



Department of Facilities and Planning
Folsom Cordova Unified School District

PROJECT MANUAL

VISTA DEL LAGO HIGH SCHOOL SITE FENCING PROJECT

1970 Broadstone Parkway
Folsom, CA 95630

Bidding and Contract Requirements

DOCUMENT 00 01 10

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SITE DEMOLITION

PART 1 – GENERAL

1.01 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. The General Conditions, Special Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01 50 00, Temporary Facilities and Controls.
- B. Section 01 57 13, Erosion Control
- C. Section 31 00 00, Earthwork.

1.03 REGULATORY REQUIREMENTS

- A. Conform to applicable jurisdictional authority regulations and codes for disposal of debris.
- B. Coordinate clearing Work with utility companies.
- C. Maintain emergency access ways at all times.
- D. Contractor shall comply with all applicable laws and ordinances regarding hazardous materials, including contaminated soils, hazardous material transformers, and similar materials or components.

1.04 SUBMITTALS

- A. Schedule: Submit a detailed sequence of demolition and removal work, including dates for shutoff, capping, and continuance of utility services.
- B. Procedures: Submit written procedures documenting the proposed methods to be used to control dust and noise.

1.05 EXISTING CONDITIONS

- A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.
- B. Conduct demolition to minimize interference with adjacent structures or items to remain. Maintain protected egress and access at all times.

1.06 PROTECTION

- A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.
- B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- C. Safety Precautions Prevent damage to existing elements identified to remain or to be salvaged, and prevent injury to the public and workmen engaged on site. Demolish roofs, walls and other building elements in such manner that demolished materials fall within foundation lines of building. Do not allow demolition debris to accumulate on site. Pull down hazardous work at end of each day; do not leave standing or hanging overnight, or over weekends.
 - 1. Protect existing items which are not indicated to be altered. Protect utilities designated to remain from damage.
 - 2. Protect trees, plant growth, and features designated to remain as final landscaping as shown on drawings.
 - 3. Protect bench marks from damage or displacement.
- D. Trees: Carefully protect existing trees that are to remain. Provide temporary irrigation as necessary to maintain health of trees.
- E. Fire Safety: The contractor shall conform to chapter 33 of the California Fire Code (CFC), "Fire Safety During Construction and Demolition", at all times during the construction process. A copy of this chapter can be provided.
- F. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.
- G. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.
- H. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- I. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine conditions of work in place before beginning work; report defects.
- B. Report existence of hazardous materials or unsafe structural conditions.

3.02 PREPARATION

A. Scheduling:

- 1. General: Coordinate and schedule demolition work as required by the Owner and as necessary to facilitate construction progress.

B. Hazardous Materials:

- 1. General: Identify chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with demolition operations, and notify such jurisdictional agencies as may be required. Collect and legally dispose of such materials at official disposal locations away from the site.
- 2. Asbestos: If asbestos or materials containing asbestos are encountered, stop work immediately and contact the Owner. Do not proceed with demolition until directed by Owner.

C. Utility and Service Termination

- 1. Locate and identify existing utility, service and irrigation system components affected by work of this contract. Review existing record drawings, conduct site investigations, contact Underground Service Alert and other qualified cable/pipe/line locator services, and implement all other means necessary to define the location of underground systems.
- 2. Prior to beginning any demolition, properly disconnect all water, gas and electrical power supply at appropriate disconnect locations. Obtain all necessary releases and approvals from serving utility companies.
- 3. Prior to demolition or disconnect, obtain Owners approval that such system does not impact facilities or systems beyond the extent of this contract.
- 4. Mark location of disconnected systems. Identify and indicate stub-out locations on Project Record Documents.

D. Verify that existing plant life and features designated to remain are tagged or identified.

- 1. The Architect will mark the features, trees, and shrubs to remain within the construction area. Contractor shall not commence clearing and grubbing operations until authorized by the Owner and all protective measures are in place.

E. Coordinate the time and duration of all system disconnects with Owner.

3.03 DEMOLITION

A. General Requirements

- 1. Clear areas required for access to site and execution of Work, including pavements, structures, foundations, vegetation, trash and debris.
- 2. Coordinate with Owner the time of day and route to remove demolished materials from premises.
- 3. Remove demolished materials from site as work progresses. Upon completion of work, leave areas of work in clean condition.
- 4. Remove all buried debris, rubble, trash, or other material not deemed suitable by the Geotechnical Engineer.

5. Fill all voids or excavations resulting from clearing, demolition, or removal of vegetation with specified fill material.

B. Fixture and Equipment Removal:

1. Remove existing fixtures and equipment as identified and shown on drawings and required by Architect.
2. Verify all service connections to fixtures and equipment designated for removal have been properly disconnected.
3. Remove all conductors from conduit at all abandoned circuits.

3.04 UTILITY AND BUILDING SERVICES REMOVAL AND RE-INSTALLATION

A. Where crossing paths and potential points of interference with existing utility services are shown or can be reasonably inferred from surface conditions or evidence of subsurface systems, such as meter boxes, vaults, relief vents, cleanouts and similar components.

1. Review all contract documents showing crossing paths and potential points of interference.
2. Pot-hole or determine by other means the accurate depth and location of such utilities.
3. Incorporate all costs required to complete work under this contract, including additional trenching, re-routing of existing and new utilities, and all means necessary to construct work under this contract.
4. No additional cost to the Owner will be allowed for work necessary to accommodate utility conflicts where such crossing paths are shown on contract drawings or can be reasonably inferred from surface conditions or components.

B. Remove all conductors from conduit at all abandoned electrical circuits.

C. Seal off ends of all piping, drains and other components as directed by Architect and serving utility.

D. Where necessary to maintain service to existing utility and building systems, relocate or redirect all conduit and conductors, piping, drains, and associated system components.

1. Re-circuit all electrical as required.
2. Re-circuit all landscape irrigation valving and control systems as required.
3. Temporarily terminate landscape system components in approved boxes or with approved caps, suitable for re-connection or extension.
4. Extend or otherwise modify all site drainage systems, including catch basins, drain inlets and piping. Fine grade to maintain proper drainage flow pattern to drains.

E. Demolish structure in an orderly and careful manner.

1. Use of explosives prohibited.

3.05 SITE PAVEMENT REMOVAL

A. Remove sidewalk and curb where required for new construction as specified and as indicated on the Drawings.

1. Remove all paving by saw-cutting.

2. Remove concrete paving and curbing at locations shown on drawings. Locate closest adjacent expansion or weakened plane joint to define start of removal or saw-cutting.
- B. Remove asphalt concrete paving areas where required for new construction as specified and as indicated on the Drawings.
1. Remove all paving by saw-cutting.
 2. Remove paving assembly as required to expose subgrade.

3.06 LANDSCAPE AND IRRIGATION SYSTEMS DEMOLITION AND RENOVATION

- A. Clearing, grubbing, and planting demolition.
1. Remove grass and grass roots to a minimum depth of two inches below existing grade.
 2. Remove all shrubs, plants and other vegetation within the area of the work unless designated to remain. Grub and remove all roots of all vegetation to a depth of 24 inches below existing grade.
 3. Remove only those trees which are specifically designated for removal, or as shown on the drawings, within the construction area. Remove all stumps. Remove root ball and root systems larger than 1 inch in diameter to a depth of two feet below existing or finished grades, whichever is lower and a minimum of five feet beyond the edge of paving, structure, wall or walkway.
 4. Hand cut existing tree roots over 1 inch in diameter as necessary for trenching or other new construction, apply multiple coats of emulsified asphalt sealant especially made for horticultural use on cut or damaged plant tissues to cut faces and adjacent surfaces. Cover exposed roots with wet burlap to prevent roots from dying out until backfilling is complete.
 5. Disking and mixing of vegetation, trash, debris, and other deleterious materials with surface soils prior to grading is not permitted.
 6. Remove all buried debris, organic material, rubble, trash, or other material not deemed suitable by the Geotechnical Engineer.
 7. Fill all voids or excavations resulting from clearing, demolition, or removal of vegetation with fill material in compliance with Section 31 00 00.
 8. Selected equipment of such sizes and capacities that the existing environment is disturbed as little as possible, and to afford ease of mobility within limited and relatively confined work areas. Make every effort to preserve the topography in its natural state.
 9. Keep drains, catch basins, surface drainage courses and related drainage system components clear of debris and construction materials.
 10. Remove irrigation piping and appurtenances as necessary within area of work, unless noted otherwise to remain. Replace irrigation piping and appurtenances to irrigate new and/or existing landscaping. Contractor shall be responsible for temporary landscape irrigation until such time that irrigation system is restored and operational.

3.07 DISPOSAL

Demolished materials become property of the Contractor and shall be removed from premises, except those items specifically listed to be retained by Owner.

- A. Dispose of all demolished material, trash, debris, and other materials not used in the work in accordance with the regulations of jurisdictional authority.

- B. It is recommended that all materials that are of a recyclable nature, be transported to a suitable legal recycling facility instead of a dump or refuse facility (unless they are one-in-the same).
- C. Burning and Burying of Materials: NOT ALLOWED.
- D. Haul Routes:
 - 1. Obtain permits as required by jurisdictional agencies. Establish haul routes in advance; post flagmen for the safety of the public and workmen.
 - 2. Keep streets free of mud, rubbish, etc.; assume responsibility for damage resulting from hauling operations; hold Owner free of liability in connection therewith.
- E. Remove demolished materials and debris from site on a daily basis.

3.08 CLEANING

- A. Upon completion of work of this Section promptly remove from the working area all scraps, debris.
- B. Clean excess material from surface of all remaining paved surfaces and utility structures.
- C. Power wash all concrete surfaces to remove stains, dried mud, tire marks, and rust spots.

END OF SECTION

10/26/21

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Demolition of existing improvements indicated on the Drawings and required for completion of the work.
 - 2. Disconnecting, capping or sealing, and removing of utilities.

1.2 RELATED REQUIREMENTS

- A. Section 01 3516, Alteration Project Procedures.
- B. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- C. Section 01 7329, Cutting and Patching.
- D. Section 01 7419, Construction Waste Management and Disposal.
- E. Section 01 8113, Sustainable Design Requirements, for CAL-Green.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. California Fire Code (CFC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- D. American National Standards Institute (ANSI):
 - 1. ANSI A10.6: Safety and Health Program Requirements for Demolition Operations.
- E. National Fire Protection Association (NFPA):
 - 1. NFPA 241: Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.4 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 them to Owner as directed.

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- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Salvage Elements: Element to be removed from the existing construction and to be retained for reinstallation or potential reuse.
- E. 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.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.
- B. Pre-demolition Meeting: Prior to start of demolition operations, the Contractor shall meet with Architect and Owner's Project Inspector at Project site to review methods and procedures related to demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of existing improvements to be demolished.
 - 2. Protection requirements.

1.6 SCHEDULING

- A. Schedule work to coincide with new construction and Owners use of affected and unaffected facilities.
- B. No demolition shall occur when the site is occupied by students or staff without proper protection measures and written consent of Owner.

1.7 MATERIALS OWNERSHIP

- A. Items of interest or value to Owner that may be encountered during building demolition and not identified on the Drawings, remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage, unless otherwise instructed.

1.8 ACTION SUBMITTALS

- A. None

1.9 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For demolition firm if a separate subcontractor will be used.
- B. Pre-demolition photographs.
- C. Record of Pre-demolition Meeting.
- D. Sustainable Design:

1. General:
 - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
 - b. Sustainable design submittals are in addition to other submittals.
2. The following information shall be provided:
 - a. Demolition Debris: Verification of compliance with waste reduction requirements specified in Section 01 8113, Sustainable Design Requirements.

1.10 QUALITY ASSURANCE

- A. Qualifications:
 1. Demolition Firm: Company specializing in performing the Work of this Section with minimum of five years' experience.
- B. Obtain required permits from authorities and agencies.
- C. Comply with governing EPA notification regulations before beginning demolition.
- D. Comply with hauling and disposal regulations of authorities having jurisdiction.
- E. Comply with ANSI A10.6 and NFPA 241.
- F. Fire protection during demolition shall be in accordance with California Fire Code, Chapter 33.
- G. The Owner's Project Inspector will be present at the site when removal operations are in progress. Should an unplanned event occur, the Contractor shall immediately provide the Project Inspector with the procedure of operation to correct or remedy the occurrence. The Project Inspector will report details of the event and the procedures employed by the Contractor for correction. The Contractor shall provide the Project Inspector with its proposed procedures to eliminate similar events in the future.

1.11 STORAGE FACILITY REQUIREMENTS FOR SALVAGED ITEMS

- A. Furnish facility of sufficient size and capacity to store and retrieve items identified for salvage. A contiguous, isolated, centralized area shall be furnished to the greatest extent possible.
- B. Physical Requirements: Facility shall comply with the following unless applicable to the items being salvaged and approved by the Owner.
 1. Covered loading and unloading area to allow for transport of elements without exposure to inclement weather conditions.
 2. Configuration of space shall allow for adequate ventilation of stored elements; provision of mechanical devices to circulate air will be required if ventilation is inadequate.
 3. Ambient Conditions:

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- a. Maintain ambient temperature of a minimum of 45 degrees F to a maximum of 100 degrees F.
 - b. Maintain a relative humidity between 20-80 percent.
 - c. Climate control is not required if these conditions can be met.
 4. Adequate artificial light to allow for proper handling of elements and for potential examination of salvage elements at the facility.
 5. Adequate protection from degradation due to ultraviolet (direct) sunlight.
 6. Protection from exposure to water. No exposure of salvage elements and/or packing materials to moisture will be permitted.
 7. Protection from vermin and pests is required. Vermin and pests include, but are not limited to, rats, mice, insects, birds, bats, and squirrels.
 8. Functioning smoke alarm, fire detection/notification, and sprinkler system.
- C. Security: An off-site facility shall comply with the following.
1. Facility must be a bonded facility of sufficient bonding capacity to suitably replicate and replace all stored salvage elements.
 2. Facility must provide an inventory and receiver control to adequately monitor and document storage activities.

1.12 FIELD CONDITIONS

- A. Do not close or obstruct egress width to exits.
- B. Do not disable or disrupt building fire or life safety systems without 3 day prior written notice to the Owner. Portions of the building and other buildings on-site not a part of the Contract shall not be left unprotected during non-work hours.
- C. Conform to procedures applicable when discovering hazardous or contaminated materials.

1.13 REMOVED MATERIALS

- A. Materials or equipment noted to be removed is at the discretion of the Contractor. Storage or sale of removed items will not be permitted on Project Site. Transport salvaged items from Project Site as they are removed.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inventory and record the condition of items to be removed and salvaged.
- B. 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.

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

3.2 PREPARATION

- A. Provide, erect, and maintain temporary barriers and partitions at locations indicated or as needed to safeguard occupants and pedestrians.
- B. Erect and maintain weatherproof closures for exterior openings.
- C. Erect and maintain temporary partitions to prevent spread of dust, odors and noise to permit continued Owner occupancy.
- D. Clearly mark and protect existing materials and equipment which are not to be demolished.
- E. Existing Utilities: Mark location of all utilities and seal or cap off indicated utilities in work area prior to start of demolition.

3.3 DEMOLITION

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Maintain and protect egress and access at all times.
- C. Demolish in an orderly and careful manner. Protect existing supporting structural members.
- D. Cease operations immediately if structure appears to be in danger. Notify Architect. Do not resume operations until resumption is approved by Architect.
- E. Removed and Salvaged Items: Comply with the following.
 - 1. Clean salvaged items of dirt and demolition debris.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items until re-installation or delivery to Owner.
 - a. If required on-site facilities are not available, store off-site.
 - b. Both on-site and off-site storage facility shall be acceptable to the Owner and shall comply with the specified requirements.
 - 4. Items not scheduled to be re-installed shall be transported to Owner as directed.
 - 5. Protect items from damage during transport and storage.
- F. Except where noted otherwise, remove demolished materials from site. Do not burn or bury materials on site.
- G. Remove and legally dispose and recycle demolished materials from site as work progresses. Documentation of legal dumping and recycling shall be obtained and submitted in accordance with requirements of Section 01 7419, Construction Waste Management and Disposal.
- H. Remove temporary work.

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3.4 REPAIR

- A. Where fasteners are removed from existing surfaces or when temporary penetrations are necessary patch and repair holes and openings to match adjacent surface.
- B. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing in accordance with Section 01 7329, Cutting and Patching.

3.5 SALVAGE AND PROTECTION

- A. Remove and salvage the following materials and equipment to be reinstalled:
 - 1. Items as indicated on the Drawings.
- B. Remove and salvage the following equipment to be retained by the Owner.
 - 1. Items as indicated on the Drawings.
- C. Owner will remove and keep the following material and equipment:
 - 1. Furnishings not built in or connected to the structure and in the way of construction.
- D. Protect the following materials and equipment:
 - 1. Existing mechanical systems.
 - 2. Under floor plumbing lines.
 - 3. Systems, equipment and finishes which are to remain, inside and outside.

3.6 CLEAN UP

- A. Return adjacent areas outside of the work area to condition existing before demolition operations began.
- B. After materials have been removed from the site, broom clean all affected areas.

END OF SECTION

SECTION 03 11 00
CONCRETE FORMING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Furnishing, installing, and removing of forms for cast-in-place concrete.
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.
- C. Related Requirements:
 - 1. Section 32 16 00 "Site Concrete" for formwork related to concrete pavement and walks.

1.2 REFERENCES

- A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the formwork only to the extent specified by the reference. Refer to Section 01 42 16 for information concerning availability and use of references.

American Concrete Institute (ACI)
Corps of Engineers
U. S. Department of Commerce Product Standard (PS)
Western Wood Products Association (WWPA)
West Coast Lumber Inspection Bureau (WCLIB)

1.3 DEFINITIONS

- A. Form-Facing Material: Temporary structure or mold for the support of concrete while the concrete is setting and gaining sufficient strength to be self-supporting.
- B. Formwork: The total system of support of freshly placed concrete, including the mold or sheathing that contacts the concrete, as well as supporting members, hardware, and necessary bracing.

1.4 ACTION SUBMITTALS

- A. Product Data: For each of the following:
 - 1. Exposed surface form-facing material.
 - 2. Form ties and spreaders.
 - 3. Waterstops.
 - 4. Form-release agent.
- B. Submittal procedures and quantities are specified in Section 01 33 00.

1.5 REGULATORY REQUIREMENTS

- A. Except as modified by the requirements specified herein or the details on the drawings, formwork shall conform to the 2019 California Building Code (CBC) Title 24 Part 2, Chapter 19A - Concrete.
- B. CalGreen Requirements: Form coatings shall comply with environmental requirements of 2019 California Building Code (CBC) Title 24 Part 11.
 - 1. The quantity of volatile organic compounds (VOC) used in coating products shall not exceed the limits permitted under the current regulations for architectural coatings of the Bay Area Air Quality Management District.

1.6 QUALITY ASSURANCE

- A. Mockups: Formed surfaces to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship.
 - 1. Build stand-alone vertical wall panel approximately 50 sq. ft. in the location indicated or, if not indicated, as directed by Architect.
 - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Concrete Formwork: Design, engineer, erect, shore, brace, and maintain formwork, shores, and reshores in accordance with **ACI 301**, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, so that resulting concrete conforms to the required shapes, lines, and dimensions.
 - 1. Design wood panel forms in accordance with APA's "Concrete Forming Design/Construction Guide."
 - 2. Design formwork to limit deflection of form-facing material to 1/240 of center-to-center spacing of supports.

2.2 FORM FACING MATERIALS

- A. Forms for Unexposed Concrete: Form concrete surfaces that will not be exposed in the finished structure with plywood, lumber, metal or other acceptable material.
 - 1. Lumber: Standard or better grade Douglas fir, meeting the requirements of WCLIB "Standard No. 17, Grading Rules for West Coast Lumber" or WWPB "Western Lumber Grading Rules 2011". Use boards that are surfaced on at least 2 edges and one side for a tight fit.
 - 2. Plywood: B-B Plyform, Class I, Exterior grade meeting the requirements of PS 1-09, 5/8-inch minimum thickness for 12-inch stud spacing and 3/4-inch minimum thickness for 16-inch stud spacing.

- B. Forms for Exposed Finish Concrete: Construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practical sizes to minimize number of joints. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.
 - 1. Where an as cast surface finish is indicated, provide High Density Overlay Plyform Class I Exterior plywood meeting the requirements of PS 1-09.
 - 2. Where sacked, rubbed or sandblasted surface finish is indicated, provide B-B Plyform Class I Exterior plywood meeting the requirements of PS 1-09.
- C. Form Liners: Form architectural finish concrete surfaces with PVC or ABS plastic, fiberglass reinforced plastic or elastomeric urethane form liners of face design indicated.

2.3 WATERSTOPS

- A. Flexible PVC Waterstops: U.S. Army Corps of Engineers Specification CRD-C 572, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.
 - 1. Profile: As indicated.
 - 2. Dimensions: As indicated.

2.4 RELATED MATERIALS

- A. Framing, Studding and Bracing: "Standard" or "Construction" grade Douglas fir, rough or S4S, meeting the requirements of WCLIB "Standard No. 17, Grading Rules for West Coast Lumber" or WWPB "Western Lumber Grading Rules 2011".
- B. Form Ties and Spreaders: Standard metal form clamp assembly, of type acting as spreaders and leaving no metal within 1-inch of concrete face. Inner tie rod shall be left in concrete when forms are removed. Wire ties or wood spreaders will not be permitted.
- C. Form Coating (Form-Release Agent): Non-grain raising and non-staining type that will not leave residual matter on surface of concrete or adversely affect proper bonding of subsequent application of other material applied to concrete surface. Coatings containing mineral oils or other nondrying ingredients will not be permitted. Form coating for use with form liners shall be of type recommended by form liner manufacturer.
- D. Nails: Common wire, steel.
- E. Dovetail Anchor Slot: 20 gauge dovetail anchor slot, ASTM A653, G60 mill galvanized, foam filled. Standard Size: 1-inch x 1-inch narrowing down to a 5/8-inch throat. Slot is filled with flexible foam filler to prevent concrete from entering the slot during the pour. Basis-of-Design Product: Tru Supply Company; www.trusupply.com; Item #DTAS20-10MG.

PART 3 - EXECUTION

3.1 DESIGN OF FORMWORK

- A. Carry out the engineering and construction of all formwork, shoring, and bracing, by and under the direction of the Contractor. The Contractor shall be held responsible for the engineering, construction, maintenance, and safety of all formwork during the entire construction period.

- B. The formwork shall be designed for the loads and lateral pressures outlined in Part 3, Section 102, of ACI 347R-14, and lateral forces as specified by the CBC Title 24 Part 2.

3.2 INSTALLATION OF FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117. Camber formwork where necessary to compensate for anticipated deflections due to fresh concrete and construction loads.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 - 1. Surface Finish-2.0: ACI 117 Class B, **1/4 inch**, for rough-formed finished surfaces.
 - 2. Surface Finish-3.0: ACI 117 Class A, **1/8 inch**, for smooth-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
 - 1. Minimize joints.
 - 2. Exposed Concrete: Symmetrically align joints in forms.
- E. Construct forms for easy removal without hammering or prying against concrete surfaces.
 - 1. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.
 - 2. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 3. Install keyways, reglets, recesses, and the like, for easy removal.
- F. Do not use rust-stained steel form-facing material.
- G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces.
 - 1. Provide and secure units to support screed strips.
 - 2. Use strike-off templates or compacting-type screeds.
- H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible.
 - 1. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar.
 - 2. Locate temporary openings in forms at inconspicuous locations.
- I. Chamfer exterior corners and edges of permanently exposed concrete 3/4-inch, unless otherwise indicated. Provide molding in forms for all chamfering required.
- J. At construction joints, overlap forms onto previously placed concrete not less than 12 inches.
- K. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work.
 - 1. Determine sizes and locations from trades providing such items.
 - 2. Obtain written approval of Architect prior to forming openings not indicated on Drawings.

3. Drawings.

L. Construction and Movement Joints:

1. Construct joints true to line with faces perpendicular to surface plane of concrete.
2. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
3. Place joints perpendicular to main reinforcement.
4. Locate joints for beams, slabs, joists, and girders in the middle third of spans.
 - a. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
6. Space vertical joints in walls as indicated on Drawings.
 - a. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.

M. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.

1. Locate ports and openings in bottom of vertical forms, in inconspicuous location, to allow flushing water to drain.
2. Close temporary ports and openings with tight-fitting panels, flush with inside face of form, and neatly fitted, so joints will not be apparent in exposed concrete surfaces.

N. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

O. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

P. Coating of Forms: Thoroughly clean forms and coat with specified form coating before each use. Do not reuse forms for exposed construction which cannot be reconditioned to "like new" condition. Apply form coating to forms in accordance with the manufacturer's specifications. Apply form coating to forms before placing reinforcing steel.

Q. Earth Forms: Earth forms may be used for footings only where the soil is firm and stable and the concrete will not be exposed to view. Where earth forms are to be used, excavations shall be cut neat and accurately to size for placing of concrete directly against the excavation. Except for bottom of footings, allow for one-inch additional concrete beyond the dimensions or profiles shown on the drawings. Construct wood edge strips at each side of trench at top to secure reinforcing and prevent trench from sloughing. Form sides of footings where earth sloughs more than 6-inches. Earth forms shall be tamped firm and cleaned of all debris and loose material before depositing concrete.

R. Wood Forms: Construct forms of sound material to the correct shape and dimensions, mortar tight, and of sufficient strength, and so braced and tied together that the movement of men, equipment, materials, or placing and vibrating the concrete will not throw them out of exact shape under imposed loads. They shall be so constructed that they may be easily removed without damage to the concrete. Before concrete is placed in forms, carefully verify the horizontal and vertical position of the form and correct inaccuracies. Complete wedging and bracing in advance of placing of concrete.

S. Form Liners: Position liners on the forms so that grooves and joints are aligned with tie slots. Attach form liners to plywood forms with staples and to metal forms with sheet metal screws or pop rivets. Space fasteners not to exceed 4-inches on centers around the

perimeter of each sheet. Place staples perpendicular to the edges. Install staples using a power staple with pressure regulated so that staple heads are driven flush with the surface. Seal joints between liners and joints at top and bottoms of liners with foam tape placed on the backside of liners.

- T. Framing bracing, supporting members, and centering shall be of ample size and strength to safely carry, without deflection, dead and live loads to which forms may be subjected, and shall be spaced sufficiently close to prevent bulging or sagging of forms. Concrete out of line, level, or plumb will be cause for rejection of the whole construction affected.
- U. Tolerances: Formwork shall be constructed so as to ensure that the concrete surfaces will conform to the tolerances of ACI 117-10.
- V. Chamfered Corners: Chamfer exposed corners 3/4-inch, unless otherwise indicated. Provide molding in forms for all chamfering required.
- W. Form Ties: Use ties of sufficient strength and in sufficient quantities to prevent spreading of the forms. Place ties at least 1 inch away from the finished surface of the concrete.
- X. Arrangement: Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.
- Y. Joints: Install construction joints, isolation joints, shrinkage control joints and expansion joints as approved. Coordinate location of construction joints, particularly those exposed to view at walls and columns, in advance of concrete placement.

3.3 INSTALLATION OF EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.
 - 1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
 - 3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
 - 4. Install dovetail anchor slots in concrete structures, as indicated on Drawings.
 - 5. Clean embedded items immediate prior to concrete placement.
- B. Embedded Piping and Rough Hardware:
 - 1. Coordinate with other trades who are required to fasten materials to formwork, or who are required to insert piping, boxes, bolts, anchors, inserts, or other rough hardware, within the forms.
 - 2. Locate conduits or pipes so as not to reduce the strength of the construction, and in no case place in a slab less than 4-inches thick except for local offsets. Do not bury conduit in a concrete slab with an outside diameter greater than 30 percent of the thickness of the slab, and do not place conduit under slab reinforcing steel, except for slab mesh. Place conduits parallel to roof slab span.

3.4 INSTALLATION OF WATERSTOPS

- A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm.

1. Install in longest lengths practicable.
2. Locate waterstops in center of joint unless otherwise indicated on Drawings.
3. Allow clearance between waterstop and reinforcing steel of not less than 2 times the largest concrete aggregate size specified in Section 03 30 00 "Cast-In-Place Concrete."
4. Secure waterstops in correct position at 12 inches on center.
5. Field fabricate joints in accordance with manufacturer's instructions using heat welding.
 - a. Miter corners, intersections, and directional changes in waterstops.
 - b. Align center bulbs.
6. Clean waterstops immediately prior to placement of concrete.
7. Support and protect exposed waterstops during progress of the Work.

3.5 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.
 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved its 28-day design compressive strength.
 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.
- D. When shores and other vertical supports are so arranged that the form facing material may be removed without loosening or disturbing the shores and supports, the facing material may be removed at an earlier age as specified or permitted. The shores and supports shall remain in place until the concrete has reached its specified 28-day strength, unless otherwise specified or permitted.
- E. Whenever the formwork is removed during the curing period, cure the exposed concrete by one of the methods specified in Section 03 30 00.
- F. Construction loads exceeding the design loads shall not be imposed on any member unless it is properly shored and braced.
- G. Use softwood wedges to release form faces from concrete. Do not pry with metal tool.

3.6 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Inspections:

1. Before placing of concrete, and after placement of reinforcing steel in the forms, provide notification so that proper inspection can be made. Make such notification at least 2 working days in advance of placing concrete.
 2. Inspect formwork for shape, location, and dimensions of the concrete member being formed.
- C. Rejection of Defective Work: Any movement or bellying of forms during construction or variations in excess of the tolerances specified will be considered just cause for the removal of such forms and, in addition, the concrete construction so affected. Reconstruct forms, place new concrete and required reinforcing steel at no additional cost to the Owner.

END OF SECTION

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SECTION 03 20 00

CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Reinforcing steel for cast-in-place concrete.
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 REFERENCES

- A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the formwork only to the extent specified by the reference. Refer to Section 01 42 16 for information concerning availability and use of references.

American Concrete Institute (ACI)
American Society for Testing and Materials (ASTM International)
Concrete Reinforcing Steel Institute (CRSI)
American Welding Society (AWS)
American Concrete Institute (ACI)

1.3 ACTION SUBMITTALS

- A. Product Data: Submit mill affidavits, stating the grades and physical and chemical properties of the reinforcing steel, and conformance with ASTM Specifications, before delivery of the steel to the project site.
- B. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- C. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 INFORMATIONAL SUBMITTALS

- A. Welding certificates.

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4.

1.6 REGULATORY REQUIREMENTS

- A. Except as modified by the requirements specified herein or the details on the drawings, reinforcing steel shall conform to the 2019 California Building Code (CBC) Title 24 Part 2, Chapter 19A - Concrete.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver reinforcement bundled and tagged to identify placement and certify testing.
- B. Transport reinforcing steel to the construction site, store and cover in a manner that will ensure that no damage occurs to it from moisture, dirt, grease, or other cause that might impair bond to concrete. Store a sufficient supply of approved reinforcing steel on the construction site at all times to ensure that there will be no delay of the construction. Maintain identification of steel after bundles are broken.

1.8 COORDINATION

- A. Review architectural, structural, mechanical, and electrical drawings for anchor bolt schedules and locations, anchors, inserts, conduits, sleeves, and other items which are required to be cast in concrete, and make necessary provisions as required so that reinforcing steel will not interfere with the placement of such embedded items.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT MATERIALS

- A. Reinforcing Bars: New, deformed, billet steel bars, complying with ASTM A615, except provide low alloy deformed bars complying with ASTM A706 for bars to be welded. Grades shall be as indicated. Deliver bars new and free from rust and mill scale in original bundles with mill tags intact.
- B. Welded Wire Fabric: New welded steel wire fabric, meeting the requirements of ASTM A1064, of gage and center-to-center spacing as indicated. Supply welded wire fabric in flat sheets.
- C. Tie Wire: 16-gage or heavier, where indicated or specified, black or galvanized steel wire, meeting the requirements of ASTM A82.
- D. Welding Electrodes: AWS A5.1-04, grade E70XX for welding grade 40 reinforcing steel, and AWS A5.5-06 E90XX for welding grade 60 reinforcing steel.

2.2 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.3 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement in accordance with the details indicated. Where specific details are not indicated or noted, comply with the applicable requirements of CRSI's "Manual of Standard Practice," CBC Title 24 Part 2, Chapter 19A; IBC Standard 19-1; and ACI SP-66-04.

- B. Bend, cut, and place bars accurately, as indicated. Bend bars cold; heating of bars will not be permitted. Do not bend or straighten bars in any manner that will injure the material.

PART 3 - EXECUTION

3.1 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with applicable requirements of CCR Title 24 Part 2, ACI 315, and CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement. Install reinforcement accurately and secure against movement, particularly under the weight of workmen and the placement of concrete.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- E. Reinforcing Supports: Support bars and welded wire fabric larger than 8-gage on metal chairs or spacers on metal hangers, accurately placed and securely fastened to steel reinforcement in place. Support legs of accessories in forms without embedding in form surface. Space chairs and accessories in conformance with CRSI's "Recommended Practice for Placing Bar Supports". No wood will be permitted inside forms. Precast concrete cubes may be used to support reinforcing for footings and slabs on grade.
- F. Placing and Tying: Set reinforcing in place, space, and securely tie at splices and at crossing points and intersections in the position indicated, or as directed. Point ends of wire away from forms.
- G. Spacing: Space bars as indicated. Where not indicated, the clear spacing for main longitudinal column reinforcement shall be not less than 1.5 times the nominal bar diameter, or 1-1/2 inches, or 1-1/3 times the maximum size aggregate, whichever is greater. For other parallel bars, where spacing is not indicated, the minimum clear spacing shall not be less than the nominal bar diameter, or one inch, or 1-1/3 times the maximum size aggregate, whichever is less. The clear distance limitations above also apply between the bars being spliced at a contact lap splice and adjacent bars.
- H. Splices: Except for temperature bars in slabs and horizontal wall reinforcing, no splicing will be allowed for reinforcing bars unless detailed locations are indicated, or approval is given. Stagger lapped splices for horizontal wall reinforcing and slab temperature bars by the required minimum lap splice length. Wherever possible, stagger splices of adjacent bars.
- I. Dowels: Securely tie dowels in place before concrete is deposited. In the event there are no bars in position to which dowels may be tied, add a No. 3 minimum to provide proper support and anchorage. Bending of dowels after placement of concrete will not be permitted. Protect dowels extended for future construction from weather exposure. Compliance with safety law requirements for extended dowels is required.

- J. Cleaning: At time of concrete placement, clean reinforcement free of coatings that would impair bond to concrete, otherwise clean reinforcing by sandblasting as required.
- K. Welding: Welding of reinforcing steel will not be permitted except as specifically approved or detailed. Welding shall comply with IBC Standard 19-2 and AWS D1.4-05 using low hydrogen electrodes. Before welding, determine weldability of reinforcing bars by a laboratory chemical analysis.

3.2 FIELD QUALITY CONTROL

- A. Notify the District Inspector at least 2 working days ahead of each concrete pour and do not place any concrete until all reinforcing steel has been installed and approved by the Inspector. Complete all reinforcing in every way by the end of the working day before concrete placing. Testing and inspections are specified in Section 01 45 00 "Quality Control."

3.3 DEFECTIVE WORK

- A. The following reinforcing steel construction will be considered defective and removed and replaced at no additional cost to the Owner.
 - 1. Bars with kinks or bends not indicated.
 - 2. Bars damaged by bending or straightening.
 - 3. Bars heated for bending.
 - 4. Reinforcement not placed in accordance with the drawings or specifications.

END OF SECTION

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SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.
- C. Related Sections:
 - 1. Section 03 11 00 "Concrete Forming" for concrete formwork.
 - 2. Section 03 20 00 "Concrete Reinforcing" for reinforcing steel for cast-in-place concrete.
 - 3. Section 07 26 16 "Below Grade Vapor Barrier".
 - 4. Section 32 16 00 "Site Concrete" for concrete curbs, gutters, sidewalks, and other exterior concrete paving work.

1.2 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.3 REFERENCES

- A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the formwork only to the extent specified by the reference. Refer to Section 01 42 16 for information concerning availability and use of references.

American Concrete Institute (ACI)
American Society for Testing and Materials (ASTM International)

1.4 ACTION SUBMITTALS

- A. Product Data:
 - 1. Submit certificates of compliance for Portland cement.
 - 2. Submit manufacturer's technical literature for admixtures, curing compounds, expansion joint filler, sealer and chemical hardener.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.

- C. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints is subject to approval of the Architect.
- D. Submittal procedures and quantities are specified in Section 01 33 00.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Waterstops.
 - 4. Curing compounds.
 - 5. Floor and slab treatments.
 - 6. Bonding agents.
 - 7. Adhesives.
 - 8. Semirigid joint filler.
 - 9. Joint-filler strips.
 - 10. Repair materials.
- B. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
 - 1. Aggregates: Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- C. Plant Certification Form from National Ready Mixed Concrete Association or another agency acceptable to the enforcement agency. The certification shall indicate that the plant has automatic batching and recording capabilities.
- D. Submittal procedures and quantities are specified in Section 01 33 00.

1.6 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Except as modified by the requirements specified herein or the details indicated, concrete construction shall conform to the 2019 California Building Code (CBC) Title 24 Part 2 Chapter 19A - Concrete.
 - 2. CalGreen Requirements: Materials shall comply with environmental requirements of 2019 California Building Code (CBC) Title 24 Part 11.
 - a. The quantity of volatile organic compounds (VOC) used in materials shall not exceed the limits permitted under the current regulations for architectural coatings of the Bay Area Air Quality Management District.
- B. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- C. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 1. ACI 301, "Specifications for Structural Concrete."
 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

1.7 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 305.1 and as follows:
 1. Maintain concrete temperature below 95 deg F at time of placement provided that concrete is workable enough to be placed without the addition of water.
 2. If hot weather is expected, contractor shall present a Hot Weather Concrete Plan that follows the recommendations of ACI 305.1 not less than 30 days in advance of the first placement. The plan shall include provisions for producing, placing, handling, finishing and curing concrete during the hot weather period, including cutting of joints.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 1. ACI 301.
 2. ACI 117.

2.2 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Portland Cement:
 1. Cement shall conform to ASTM C150, Type II. The cement used in the work shall correspond to that on which the selection of concrete proportions was based.

2. Where aggregates contain reactive substances, low alkali cement shall be used in all concrete. Low alkali cement shall not contain more than 0.6 percent total alkali when calculated as sodium oxide as determined by the method given in ASTM C114.
- C. Pozzolan: ASTM C618, Type F. Limit use of pozzolan to not more than 15 percent of cement content by weight.
- D. Regular Weight Concrete Aggregates: CCR Title 24 Part 2, Sec. 1903A.3. Use ASTM C227 to determine alkali reactivity of the aggregates as specified therein, the alkali reactivity shall be "innocuous" as determined by ASTM C289.
1. Fine Aggregate: Washed clean, uniformly screen graded, and containing not more than 2 percent by weight of deleterious materials such as shale, schist, alkali, clay lumps, earth, loam, mica or similar materials. Uniformly grade fine aggregate from fine to coarse.
 2. Coarse Aggregate: Clean, hard, crushed rock or washed gravel, free from organic materials or soft or friable materials, containing not more than 2 percent by weight of shale or cherty material and not more than 15 percent by weight of elongated fragments.
- E. Lightweight Concrete Aggregates: ASTM C330; 1-inch nominal maximum aggregate size.
- F. Admixtures: CBC Title 24 Part 2, Sec. 1905A.1 and ACI-318. Admixture shall be subject to acceptance by the Architect and Division of the State Architect (DSA) as to type and amount used. Admixtures shall not contain intentionally-added chlorides.
1. Air-Entraining Admixture: ASTM C260. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterAir Series
Cormix, Inc.; Air-Tite
Euclid Chemical Co.; Air-Mix
GCP Applied Technologies.; Darex AEA
Sika Corp.; AER
 2. Water Reducing Admixture: ASTM C494, Type A. Acceptable products, or equal:

Cormix, Inc.; PSI N
Euclid Chemical Co.; Eucon WR 75
GCP Applied Technologies; WRDA
Master Builders Solutions US LLC; MasterPozzoloth Series or MasterPolyheed Series
Sika Corp.; Plastocrete 161
 3. Retarding Admixture: ASTM C494, Type B. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterSet R Series or MasterSet DELVO Series
 4. Accelerating Admixture: ASTM C494, Type C. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterSet AC 534 or MasterSet FP 20.
 5. Water Reducing and Retarding Admixture: ASTM C494, Type D. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterSet R Series or MasterSet DELVO Series.

6. Water Reducing and Accelerating Admixture: ASTM C494, Type E. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterSet FP 20.
Cormix, Inc.; Gilco Accelerator
Euclid Chemical Co.; Accelguard 90
GCP Applied Technologies; Duraset
 7. High Range Water Reducing Admixture: ASTM C494, Type F. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterRheobuild 1000, MasterGlenium Series or PS 1466. Master Builders, Inc.; Rheobuild
Cormix, Inc.; PSI Super
Euclid Chemical Co.; Eucon 37
GCP Applied Technologies; Daracem
Sika Corp.; Sikament 300
 8. Workability-Retaining Admixture: ASTM C494, Type S. Shall retain concrete workability without affecting time of setting or early-age strength development. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterSure Z 60.
 9. Permeability-Reducing Admixture:
 - a. Shall be a portland cement-based crystalline capillary waterproofing admixture that reacts in concrete to form non-soluble crystalline hydration products in the capillary pores of the concrete.
 - b. Shall show a reduction in permeability of concrete compared to an identical concrete mixture without the admixture, when tested in accordance with CRD-C 48 at a pressure of 200 psi (1.4 MPa) [equivalent to 460 ft (140 m) of head].
 - c. Shall reduce or have no penetration of water compared to an identical concrete mixture without the admixture, when tested in accordance with DIN 1048 for a duration of 96 hours.
 - d. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterLife 300D.
 10. Corrosion-Inhibiting Admixture: Shall be a nominal 30 percent solution of calcium nitrate or an amine/ester-based organic corrosion-inhibiting admixture. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterLife CI 30 or MasterLife CI 222.
 11. Shrinkage-Reducing Admixture: ASTM C494, Type S. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterLife SRA 20 or MasterLife CRA 007.
 12. Alkali-Silica Reaction Inhibiting Admixture: ASTM C494, Type S. Shall contain a nominal lithium nitrate content of 30 percent. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterLife ASR 30.
- G. Water Used in Mixing Concrete: Complying with ASTM C1602, including all limits listed in Table 2 and the requirements of paragraph 5.4.

2.3 CURING MATERIALS

- A. Curing Membrane: Non-staining paper meeting the requirements of ASTM C171, or 6 mil thick polyethylene film.
- B. Curing Compound: Types as follows subject to the limitations specified elsewhere in this Section:
1. Non-film Forming Type: Clear, water-based solution that penetrates below the concrete surface to react with free lime to seal, harden and dust proof concrete surfaces. When tested in accordance with ASTM C156, compound shall restrict the loss of water to not more than 0.55 kg per square meter. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterKure HD 100 WB
Burke Corp.; Res-X Silicate
Dayton-Superior; Day-Chem Sil-Cure (J13)
Euclid Chemical Co.; Cure & Hard
W. R. Meadows; Med-Cure
Nox-Crete, Inc.; Bro-Cure
 2. Dissipating Resin Type: Water based, resin compound containing no wax, paraffin, gum or oil, designed to cure fresh concrete and complying with ASTM C309, Type I-D, Class B. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterKure CC 180 WB
Burke Corp.; Aqua Resin Cure
Euclid Chemical Co.; Kurez VOX
W. R. Meadows; 1100 Clear
Nox-Crete, Inc.; Resin Cure E
Symons Corp.; Resi-Chem Clear Cure
 3. Pigmented Type: Water based blend of pure waxes, polymers, additives, and alkali resistant pigments as recommended by the manufacturer of the coloring admixture. When tested in accordance with ASTM C156, compound shall restrict the loss of water to not more than 0.55 kg per square meter. Acceptable products, or equal:

L.M. Scofield Co.; Lithochrome Colorwax, Water Base
Admixtures, Inc.; Colorfull Cure-Sealer
 4. Curing Sealer: Water based acrylic resin compound containing not less than 12 percent solids, designed to cure, seal and dustproof concrete floors, complying with ASTM C309, Type I, Class B. Acceptable products, or equal:

Master Builders Solutions US LLC; MasterKure CC 160 WB
Burke Corp.; Spartan Cote WB
Dayton-Superior; Safe Cure & Seal (J-18)
Euclid Chemical Co.; Aqua-Cure VOX
W. R. Meadows; Vocomp-20
Nox-Crete, Inc.; Cure & Seal 1200E
Symons Corp.; Cure & Seal 12% Emulsion

2.4 RELATED MATERIALS

- A. Expansion Joint Filler: Premolded, of sizes and thicknesses indicated, meeting the requirements of ASTM D1751.
- B. Expansion Joint Sealing Compound: Expansion joint sealant and backer rod is specified in Section 07 92 00.

- C. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids content epoxy joint filler, with a Type A shore durometer hardness range of 90 to 95, in accordance with ASTM D2240.
 - 1. Basis-of-Design Product: Metzger/McGuire MM-80.
- D. Bonding Agent: SikaLiquid® Weld.
 - 1. VAE based re-emulsifiable bonding agent.
 - 2. Tensile Adhesion Strength: 7 days; 150 psi; (ASTM C-1583).
 - 3. Slant Shear Strength: 14 days; 1,300 psi; (ASTM C-1059).
 - 4. Freeze-thaw Stability: 5 cycles; good; (ASTM C666).
- E. Below Grade Vapor Barrier: As specified in Section 07 26 16.
- F. Drilled Anchors: Acceptable products, or equal:
 - Hilti; Kwik-Bolt TZ Expansion Anchors (ICC Report No. ESR-1917)
- G. Epoxy Adhesive Anchoring System: Basis-of-Design Product:
 - Hilti HIT-RE 500-SD Epoxy Adhesive Anchoring System (ICC Report No. ESR-2322). HIT-RE 500-SD Adhesive Anchoring System is an injectable two-component epoxy adhesive. The two components are kept separate by means of a dual-cylinder foil pack attached to a manifold. The two components combine and react when dispensed through a static mixing nozzle attached to the manifold.

2.5 REPAIR MATERIALS

- A. Leveling Compound: Cementitious, single component, non-shrink, self-leveling underlayment for concrete floors. Acceptable products, or equal:
 - Ardex; V-800
 - Burke Corp.; Flo-Tru
 - Dayton-Superior; Levelayer II
 - Euclid Chemical Co.; Flo-Top
 - Master Builders Solutions US LLC; MasterTop 110 SL
 - Symons Corp.; Floor Top

2.6 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Concrete Proportions and Properties:
 - 1. Minimum Concrete Strengths at 28 Days: As indicated.
 - 2. Slump Limit: 6 inches, plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
 - 3. Maximum Water-to-Cement Ratios: As indicated.
 - 4. Maximum Size Aggregate: In no case shall the maximum aggregate size used exceed one fifth of a member's thickness, one third of the depth of slabs, nor three fourths of

the minimum clear spacing between individual reinforcing bars or bundles of bars. In columns and piers it shall not exceed 2/3 of the clear distance between reinforcement. In addition, it shall never exceed the size indicated for the following:

- a. Slabs 6 inches and less in thickness: 1-inch.
 - b. Walls less than 8 inches in thickness: 1-inch.
5. Admixtures: Admixtures shall be added in accordance with the manufacturer's instruction.
- a. High range water reducing accelerating admixtures may be used, at the Contractor's option, to improve workability and finishing of low slump concrete mixes and to produce flowable concrete for pumping. Dosages shall be determined by the manufacturer after testing of cements and aggregates to be used.
 - b. Water reducing admixtures may be used, at the Contractor's option, to improve workability and finishing of low slump concrete mixes.
 - c. Water reducing, accelerating admixtures may be used, at the Contractor's option, to achieve early strength for earlier form removal.
 - d. Air entraining admixture may be used, at the Contractor's option, to improve workability of low slump concrete mixes. Air-entraining admixtures shall not be used in any concrete that will receive a hard-troweled surface.
- C. Grout: One part Portland cement and 2 parts fine aggregate, by volume. Grout shall be of a consistency suitable for the intended purpose and shall be used immediately after mixing. Grout used under minor bearing plates shall be "drypack" and shall be rammed into place. Small quantities of grout may be mixed by hand, but grout requiring 1/2 sack of cement, or more, per batch shall be machine mixed.
1. Grout: For shrink resistant grout under base plates, refer to Section 05 12 00.

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and ASTM C 1116/C 1116M, and furnish batch ticket information.
- 1. Use ready mixed concrete, produced, mixed and transported in accordance with ASTM C94.
 - 2. Retempering: Mix concrete only in quantities for immediate use. Discard concrete which has set, do not retemper.
 - 3. Indiscriminate addition of water to increase slump is prohibited. When concrete arrives at the project with slump below that suitable for placing, water may be added only if the maximum permissible water-cement ratio is not exceeded. Incorporate the water by additional mixing equal to at least half of the total mixing required. Retempering of concrete is allowed prior to discharge in accordance with ASTM C94.

2.8 SOURCE QUALITY CONTROL

- A. General: Submit mill tests and manufacturer's certification of compliance with ASTM Specifications to the Inspector in lieu of testing of cement and aggregate analysis.

B. Mix Designs:

1. Mix designs shall be made by the contractor's concrete supplier under the supervision of a California Registered Civil Engineer, who shall determine mix proportions to fulfill the specified requirements for strength, aggregate size and workability of concrete, and such designs shall be used in proportioning all structural concrete. Mix designs shall bear the signature and seal of the California Registered Engineer. Two copies of the mix designs shall be filed with the Architect for record purposes only, not for review or approval.
2. Make mix designs in accordance with ACI 318 Sec. 5.3 and CBC Title 24 Part 2, Sec. 1904A.2. The Owner in accordance with Section 01 45 00 will pay costs for mix design.
3. Cover and clear distances between reinforcing bars shown on the drawings shall be considered in determining the aggregate size for mix designs, which may result in an aggregate size smaller than the maximum aggregate size stipulated elsewhere in this specification.
4. A list specifying the intended usage of each mix design shall be clearly shown as part of the designs.
5. The maximum water-cement ratio for concrete intended for use in interior slabs-on-grade shall be 0.50, or as indicated.
6. Mix designs shall be reviewed and approved by the Owner's Testing Laboratory for compliance with the contract documents, with "NO EXCEPTIONS TAKEN".

C. Per 2019 CBC, Sec.1705A.3.3.1 Waiver of Continuous Batch Plant Inspection: Continuous batch plant inspection shall be waived by the registered design professional, subject to approval by the enforcement agency under either of the following conditions:

1. The concrete plant complies fully with the requirements of ASTM C94, Sections 9 and 10, and has a current certificate from the National Ready Mixed Concrete Association or another agency acceptable to the enforcement agency. The certification shall indicate that the plant has automatic batching and recording capabilities.
2. For isolated foundations supporting equipment only, where deep foundation elements are not used.
3. When continuous batch plant inspection is waived, the following requirements shall apply:
 - a. An approved agency shall check the first batch at the start of the day to verify materials and proportions conform to the approved mix design.
 - b. A licensed weighmaster shall positively identify quantity of materials and certify each load by a batch ticket.
 - c. Batch tickets, including material quantities and weights shall accompany the load, shall be transmitted to the inspector of record by the truck driver with load identified thereon. The load shall not be placed without a batch ticket identifying the mix. The inspector of record shall keep a daily record of placements, identifying each truck, its load, and time of receipt at the jobsite, and approximate location of deposit in the structure and shall maintain a copy of the daily record as required by the enforcement agency.

D. If any of the conditions in paragraph 2.7.C.1 or 2.7.C.2 are not met, then continuous batch plant inspection is required.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:

1. Daily access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.3 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.4 VAPOR RETARDER INSTALLATION

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E1643 and manufacturer's written instructions. Refer to Section 07 26 16 "Below Grade Vapor Barrier".

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
3. Locate joints for slabs in the middle third of spans.

4. Locate horizontal joints in walls and columns at underside of floors and slabs, and at top of footings or floor slabs.
 5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 07 92 00 "Joint Sealants," are indicated.
 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.6 CONVEYING AND PLACING CONCRETE

- A. Notify the Owner's Inspector and DSA at least 2 working days in advance of the placing of any concrete.
- B. Geotechnical Engineer shall inspect soil bottoms for footings and slabs before placing concrete.
- C. Before placing concrete, forms shall be thoroughly inspected. Remove wood chips, dirt, etc., take out temporary bracing and cleats, box openings for pipes, etc., secure forms in their correct position and make tight, secure reinforcement, anchors, and embedded items in their proper places. Concrete which may be on the forms or reinforcement, and which is set and dry, shall be cleaned off and the forms and steel washed off before proceeding. Remove water and all foreign matter from forms and excavations.
- D. Subgrade Preparation: Before concrete floor slabs on grade are poured, place vapor barrier over prepared subgrade, lapping all joints not less than 4-inches. Seal all joints and punctures in vapor barriers with pressure sensitive tape. Vapor barriers should be turned up at all edges and extend for the full depth of the slab.

E. Surface Preparation: Before new concrete is deposited against hardened concrete, and before masonry is placed on concrete, remove all incrustations and laitance from forms, reinforcing, and surface of hardened concrete. If the surface mortar and laitance of the first concrete pour has not been completely removed by water blasting, the hardened concrete surface shall receive a sandblast treatment exposing the coarse aggregate, to 1/4-inch amplitude. Surfaces that are to receive drypack shall also be prepared as herein specified.

F. Handling and Depositing:

1. Concreting, once started, shall be carried on as a continuous operation until the section of approved size and shape is completed.
2. Handle concrete as rapidly as practicable from the mixer to the place of final deposit by methods that prevent the separation or loss of ingredients. Deposit concrete as neatly as practicable, in its final position to avoid rehandling or flowing.
3. Concrete shall not be dropped freely where reinforcing will cause segregation. Concrete shall be deposited to maintain a plastic surface approximately horizontal.

G. Vibrating and Compacting:

1. Thoroughly consolidate all concrete and compact by suitable means during the operation of placing and depositing. Thoroughly work all concrete around reinforcement, embedded items, and into the corners of the forms. Concrete against forms shall be thoroughly vibrated. Use internal vibrators under experienced supervision and keep out of contact with reinforcement and wood forms.
2. Vibrate close to the forms but do not continue at one spot to the extent that large areas of grout are formed or the heavier aggregates are caused to settle. Take care not to disturb concrete that has taken its initial set.

H. Flatwork:

1. Set edge forms and intermediate screed strips accurately to produce the designed elevations and contours in the finished surface, and sufficiently strong to support vibrating bridge screeds or roller pipe screeds if the nature of the finish specified requires the use of such equipment. Align concrete surface to the contours of screed strips by the use of strike-off templates or approved compacting type screeds.
2. When the formwork is cambered, set screeds to a like camber to maintain the proper concrete thickness.
3. Locate and detail joints in slabs on grade as indicated.
4. Thoroughly consolidate concrete slabs. Use internal vibration along the bulkheads of slabs on grade. Obtain consolidation of slabs and floors with vibrating bridge screeds, roller pipe screeds, or other approved means. Concrete to be consolidated shall be as dry as practical and the surfaces thereof shall not be manipulated before the finishing operations.

3.7 FINISHING FORMED SURFACES

- A. General: Provide sacked or rubbed finishes where indicated. Provide sacked finish where no other finish is indicated. As-cast finish not acceptable.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes

and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces to receive a rubbed finish.
- C. Sacked Finish: Remove fins, rough spots, stains and hardened mortar by carefully rubbing with a fine abrasive stone to a smooth even surface. Remove excess form sealer by carefully scrubbing surface with 5 to 10 percent solution of muriatic acid. Fill holes or irregular surfaces. Apply a slurry proportioned one part cement to 1-1/2 parts sand, passing a No. 16 sieve, by damp loose volume, mixed with sufficient water to form a grout having the consistency of thick paint. Before applying slurry to surfaces, dampen concrete sufficiently to prevent water absorption. Spread slurry over surfaces with a clean sponge rubber float to completely fill holes and imperfections. Float surface vigorously, and while slurry is still plastic remove excess grout. Allow to dry then rub with burlap to completely remove dry grout so that no visible grout film remains. Complete the entire cleaning operation for any area the day it is started.
- D. Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than the cement paste drawn from the concrete by the rubbing process.

3.8 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish:
1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
 2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete.
 3. Apply float finish to surfaces to receive trowel finish.
 - a. Tolerances for slabs indicated to receive the following floor finishes shall not exceed 1/8-inch in 12-feet:
 - 1) epoxy flooring.
 - 1) urethane cement composition flooring.
 - b. Tolerances for all other floors shall not exceed 1/4-inch in 12-feet.
 - c. Where concrete slabs are indicated to slope to floor drains the tolerances per above shall be measured parallel to the sloping plane.
 - d. Concrete contractor is responsible for providing a slab meeting these finish tolerances at the time the flooring material is to be installed. Slabs that do not meet specified tolerances shall be leveled by the concrete contractor to within the specified tolerances using a leveling compound. Alternately the concrete contractor may use a rotary disk grinder to improve slab to within the leveling tolerances.
- C. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
 2. Continue troweling passes and restraighen until surface is free of trowel marks and uniform in texture and appearance.
 3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 4. Do not add water to concrete surface.
 5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
 6. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, or ceramic tile.
 7. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:
 - a. Slabs on Ground:
 - 1) Specified Overall Value (SOV) of flatness, F_F 50; and of levelness, F_L 30; with minimum local values (MLV) of flatness, F_F 40; and of levelness, F_L 20.
- D. Edge and Joint Finish: Use standard tools to produce rounded edge corners and intermediate line scoring.
- E. Mark-Off Lines: Form mark-off lines with curved edging tool, neat and true to line, uniform throughout. Conform to markings indicated.
- F. Concrete Sealer: All concrete floors not indicated in the schedule to receive other finish shall receive 2 coats of sealer specified herein. Spray apply in perpendicular directions. First coat shall be applied as a curing compound. Apply final coat just prior to occupation of buildings. Before applying final coat, remove dirt, dust, oil, grease, asphalt and other foreign matter.
- G. Chemical Hardener: Remove dirt, dust, oil, grease, asphalt, paint and other foreign matter from the concrete surface. Damp cure concrete, do not cure with curing compound. Apply hardener using 3 coats allowing 24 hours between coats. Apply first coat at 1/3 strength, second coat at 1/2 strength and final coat at 2/3 strength. Use manufacturer's recommended application rates. After final coat is dry, remove surplus hardener by scrubbing and mopping with water.
- H. Finishes for exterior concrete paving construction are specified in Section 32 16 00.

3.9 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations:
1. Coordinate sizes and locations of concrete bases with actual equipment provided.
 2. Construct concrete bases 4 inches high unless otherwise indicated, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
 3. Minimum Compressive Strength: As indicated.

4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
7. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.10 CONCRETE PROTECTING AND CURING

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
 1. Comply with ACI 301 and ACI 306.1 for cold weather protection during curing.
 2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing.
- B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:
 1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
 2. If forms remain during curing period, moist cure after loosening forms.
 3. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
 - a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
 - b. Continuous Sprinkling: Maintain concrete surface continuously wet.
 - c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
 - d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
 - e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
 - 1) Recoat areas subject to heavy rainfall within three hours after initial application.
 - 2) Maintain continuity of coating and repair damage during curing period.
- C. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:
 1. Begin curing immediately after finishing concrete.
 2. Interior Concrete Floors:
 - a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:
 - 1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - a) Lap edges and ends of absorptive cover not less than 12-inches.
 - b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.

- 2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.
 - a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - b) Cure for not less than seven days.
 - 3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
 - a) Water.
 - b) Continuous water-fog spray.
- b. Floors to Receive Penetrating Liquid Floor Treatments: Contractor has option of the following:
- 1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - a) Lap edges and ends of absorptive cover not less than 12 inches.
 - b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
 - 2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.
 - a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - b) Cure for not less than seven days.
 - 3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
 - a) Water.
 - b) Continuous water-fog spray.
- c. Floors to Receive Urethane Flooring:
- 1) As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - 2) Rewet absorptive cover, and cover immediately with polyethylene moisture-retaining cover with edges lapped 6 inches and sealed in place.
 - 3) Secure polyethylene moisture-retaining cover in place to prohibit air from circulating under polyethylene moisture-retaining cover.
 - 4) Leave absorptive cover and polyethylene moisture-retaining cover in place for duration of curing period, but not less than 28 days.
- d. Floors to Receive Curing Compound:
- 1) Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.

- 2) Recoat areas subjected to heavy rainfall within three hours after initial application.
- 3) Maintain continuity of coating, and repair damage during curing period.
- 4) Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer, unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

e. Floors to Receive Curing and Sealing Compound:

- 1) Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller in accordance with manufacturer's written instructions.
- 2) Recoat areas subjected to heavy rainfall within three hours after initial application.
- 3) Repeat process 24 hours later, and apply a second coat. Maintain continuity of coating, and repair damage during curing period.

D. Protection from Mechanical Injury: During the curing period, protect the concrete from damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibration. Protect finished concrete surfaces from damage caused by construction equipment, materials, or methods, and by rain or running water. Self-supporting structures shall not be loaded in such a way as to overstress the concrete.

3.11 TOLERANCES

A. Conform to ACI 117.

3.12 JOINT FILLING

A. Prepare, clean, and install joint filler in accordance with manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least 60-90 days.
2. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints, and at least 2 inches deep in formed joints.

D. Overfill joint, and trim joint filler flush with top of joint after hardening.

3.13 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Any concrete which is not formed as shown on the drawings, or for any reason is out of alignment, or is not true, or is not plumb or level, or is not in plane, or shows a defective surface, or is otherwise not in true and continuous form or is structurally defective, shall be considered as not conforming with the intent of this specification.

C. Contractor shall remove such concrete from the job and replace with new work, at no extra cost to the Owner, unless Architect grants permission to patch defective area in accordance with the following procedures. Do not consider permission to patch any such area as a waiver

of Architect's right to require complete removal of defective work if patching does not, in his opinion, satisfactorily produce or restore required quality and appearance of surface. Defects impairing strength of concrete will require special repairs or removal as directed by the Architect.

D. Patching Appearance Defects:

1. Inspection: After removing entire formwork assemblies, inspect concrete surfaces and patch tie holes, pour joints, voids, stone pockets, and such other defective areas as are permitted by Architect to be patched.
2. Procedure: Where necessary, chip away defective areas to depth of not less than 1-inch with edges perpendicular to surface, with no feather edges. Wet area to be patched and a space at least 6-inches wide entirely surrounding it, to prevent absorption of water from patching mortar. Place grout of equal parts Portland cement and sand with sufficient water to produce a brushing consistency. Brush well into surface, and then follow immediately with patching mortar.
3. Use patching mortar of same material and of approximately same proportions as used for concrete, except omit coarse aggregate, and do not mix richer than 1 part cement to 3 parts sand. Use as little mixing water as is consistent with requirements of handling and placing.
4. Compact mortar into place and screed off so as to leave patch slightly higher than surrounding surface. Then leave patch undisturbed for a period of 1 to 2 hours to permit initial shrinkage before being finally finished. Finish the patch in such a manner as to match adjoining surface, after striking off the patch with a straightedge spanning the patch and held parallel to direction of form marks.

E. Patching Structural Defects: Special repairs, or removal and replacement, as directed by the Architect.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports. Owner's testing and inspecting agency to provide tests and inspections in accordance with CCR, T24, Sec. 1913A.

1. Testing agency shall be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.
2. Testing agency shall immediately report to Architect, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.
3. Testing agency shall report results of tests and inspections, in writing, to Owner, Architect, Contractor, and concrete manufacturer within 48 hours of inspections and tests.
 - a. Test reports shall include reporting requirements of ASTM C31, ASTM C39, and ACI 301, including the following as applicable to each test and inspection:
 - 1) Project name.
 - 2) Name of testing agency.
 - 3) Names and certification numbers of field and laboratory technicians performing inspections and testing.
 - 4) Name of concrete manufacturer.

- 5) Date and time of inspection, sampling, and field testing.
- 6) Date and time of concrete placement.
- 7) Location in Work of concrete represented by samples.
- 8) Date and time sample was obtained.
- 9) Truck and batch ticket numbers.
- 10) Design compressive strength at 28 days.
- 11) Concrete mixture designation, proportions, and materials.
- 12) Field test results.
- 13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.
- 14) Type of fracture and compressive break strengths at seven days and 28 days.

B. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.

1. Refer to paragraph 2.8.C for Waiver of Continuous Batch Plant Inspection.

C. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs.
4. Verification of use of required design mixture.
5. Concrete placement, including conveying and depositing.
6. Curing procedures and maintenance of curing temperature.
7. Verification of concrete strength before removal of shores and forms from beams and slabs.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 50 cu. yd. of concrete or fraction thereof, or not less than once for each 2,000 square feet of surface area for slabs or walls, of each concrete mixture placed each day, per 2016 CBC 1905A.1.2.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C 31/C 31M.
 - a. A "set" of cylinder strength test specimens consists of
 - 1) Two 6 by 12 inch cylinders; or
 - 2) Three 4 inch by 8 inch cylinders.
 - b. Cast and field cure at least two sets of strength test specimens for each composite sample.
 6. Compressive-Strength Tests: ASTM C 39.
 - a. Test one set of field-cured specimens at 7 days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of strength test specimens obtained from same composite sample and tested at age indicated.
 7. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
 8. Test results shall be reported in writing to Architect, IOR, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
 9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
 10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
 11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- E. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within 72 hours of completion of floor finishing and promptly report test results to Architect.

3.15 PROTECTION

- A. Protect concrete surfaces as follows:
1. Protect from petroleum stains.
 2. Diaper hydraulic equipment used over concrete surfaces.
 3. Prohibit vehicles from interior concrete slabs.

4. Prohibit use of pipe-cutting machinery over concrete surfaces.
5. Prohibit placement of steel items on concrete surfaces.
6. Prohibit use of acids or acidic detergents over concrete surfaces.
7. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.
8. Protect concrete surfaces scheduled to receive surface hardener or stained concrete finish using Floor Slab Protective Covering.

3.16 DEFECTIVE WORK

- A. Remove and replace defective concrete construction at Contractor's expense.

END OF SECTION

10/26/21

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Engineered fill materials.
 - 2. Imported engineered fill material.
 - 3. Landscape backfill material'
 - 4. Decomposed granite.
 - 5. Aggregate base.

1.2 RELATED REQUIREMENTS

- A. Section 01 5000, Temporary Facilities and Controls.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Section 31 2333, Trenching and Backfilling.
- D. Section 32 1200, Asphalt Concrete Paving.
- E. Section 32 1600, Site Concrete.
- F. Section 33 0000, Utilities
- G. Section 33 4000, Storm Drainage Utilities.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. Local Jurisdiction: Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.
- D. ASTM International (ASTM):
 - 1. D698-00 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
 - 2. D1556-00 - Test Method for Density of Soil in Place by the Sand-Cone Method.
 - 3. D1557-02e2 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.

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4. D3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).
 5. D422-63(2007) e1 Test Method for Particle Size Analysis of Soil.
 6. D4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.
- E. CALTRANS Standard Specifications Section 17.
- F. CAL-OSHA, Title 8, Section 1590 (e).
- G. Site survey: Included in the drawings, was prepared by Warren Consulting Engineers and is the basis for data regarding current conditions. While the survey is deemed generally accurate, there exists discrepancies and variations due to elapsed time, weather, etc. Existing dirt grades may vary 0.2 ft. from that shown.

1.4 ADMINISTRATION REQUIREMENTS

- A. Submittal Procedures:
1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.
- B. Site Visitation: All bidders interfacing with existing conditions shall visit the site prior to bid to verify general conditions of improvements. Discrepancies must be reported prior to the bid for clarification.

1.5 ACTION SUBMITTALS

- A. Provide supplier's descriptive literature for all products to demonstrate compliance with specified attributes.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Contractor / Installer.

1.7 CLOSEOUT SUBMITTALS

- A. Guarantee: Submit subcontractor's guarantee.

1.8 QUALITY ASSURANCE

- A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.
- B. Contractor shall be solely responsible for all subgrades built. Failures resulting from inadequate compaction or moisture content are the responsibility of the contractor. Contractor shall be solely responsible for any and all repairs.

- C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting of inadequate compaction or moisture content is the sole responsibility of the contractor.
- D. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- E. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.
- F. Tests (See Part 3, Article "Testing and Observation" for Compaction Testing).

1.9 DELIVERY, STORAGE AND HANDLING

- A. Transport, store and handle in strict accord with the local jurisdiction.

1.10 EXISTING SITE CONDITIONS

- A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.
- B. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.

1.11 [USE FOLLOWING IF WORKING ON EXISTING SITE] ON SITE UTILITY VERIFICATION AND REPAIR PROCEDURES

- A. Ground-breaking requirements:
 - 1. All underground work performed by a Contractor must be authorized by the District's Construction Manager or the Low Voltage Consultant prior to start of construction.
 - 2. The Contractor is to obtain and keep the original School's construction utility site plans on site during all excavation operations. Contractor can contact the District's Construction Manager, Facilities Manager, or the Low Voltage Consultant to procure the drawings.
- B. Underground Utility Locating:
 - 1. The contractor shall hire an Underground Utility Locating Service to locate existing underground utility pathways in areas effected by the scope of work for excavation.

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2. Contractor must use an underground utility locator service with a minimum of 3 years experience. The equipment operator must have demonstrated experience. Contact Norcal Underground Locating (800/986-6722) or Precision Locating (800/577-7324)
3. The Underground Utility Locator Service must have the use of equipment with the ability to locate by means of inductive clamping, induction, inductive metal detection, conductive coupling, or TransOnde (Radiodetection) to generate signals, passive locating (free scoping) for "hot" electric, and metal detector.
4. The Underground Utility Locator Service must be able to locate existing utilities at a depth of at least 72".
5. The Underground Utility Locator Service must be able to locate but are not limited to locating the following types of utility pathways:
 - a. All conduit pathways containing 110 volt or greater 50-60Hz electrical wire.
 - b. All conduit pathways containing an active cable TV system.
 - c. All conduit pathways containing wire or conductor in which a signal can be attached and generated without damaging or triggering the existing systems.
 - d. All empty conduit pathways or pipe in which a signal probe or sonde (miniature transmitter) can be inserted.
 - e. All conduit pathways containing non-conductive cables or wires in which a signal probe or sonde (miniature transmitter) can be inserted.
 - f. All plastic and other nonconductive water lines in which a TransOnde Radiodetection) or other "transmitter" can be applied to create a low frequency pressure wave (signal) without damaging or triggering the existing systems.
 - g. All copper or steel waterlines and plastic or steel gas lines.
6. All markings made by the Underground Utility Locator Service or other shall be clear and visible.
7. The contractor shall maintain all markings made by Underground Utility Locator Service or other throughout the entire length of the project.
8. The Underground Utility Locator Service shall provide the contractor with two sets of maps showing the location of utilities and average depth. They will be referenced to permanent buildings. Contractor will deliver one copy to the district at no additional charge.
9. Contractor is responsible to contact Underground Service Alert (U.S.A. 800/227-2600) and receive clearance prior to any excavation operations.
10. Contractor shall inform the (District's Construction Manager)(Architect)(Owner) no later than five (5) days prior to the date scheduled for the utility locator service to be on site.

1.12 PROTECTION

- A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.

- B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.
- D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gulying of sides of excavation.
- E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.
- F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.
- H. Trees: Carefully protect existing trees that are to remain. Provide temporary irrigation as necessary to maintain health of trees.

1.13 SEASONAL LIMITS

- A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.
- B. Excessively wet fill material shall be bladed and aerated per Article "Subgrade Preparation".

1.14 TESTING

- A. General: Refer to Section 01 4523 - TESTING AND INSPECTION SERVICES, AND STRUCTURAL TESTS AND INSPECTIONS LIST, DSA-103.
- B. Geotechnical Engineer: Owner is retaining a Geotechnical Engineer to determine compliance of fill with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except those costs incurred for re-tests or re-inspection will be paid by Owner and backcharged to Contractor.
 - 1. If Contractor elects to process or mine onsite materials for use as Suitable Fill, Aggregate Sub Base, Aggregate Base, Rock, Crushed Rock or sand the cost of all testing of this material shall be paid for by the Contractor.
 - 2. Testing of import fill for compliance with Department of Toxic Substance Control (DTSC) shall be paid for by the Contractor.

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. Engineered Fill Materials: All fill shall be of approved local materials supplemented by imported fill if necessary. "Approved" local materials are defined as local soils tested and approved by Geotechnical Engineer free from debris, and concentrations of clay and organics; and contain rocks no larger than 3 inches in greatest dimension. The soil and rock should be thoroughly blended so that all rock is surrounded by soil. This may require mixing of the soil and rock with a dozer prior to placement and compaction. Clods, rocks, hard lumps or cobbles exceeding 3 inches in final size shall not be allowed in the upper 8 inches of any fill.
- B. Imported Engineered Fill Material: Imported fill may be required to complete work. Proposed import fill material shall meet the above requirements; shall be similar to the native soils. Import fill shall meet the above requirements; shall be primarily granular with a "very low" expansion potential, expansion index less than 20; shall have plasticity index less than 15; be free of particles greater than 3 inch in largest dimension; be free of contaminants and have corrosion characteristics within the acceptable limits. All import fill material shall be tested and approved by Soils Engineer prior to transportation to the site. Proposed fill material shall comply with DTSC guidelines to include Phase 1 environmental site assessment and related tests. Refer to the October 2001 DTSC Information Advisory for clean imported fill material.
1. DTSC TESTING: Site work contractor is to coordinate testing with an analytical lab, hired by the owner, licensed by the State of California for the DTSC testing. The costs associated with testing will be paid by the contractor.
 2. DTSC testing shall include documentation as to the previous land use, location, and history. Soils shall be analyzed for all compounds of concern to ensure the imported soil is uncontaminated and acceptable. Testing shall be performed per the recommendations included in DTSC Imported Fill Advisory http://www.dtsc.ca.gov/Schools/upload/SMP_FS_Cleanfill-Schools.pdf). Soils shall be tested prior to import to the project site.
 3. Lab shall determine geographically which tests and analysis comparison will be appropriate for the testing. (CAM 17 / Title 22); (RWQCB) Regional Water Quality Control Board; or (OEHHA) Office of Environmental Health Hazard Assessment.
 4. Frequency of testing shall be conducted in accordance with DTSC's Imported Fill Advisory as follows;

Fill Material Sample Schedule	
Area Of Individual Borrow Area	Sampling Requirements
2 Acres or less	Minimum of 4 samples
2 to 4 Acres	Minimum of 1 sample every ½ acre
4 to 10 Acres	Minimum of 8 samples

Greater than 10 Acres	Minimum of 8 locations with 4 subsamples per location
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Volume of Borrow Area Stockpile	
Up to 1,000 Cubic Yards	1 sample per 250 cubic yards
1,000 to 5,000 Cubic Yards	4 samples for the first 1000 cubic yards + 1 sample per each additional 500 cubic yards
Greater than 5,000 Cubic Yards	12 samples for the first 5,000 cubic yards + 1 sample per each additional 1,000 cubic yards

5. Reports/ Documentation
 - a. Results of the testing analysis shall be sent to the Owner; Architect; Project Inspector, Project Civil Engineer, DTSC, and DSA. Letter shall reference DSA file and application numbers.

- C. Landscape Backfill Material:
 1. The top 4 inches of native topsoil stripped from the site may be used for landscape backfill material.
 2. Imported Topsoil may be required to complete work. Proposed Topsoil material shall comply with DTSC guidelines to include Phase 1 environmental site assessment and related tests. Refer to the October 2001 DTSC Information Advisory for clean imported fill material.

- D. Water: Furnish all required water for construction purposes, including compaction and dust control. Water shall be potable.

- E. Aggregate Base: Provide Class 2 3/4" Aggregate Base conforming to standard gradation as specified in Cal Trans Standard Specifications, Section 26,-1.02A.

PART 3 - EXECUTION

3.1 INSPECTION LAYOUT AND PREPARATION

- A. Prior to installation of the work of this Section, carefully inspect and verify by field measurements that installed work of all other trades is complete to the point where this installation may properly commence

- B. Layout all work, establish grades, locate existing underground utilities, set markers and stakes, setup and maintain barricades and protection facilities; all prior to beginning actual earthwork operations. Layout and staking shall be done by a licensed Land Surveyor or Professional Civil Engineer.

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- C. Verify that specified items may be installed in accordance with the approved design.
- D. In event of discrepancy, immediately notify Owner and the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 PERFORMANCE

A. GENERAL:

- 1. General: Do all grading, excavating and cutting necessary to conform finish grade and contours as shown. All cuts shall be made to true surface of subgrade.
- 2. Archaeological Artifacts: Should any artifacts of possible historic interest be encountered during earthwork operations, halt all work in area of discovery and immediately contact the Architect for notification of appropriate authorities.
- 3. Degree of Compaction: Percentage of maximum density, hereinafter specified as degree of compaction required, means density equivalent to that percentage of maximum dry density determined by ASTM D1557 Compaction Test method, and such expressed percentage thereof will be minimum acceptable compaction for specified work.
- 4. Moisture Content: Moisture content shall be as noted below and as called for on the plans. Moisture content shall be maintained until subgrade is covered by surfacing materials.

3.3 DEMOLITION, DISPOSAL AND DISPOSITION OF UNDESIRABLE MAN-MADE FEATURES

- A. All other obstructions, such as abandoned utility lines, septic tanks, concrete foundations, and the like shall be removed from site. Excavations resulting from these removal activities shall be cleaned of all loose materials, dish shaped, and widened as necessary to permit access for compaction equipment. Areas exposed by any required over-excavation should be scarified to a depth of 8 inches, moisture-conditioned to optimum moisture content, and recompacted to at least 90% of the maximum dry density.

3.4 TESTING AND OBSERVATION

- A. All grading and earthwork operations shall be observed by the Geotechnical Engineer or his representative, serving as the representative of the Owner.
- B. Field compaction tests shall be made by the Geotechnical Engineer or his representative. If moisture content and/or compaction are not satisfactory, Contractor will be required to change equipment or procedure or both, as required to obtain specified moisture or compaction. Notify Geotechnical Engineer at least 48 hours in advance of any filling operation.
- C. Earthwork shall not be performed without the notification or approval of the Geotechnical Engineer or his representative. The Contractor shall notify the Geotechnical Engineer at least two (2) working days prior to commencement of any aspect of the site earthwork.
- D. If the Contractor should fail to meet the compaction or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments

until all work is deemed satisfactory, as determined by the Geotechnical Engineer or Architect/Engineer.

- E. After each rain event Geotechnical Engineer shall test fill material for optimum moisture. Do not place any fill material until desired moisture is achieved.

3.5 CLEARING AND GRUBBING

- A. Prior to grading, remove all debris off-site. Remove trees and brush including the root systems. Holes resulting from tree and brush removal should be prepared and backfilled in accordance with paragraphs 3.7, 3.8, 3.9, and 3.10. This may require deepening and/or widening the holes to adequately remove disturbed soil and provide room for compaction equipment. Strip the surface of all organics.

3.6 CUTTING

- A. Do all cutting necessary to bring finish grade to elevations shown on Drawings.
- B. When excavation through roots is necessary, cut roots by hand.
- C. Carefully excavate around existing utilities to avoid unnecessary damage. The contractor shall anticipate and perform hand work near existing utilities as shown on the survey, without additional claims or cost.

3.7 STRUCTURAL EXCAVATION

- A. General: Excavate to bear on firm material at contract depth shown on Structural Drawings.
- B. Footings: All footing excavations shall be of sufficient width for installation of formwork, unless earth will retain its position during concreting. All portions of footings above grade must be formed. In the event that footings are placed against earth, footing widths below grade shall be increased 2 inches from those shown on Drawings and positive protection shall be provided for top corners of trench.
- C. Unsuitable Ground: Any errors in structural excavation, soft ground, or clay soils found when excavating shall be reported to Architect. In no case shall work be built on any such soft or clayey unsuitable surface without direction from the Architect. Restore excavations to proper elevation with engineered fill material compacted to 90% of dry density.

3.8 SUBGRADE PREPARATION

- A. Grade compact and finish all subgrades within a tolerance of 0.10' of grades as indicated on Drawings and so as not to pool water. Subgrade within building pads and concrete walks shall be within 0.05' of grades indicated.
- B. After clearing, grubbing and cutting, subsurface shall be plowed or scarified to a depth of at least 6 inches, until surface is free from ruts, hummocks or other uneven features. Moisture condition to optimum moisture content and recompact to at least 90% of the maximum dry density as determined by ASTM Test Method D1557. If the existing soils

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are at a water content higher than specified, the contractor shall provide multiple daily aerations by ripping, blading, and/or discing to dry the soils to a moisture content where the specified degree of compaction can be achieved. After seven consecutive working days of daily aerations, and the moisture content of the soil remains higher than specified, the contractor shall notify the architect. If the existing soils have a moisture content lower than specified, the contractor shall scarify, rip, water and blade existing soil to achieve specified moisture content. The contractor shall make proper allowance in schedule and methods to complete this work.

- C. Subgrade in areas to receive landscaping shall be compacted to 85%.
- D. Where Contractor over-excavates building pads through error, resulting excavation shall be recompacted as engineered fill at Contractor's expense.

3.9 PLACING, SPREADING AND COMPACTING FILL MATERIAL IN BUILDING PAD AND PAVEMENT AREAS

- A. Selected fill material shall be placed in layers which, when compacted, shall not exceed 8 inches in loose thickness. Each layer shall be spread evenly and thoroughly mixed to insure uniformity in moisture content.
- B. Selected fill material shall be moisture-conditioned to specified moisture content. Selected fill material shall be unfrozen. When moisture content of fill material is below that specified, add water until proper moisture content is achieved. When moisture content is above that specified, aerate by blading or other methods mentioned in 3.08 B until moisture content is satisfactory.
- C. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to a minimum of 95% as determined by the ASTM D1557 Compaction Test. Compact each layer over its entire area until desired density has been obtained.
- D. Recomposition of Fill in Trenches and Compaction of Fill Adjacent to Walls: Where trenches must be excavated, backfill with material excavated. Place in lifts that when compacted do not exceed 6 inches, moisture conditioned to optimum moisture content, and compact to a minimum of 95% relative compaction in building pad and paved areas, and to 90% relative compaction in landscape areas.
- E. Jetting of fill materials will not be allowed.

3.10 FINAL SUBGRADE COMPACTION

- A. Building Pads: Upper 8 inches of all final building pad subgrades shall be uniformly compacted at specified moisture content to at least 95% of maximum dry density, as determined by ASTM D1557 Compaction Test, regardless of whether final subgrade elevation is attained by filling, excavation, or is left at existing grade. After acceptance of final compaction test, contractor shall maintain the required moisture content of subgrade until concrete flatwork is placed.
- B. Paved Areas: Upper 8 inches of all final subgrades supporting pavement sections and all other flatwork shall be brought to specified moisture content and shall be uniformly

compacted to not less than 95% of maximum dry density, regardless of whether final subgrade elevation is attained by filling, excavation, or is left at existing grade. After acceptance of final compaction test, contractor shall maintain the required moisture content of subgrade until concrete flatwork is placed.

3.11 FINISH GRADING

- A. At completion of project, site shall be finished graded, as indicated on Drawings. Finish grades shall be "flat graded" to grades shown on the drawing. Mounding of finish grades will not be allowed unless otherwise directed on the landscape drawings. Tolerances for finish grades in drainage swales shall be $\pm 0.05'$. Tie in new and existing finish grades. Leave all landscaped areas in finish condition for lawn seeding. Landscaped planters shall be graded uniformly from edge of planter to inlets. If sod is used for turf areas the finish grade on which it is placed shall be lowered to allow for sod thickness.
- B. All landscape areas shall be left free of rock or foreign material.

3.12 SURPLUS MATERIAL

- A. Excavated material not required for grading or backfill shall be removed from site at contractor's expense.

3.13 CLEANING

- A. Refer to Section 01 7700.
- B. Remove from fill all vegetation, wood, form lumber, casual lumber, and shavings, in contact with ground; buried wood will not be permitted in any fill.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Trench backfill materials.

1.2 RELATED REQUIREMENTS

- A. Section 01 5000, Temporary Facilities and Controls.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.
- C. Section 31 0000, Earthwork.
- D. Section 33 0000, Utilities
- E. Section 33 4000, Storm Drainage Utilities.

1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. California Plumbing Code (CPC), edition as noted on the drawings.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
 - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
 - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
 - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.
- B. Coordination:
 - 1. General Contractor shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

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1.5 ACTION SUBMITTALS

- A. Provide supplier's descriptive literature for all products to demonstrate compliance with specified attributes:

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For contractor / Installer.

1.7 CLOSEOUT SUBMITTALS

- A. Guarantee: Submit subcontractor's guarantee.

1.8 QUALITY ASSURANCE

- A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Transport, store and handle in strict accord with the local jurisdiction.

1.10 FIELD CONDITIONS

- A. Contractor shall acquaint himself with all existing site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.
- B. Trench dewatering may be necessary. Contractor shall provide any and all tools, equipment and labor necessary for trench dewatering no matter what the source. Dewatering shall be continuous until all site utilities are installed and backfilled.

1.11 PROTECTION

- A. Adequate protection measures shall be provided to protect workers and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations. Repair all trenches in grass areas with new sod (seeding not permitted) and "stake-off" for protection.

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- B. Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- C. Any construction review of the Contractor's performance conducted by the Architect or Owner is not intended to include review of the adequacy of the Contractor's safety measures, in, on or near the construction site.
- D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gulying of sides of excavation.
- E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. Keep all excavations free from water during entire progress of work, regardless of cause, source or nature of water.
- F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance.
- H. Trees: Carefully protect existing trees which are to remain.

1.12 TRENCH SAFETY PROVISIONS

- A. General Contractor shall be solely responsible for safety design, construction and coordination with agencies having jurisdiction. If such plan varies from shoring system standards established by Construction Safety Orders, plan shall be prepared by registered civil or structural engineer.
- B. Nothing herein shall be deemed to allow use of shoring, sloping or protective system less effective than that required by Construction Safety Orders of California State Division of Industrial Safety.
- C. When trenching through paved surface, provide steel trench plates to cover open trenches daily until trenches are backfilled.

1.13 SEASONAL LIMITS

- A. No backfill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by heavy rains, full operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.
- B. Material above optimum moisture shall be processed per Section 31 0000, Part 3, Article "Subgrade Preparation".

1.14 TESTING

- A. General: Refer to Section 31 0000, Part 1, Article "Testing" and Part 3, Article "Testing and Observation".

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. Backfill materials: Pipeline and conduit trench backfill as shown on the plans and as specified below.
 - 1. ¾ inch crush rock.
 - 2. Native Materials: Soil native to Project Site, free of wood, organics, and other deleterious substances. Rocks shall not be greater than ___-inches.
 - 3. Sand: Fine granular material, free of organic matter, mica, loam or clay.
 - 4. Lean Mix Concrete: 3 sacks of cement per yard plus sand.
 - 5. Class 2 aggregate base, ¾" rock, per Caltrans Section 26-1.02B
 - 6. Controlled Density Fill: 3 sack slurry backfill.
- B. Water: Furnish all required water for construction purposes, including compaction and dust control. Water shall be potable.
- C. Provide other bedding and backfill materials as described and specified in Section 33 0000, Section 33 4000 and Divisions 22 and 26.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions:
 - 1. Examine areas and conditions under which work is to be performed.
 - 2. Identify conditions detrimental to proper or timely completion of work and coordinate with General Contractor to rectify.

3.2 INSTALLATION

- A. Perform work in accordance with pipe manufacturer's recommendations, as herein specified and in accordance with drawings.

3.3 TRENCHING

- A. Make all trenches open vertical construction with sufficient width to provide free working space at both sides of trench around installed item as required for caulking, joining, backfilling and compacting; not less than 12 inches wider than pipe or conduit diameter, unless otherwise noted.
- B. Carefully excavate around existing utilities to avoid unnecessary damage. The contractor shall anticipate and perform hand work near existing utilities as shown on the survey, without additional claims or cost.
- C. Trench straight and true to line and grade with bottom smooth and free of edges or rock points.

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- D. Where depths are not shown on the plans, trench to sufficient depth to give minimum fill above top of installed item measured from finish grade above the utility as follows:
1. Sewer pipe: depth to vary
 2. Storm drain pipe: depth to vary
 3. Water pipe - Fire Supply: 36 inches
 4. Water pipe – Domestic Supply: 30 inches

3.4 BACKFILL

- A. Pipe Trench Backfill is divided into three zones:
1. Bedding: Layer of material directly under the pipe upon which the pipe is laid.
 2. Pipe Zone: Backfill from the top of the bedding to 6 inches (compacted) over the top of the pipe.
 3. Upper Zone: Backfill between top of Pipe Zone and to surface of subgrade.
- B. Bedding: Type of material and degree of compaction for bedding backfill shall be as defined in the Details and Specifications.
- C. Pipe Zone and Upper Zone Backfill:
1. Type of material and degree of compaction Pipe Zone and Upper Zone Backfill shall be as required by Drawings, Details, & Specifications.
 2. Upper Zone Backfill shall not be placed until conformance of Bedding and Pipe Zone Backfill with specified compaction test requirements has been confirmed.
 3. Backfill shall be brought up at substantially the same rate on both sides of the pipe and care shall be taken so that the pipe is not floated or displaced. Material shall not be dropped directly on pipe.
- D. Backfill Compaction:
1. Backfill shall be placed in layers which, when compacted shall not exceed 6 inches in thickness. Each layer shall be spread evenly and thoroughly mixed to insure uniformity. Do not backfill over, wet, frozen or soft subgrade surfaces. Employ a placement method that does not disturb or damage foundation walls, perimeter drainage, foundation damp-proofing, waterproofing or protective cover.
 2. When moisture content of fill material is below that required to achieve specified density, add water until proper moisture content is achieved. When moisture content is above that required, aerate by blading or other methods until specified moisture content is met; see Section 31 0000, Part 3, Article "Subgrade Preparation".
 3. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to 90% of maximum dry density while at specified moisture content. Compact each layer over its entire area until desired density has been obtained.
 4. Compaction: All backfill operations shall be observed by the Inspector of Record and/or Geotechnical Engineer. Field density tests shall be made to check compaction of fill material. If densities are not satisfactory, Contractor will be

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required to change equipment or procedure or both, as required to obtain specified densities. Notify Inspector and Architect at least 24 hours in advance of any operation.

E. Backfill in Areas Previously Lime or Cement Treated

1. Where trenching occurs in areas that have been lime or cement treated, class 2 aggregate bases or approved controlled density backfill material shall be used for the top 12-inches minimum of the trench or thickness shall match the depth of treated material.

3.5 TRENCH AND SITE RESTORATION

- A. Finished surface of trenches shall be restored to a condition equal to, or better than the condition as existed prior to excavation work.

3.6 PROTECTION

- A. Protect existing surfaces, structures, and utilities from damage. Protect work by others from damage. In the event of damage, immediately repair or replace to satisfaction of Owner.
- B. Repair existing landscaped areas to as new condition. Replant trees, shrubs or groundcover with existing materials if not damaged or with new materials if required. Replace damaged lawn areas with sod, no seeding will be permitted.
- C. Replace damaged pavement with new compatible matching materials. Concrete walks to be removed to nearest expansion joint and entire panel replaced. Asphalt to be cut neatly and replaced with new materials.
- D. Any existing materials removed or damaged due to trenching to be returned to new condition.

3.7 SURPLUS MATERIAL

- A. Remove excess excavated material, unused materials, damaged or unsuitable materials from site.

3.8 CLEANING

- A. Refer to Section 01 7700.
- B. Contractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others throughout the project and at the completion of work.
- C. After completion of work in this section, remove all equipment, materials, and debris. Leave entire area in a neat, clean, acceptable condition.

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END OF SECTION

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PART 1 - GENERAL

1.1 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Pertinent Sections specifying Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 01 8113, Sustainable Design Requirements.
- C. Section 32 1600, Site Concrete.

1.3 QUALITY ASSURANCE

- A. Use only new materials and products.
- B. Use materials and products of one manufacturer whenever possible.
- C. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

1.4 SUBMITTALS

- A. Refer to Section 01 3300.
- B. Manufacturer's Data: Submit list and complete descriptive data of all products and finishes proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.
- C. CAL-GREEN Submittals:
 - 1. Product Data – VOC Limits: For adhesives, sealants, fillers and primers, documentation including printed statement of VOC contents, comply with limits specified in Section 01 6116.
- D. Shop Drawings: Submit showing all parts, connections and anchorages, adjacent materials, fully dimensioned and noted. Indicate plan layout, spacing of components, locations and sizes of support structures, post foundation dimensions, hardware anchorage and schedule of components. Provide evidence that mounting plates, lock boxes etc. have been sized, located and coordinated properly with the finish hardware supplier and installer where applicable.
- E. Guarantee of Contractor/Subcontractor per Article 1.5.

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1.5 GUARANTEE

- A. Refer to General Conditions and Section 01 3300.
- B. Submit fully executed Guarantee with submittal package required by Article 1.4.
- C. Submit fully executed contractors Guarantee covering all materials and workmanship for a period of five (5) years. Provide ten (10) year coating manufacturer's commercial material warranty covering coating materials as specified herein.

1.6 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code, edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- C. ASTM A500, Standard Specification for Cold-Formed Welded Carbon and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
- D. ASTM A513, Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing
- E. ASTM A123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- F. ASTM A143, Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement
- G. ASTM A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- H. ASTM A384, Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies
- I. ASTM A385, Practice for Providing High Quality Zinc Coating (Hot Dip)
- J. ASTM A780, Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
- K. ASTM B6, Standard Specification for Zinc
- L. ASTM D6386, Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel product and Hardware Surfaces for Painting
- M. ASTM E376, Standard Practice for Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Test Methods

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1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.
- B. Store materials in weather protected, dry conditions off of ground and in areas so as to not interfere with the progress of the work.
- C. Transport, store and handle in strict accord with the manufacturer's written recommendations.
- D. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

1.8 FIELD MEASUREMENTS

- A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report any discrepancies to Architect before proceeding.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. VOC Limits for adhesives, sealants, fillers, coatings and primers. Comply with limits specified in related Section.
- B. Provide products conforming to local, State and Federal government requirements limiting the amount of volatile organic compounds contained in the product, for its intended application. If specified product exceeds current requirement, provide conforming product at no additional cost. Provide written confirmation to Architect describing reason for revision and demonstrate compliance of replacement product with specified requirements.
- C. Structural Performance Requirements: Metal railing assemblies, including support and anchorage components, shall be capable of withstanding a minimum concentrated load of 200 pounds applied in any direction.

2.2 WORKMANSHIP

- A. General: Use new components free from defects affecting service and appearance. Sizes specified or shown shall be considered minimum size. Deviations from specified sizes shall be first approved by the Architect.
- B. Galvanizing: Hot-dip galvanize (interior and exterior surfaces) all steel fence components. Fence components shall include pickets, horizontal rails, perimeter gate frame, posts (including post caps), fittings, plates, astragals, lock box, security screen, accessories and appropriate hardware, and other components as shown in assembly. Hot dip galvanizing is not to be provided at exit devices or lever hardware. Repair hot-

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dipped galvanized coating damaged in shop or during field erection/welding by coating with Galvanized Metal Repair Primer as specified herein and applied in accordance with manufacturer's recommendations.

2.3 ORNAMENTAL METAL FENCING AND GATES

A. General

1. Assembly: Fence shall be all-welded construction. No mechanical fasteners or connectors are permitted.
2. The tubing for fence pickets, rails and posts shall be ASTM A500-A /ASTM A513 and ASTM A500-B, hot-rolled or cold-rolled steel tubing (depending on size). Fence pickets to have a minimum yield strength of 33 ksi, all other tubing to be 50 ksi. The steel shall not be pre-galvanized or pre-coated prior to the hot-dip preparation and coating process. The steel shall be hot dipped galvanized before fabrication.
3. Galvanized Metal Repair Compound: "ZRC Galvalite", single component, high zinc dust content (zinc rich) repair compound for iron, steel and galvanized metal as manufactured by ZRC Worldwide or approved equal.

B. Fence Components:

1. Fence panels and gate assemblies shall be shop welded. Shop coat weld joints, scratches and other areas where hot-dip galvanized coating was removed or damaged with specified Galvanized Metal Repair Primer. Deliver to the project site prefabricated.
2. Pickets: 3/4-inch square, 16-gauge tubular steel, spaced as indicated on the drawings.
3. Rails & Gate Frame: 1-1/2-inch square, 14-gauge tubular steel, spaced as indicated on the drawings. For gate leafs over 6'-0" and less than 12'-0" wide, increase gate frame to 2-inch square.
4. Intermediate Rail: 1-1/2-inch x 3/4 inch, 14-gauge tubular steel, spaced as indicated on the drawings.
5. Line Posts & Roller Posts: 3-inch square, **HSS3x3x1/8 ASTM A500 Grade B.**
6. Corner and End Posts: 4-inch square, **HSS4x4x3/16 ASTM A500 Grade B.**
7. Gate Posts: 4-inch square, **HSS4x4x3/16 ASTM A500 Grade B when less than 6'** in width. Use 6-inch square, **HSS6x6x3/8 ASTM A500 Grade B** where gate leaf width is greater than 6'-0" and less than 12'-0".

C. Fittings and accessories:

1. General: Provide all necessary fittings and accessories as required for a complete fence system.
2. Post Caps: Pressed steel, pyramid style as supplied by King Architectural Metals or approved equal. Weld all around to top of post and hot-dip as one assembly.

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3. Security Screen: 16-gauge, galvanized and perforated steel sheet with 1/8-inch holes staggered at 3/16-inches on center. Provide as a part of the fabricated gate or fence panel assembly, hot-dip galvanized.

D. Gates:

1. Swing Gates: Fabricate with the same components as the fence panel assembly.
2. Kick Plates: 10-inch H. x Gate Width x 12 gauge.
3. Exit Device Mounting Plate: Gate width x 12 gauge galvanized steel sheet.
4. Plate Closure Rail: ½-inch square, 16-gauge tubular steel.
5. Astragal: 10 gauge galvanized steel sheet.

E. Gate Hardware: Non ADA Gates:

1. Lock Box (at lever hardware): Size and backset as required by specified lockset and as indicated on drawings x 14-guage steel.
2. Hinges: For gate leafs of 6'-0" wide or less provide 1 ½-pair, No. 1-3030, extra heavy duty butt hinges as supplied by King Architectural Metals or approved equal. For gate leafs over 6'-0" and less than 12'-0" wide, provide 1 ½-pair, No. 1-4040, extra heavy duty butt hinges as supplied by King Architectural Metals or approved equal.
3. Spring Gate Closer: No. 30-12 as supplied by King Architectural Metals or approved equal. Closing speed to comply with 2010 ADA Standards, section 404.2.8.2. Provide at all gates including pool gates and other locations as noted.
4. Lockable Cane Bolt: No. 30-6000-MCB as supplied by King Architectural Metals or approved equal. Provide at all gates and other locations as noted. Where indicated and required by drawings, provide custom fabricated cane bolt assembly.
5. In-Ground Cane Bolt Sleeve: ½-inch steel pipe x 12-inches long (0.84" O.D. x 0.62 I.D.) Provide for each gate leaf at both open and closed positions. Verify exact open position with Architect prior to installing sleeve.
6. Miscellaneous Hardware: Items of hardware such as padlock eyes, etc., shall be fabricated by the fence manufacturer.

F. HARDWARE GROUP NO. G-01 - GATES

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HEAVY DUTY HINGE	BB855 5.0 X 6.0	600	STA
1	EA	PANIC HARDWARE	AX-XP-WH-98-NL-909	626	VON
~~1~~	~~EA~~	~~DOGGING CYLINDER~~	~~3841-25-1206~~	~~626~~	~~KAB~~
1	EA	RIM RCYLINDER	3842-25-1206	626	KAB
1	EA	ALL CYLINDERS SHALL BE SCHLAGE FSIC CORES			
	EA	CONSTRUCTION CORE	C606	626	KAB
1	EA	DOOR PULL	VR910 NL	630	IVE
1	EA	HINGES/CLOSER	LOCINOX MAMMOTH-HD		LOC
~~1~~	~~EA~~	~~FLOOR STOP~~	~~FS43~~	~~BLK~~	~~IVE~~
1	EA	STRIKE	299	626	VON

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G. Field Applied Finish: **All OI fencing to have coatings electro-statically applied.**

1. All materials specified are from PPG Industries, Inc. and are intended to establish standards of quality for the specified coating system. Similar coatings of equal quality offering the same or better warranty as required by paragraph 1.06 B. will be considered by the Architect.
2. Manufacturer's Inspection and Warranty: The limited warranty shall apply and be effective only if the coating manufacturer is given reasonable notice and access for inspection of the work to be coated during all stages of preparation and application. Any improper surface preparation or application found by the manufacturer during any inspection shall be properly corrected to the satisfaction of the manufacturer.
3. Color: Color shall be as selected by Architect from full range of manufacturer's standard colors.
4. Delivery and Storage: All materials shall be delivered to the job site in the original and unopened containers, plainly marked with the proper designation of the product, as well as the name of the manufacturer. All coating materials at the job site shall be subject to inspection. Materials shall be stored in a clean, dry, well ventilated place, protected from sparks, flame, direct rays of the sun, and excessive heat or cold. The Contractor shall be solely responsible for the protection and safety of the materials stored by himself at the job site.
5. Paint Additives: Paint additives are prohibited unless specified and approved by the Architect or the coating manufacturer.
6. Application and Repair: The application shall leave no sags, runs or holidays. Any damage, imperfections or holes in any coat shall be cleaned and repaired to conform to manufacturer's requirements in order to maintain the warranty prior to final inspection.
7. Coating Color: Each coat shall be applied in a different color or shade from the preceding coat to aid in determining the uniformity, mil thickness and coverage of the coating.
8. Application Conditions: Exterior painting shall only take place when good weather conditions prevail. Painting shall not be undertaken during foggy or misty conditions or when rain or snow is imminent. The temperature of the surface to be painted should be at least 5-degrees F (3-degrees C) above the dew point. When substrate temperatures are high, care must be taken while applying the paint to prevent formation, of voids, pin holes, and bubbles due to the rapid evaporation of solvent. These requirements also apply during the curing stage of the coatings.
9. Preparation: Before any surface is coated, it shall be cleaned carefully of all dust, dirt, mud, grease, oil, loose rust etc. Grind and smooth out any racking marks left over from hot dipped galvanizing process. Repair of galvanized surfaces shall be done as specified above utilizing the Galvanized Metal Repair Compound. Immediately prior to painting, the prepared surface shall be inspected for compliance with the manufacturer's specified degree of surface preparation. Subsequent inspection between coats should also be conducted. See paragraph 2 above for coating manufacturer's requirements for inspection for warranty. In all

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cases, properly prepared, galvanized steel shall be coated within 8 hours of proper and accepted preparation.

10. Curing Time: The manufacturer's required minimum or maximum curing time between coats shall be strictly adhered to. Applicator shall verify what these times are.
11. Protection of Surrounding Area: Surrounding area and surfaces not to be painted shall be protected during cleaning, preparation and painting operations. Drifting of overspray shall be controlled and contained during painting operations so that finish is contained to the work only.
12. Coating Schedule:
 - a. 1st Coat: Apply one coat Pitt-Guard® Rapid Coat DTR Mastic Epoxy as to achieve a 5.0 to 7.0 Mil DFT (dry film thickness) finish.
 - b. 2nd Coat: Apply one coat Pitt-Guard® Rapid Coat DTR Mastic Epoxy as to achieve a 5.0 to 7.0 Mil DFT finish.
 - c. 3rd Coat: Apply one coat Pitthane® Ultra Urethane as to achieve a 3.0 to 4.0 Mil DFT finish.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the conditions under which the fencing is to be installed and advise the General Contractor of any conditions detrimental to the proper and timely completion of the work. Work shall not proceed until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.
- B. The Contractor shall take field measurements for this work and notify the Architect of any discrepancies between plan and field dimensions.

3.2 INSTALLATION

- A. General: Install all-welded metal fencing system in accordance with industry standard and best practices.
- B. Upon receipt at job site, all materials shall be checked to ensure that no damage occurred during handling or shipping. Contractor shall repair or replace material at no additional cost to the owner.
- C. Dig post holes in firm, undisturbed compacted soil. For fence posts and gate posts where gate leaf is 6'-0" or less in width, footing shall be no less than 18-inches in diameter and 4'-6" deep with posts set 6-inches above bottom of excavation. For gate posts where gate leaf is greater than 6'-0" and less than 12'-0" wide, footing shall be no less than 30" inches in diameter and 6'-0" deep with posts set 6-inches above bottom of excavation. **Sliding gate posts shall be 24" in diameter and 5'-0" deep.**
- D. Set fence posts a maximum of 8 ft. 0 inches on center. Dimensions vary when going up or down grades.

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- E. Install all posts and panel sections plumb and level in accordance to plans in a workmanlike manner.
- F. At slopes, step panel sections to accommodate grade changes. Do not slope panel sections.
- G. Install gates plumb, level and secure for a full opening without interference. Adjust hardware for smooth operation. Install in-ground sleeves flush to grade at both closed and open positions to accept cane bolts
- H. Finish: Field coat weld joints, scratches and other areas where hot-dip galvanized coating was removed or damaged, during shipping, installation and field welding, with specified Galvanized Metal Repair Primer. Provide painted finish utilizing preparation and application process as described in Part 2 above.

- END OF SECTION -

**2025
ANNUAL OPERATIONS AND MAINTENANCE
INSPECTION SUMMARY REPORT
FOR NATURALLY OCCURRING ASBESTOS**

**Vista del Lago High School
1970 Broadstone Parkway
Folsom, California**

PREPARED FOR:

**DEPARTMENT OF TOXIC SUBSTANCES CONTROL
8800 CAL CENTER DRIVE
SACRAMENTO, CALIFORNIA 95826-3200**



PREPARED BY:

**GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DRIVE, SUITE 800
RANCHO CORDOVA, CALIFORNIA 95742**



GEOCON PROJECT NO. S9460-07-13

MARCH 2026



Project No. S9460-01-13

March 2026

Department of Toxic Substances Control
Northern California Schools Unit
Site Mitigation and Restoration Program
8800 Cal Center Drive
Sacramento, California 95826-3200

Attn: Noah Vue, M.S., Hazardous Substances Engineer

Subject: 2025 ANNUAL OPERATIONS AND MAINTENANCE INSPECTION SUMMARY REPORT FOR
NATURALLY OCCURRING ASBESTOS
VISTA DEL LAGO HIGH SCHOOL
1970 BROADSTONE PARKWAY
FOLSOM, CALIFORNIA

Dear Mr. Vue:

In accordance with the requirements of the California Department of Toxic Substances Control, we have prepared this 2025 Annual Operations and Maintenance Inspection Summary Report for Naturally Occurring Asbestos (Report) for Vista del Lago High School (the site). The site consists of approximately 52.11 acres located at 1970 Broadstone Parkway in Folsom, California. This Report has been prepared to comply with requirements of the *Operations and Maintenance Plan*, which specifies those measures that will be taken for maintaining engineering controls and implementing best management practices for the site.

Please contact us if you have questions about this Report or need additional assistance.

Sincerely,

GEOCON CONSULTANTS, INC.

Matthew Tidwell, PG
Project Geologist

Josh Ewert, PG
Senior Geologist

- (1) Addressee
- (1) FCUSD Facilities Planning and Construction, JoAnne Blaisdell
- (1) FCUSD Maintenance & Operations, Jim Bonovich
- (1) Vista del Lago High School, Shawn Hunter

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2025 ANNUAL OPERATIONS AND MAINTENANCE INSPECTION SUMMARY REPORT FOR NATURALLY OCCURRING ASBESTOS

1.0 GENERAL INFORMATION

1.1 Introduction

In accordance with Geocon Consultants, Inc. (Geocon) Proposal No. SA-25-0540-P-EV dated August 6, 2025 and Folsom Cordova Unified School District (FCUSD) Purchase Order No. 262318 dated September 5, 2025, Geocon has prepared *this 2025 Annual Operations and Maintenance (O&M) Inspection Summary Report*, which summarizes the 2025 annual inspection of naturally occurring asbestos (NOA) engineering controls at Vista del Lago High School (the site) located at 1970 Broadstone Parkway in Folsom, Sacramento County, California. The approximate location of the site is shown on the Site Location Map, Figure 1.

We prepared an updated Operations and Maintenance Plan (O&M Plan) for the site dated July 3, 2014, which was approved by the California Department of Toxic Substances Control (DTSC) in a letter dated July 16, 2014. The O&M Plan documents policies and procedures for the FCUSD to follow for long-term operation, maintenance, and monitoring of NOA engineering controls at the site. NOA O&M activities are to be conducted under DTSC oversight, as required under the California Education Code (CEC), Section (§) 17213.1 and §17213.2, and Health and Safety Code (H&SC), Division 20, Chapter 6.8, commencing with § 78000(a) (formerly 25300 et. Seq.).

The O&M Plan specifies that an annual inspection shall be performed by the O&M Project Professional and that the Project Coordinator may accompany the O&M Project Professional. The 2025 annual inspection was conducted at the site on October 9, 2025.

1.2 Background

The site is bound by single-family residences to the west and south, Broadstone Parkway to the north and east, and undeveloped City of Folsom owned park-land to the southeast. Vista del Lago High School was opened to grades 9 and 10 in August of 2007, grade 11 service was added for the 2008/2009 school year, and the school has subsequently served grades 9 through 12.

The site consists of approximately 52.11 acres developed with nine buildings, two softball fields, two baseball fields, track and field facilities, parking lots, and landscaping. The buildings total approximately 168,000 square feet, consisting of gymnasiums, administration, multipurpose, classroom, and pool

structures. Prior to school construction, DTSC required completion of a Preliminary Environmental Assessment (PEA) and further action was required to mitigate NOA in order for the school to be developed. Removal of NOA is not considered a practical remedial action, since asbestos is contained in the underlying bedrock, and uniform distribution of NOA is assumed for the site. Therefore, DTSC required the placement of engineering controls to minimize potential exposures to NOA-containing soils.

The NOA engineering controls placed during site construction include:

- Building Foundations – 6 inches of crushed rock capped by 4 inches of concrete;
- Bus Lanes – 11 inches of aggregate base (AB) and 3 inches of asphalt concrete (AC);
- Traffic Aisles and Fire Lane – 8 inches of AB and 3 inches of AC;
- Parking Stalls – 4 inches of AB and 3 inches of AC;
- Tennis Courts – 5.5 inches of AB, 2.5 inches of AC, and ¼-inch tennis court surfacing;
- Hard Courts – 4 inches of AB and 2.5 inches of AC;
- Football Field – geotextile fabric, 6 inches of drain rock, and 2 inches of rubber turf surfacing;
- Track – 6 inches of AB, 2 inches of AC, and ¼-inch rubber track surfacing;
- Heavy Concrete Paving – 6 inches of AB and 6 inches of reinforced concrete;
- Concrete Paving – 6 inches of fill capped by 4 inches of concrete;
- 2H:1V Slope Area (embankment protection) – jute mesh and grass or other vegetation with fencing and signage to restrict access;
- Planters and Playfields – warning barrier and 12 to 18 inches of NOA-free fill;
- Infield Mix – warning barrier, 8 inches of NOA-free soil, and 4 inches of infield mix; and
- Site boundary protection fencing – 4- to 6-foot-high fence at site boundary north of Parking Lot 2 with signage indicating access is restricted;

The locations of the cap systems are depicted on Figure 2, Site Plan. Depictions of the NOA engineering controls are depicted on Figure 3, Cap System Components.

1.3 O&M Personnel

The FCUSD employs and designates the following key personnel associated with the implementation of O&M policies and procedures for the site:

Project Coordinator

Jim Bonovich, Executive Director, Maintenance and Operations
Folsom Cordova Unified School District
11458 Elks Circle, Rancho Cordova, California 95742
Office: 916.631.0501
Mobile: 916.870.0224
E-mail: jbonovic@fcusd.org

O&M Project Professional

Matthew Tidwell, Project Geologist
Professional Geologist (PG) No. 10025
Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800, Rancho Cordova, California 95742
Office: 916.852.9118
E-mail: tidwell@geoconinc.com

School Site Designee

Shawn Hunter, Assistant Principal
1970 Broadstone Parkway, Folsom, California 95630
Office: 916.294.2410
E-mail: shunter@fcusd.org

1.4 Pre-inspection Activities

Prior to conducting the school site walk-through, we noted any maintenance issues or repairs that were identified during previous O&M inspections, and reviewed the following documents:

- Operations and Maintenance Plan, Vista del Lago High School, Folsom, California, dated July 3, 2014.
- Health and safety requirements and training records.

2.0 NARRATIVE OF INSPECTION OBSERVATIONS

The following sections summarize the purpose of this Report, the NOA Awareness and O&M Training completed in 2025, and describe the observations made during the annual inspection conducted on October 9, 2025.

2.1 Purpose

The purpose of this Report is to comply with the specifications outlined in the O&M Plan by providing a summary of the findings from periodic inspections and documenting completions, delays, or failures to repair any items identified as needing repairs.

2.2 NOA Awareness and O&M Training

Matthew Tidwell, the O&M Project Professional, conducted NOA Awareness and O&M Training for FCUSD O&M personnel on October 9, 2025. Topics covered in the NOA awareness portion of the training included an overview of pertinent regulations, definition and types of asbestos, NOA occurrence in California and locally (Sacramento and Sierra foothills regions), health effects associated with asbestos exposure, relationship between smoking, asbestos, and lung cancer, and general hazard controls and work practices to avoid disturbing NOA and to prevent NOA exposures. Topics covered in the O&M portion of the training included purpose, content, and locations of the school's O&M Plan, school site engineering controls for NOA, standard operating procedures (SOP) for NOA-intrusive work, and O&M inspections. A copy of the NOA Awareness and O&M Training sign-in sheet for the October 2025 training is in Appendix A.

2.3 Periodic O&M Inspections

No periodic inspections have been performed at the site since 2018. Rafaela Barron and/or Shawn Hunter, the respective Head Custodian and Assistant Principal of Vista del Lago High School, will conduct the periodic O&M inspections in late 2025 and in 2026 (leading up to the 2026 annual inspection).

2.4 Annual Inspection

We conducted an annual inspection of the Site on October 9, 2025, to evaluate each area listed on the O&M inspection checklist. Matthew Tidwell and Christina Scott of Geocon and Noah Vue of DTSC performed the inspection. Ms. Barron and Mr. Hunter were intermittently present during the course of the inspection. We began the site inspection activities at Building A and evaluated the general condition of engineering controls in each area around the campus. Photographs taken during the October 9, 2025, annual inspection are included as Photos 1 through 20. The location and orientation of the photographs are shown in Figure 2, Site Plan.

2.5 Inspection Checklists and Field Logs

A copy of the completed Inspection Checklist for NOA Engineering Controls for the 2025 annual inspection is in Appendix B.

2.6 Observations

This section describes observations made during the annual inspection, evaluates cap integrity, and summarizes the status of action items at the site. Depictions and summaries of the cap system components are presented on Figure 3 and Table 1, respectively.

2.6.1 Hardscape Systems – Cap Integrity

2.6.1.1 Building Foundations

The building foundations are in good condition, and no corrective action is required.

2.6.1.2 Bus Lanes

The bus lanes in the northern portion of the site are in good condition and devoid of significant cracking or settlement (Photos 1 and 2). No corrective action is required.

2.6.1.3 Traffic Aisles and Fire Lane

The asphalt traffic aisles and fire lane are in good condition and devoid of significant cracking or settlement (Photos 1 and 2). No corrective action is required.

2.6.1.4 Parking Stalls

The asphalt-paved parking stalls within the parking lots are in good condition (Photos 2 through 5). No corrective action is required.

2.6.1.5 Tennis Courts

The tennis courts in the central portion of the site are in good condition (Photo 6). The tennis court surface is free of significant cracks or settlement. No corrective action is required.

2.6.1.6 Hard Courts

The asphalt-paved hard courts (basketball courts) in the central portion of the site are in good condition and free of significant cracks or settlement (Photo 7). No corrective action is required.

2.6.1.7 On-campus Asphalt Paving

The on-campus asphalt paving areas are in good condition, and no corrective action is required.

2.6.1.8 Concrete Paving

Most of concrete paving including sidewalks and walkways are in good condition, and no corrective action is required. The pool area in the central portion of the site was under construction at the time of the annual inspection (Photo 8). The concrete slab around the pool had been removed exposing the underlying fill portion of the cap system. Additional information about the construction work performed at the pool area is provided in Section 2.7.

2.6.2 Softscape Systems – Cap Integrity

2.6.2.1 Football Field

The football field and associated grounds in the southern portion of the site are in good condition and void of stressed or strained vegetation during our school site walk-through (Photo 9). No corrective action is required.

2.6.2.2 Track

The track surrounding the football field is in good condition, and no corrective action is required (Photo 9).

2.6.2.3 Junior Varsity Baseball Field

The junior varsity baseball field is generally in good condition; however, reseeding is recommended for portions of the field (Photo 10).

2.6.2.4 Varsity Baseball Field

The varsity baseball field is generally in good condition; however, reseeding is recommended for portions of the field (Photo 11).

2.6.2.5 Soccer Field

The soccer field is in good condition, and no corrective action is required (Photo 12).

2.6.2.6 Softball Fields

The softball fields are in good condition, and no corrective action is required (Photo 13).

2.6.2.7 2:1 Slope Area

The 2:1 slopes at the southern and western boundaries of the site are generally in good condition (Photo 13).

2.6.2.8 Site Boundary Fencing

The site boundary fencing is in good condition, and no corrective action is required.

2.6.2.9 Planters

Planters, including lawn and landscaped areas around the site, are generally in good condition (Photos 14, 15, and 16). Many of the planters, however, are due for replenished ground cover (e.g., bark, reseeding). There were a few areas where pathways (shortcuts) and channels have developed through planters on the campus (e.g., Photo Nos. 17 through 20), and other areas where minor erosion has occurred due to water runoff and high foot traffic. While there is minor erosion associated with some of these paths, they do not present significant potential for breaching the cap, which consists of at least 12 to 18 inches of NOA-free soil. No specific corrective action is required beyond the FCUSD's ongoing periodic addition of bark as part of regular facility maintenance.

2.6.3 Action Item Status Summary

Vista del Lago High School Operation and Maintenance Repair Summary			
Area	Action Item	Date Discovered	Date to be Completed
Building Foundations	None	---	---
Bus Lanes	None	---	---
Traffic Aisles and Fire Lane	None	---	---
Parking Stalls	None	---	---
Tennis Courts	None	---	---
Hard Courts	None	---	---
On-campus Asphalt Paving	None	---	---
Concrete Paving	NOA -Intrusive Work in Pool Area	10/09/25	Early 2026
Football Field	None	---	---
Track	None	---	---
Junior Varsity Baseball Field	Reseeding	10/09/25	Ongoing
Varsity Baseball Field	Reseeding	10/09/25	Ongoing
Soccer Field	None	---	---
Softball Field	None	---	---
2:1 Slopes	None	---	---
Site Boundary Fence	None	---	---
Planters	Add ground cover (e.g., bark/wood chips)	10/09/25	Ongoing

Notes:

--- = Not applicable

The status of each action item should be reviewed and noted during upcoming periodic (quarterly) O&M inspections. If any action items have not been resolved/improved before the 2026 annual inspection, they will be addressed in the 2026 Annual Inspection Summary Report.

2.7 Non-NOA-Intrusive Work in Pool Area

During our 2025 annual inspection of the site, we observed non-NOA-intrusive work being performed in the pool area in the central portion of the site. The concrete deck (i.e., slab) surrounding the pool and the pool itself were being renovated or replaced. We understand that the former pool deck was in disrepair and needed to be replaced. At the time of the 2025 annual inspection, the concrete deck had been removed and fill was exposed around the pool. The fill is part of the cap system in this area, which is titled “concrete paving” and consists of at least 4 inches of concrete and 6 inches of fill (Figure 3).

Due to the work being performed, Mr. Tidwell performed NOA Awareness and O&M Training for Roebbelen Contracting Inc. (Roebbelen) personnel and their subcontractors on October 24, 2025, and November 6, 2025. Topics covered in the NOA awareness portion of the training included an overview of pertinent regulations, definition and types of asbestos, NOA occurrence in California and locally (Sacramento and Sierra foothills regions), health effects associated with asbestos exposure, relationship between smoking, asbestos, and lung cancer, and general hazard controls and work practices to avoid disturbing NOA and to prevent NOA exposures. Topics covered in the O&M portion of the training included purpose, content, and locations of the school’s O&M Plan, school site engineering controls for NOA, and SOPs for NOA-intrusive work. Copies of the NOA Awareness and O&M Training sign-in sheets for the October and November 2025 trainings are in Appendix A.

FCUSD and Roebbelen provided us with a presentation that outlined some of the work completed and upcoming work to be completed at the pool area. A copy of Roebbelen’s presentation is in Appendix C. The project involved a four-phase renovation of an existing high school pool facility, including full demolition of the old pool and associated features, grading and underground utility work, interior restroom upgrades for Americans with Disabilities Act (ADA) compliance, and construction of a new reinforced concrete pool deck. The work occurred while that campus was active and was conducted under strict safety and dust control measures. Although the construction activities did not meet the thresholds for NOA-intrusive work, FCUSD and Roebbelen implemented NOA precautionary protocols during construction as an added measure of safety in case the work exposed NOA soils beneath the cap system. Mr. Hunter stated that the construction work at the pool was completed in February 2026. The renovation is anticipated to be completed and the pool reopened to students in early 2026.

3.0 CONCLUSIONS AND RECOMMENDATIONS

The NOA mitigation measures installed at the site appear to be protective of human health based on the condition of the cap system components. The corrective actions listed in Section 2.6.3 are considered to be minor but are in need of attention.

We recommend that the FCUSD address the action items summarized in Section 2.6.3 of this 2025 Annual Inspection Summary Report and ensure that periodic O&M inspections are completed on a quarterly basis. The O&M Project Professional will continue to communicate regularly with pertinent FCUSD personnel to facilitate quarterly completion of periodic inspections and completion of action items summarized in Section 2.6.3. If necessary, the O&M Project Professional will perform periodic inspections to ensure that they are not missed.

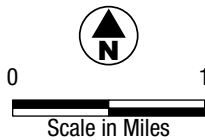
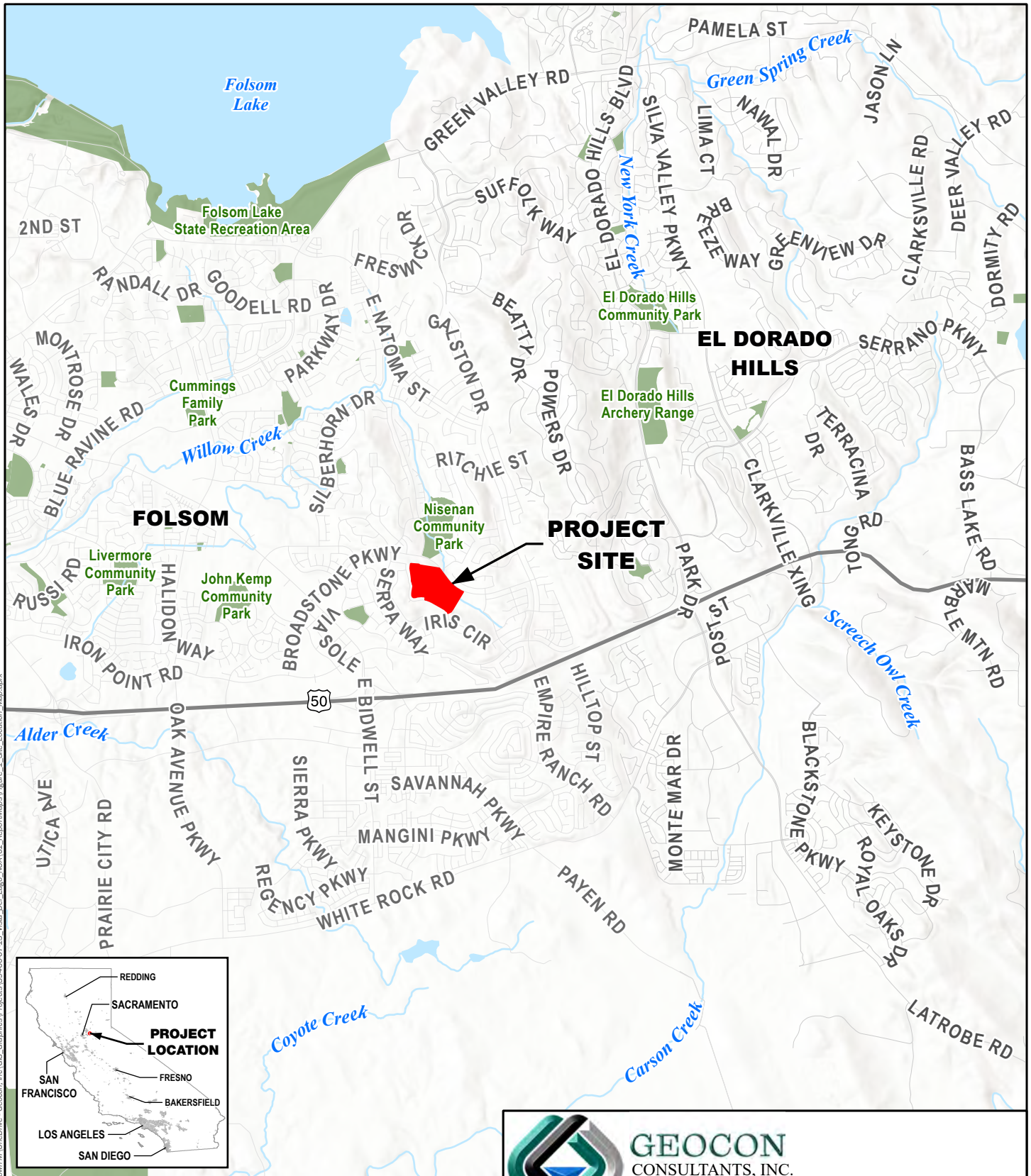
4.0 INSPECTION AND REPORTING SCHEDULE

Periodic inspections will continue to be performed quarterly, with the 2026 annual inspection performed on or before December 31, 2026. O&M Inspection Summary Reports will be prepared and submitted to DTSC in accordance with the schedule in Appendix K of the O&M Plan. The next five-year review will be performed in 2030 and will be completed on or before December 31, 2030. Public notice of the five-year review must be posted at least 30 days prior to the review. After DTSC's review and approval, O&M Inspection Summary Reports will be included and maintained in files at the site and at the FCUSD office.

5.0 LIMITATIONS

This Annual Inspection Summary Report has been prepared solely for the FCUSD in consideration of the FCUSD's requirements. Other parties may rely on the findings and conclusions of the Annual Inspection Summary Report for informational purposes only. However, the FCUSD and other parties who may rely on the findings and conclusions of the Annual Inspection Summary Report should recognize that this Annual Inspection Summary Report does not constitute a complete set of as-built construction plans or specifications and should not be construed as such. The recommendations as presented in this Annual Inspection Summary Report are predicated on the construction of the NOA exposure mitigation measures described herein. In addition, the recommendations made are not intended to address potential impacts related to sources of potentially hazardous materials other than NOA as specified herein.

The information contained herein is only valid as of the date of the Annual Inspection Summary Report and would require an update to reflect additional site activities. Therefore, the Annual Inspection Summary Report should only be deemed conclusive with respect to the information presented. No guarantee of the results of the study used to generate the Annual Inspection Summary Report is implied within the intent of this Annual Inspection Summary Report or any subsequent report, correspondence or consultation, either express or implied. The services performed were conducted in accordance with the local standard of care in the geographic region at the time the services were rendered.



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Vista del Lago High School

1970 Broadstone Parkway
Folsom, California

SITE LOCATION MAP

S9460-07-13

March 2026

Figure 1

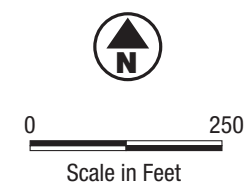


LEGEND:

- BUILDING FOUNDATIONS
4 INCHES OF CONCRETE OVER
6 INCHES OF 1/2 INCH CRUSHED ROCK
- BUS LANES
3 INCHES OF ASPHALT CONCRETE OVER
11 INCHES OF AGGREGATE BASE
- TRAFFIC AISLES & FIRE LANE
3 INCHES OF ASPHALT CONCRETE OVER
8 INCHES OF AGGREGATE BASE
- PARKING STALLS
3 INCHES OF ASPHALT CONCRETE OVER
4 INCHES OF AGGREGATE BASE
- TENNIS COURTS
1/4 INCH TENNIS COURT SURFACING
2 1/2 INCHES OF ASPHALT CONCRETE OVER
3 1/2 INCHES OF AGGREGATE BASE
- HARD COURTS
2 1/2 INCHES ASPHALT CONCRETE OVER
4 INCHES AGGREGATE BASE
- FOOTBALL FIELD
2 INCHES RUBBER/TURF SURFACING OVER
6 INCHES OF COMPACTED DRAIN ROCK OVER
GEOTEXTILE FABRIC
- TRACK
1/4 INCH RESILIENT SURFACE POLYURETHANE/RUBBER OVER
2 INCHES OF ASPHALT CONCRETE OVER
6 INCHES OF AGGREGATE BASE
- HEAVY CONCRETE PAVING
6 INCHES PORTLAND CEMENT CONCRETE WITH
#4 REBAR 18 INCHES ON-CENTER, EACH WAY OVER
6 INCHES OF AGGREGATE BASE
- CONCRETE PAVING
4 INCHES PORTLAND CEMENT CONCRETE OVER
6 INCHES OF FILL
- 2H:1V SLOPES
NATURAL GRASSES OVER
JUTE MESH
FENCED PERIMETER WITH SIGNAGE
- PLANTERS & PLAY FIELD
12 TO 18 INCHES CLEAN FILL OVER WARNING BARRIER
- INFIELD MIX
4 INCHES OF INFIELD MIX (IM) OVER
8 INCHES OF CLEAN FILL (CF) OVER WARNING BARRIER
- SITE BOUNDARY

Legend
 Annual Inspection Site Photograph Location & Orientation

Adopted from a Composite Paving Plan prepared by
Warren Consulting Engineers, Inc. dated September 28, 2004.



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Vista del Lago High School		
1970 Broadstone Parkway Folsom, California		
SITE PLAN		
S9460-07-13	March 2026	Figure 2

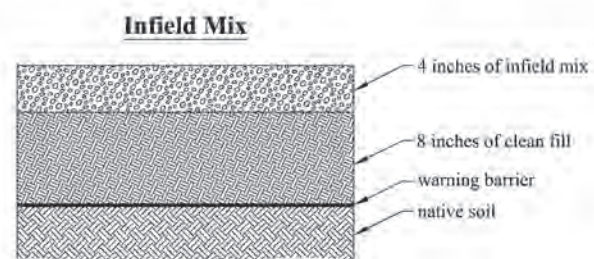
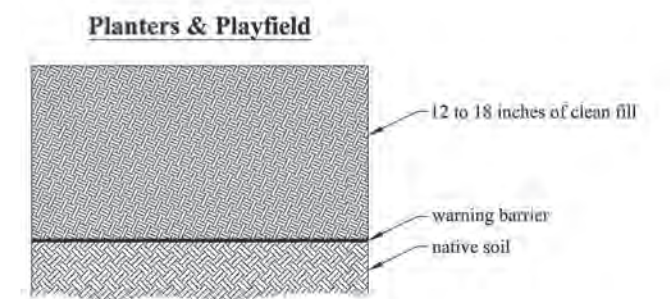
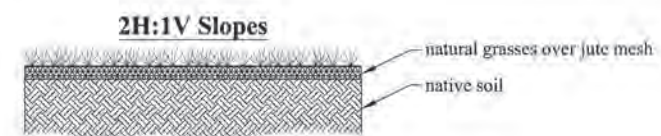
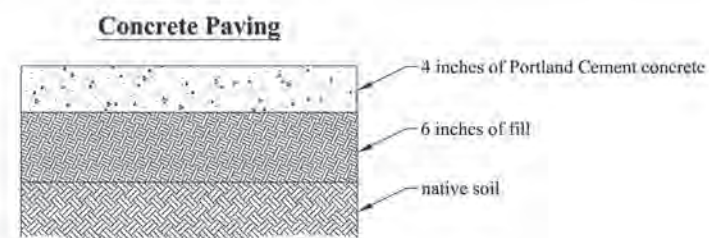
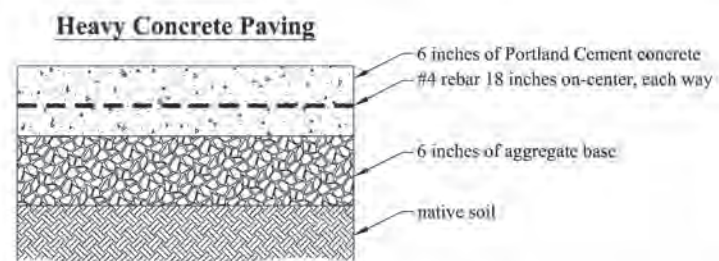
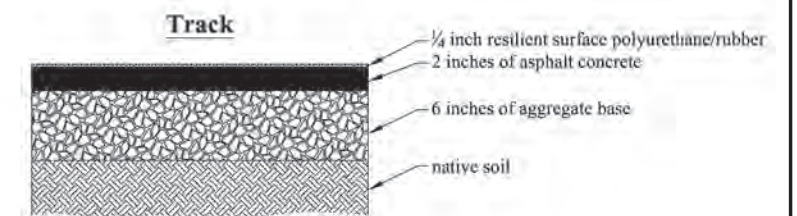
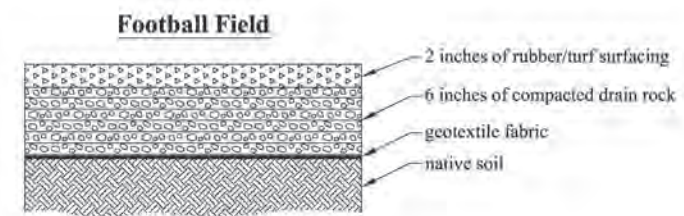
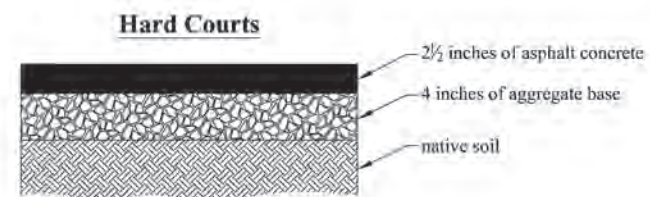
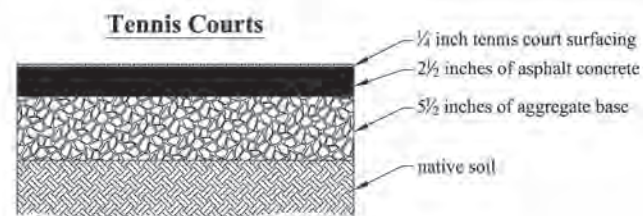
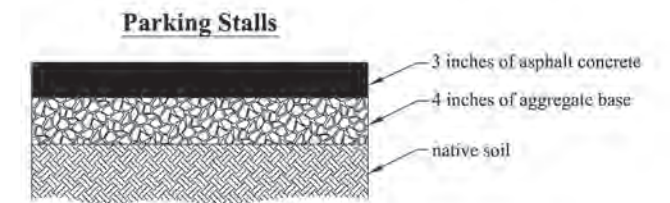
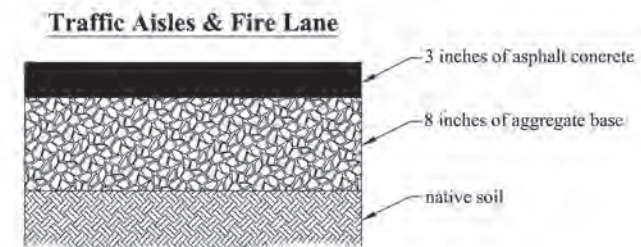
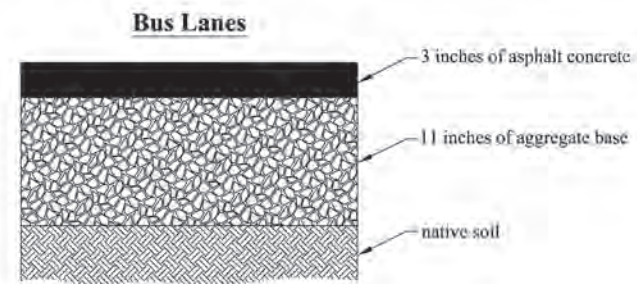
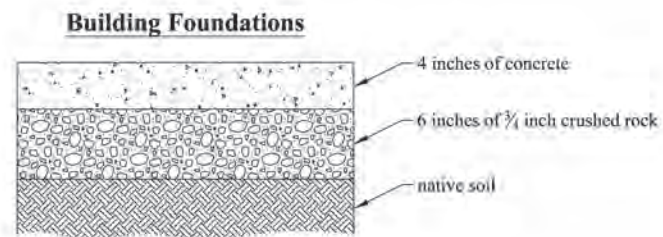




Photo 1 — View to the west of traffic and fire lanes and Buildings B and C in the northeastern portion of the site.



Photo 2 — View to the northwest of the traffic and fire lanes and Parking Lot 3 in the eastern portion of the site.



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Photo 3 — View to the south of Parking Lot 3 in the eastern portion of the site.



Photo 4 — View to the east of Parking Lot 2 in the northern portion of the site.



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Photo 5 — View to the south of Parking Lot 1 in the northwestern portion of the site.



Photo 6 — View to the west of tennis court in the central portion of the site.



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Photo 7 — View to the northwest of hard courts (basketball courts) in the central portion of the site.



Photo 8 — View to the southwest of the pool area (under construction) in the central portion of the site. Fill (part of the cap system) is shown around the pool area.



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Photo 9 — View to the southeast of the football field and track in the southern portion of the site.



Photo 10 — View to the west-southwest of the junior varsity baseball field in the southeastern portion of the site.



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Photo 11 — View to the northwest of the varsity baseball field in the southern portion of the site.



Photo 12 — View to the west of soccer fields in the southeast central portion of the site.



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Photo 13 — View to the southwest of the softball fields and sloped areas in the western portion of the site.



Photo 14 — Landscaped areas in the western portion of the site.



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1970 Broadstone Parkway
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Photo 15 — Landscaped areas in the northwestern portion of the site.



Photo 16 — Landscaped areas in the central portion of the site.



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Photo 17 — Sparse bark in a planter in Parking Lot 2 .



Photo 18 — Sparse bark in a planter in Parking Lot 3.



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Photo 19 — Minor erosion in a planter near Building E in the western portion of the site.



Photo 20 — Lack of vegetation in a planter near Buildings G and H in the northwestern portion of the site.



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1970 Broadstone Parkway
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TABLE 1
SUMMARY OF CAP SYSTEM COMPONENTS
VISTA DEL LAGO HIGH SCHOOL
FOLSOM, CALIFORNIA

	Area	Activity Level	Capping Material	Warning Barrier/ Geotextile Fabric	Minimum Cap Thickness
Hardscape Systems	Building Foundations	Low	Concrete over aggregate base	No	10 inches
	Bus Lanes	High	Asphalt over aggregate base	No	14 inches
	Traffic Aisles and Fire Lane	Moderate to High	Asphalt over aggregate base	No	11 inches
	Parking Stalls	High	Asphalt over aggregate base	No	7 inches
	Tennis Courts	High	Court surfacing and asphalt over aggregate base	No	8.25 inches
	Hard Courts	High	Asphalt over aggregate base	No	6.5 inches
	Football Field	High	Rubber/turf surfacing over drain rock	Yes	8 inches
	Track	High	Polyurethane/rubber and asphalt over aggregate base	No	8.25 inches
	Heavy Concrete Paving	Moderate to High	Concrete and rebar over aggregate base	No	12 inches
	Concrete Paving	High	Concrete over fill	No	10 inches
Softscape Systems	2H/1V Slopes	Low	Grass and jute mesh	No	n/a
	Planters and Playfields	Low	Clean fill	Yes	12 to 18 inches
	Infield Mix	Moderate to High	Infield mix over clean fill	Yes	12 inches
Fence Systems	Boundary Fence	n/a	n/a	n/a	n/a

Notes:
n/a = not applicable

APPENDIX

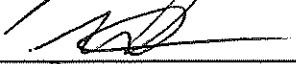
A

provided by: Matthew Cowen

Naturally Occurring Asbestos (NOA) Awareness and O&M Training
Vista Del Lago High School

Instructor: Matthew Tidwell, PG - Project Geologist - Geocon Consultants, Inc.

Date: October 24, 2025

NAME	SIGNATURE	TITLE
Sam Frias		RCon Super
Damian Contreras		Intern RCon
Novak Perchevitch		Super
Travis Johnson		Pm

Asbestos Hazard Communications provided by:

Matthew Tidwell, PG



Marshall Crowell

APPENDIX

B

VISTA DEL LAGO HIGH SCHOOL
INSPECTION CHECKLIST FOR NOA ENGINEERING CONTROLS

Date	10/9/2023	Inspector Name/Signature	Matthew Dawell	
Inspection Frequency	Annual	Supervisor Name/Signature	Matthew Dawell	
Area	Surface Condition OK?	Maintenance Required	Recommended Action Schedule	
			Plan	Implement

Bus Lanes	Yes ☒ No ☐	Yes ☐ No ☒			
Traffic Aisle & Fire Lane	Yes ☒ No ☐	Yes ☐ No ☒			
Parking Stalls	Yes ☒ No ☐	Yes ☐ No ☒			
Tennis Courts	Yes ☒ No ☐	Yes ☐ No ☒			
Hard Courts	Yes ☒ No ☐	Yes ☐ No ☒			
Football Field	Yes ☒ No ☐	Yes ☐ No ☒			
Track	Yes ☒ No ☐	Yes ☐ No ☒			
JV Baseball	Yes ☒ No ☐	Yes ☒ No ☐	reseeding		
Varsity Baseball	Yes ☒ No ☐	Yes ☒ No ☐	Reedling		
Soccer	Yes ☒ No ☐	Yes ☐ No ☒			
Softball	Yes ☒ No ☐	Yes ☐ No ☒			
Heavy Concrete Paving	Yes ☒ No ☐	Yes ☒ No ☐	pool area ~~has been~~		
Concrete Paving	Yes ☒ No ☐	Yes ☐ No ☒			
Site Boundary Protection Fencing	Yes ☒ No ☐	Yes ☐ No ☒			
Slope Areas					
<u>West Slope</u> Extends along west edge of the campus, from northwest to southwest corners	Yes ☒ No ☐	Yes ☐ No ☒			
<u>Southwest Slope</u> Extends along southwest edge of the campus, south of softball, football, and varsity baseball fields	Yes ☒ No ☐	Yes ☐ No ☒			
<u>Northeast Slope</u> Small slope area east of Parking Lot 2 at northern most boundary of school	Yes ☒ No ☐	Yes ☐ No ☒			

* to be filled w/ AS gravel and concrete mesh fabric

VISTA DEL LAGO HIGH SCHOOL
INSPECTION CHECKLIST FOR NOA ENGINEERING CONTROLS

Date		Inspector Name/Signature	
Inspection Frequency		Supervisor Name/Signature	
Area	Surface Condition OK?	Maintenance Required	Recommended Action Schedule
			Plan

Parking Lot 1 Planters					
Planters and grassy area north and east of Parking Lot 1	Yes ☒ No ☐	Yes ☐ No ☒			
5 small planters within and south of Parking Lot 1	Yes ☒ No ☐	Yes ☐ No ☒			
Parking Lot 2 Planters					
2 planters at west end of Parking Lot 2	Yes ☒ No ☐	Yes ☐ No ☒			
3 planters along north and south sides of Parking Lot 2	Yes ☒ No ☐	Yes ☐ No ☒			
Planter at east end of Parking Lot 2	Yes ☒ No ☐	Yes ☐ No ☒			
3 planters east and southeast of Parking Lot 2 that extend downslope along the traffic aisles	Yes ☒ No ☐	Yes ☐ No ☒			
Parking Lot 3 Planters					
Parking Lot 3 perimeter planters – northwest and northeast sides	Yes ☒ No ☐	Yes ☐ No ☒			
Parking Lot 3 perimeter planters – southwest, south, and southeast sides	Yes ☒ No ☐	Yes ☐ No ☒			
3 small planters within the northwest portion of Parking Lot 3	Yes ☒ No ☐	Yes ☐ No ☒			
5 small planters within the central portion of Parking Lot 3	Yes ☒ No ☐	Yes ☐ No ☒			
2 small planters within the southeast portion of Parking Lot 3	Yes ☒ No ☐	Yes ☒ No ☐	burrow to be fixed		
5 planters in center of Bus Lanes around northwest, southwest, south, and southeast sides of Parking Lot 3	Yes ☒ No ☐	Yes ☐ No ☒			
JV Baseball Field Area					
Large sloped planter north and northwest of JV Baseball field	Yes ☒ No ☐	Yes ☐ No ☒			

VISTA DEL LAGO HIGH SCHOOL
INSPECTION CHECKLIST FOR NOA ENGINEERING CONTROLS

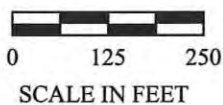
Date		Inspector Name/Signature	
Inspection Frequency		Supervisor Name/Signature	
Area	Surface Condition OK?	Maintenance Required	Recommended Action Schedule
			Plan

Building A Area					
Building A Foundation	Yes ☒ No ☐	Yes ☐ No ☒			
2 small planters on north/northwest sides of Building A	Yes ☒ No ☐	Yes ☐ No ☒			
Semi-circular planters southeast of Building A, in center of "quad" area	Yes ☒ No ☐	Yes ☐ No ☒			
Building B Area					
Building B Foundation	Yes ☒ No ☐	Yes ☐ No ☒			
3 planters on north, northeast, and east sides of Building B	Yes ☒ No ☐	Yes ☐ No ☒			
2 planters on south and southeast sides of Building B	Yes ☒ No ☐	Yes ☐ No ☒			
Building C Area					
Building C Foundation	Yes ☒ No ☐	Yes ☐ No ☒			
4 small planters/grassy areas at the west end of Building C	Yes ☒ No ☐	Yes ☐ No ☒			
2 planters on the north side of Building C	Yes ☒ No ☐	Yes ☐ No ☒			
Large grassy area and planters on the east side of Building C	Yes ☒ No ☐	Yes ☐ No ☒			
Building D Area					
Building D Foundation	Yes ☒ No ☐	Yes ☐ No ☒			
3 small to large planters/ grassy areas at the west end of Building D	Yes ☒ No ☐	Yes ☐ No ☒			
Building E Area					
Building E Foundation	Yes ☒ No ☐	Yes ☐ No ☒			
Planter off the northwest side of Building E	Yes ☒ No ☐	Yes ☐ No ☒			
Planter off the southwest and southeast sides of Building E	Yes ☒ No ☐	Yes ☐ No ☒	small trails within breaks at baselines		
Long planter(s) along the north side of the Softball Field Area	Yes ☒ No ☐	Yes ☐ No ☒			

**VISTA DEL LAGO HIGH SCHOOL
INSPECTION CHECKLIST FOR NOA ENGINEERING CONTROLS**

Date		Inspector Name/Signature	
Inspection Frequency		Supervisor Name/Signature	
Area	Surface Condition OK?	Maintenance Required	Recommended Action Schedule
			Plan

Building F Area					
Building F Foundation	Yes ☒ No ☐	Yes ☐ No ☒			
2 small planters on the north to east sides of Building F	Yes ☒ No ☐	Yes ☐ No ☒			
2 small planters on the southeast and south side of Building F	Yes ☒ No ☐	Yes ☐ No ☒			
Planters between Building F and Building H (stairway planters)	Yes ☒ No ☐	Yes ☐ No ☒			
Building G Area					
Building G Foundation	Yes ☒ No ☐	Yes ☐ No ☒			
2 small planters on the north side of Building G	Yes ☒ No ☐	Yes ☐ No ☒			
Planter(s) on the northwest and southwest sides of Building G	Yes ☒ No ☐	Yes ☐ No ☒			
Grassy areas between Buildings G, H, and A	Yes ☒ No ☐	Yes ☐ No ☒			
Building H Area					
Building H Foundation	Yes ☒ No ☐	Yes ☐ No ☒			
Grassy areas between Buildings H and E and the Hard Courts	Yes ☒ No ☐	Yes ☐ No ☒			
Planters and grassy area on the east side of Building H	Yes ☒ No ☐	Yes ☐ No ☒			
Building J Area					
Building J Foundation	Yes ☒ No ☐	Yes ☐ No ☒			
Small planter on the north and west side of the swimming pool area	Yes ☒ No ☐	Yes ☐ No ☒			
Tennis Court Area					
Narrow planter along the south side of the tennis courts	Yes ☒ No ☐	Yes ☐ No ☒			



GEOCON
CONSULTANTS, INC.

3160 GOLD VALLEY DR. - SUITE 800 - RANCHO CORDOVA, CA. 95742
PHONE 916 852-9118 - FAX 916 852-9132

Vista del Lago High School

Folsom,
California

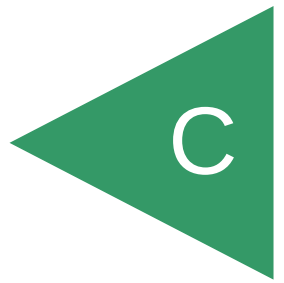
Inspection Site Plan

S9460-06-01

July 2014

Figure F1

APPENDIX



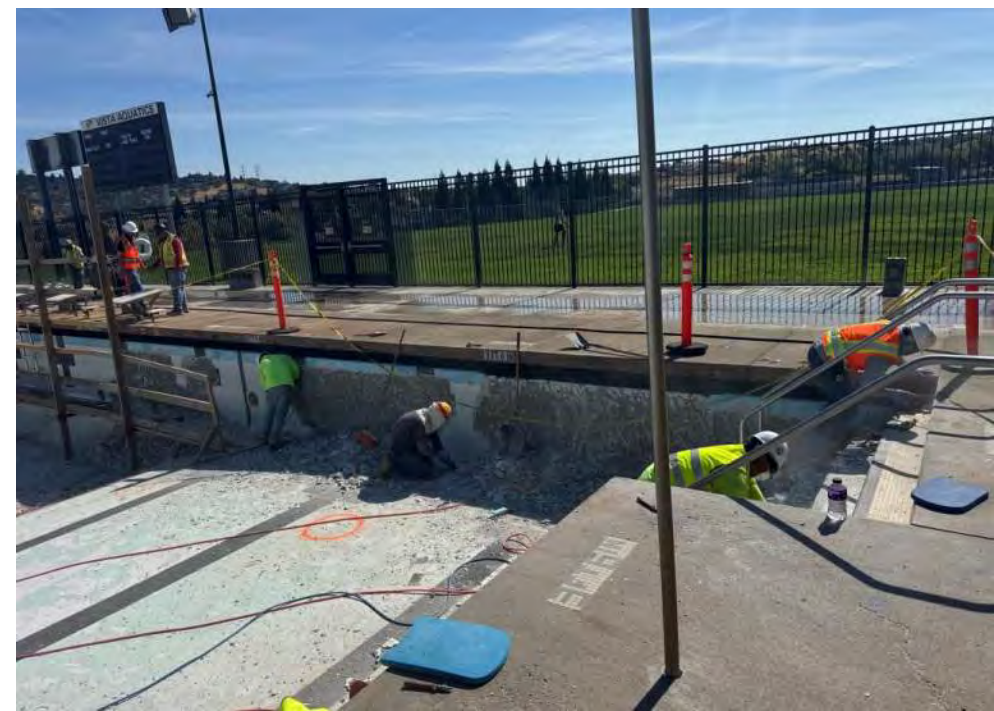


Vista Del Lago High School Pool Renovation

General Contractor:
Roebbelen Contracting Inc.

Phase 1: Demolition

The demolition scope included the complete removal of the existing pool and all associated components. This work encompassed dismantling and hauling away the pool equipment, breaking out the concrete deck, and removing the surge tank lid, slot drain system, pool tile, and plaster. Interior finishes within the adjacent facilities, such as restroom tiles and shower panels, were also demolished along with selective removal of asphalt paving and existing ADA signage. Because the project took place on an active high school campus, strict site safety protocols were implemented throughout the demolition process. The construction area was secured with fencing, safety signage, and controlled access points, and equipment operations were scheduled to minimize interaction with students. Dust control measures were practiced consistently, including the use of water hoses during demolition to prevent dust from migrating toward PE classes and other occupied outdoor areas. Continuous site cleanup was maintained, with debris removed daily and work areas kept organized to ensure a safe, clean, and minimally disruptive environment for the school community.







Phase 2: Site Work

The site work phase of the project began with naturally occurring asbestos (NOA) training to ensure all trades understood safety protocols and project expectations. We proceeded with cutting and filling the project site to achieve the required grades. Shallow trenches were excavated, to install underground water lines serving hose bibs and future shower locations. In response to the recommendations outlined in the Geotechnical report, geotextile fabric was placed across the entire area beneath the swimming pool deck. The soil was then compacted and tested by Geocon until passing results were achieved. Approved aggregate base was imported and used to create a stable subgrade, which was also compacted successfully. Once compaction of the aggregate base was confirmed, the team advanced to the asphalt paving portion of the work. After allowing the asphalt to cure for approximately one week, the striping was placed, completing this phase of the project.



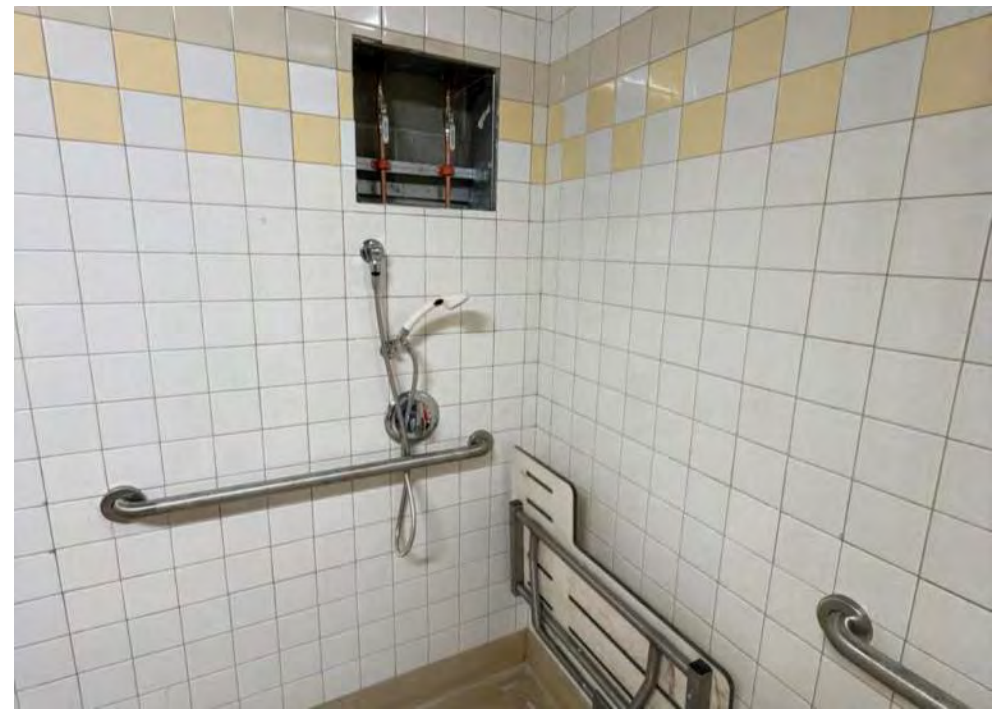




Phase 3: Interior Buildout

The interior buildout phase involved a series of improvements aimed at upgrading functionality and ensuring full ADA compliance. Work began with installing new blocking where required to support future fixtures and accessories. Water service to the building was temporarily shut off at scheduled times to allow the team to replace outdated components, including switching to lead free valves throughout the system. Existing shower panels were removed to modify the restrooms for ADA compliance, and new access panels were added to provide convenient shut off points for the handheld showers. ADA compliant signage was also installed to replace older noncompliant signs. In the toilet areas, the men's ambulatory stall was upgraded with new toilet partitions that met ADA requirements, while grab bars were updated throughout both restrooms. Mounting heights for the women's sanitary napkin dispensers were adjusted to meet accessibility standards as well. These efforts ensured that all interior spaces met current code requirements and provided improved accessibility for all users.





Phase 4: Swimming Pool Concrete Deck

The construction of the swimming pool concrete deck involved detailed preparation and precise coordination to ensure long term performance and full compliance with project requirements. Work began with formwork for the slot drain, followed by placement of reinforcing steel and verification of all required elevations. The cantilever deck was then laid out, incorporating all necessary anchors, deck boxes, block-outs, access hatches, and edge bevels. Proper slope toward the slot drain was carefully established to prevent standing water and ensure effective drainage across the entire deck surface. The concrete mix design used for this phase included Xypex Admixture, a crystalline waterproofing product selected to enhance durability and extend the life of the pool deck. Because the deck also serves as the cover for the surge chamber, this phase included the structural pour of the deck top as well as the installation of the access hatch. Throughout construction, grades were continuously checked to confirm that all site concrete met ADA compliance standards, supporting safe and accessible use of the facility.









Project Completion

The Vista del Lago High School pool renovation is expected to be completed and reopened to students and the City of Folsom by mid to late February 2026, weather permitting.