass pipe and fittings and plastic pipe and threaded fittings, using Teflon tape, Rectorseal #5 non-hardening paste, or District approved equal applied to the male threads only. Rectorseal #5 paste shall only be used on mainline pipe fittings and on materials recommended by the manufacturer as compatible with Rectorseal paste.

E. Install concrete thrust blocking at all changes of direction 45° or greater on all mainline, 2" or larger, where soil conditions dictate the need. Install thrust blocks per details.

3.05 LINE CLEARANCE

A. All lines shall have a minimum clearance of 4" from each other and 24" from lines of other trades. Any deviations must be approved by the District Representative and the changes included on the as-built drawings.

B. Do not install parallel lines directly over one another.

3.06 TRENCHING

A. Dig trenches and support pipe continuously on bottom of trench. Lay pipe to an even grade. Pipe shall be snaked from side to side to allow for expansion and contraction. Trenching excavation shall follow layout indicated and as noted. Where lines occur under paved area, these dimensions shall be considered below sub-grade.

B. Provide the following minimum covers:

1. Pressure mainlines 3" size or greater: 24"
2. Pressure mainlines less than 3": 24"
3. Non-pressure lines (lateral lines): 18"
4. Control wiring: 24"

3.07 BACKFILLING

A. Initial backfill on all pipelines shall be sand to cover a minimum of 2" in all directions around the pipe. When installing pipe sleeves under pavement the entire trench shall be backfilled using sand. All other trench backfill shall be fine granular materials, not larger than 1/2" diameter.

B. Compact backfill to dry density equal to the adjacent undisturbed soil, conforming to adjacent grades without dips, sunken areas, humps, or other irregularities.

C. In appropriate types of soil, the District Representative may authorize the use of flooding in lieu of tamping.

D. Under no circumstances shall vehicle wheels be used for compacting soil.

E. Provide sand backfill a minimum of 4" over and under all piping under paved areas, and a minimum of 2" on all other piping.

F. If settlement occurs and subsequent adjustments in pipe, valves, irrigation heads, turf or other plantings, or other construction are necessary, the contractor shall make all required adjustments without cost to the _____ School District.

3.08 FLUSHING THE SYSTEM

A. After all irrigation pipe lines and risers are in place and connected, and prior to installation of irrigation heads, the control valves shall be opened and full head of water used to flush out the system.

B. Sprinkler heads shall be installed only after flushing of the system has been accomplished to the complete satisfaction of the District Representative.

3.09 UNDER EXISTING AND/OR PROPOSED PAVEMENT

A. Trenches located under areas where paving, asphaltic concrete or concrete will be installed shall be backfilled with sand and compacted in layers to 95% compaction, using manual or mechanical tamping devices. Trenches for piping shall be compacted to equal the compaction of the existing adjacent undisturbed soil and shall be left in flush with the adjoining grade. The irrigation contractor shall set in place; cap and pressure test all piping under paving prior to paving work.

B. Piping under existing pavement may be installed by jacking, boring, or hydraulic driving. However, no hydraulic driving will be permitted under asphalt paving.

C. Pipe and conduit located under asphalt or concrete paving on the site shall be installed with the following minimum clearances:
   1. Pressure mainlines: 30"
   2. Non-pressure lines (lateral lines): 24"
   3. Control wiring: 30"

D. Sleeves shall be two times the diameter of lateral line, mainline, and wire conduit, and a minimum of 2" size. Install separate sleeves for each use.

E. Under public roads, all mainlines and lateral piping must have a minimum cover of 36" from the top of the pipe to the bottom of aggregate base.

F. Secure permission from the District Representative before cutting or breaking existing pavement. All necessary repairs and replacements shall be approved by the District Representative and made at no additional cost to the _____ School District.

3.10 IRRIGATION HEADS

A. Install irrigation heads as indicated on the irrigation drawings.

B. Spacing of heads shall not exceed the maximum indicated. In no case shall the spacing exceed the maximum recommended by the manufacturer.

C. Sprinkler heads in lawn or turf areas shall be elevated to a minimum of 4" above grade during installation. Heads along curbs, walks, paving, etc., shall be placed 1/2" above finish grade. Lower raised irrigation heads within ten days after notification by the District Representative.

D. Final sprinkler head heights shall be as indicated on the _____ School District standard irrigation detail drawings.

E. All turf sprinkler heads installed adjacent to hardscape features shall be located 4" off of the edge of the hardscape feature. All ground cover sprinkler heads installed adjacent to hardscape features shall be located 6" off of the edge of the hardscape feature.

F. All irrigation heads shall be set perpendicular to finish grades unless otherwise indicated on the plans.

3.11 ADJUSTING THE SYSTEM

A. The contractor shall flush and adjust all irrigation heads and valves for optimum performance and to prevent over spray onto walks, roadways, buildings, walls and other structures as much as possible.

B. If it is determined that adjustments in the irrigation equipment or nozzle changes will provide proper and more adequate coverage, make all such changes or make arrangements with the manufacturer to have adjustments made, prior to any planting. Any adjustments in the irrigation equipment or nozzle changes shall be approved by the District Representative prior to making the changes. All adjustments in the irrigation equipment or nozzle changes shall be reflected on the irrigation as-built drawings.

3.12 COVERAGE TEST

When the irrigation system is completed, perform a coverage test in the presence of the District Representative to determine if the water coverage for lawn, planting and slope areas is complete and adequate. Coverage must be 100% head to head to be accepted by the District Representative. Furnish all materials and perform all work required to correct any inadequacies of coverage due to deviations from the plans or where the system has been willfully installed as indicated in the drawings; when it is obviously inadequate or inappropriate, without bringing this to the attention of the District Representative. This test shall be accomplished before any plant material is planted (excluding trees).

3.13 TESTS

A. All piping under paved areas shall be tested under a hydrostatic pressure of 150 PSI, and approved watertight, prior to the paving operation. Make hydrostatic tests only in the presence of the District Representative. No pipe shall be backfilled until it has been inspected, tested, and approved in writing.

B. Furnish necessary force pump and all other test equipment.

C. Test all pressure mainlines under a hydrostatic pressure of 150 PSI for a period of two hours.

D. All testing shall be approved prior to the installation of remote control valves, quick couplers, or other valve assemblies.

E. Air pressure check all lines that could weaken or damage any major structures or hardscape, if water were used.

3.14 MAINTENANCE

The entire irrigation system shall be under full automatic operation for a period of seven days prior to any planting or hydroseeding (excluding trees).

3.15 COMPLETION CLEANING

Upon completion of the work, make ground surface-level, remove excess materials, rubbish, debris, etc., and remove construction and installation equipment from the premises.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Work in this Section includes the installation of soil amendments, finish grading, plant pit backfill, and all other incidentals related.

B. Related Work:
   1. Earthwork: Section 31 00 00.
   2. Rough Grading: Section 31 22 13.
   3. Planting: Section 32 93 00.

1.02 REVIEWS

A. Contractors shall specifically request at least two days in advance the following reviews prior to progressing with the work:
   1. Rough Site Grading completed.
   2. Verification of soil amendment depths.
   3. Finish Grade.

1.03 SUBMITTALS

A. Test Samples: Provide a one-quart sample of proposed amendments to an agricultural soils laboratory approved by the Architect for their testing for conformance to this specification, unless delivered to the Site in original, unopened containers, each bearing the manufacturer guaranteed analysis. No material shall be delivered to the Site until the Architect approves the material.

B. Certification: Written certificates stating quantity, type, and composition, weight and origin for amendments, chemicals shall be delivered to the Architect within fourteen (14) days of the Notice to Proceed and before the material is delivered to the Site.

C. Soil Testing:
   1. During finish grading operations or at least two weeks before proposed planting operations, take two one quart samples of the existing subgrade soil, from 0 to 12" deep from three separate locations across the site after rough grading as directed by the Architect. Soil samples shall be forwarded by the Contractor to Soils testing laboratory as designated by Owner for testing as to exact fertilizers and soil amendments to be used in planting. Contractor shall pay for testing fees from the lab.

2. A one-quart sample of any imported soil intended for the project shall also be sent to Soil and Plant Lab for testing to verify compatibility with the existing soil. Contractor shall pay for testing fees from the lab.

1.04 PROTECTION

Protect concrete from iron sulfate amendment that may be specified from soil analysis to avoid staining. Concrete damaged from amendment placement shall be replaced at the Contractor's expense.

PART 2 - PRODUCTS

2.01 NATIVE SOIL

Shall be the existing soil on Site after rocks over one cubic inch and all foreign debris have been removed.

2.02 FERTILIZER

A. Exact types to be determined by Soil and Plant Lab analysis.

B. For bidding purposes only, fertilizer shall be the following:
   1. Controlled release three year commercial fertilizer packets, 16-8-8 (N-P-K) by Nutri Pak; (800) 383-8059.
   2. Commercial fertilizer 16-6-8 (N-P-K), uniform pellet.

2.03 SOIL AMENDMENTS

A. Shall be mineralized and nitrogen stabilized bark or sawdust humus, with wetting agent and properly pulverized. Submit sample for approval.

B. Soil Sulpher.

PART 3 - EXECUTION

3.01 GENERAL

Limits and Grades: Prior to commencing soil preparation operations, request a review by the Architect to verify grading work completed to date and verify specified limits of soil preparation work to commence. Contractor shall complete the site grading necessary to round the top and toe of slopes, providing naturalized contouring to integrate newly graded areas with the natural topography.

3.02 IMPORTED TOPSOIL PLACEMENT

Topsoil shall be installed and completed as necessary to produce final finish grade requirement, minimum 6". Sub-grade shall be cross-ripped or cultivated to a depth of 10". Water shall be added and ripping or cultivation shall be continued until the entire 10" depth is loose and friable. Place 2" of topsoil uniformly over sub-grade and thoroughly cultivate before placing remaining topsoil. Place topsoil and bring to a smooth, even grade. Soil shall be thoroughly water settled and high/low areas re-graded in accordance with paragraph "Finish Grading" this Section.

3.03 AMENDMENT PLACEMENT

A. Adjustments to the bidding formula shall be determined by the Soil and Plant Lab analysis.

B. Planting areas shall be thoroughly cross-ripped to a minimum 10" depth. Upon completion of cross-ripping, and for bidding purposes only, the amendments shall be applied as follows:

AMOUNT/1000 SQUARE FEET

6 cubic yards	Nitrogen Treated Organic Amendment
12 lbs.	16-6-8 Commercial Fertilizer
12 lbs.	Soil Sulfur

C. The materials shall then be uniformly spread and incorporated to obtain a homogeneously blended soil, 6" in depth.

3.04 BACKFILL AND PLANT PITS

A. Soil which has been amended in the above manner shall be used as the backfill mix around the sides of the root balls. Only unamended soil shall be used beneath the root ball of the plant. Plant root ball and pits shall have their sides and bottoms loosened and otherwise broken to prevent glazing or compaction. Plant pits shall be at least the following minimum sizes:

1. 1 gallon container: 6" backfill all around.
2. 5 gallon container: 8" backfill all around.
3. 15 gallon container: 10" backfill all around.
4. Boxed Specimens: 12" backfill all around.

3.05 FERTILIZER

A. For planting areas, see Planting, Section 32 93 00. All container stock shall receive additional fertilizer at:
   1. One gallon plant - two packets.
   2. Five-gallon plant - four packets.
   3. Fifteen-gallon plant - ten packets.
   4. 24" box - fifteen packets.

B. Space the tablets evenly around the ball halfway up backfill touching side of root ball.

3.06 FINISH GRADING

Contractor shall finish grade-planting areas unless otherwise noted, and shall remove rocks and clods over one cubic inch. All areas shall be smooth and uniformly graded. Erosion damage during the construction period shall be repaired by the Contractor. Unless otherwise noted, soil finish grades where mulch is not installed shall be 1/2" below finish grade of walks, pavements, and curbs. Mulch areas shall have the finish grades 2-1/2" below edges of pavement or curbs back from the edges at least 30" to allow for the installation of the mulch.

END OF SECTION