SAN RAFAEL CITY SCHOOLS
310 Nova Albion Way San Rafael, CA 94903

ADDENDUM NO. 2
TO
REQUEST FOR BID

Venetia Valley Restroom Building Project
BID #23-10
Addendum Date: 8/7/2023

SVA Addendum #2 attached with revised specifications and drawings.

Requests for Information :

Item 2-1: **Question 1:** Do the spoils need to be off-hauled?
Response 1: All spoils should be off-hauled.

Item 2-2: **Question 2:** What does the District want to do with the existing irrigation piping in the area where the RR facility is being placed?
Response 1: The irrigation should be removed beneath the building and adjusted accordingly in the remaining area.

Item 2-3: **Question 3:** Where is a laydown area?
Response 3: An area in the back parking lot may be used for laydown. Area is to have temporary fencing, if used.

Attachments: SVA Addendum #2 August 4, 2023

END OF ADDENDUM

Santa Ana + Oakland + San Diego + Davis

SVA Architects, Inc.

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ADDENDUM #2

August 4, 2023

Project: **Venetia Valley School Restroom Addition**

Owner: **San Rafael City Schools**

Architect: S**VA Architects**
2030 Franklin St, Suite 210
Oakland, Ca 94612

Note: The following revisions and clarifications to the Bid Documents (Plans and Specifications) shall become a part of the Contract Documents prior to Bid. The narrative descriptions listed for the changes are provided for general reference as to the revisions, and each revised drawing/specification included shall be reviewed for the full extent of revisions.

1. SPECIFICATIONS

A. Section 00 01 10 Table of Contents
   i. Replace specification section 00 01 10 with the attached section 00 01 10.

B. Section 02 40 00 Demolition
   i. Add the attached specification section 02 40 00.

C. Section 03 11 13 Concrete Forming and Accessories
   i. Add the attached specification section 03 11 13.

D. Section 03 21 00 Concrete Reinforcement
   i. Add the attached specification section 03 21 00.

E. Section 03 31 00 Cast-in-Place Concrete
   i. Add the attached specification section 03 31 00.

F. Section 03 35 00 Concrete Finishing
   i. Add the attached specification section 03 35 00.

G. Section 05 50 00 Metal Fabrications
   i. Add the attached specification section 05 50 00.

H. Section 06 10 00 Rough Carpentry
   i. Add the attached specification section 06 10 00.

I. Section 06 18 00 Glue-Laminated Construction
   i. Add the attached specification section 06 18 00.

J. Sectio 07 60 00 Flashing and Sheet Metal
   i. Replace section 07 60 00 with the attached section 07 60 00.

K. Section 08 11 10 Hollow Metal Doors and Frames
   i. Add the attached specification section 08 11 10.

L. Section 08 71 00 Door Hardware
   i. Add the attached specification section 08 71 00.

M. Section 09 67 00 Epoxy Flooring
   i. Delete section 09 67 00 Epoxy Flooring.

N. Section 31 13 00 Selective Tree Removal and Trimming
   i. Add the attached specification section 31 13 00.

O. Section 31 23 00 Excavation and Fill
   i. Add the attached specification section 31 23 00.

P. Section 31 23 33 Trenching and Backfilling
   i. Add the attached specification section 31 23 33.

Q. Section 32 05 23 Concrete for Exterior Improvements
   i. Add the attached specification section 32 05 23.

R. Section 32 11 00 Base Courses
   i. Add the attached specification section 32 11 00.

S. Section 32 12 00 Flexible Paving
   i. Add the attached specification section 32 12 00.

T. Section 32 13 00 Rigid Paving
   i. Add the attached specification section 32 13 00.

U. Section 32 16 13 Concrete Curbs and Gutters
   i. Add the attached specification section 32 16 13.

V. Section 32 17 23 Pavement Markings
   i. Add the attached specification section 32 17 23.

W. Section 32 31 10 Chain Link Fences and Gates
   i. Add the attached specifications section 32 31 10.

2. ARCHITECTURAL

A. Sheet GEN-1
   i. Replace sheet GEN-1 with the attached sheet GEN-1.

B. Sheet C3.0
   i. Replace sheet C3.0 with the attached sheet C3.0.

C. Sheet A1.0
   i. Replace sheet A1.0 with the attached sheet A1.0.

D. Sheet A1.2
   i. Replace sheet A1.2 with the attached sheet A1.2.

E. Sheet A11.1
   i. Replace sheet A11.1 with the attached sheet A11.1.

F. Sheet A11.2
   i. Replace sheet A11.2 with the attached sheet A11.2.

G. Sheet A52.1
   i. Replace sheet A52.1 with the attached sheet A52.1.

3. PRE-BID QUESTIONS AND RESPONSES

A. Question 1: The division 03 and division 32 sections are missing from the project manual. Please provide them.

Response: Please see the sections added to the project as part of this addendum.

B. Question 2: There is an epoxy flooring specification, but that finish does not appear to be in the project. Please clarify.

Response: Epoxy flooring is not used on this project. The epoxy flooring specification section has been deleted.

C. Question 3: On plan sheet C3.0 there is an 8’ wide strip of asphalt approximately 130’ long. On plan sheet A1.1 this same 8’ section is called out as concrete. Please clarify.

Response: The area is to be concrete paving.

D. Question 4: Keynote S31 on sheet A1.1 calls for a guardrail, but it points to a downspout. Please clarify.

Response: Refer to the attached, revised sheet A1.1.

E. Question 5: The plans call for the existing restroom building to be demolished after construction of the new restroom building but do not specify what will go in place of the building. Please confirm that we are patching the asphalt around the building to match the existing.

Response: Confirmed. Reference the attached sheet A1.2.

F. Question 6: The perimeter fence also butts up to the existing restroom building. Please confirm that we are adding new fencing at the location of the existing restroom building to close off the perimeter to the school.

Response: Confirmed. Match existing fencing.

G. Question 7: The floor plan only doesn't provide information on the floor tile going in the restrooms. Please clarify what type of tile is to be used.

Response: reference the finish schedule.

H. Question 8: Please confirm the second set of drawings on the districts website and builders exchange labeled Venetia Valley Field Storm drain set is a part of the project and is to be included on the base bid.

Response: Confirmed.

I. Question 9: Please confirm where the Venetia Valley School Field drawings scope of work is in relation to the Venetia Valley School Middle School Restroom Addition drawings scope of work.

Response: The field work is at the north-east edge of the site. See sheet C3.0 of that set.

J. Question 10: On elevations 07 46 45 points to downspouts (in red), there is no spec section. Additionally, the roof plan says galvanized gutter and directs to 2/A63.2, there is no 2/A63.2, Are we to utilize 07 6000 for gutters and downspouts? Or are downspouts sched 40? No detail. What is the gutter profile? No detail. Will this be field painted or pre-finished? Please advise.

Response: Refer to detail 2/A63.2 for the gutter profile. Refer to the attached section 07 60 00 for gutters and flashing. Downspouts are to be schedule 40, G90 galvanized, and field painted.

K. Question 11: On elevations 06 17 43 points to fascia there is no spec section. Roof details callout PT wood fascia with metal over it. Is fascia PT with metal or exterior grade painted wood fascia? please advise.
Response: Sheet metal over painted PT member.

L. Question 12: Please confirm r-30 above the roof deck? 072100-3, page 84 in spec book. The spec calls for a nailbase board or 2" rigid above the plywood deck as shown in the plan drawings (page 23, A63.2).

Response: See detail 1/A63.2 for the roof assembly. Batt insulation below the plywood deck is R-30.

M. Question 13: Please revise the SCM Content from 70 % for the concrete on this project. Local ready mix suppliers do not use slag in their concrete mixes due to it being largely unavailable in the area. They do use flyash and will use up to a maximum amount of 25% flyash in mixes for Cal Trans. Please revise the SCM to 25% fly ash and eliminate the slag requirement so that concrete can be provided for this project.

Response: We spoke with Shamrock about this on two other projects in recent weeks. They are providing a mix with 40% flyash for a project in Santa Rosa, and mixes with 50% slag for a project currently in construction in San Rafael. Both will be considered acceptable substitutions, provided strength and shrinkage characteristics are submitted and meet the project requirements.

N. Question 14: Is any lampblack or color required in any of the site or building concrete?

Response: There is no colored concrete on the project unless called out in the drawings.

O. Question 15: The stucco specification section calls for integral color and the painting specification section calls for it to be painted. Please clarify whether the stucco is to be integral color or field painted.

Response: The plaster is to be integral color.

P. Question 16: The Finish Schedule doesn't call out any finishes for Restroom #10. Please confirm that it is to receive the same finishes as the other restrooms.

Response: Refer to the attached sheet A52.1.

Q. Question 17: Is the low voltage within the scope of work? Does the school already have contractors lined up to do this work already? Typically, there is a fire alarm sub who does all the work on a specific school since it would be their system.

Response: The low voltage work is included as part of the scope of this project.

R. Question 18: What is the model number of the existing Bogen paging system?

Response: Bogen Multicomp 2000.

S. Question 19: What is the model number of the existing First Alarm system?

Response: The existing fire alarm system is a Notifier NFS2-3030, see sheet EFA0.01.

T. Question 20: Is there a 270000-specification available for the Communications system or District Standards Document?

Response: Sectio 27 15 00 is included in the project manual.

U. Question 21: There is an Electric Water Heater and Circulation Pump on the plumbing drawings that doesn't show up on the electrical. Advise if we are to provide power to these and if they need disconnect switches?

Response: Yes. Provide 15A 3P 208V connection and disconnect for water heater. Circulation pump can connect to any general 120V circuit in the room.

V. Question 22: Please confirm we are to tie into the existing First Alarm Access Control System with door contacts at each door per Detail 2 on Sheet E3.02.

Response: Door contacts connect back to first alarm intrusion panel per detail 1 pm sheet E3.3.

W. Question 23: Hand dryers are referenced on sheet E1.02 note (1) please advise if we are to provide power to these.

Response: Hand dryers will not be used on this project. Owner furnished, contractor installed (OFCI) paper towel dispensers are to be provided at each restroom.

X. Question 24: E1.02 Note 8 is not shown please advise.

Response: Note #8 is used to reference exhaust fans where this note is referenced on plans.

Y. Question 25: E1.02 Note 9 is not shown please advise.

Response: Note #9 applies to all (3) exhaust fans. Provide ¾”C for controls as required.

Z. Question 26: On E1.01 Security and PA are shown from the new restroom to building C and Building D. Please confirm PA & Security only need to be tied in at their terminal cabinets in building C.

Response: Security and PA headend equipment are in bldg. C. Terminate security and PA at that location.

AA. Question 27: Please confirm that existing modular restroom building to be demolished in its entirety.

Response: Confirmed.

BB. Question 28: Please confirm that all the existing utilities to the existing modular restroom building are to be cut and capped. Are the utility terminations to be placed in boxes or buried?

Response: Confirmed, all the existing utilities to the existing modular restroom being demolished are to be cut and capped and placed in appropriately sized utility boxes.

CC. Question 29: Sheet C3.0 identifies a new walkway adjacent to the new building. The shading of this walkway is inconsistent with the call out for the AC or concrete identified on the drawings, but detail 5 identifies the header for this walkway, and that detail identifies this walkway as AC paving. Sheet A1.1 keynote S18 identifies this walkway as new concrete. Please advise.

Response: This walkway is to be concrete. Refer to the revised sheet C3.0 issued as a part of this addendum.

DD. Question 30: The plumbing and HVAC specifications mention OFCI items but are not on the plans. The only ones shown are restroom accessories. Please clarify which items are OFCI.

Response: Only plumbing and HVAC OFCI items called out in the plans, specifications, or modified by addendum are in the scope.

ATTACHMENTS

Section 00 01 10 Table of Contents
Section 02 40 00 Demolition
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Section 07 60 00 Flashing and Sheet Metal
Section 08 11 10 Hollow Metal Doors and Frames
Section 08 71 00 Door Hardware
Section 31 13 00 Selective Tree Removal and Trimming
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Section 32 17 23 Pavement Markings
Section 32 31 10 Chain Link Fences and Gates
Sheet GEN-1
Sheet C3.0
Sheet A1.0
Sheet A1.2
Sheet A11.1

Sheet A11.2
Sheet A52.1

DISTRIBUTION: SRCS
Bidders
DSA
Project Inspector

END OF ADDENDUM #2

SVA Architects
Ruth Young

SECTION 00 01 10

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SPECIFICATIONS GROUP

DIVISION 01 – GENERAL REQUIREMENTS

DIVISION 02 – EXISTING CONDITIONS

DIVISION 03 – CONCRETE

DIVISION 04 – MASONRY

Not used.

DIVISION 05 – METALS

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

DIVISION 08 – OPENINGS

DIVISION 09 – FINISHES

DIVISION 10 – SPECIALTIES

DIVISION 11 – EQUIPMENT

Not used.

DIVISION 12 – FURNISHINGS

Not used.

DIVISION 13 – SPECIAL CONSTRUCTION

Not used.

DIVISION 14 – CONVEYING EQUIPMENT

Not used.

DIVISION 21 – FIRE SUPPRESSION

Not used.

DIVISION 22 – PLUMBING

DIVISION 23 – HEATING VENTILATING AND AIR CONDITIONING

DIVISION 26 – ELECTRICAL

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DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

DIVISION 31 – EARTHWORK

DIVISION 32 – EXTERIOR IMPROVEMENTS

DIVISION 33 –UTILITIES

Not used.

END OF SECTION

SECTION 02 40 00

DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Removing above-grade site improvements within limits indicated.

B. Disconnecting, capping or sealing, and abandoning site utilities in place.

C. Disconnecting, capping or sealing, and removing site utilities.

D. Disposing of objectionable material.

1.02 RELATED SECTIONS

A. Section 31 23 00 – Excavation and Fill.

B. Section 31 23 33 – Trenching and Backfill.

1.03 RELATED DOCUMENTS

A. California Building Code: Chapter 33 – Site Work, Demolition and Construction.

B. California Building Code: Section 1809A.14 – Pipes and Trenches.

1.04 DEFINITIONS

A. ANSI: American National Standards Institute.

B. CAL-OSHA: California Occupational Safety and Health Administration.

1.05 SUBMITTALS

A. Follow Submittal procedure outlined in Section 01 33 00 – Submittal Procedures.

1.06 PROJECT CONDITIONS

A. Except for materials indicated to be stockpiled or to remain the Owner’s property, cleared materials are the Contractor's property. Remove cleared materials from site and dispose of in lawful manner.

B. Salvable Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the Owner. Avoid damaging materials designated for salvage.

C. Unidentified Materials: If unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the Owner. If necessary, the Owner will

arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

A. Backfill excavations resulting from demolition operations with on-site or import materials conforming to structural backfill defined in Section 31 23 00 – Excavation and Fill.

PART 3 - EXECUTION

3.01 PREPARATION

A. Protect and maintain benchmarks and survey control points during construction.

B. Protect existing site improvements to remain during construction.

3.02 RESTORATION

A. Restore damaged improvements to their original condition, as acceptable to the Owner.

3.03 UTILITIES

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed or abandoned.

B. Arrange to shut off indicated utilities with utility companies or verify that utilities have been shut off.

C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless authorized in writing by the Owner, and then only after arranging to provide temporary utility services according to requirements indicated.

D. Coordinate utility interruptions with utility company affected.

E. Do not proceed with utility interruptions without the permission of the Owner and utility company affected. Notify Owner and utility company affected two working days prior to utility interruptions.

F. Excavate and remove underground utilities that are indicated to be removed.

G. Securely close ends of abandoned piping with tight fitting plug or wall of concrete minimum 6-inches thick.

3.04 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

B. Remove slabs, paving, curbs, and gutters, as indicated. Where concrete slabs, curb, gutter and asphalt pavements are designated to be removed, remove bases and subbase to surface of underlying, undisturbed soil.

C. Unless the existing full-depth joints coincide with line of pavement demolition, neatly saw-cut to full depth the length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.

D. Remove driveways, curbs, gutters and sidewalks by saw cutting to full depth. If saw cut falls within 30-inches of a construction joint, expansions joint, score mark or edge, remove material to joint, mark or edge.

3.05 BACKFILL

A. Place and compact material in excavations and depressions remaining after site clearing in conformance with Section 31 23 33 – Trenching and Backfill.

3.06 DISPOSAL

A. Remove surplus obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner’s property.

END OF SECTION

SECTION 03 11 13

CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish, install and remove forms for cast-in-place concrete including shoring and form supports.

B. Related Work Specified Elsewhere:

1. Formwork for concrete work beyond the building lines: See Sidewalks and Driveways.

2. Excavating, filling and backfilling: See Earthwork.

3. Forms and casting beds for architectural precast concrete: See Concrete, Architectural Precast.

4. Patching and filling of form tie holes: See Concrete Finishes.

1.2 REFERENCES, CODES AND STANDARDS: The following references, codes and standards are hereby made a part of this Section and formwork shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

A. "Recommended Practice for Concrete Formwork", ACI Latest Edition.

B. California Building Code, 2022 Edition.

1.3 SUBMITTALS: Comply with requirements of Shop Drawings, Product Data and Sample Section.

A. Shop drawings shall include finished elevations and dimensions of all formed surfaces including finish floor elevations.

B. Contractor shall check architectural, structural and mechanical drawings to determine size and location of all depressions, openings, chases.

1.4 ALLOWABLE TOLERANCES: Design, construct, set, and maintain the formwork so as to insure complete work within the suggested tolerance limits specified in ACI 347, Section 3.3.1. See Concrete Finishes Section for traffic surface tolerances of slabs.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Earth Forms: Unless otherwise indicated or required by the Structural Drawings, concrete for footings may be placed directly against vertical excavated surfaces provided the material will stand without caving and provided that minimum reinforcing steel clearances indicated on Drawings are maintained and suitable provisions are taken to prevent raveling of top edges or sloughing of loose material from walls of excavation. Sides of excavation shall be made with a neat cut and the width made as detailed on Drawings. Concrete which is exposed to view on exterior shall be formed to a minimum depth of 6" below finished grade.

B. Wood Forms:

1. Exposed Concrete Not Otherwise Noted or Specified: APA Plyform, Grade B-B, Class I or II (as per strength and tolerance requirements), Exterior, each piece grade marked, no mill oiling permitted.

2. Chamfer Strips, Reveals, and Score Marks: Clear Douglas fir or pine, selected straight, milled on all faces -or- extruded polyvinylchloride specially produced for concrete work, Vinylex Corp., Preco Industries, Vulcan Metal Products, or equivalent. Material usage shall be consistent for each application.

3. Unexposed Concrete Not Otherwise Specified: Of sufficient design and strength to hold concrete properly in place and alignment.

4. Framing: At Contractor option subject to meeting necessary strengths and surface tolerances.

C. Metal Forms: Specification to be issued as an addendum.

D. Form Release Agents:

1. Exposed Concrete Including Surfaces to Receive Paint: Chemically active type producing water insoluble soaps. Form release agents shall be delivered in manufacturer's sealed and trademarked containers and shall be guaranteed to provide clean, stain-free concrete release and not to interfere with future applied coatings and finishes. Release agents shall contain no petroleum solvents such as creosote, paraffin, waxes or diesel oil.

2. Concealed Concrete: Contractor option.

E. Form Sealer (Wood Forms): Burke "Form Sealer", or equivalent, and of a type which will not interfere with bond of applied finishes.

F. Form Ties: Metal, spreader type, removable to 1" from concrete face. Ties for exposed concrete shall be of same type throughout project. Wire ties and wood spreaders will not be allowed except that such devices may be permitted for footings,

shallow foundations and similar other totally concealed below grade surfaces upon specific approval of Architect. Wood spreaders shall not remain in concrete.

G. Cold Joints (Slabs on Grade): Standard 24 ga. galvanized steel, keyed profile, sized to suit slab thickness.

H. Vinyl Tape (Sandblasted Concrete Form Joints): Pressure sensitive vinyl tape, not thicker than 3 mils, type recommended for sealing forms.

PART 3 - EXECUTION

3.1 PREPARATION

A. Vertical and Horizontal Controls: Establish and maintain necessary benchmarks, lines, or controls throughout construction.

B. Secure information and provide for openings, sleeves, chases, pipes, recesses, nailers, anchors, ties, inserts, and similar embedded items. Coordinate with concrete work for requirements governing embedment and sleeving of pipes and conduit.

3.2 CONSTRUCTION

A. Formwork: - General: Construct wood forms of sound material, straight and rigid, thoroughly braced, mortar tight, and of such strength that the pressure of concrete and the movement of men and equipment will not displace them. Visible waves in exposed concrete surfaces after stripping of forms may result in rejection of that portion of the concrete. The design and engineering of formwork shall be the complete responsibility of the Contractor.

B. Plywood Forms for Exposed Concrete:

1. Plywood panels shall be clean, smooth, uniform in size, and free from damaged edges or faces (including holes other than those required for form ties). Use full size (4' x 8' or larger) panels wherever possible. Make plywood panel pattern regular and symmetrical, joints plumb or level, horizontal joints continuous. Block plywood edges which do not occur at bearing points in order to eliminate joint offsets.

2. Construct forms for sandblasted concrete with butted joints. Joints shall be taped carefully applied to completely eliminate wrinkles, ripples, bubbles, fishmouths and other surface defects which would telegraph onto face of concrete. Tape shall be aligned and centered on the joint. The degree of sandblasting to be done in finishing shall be sufficient to completely remove all traces of the impression in the concrete left by the tape. Construct and externally brace forms so that no form ties or other devices penetrate sandblasted surfaces.

C. Framing and Bracing: Framing, bracing and supporting members shall be of ample size and strength to safely carry, without excessive deflection (exceeding allowable tolerances), all dead and live loads to which formwork may be subjected, and shall be spaced sufficiently close to prevent any apparent bulging or sagging of forms.

D. Form Ties: Form ties shall be of sufficient strength and used in sufficient quantities to prevent spreading of the forms. Ties for exposed concrete surfaces shall be arranged symmetrically and shall be aligned both vertically and horizontally (do not stagger). Form ties are not permitted through sandblasted surfaces.

E. Forms for exposed concrete shall be constructed full height and width between indicated construction joints or emphasized joints in concrete surface and shall not be broken for pour or construction joints within these areas.

F. Construct forms no higher than 12" above the top of a pour or construction joint.

G. Construction Joints: Construction joints shall be in accordance with requirements of Concrete, Cast-In-Place Section. Confine construction or pour joints to rustication strip locations where they occur; where rusticated joints do not occur in a surface, provide a surfaced pouring strip where construction joints intersect exposed surfaces to provide straight line at joints. Prior to subsequent pour, remove strip and tighten forms. Construction joints shall have no "overlapping" or offsetting of concrete surfaces and shall, as closely as possible, present the same appearance as butted plywood joints. Joints in a continuous line shall be straight and true.

H. Chamfered Corners: In general, chamfer all corners for exposed concrete unless otherwise noted. Obtain chamfers by placing 3/4" x 3/4" nonstaining moldings in forms. Pieces shall be in longest lengths possible, joints mitered.

I. Score Lines: Where "score", emphasized or rustication lines are indicated on vertical surface, obtain such lines by accurate placement of moldings in forms. Pieces shall be in longest lengths practical with joints mitered.

J. Arrange forms to allow proper erection sequence and to permit form removal without damage to concrete.

K. Form Sealer: Wood forms for exposed concrete shall be sealed on contact faces and edges using specified form sealer in strict accordance with manufacturer's directions.

L. Form Release Agent: Thoroughly clean forms and coat with release agent prior to initial use and before each reuse. Apply release agent in strict accordance with manufacturer's directions and coverage recommendations avoiding starved areas or excessive applications. Apply release agents before reinforcing steel is placed.

M. Reuse of Forms: Do not reuse any form which cannot be reconditioned to "like new" condition. Control reuse of forms for exposed surfaces to provide surface of uniform color and texture without sharp demarcation between adjacent surfaces.

N. Waterproofing Conditions: Concrete surfaces to receive waterproofing materials shall be formed to provide a relatively smooth surface free of sharp corners, projections, and offsets at form joints. Depressions and voids shall permit satisfactory patching as specified under Concrete Finishes Section. Form ties shall not penetrate or damage applied waterproofing.

O. Bases and Foundations: Whenever concrete bases or foundations are to be provided for equipment furnished by other trades, dimensions shall be verified for the equipment furnished before concrete is placed.

P. Prior to placement of concrete, remove dirt, debris, and foreign material from forms. Leave no wood in concrete except nailers.

3.3 REMOVAL OF FORMS AND FALSEWORK

A. The removal of forms and falsework shall be carried out in such manner as to ensure the complete safety of the structure. Supports shall not be removed until members have sufficient strength to safely support their own weight and superimposed loading with proper factor of safety.

B. Forms for exposed concrete surfaces shall be removed in such a manner as to preclude damage to finish. Pinch bars and similar tools shall not be used for prying against exposed surfaces. Stripping shall commence at top edge or vertical corner where the use of wooden wedges is possible. Wedging shall be done gradually and shall be accompanied by light tapping on panels to loosen them. When free at one end, gradually loosen remaining area without jerking.

C. Removal of Forms: After concrete is placed, the following minimum times shall elapse before the removal of forms:

1. Side Forms (Footings, Slabs on Grade): 24 hours.

END OF SECTION

SECTION 03 21 00

CONCRETE REINFORCING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install reinforcement for cast-in-place concrete.

B. Related Work Specified Elsewhere:

1. Reinforcement for concrete work: See Sidewalks and Driveways.

1.2 REFERENCES, CODES AND STANDARDS: The following references, codes and standards are hereby made a part of this Section and reinforcement shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

A. "Manual of Standard Practice for Detailing Reinforced Concrete Structures", ACI 315, latest edition.

B. "Building Code Requirement for Reinforced Concrete", ACI 318-14.

C. "Manual of Standard Practice" published by CRSI, latest edition.

D. California Building Code, 2022 Edition.

1.3 SOURCE QUALITY CONTROL: Refer to Quality Control Section for general requirement governing testing and inspection. Where certified mill test reports (required hereinafter under "Submittals") are not furnished, conform to the following.

A. Reinforcing bars shall be tested in tension and bending as per ASTM A-615. Testing shall be done by the Owner's testing agency. Furnish one copy of test reports to Architect, Structural Engineer, Owner and Contractor.

B. Samples will be taken by the testing agency from bundles as delivered from the mill. Where bundles are identified by heat number and a mill analysis accompanies the report, one tensile and one bending test specimen will be taken from each 10 tons or fraction thereof, of each size and kind of bar. Where positive identification of heat numbers cannot be made or where random samples are taken, one series of tests shall be made from each 2-1/2 tons or fraction thereof, of each size and kind of bar.

C. The costs of tests, sampling and handling of reinforcing steel shall be paid by the Owner by deducting from moneys due the Contractor.

D. Include material required to provide samples for testing.

E. The following is subject to Special Inspection as per California Building Code, Sec. 1704. Costs therefore will be paid by the Owner.

1. Placement of reinforcing steel as required by Sec. 1705A.

1.4 SUBMITTALS: Comply with requirements of Shop Drawings, Product Data, and Sample Sections.

A. Shop Drawings:

1. Fully detailed shop drawings, including bending schedules and bending diagrams, shall be submitted to the Architect for review. Shop drawings shall show placing detail and size location of reinforcing steel.

2. Shop drawings shall be of such detail and completeness that fabrication and placement at the site can be accomplished without the use of project or contract drawings for reference.

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

4. Reinforcing Steel shall not be fabricated or placed before the shop drawings have been reviewed by the Architect and returned to the Contractor. Review of shop drawings by the Architect will not relieve the Contractor of responsibility for errors or for failure in accuracy and complete placing of the work.

B. Mill Test Reports: Certified mill test reports (tensile and bending) for each heat and melt of steel shall be submitted to the Architect before delivery of any material to the job site. See requirements above under "Source Quality Control".

1.5 DELIVERY AND STORAGE: Deliver reinforcing to site properly bundled and tagged, and store so as to prevent excessive rusting or fouling with grease or any coating that will interfere with bond. Segregate so as to maintain identification after bundles are broken. Do not use damaged, reworked, or deteriorated material.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Reinforcing Bars:

1. New, free of loose rust.

2. Billet Steel Bars: ASTM A615, Grade 40 for #3 bars and smaller, Grade 60 for #4 bars and larger.

3. Low Alloy Steel Bars: ASTM A706 required for all reinforcing in shear walls and reinforcing bars to be welded.

4. Grade Ties, 75 & 80

B. Welded Wire Fabric: Welded wire fabric shall be new, rectangular mesh, welded steel wire fabric, conforming with ASTM A185. Gage or diameter of wire and center-to-center spacing of wire shall be as indicated on the Drawings.

C. Tie Wire: #16 minimum, black and annealed.

D. Accessories: Metal or plastic spacers, supports, ties, etc., as required for spacing, assembling, and supporting reinforcing in place. Legs of accessories to be of type that will rest on forms without embedding into forms. Galvanize metal items where exposed to moisture or use approved other non-corrosive, non-staining supports. Use plastic or plastic coated accessories for supporting reinforcing where concrete soffits are exposed.

2.2 FABRICATION

A. Comply with details on Drawings.

B. Where specific details are not shown or noted, do detailing and fabrication in conformance with or superior to requirements contained in the References, Codes and Standards Article.

C. Clean bars of loose rust, loose mill scale and any substance that may decrease bond. Bend bars accurately to details on reviewed shop drawings. Unless otherwise permitted by the Structural Engineer, bar shall be bent cold.

D. Shop fabricate reinforcement.

PART 3 - EXECUTION

3.1 PLACING

A. General: Reinforcing steel shall be placed in accordance with the Drawings and reviewed shop drawings and the applicable requirements of the References, Codes and Standards Articles. Install reinforcement accurately and secure against movement, particularly under the weight of workmen and the placement of concrete. Reinforcing partially embedded in concrete shall not be field bent except as shown on the Drawings or permitted by the Structural Engineer.

B. Reinforcement Supports:

1. Reinforcement shall be accurately located in the forms and held in place by means of supports adequate to prevent displacement and to maintain reinforcement at proper distance from form face. Supports and their placement shall comply with CRSI "Placing Reinforcing Bars". The use of wood supports and spacers inside the forms is not permitted except as noted in Concrete Forms Section.

2. Support reinforcement for on-grade slabs by wiring to precast concrete blocks spaced 3'-0" o.c. (maximum) both ways staggered. Size blocks so that reinforcing is maintained at the distance from face of concrete shown on the drawings.

C. Obstructions: Wherever conduits, piping, inserts, sleeves, etc., interfere with placing of reinforcing, reinforcing shall be maintained at the distance from face of concrete shown on the drawings.

D. Tying: Reinforcing shall be rigidly and securely tied with steel tie wire at splices and at crossing points and intersections in the position shown. Tie wires, after cutting, shall be bent in such a manner that concrete placement will not force the wire ends to surface of exposed concrete.

E. Spacing: Where Drawings do not show the spacing of the reinforcing, the minimum clear spacing shall conform to ACI 318 Section 7.6.

F. Splicing: Make splices only at those locations shown on the Drawings or as approved by the Structural Engineer. Where Drawings do not show minimum laps, comply with requirements of ACI 318 Section 12.14. Stagger splices in adjacent bars wherever possible.

G. Dowels: Dowels shall be tied securely in place before concrete is deposited. In the event there are no bars in position to which dowels may be tied, No. 3 bars (minimum) shall be added to provide proper support and anchorage.

H. Welding: Not permitted.

3.2 CLEANING

A. Reinforcement, at time of placing concrete, shall be free of any coating that would impair bond.

3.3 PROTECTIVE CONCRETE COVER

A. Except where indicated otherwise on the Drawings, the minimum concrete coverage for steel reinforcement shall be as specified in ACI 318 Section 7.7 "Concrete Protection for Reinforcement."

3.4 PLACEMENT TOLERANCES

A. Where placement tolerances are not indicated on the Drawings, applicable requirements of ACI 301 shall apply. Bars may be shifted as necessary to avoid

interference with other reinforcing steel, conduits, or embedded items. If bars are shifted more than one diameter, or enough to exceed specified tolerances, the resulting arrangement of bars shall be subject to the Architect's acceptance.

3.5 NOTIFICATION AND INSPECTION

A. The Contractor shall notify the Architect at least 72 hours ahead of each concrete pour, and no concrete shall be deposited until reinforcing steel has been installed, and has been observed by the Architect.

3.6 CORRECTION BEFORE CONCRETE PLACEMENT

A. Capable steel workers shall be kept on the job during the placing of concrete, and they shall properly reset any reinforcement displaced by runways, workers, or other causes. Reinforcement shall not be bent after being partially embedded in hardened concrete.

3.7 DEFECTIVE WORK

A. The following reinforcing steel work will be considered defective and will be ordered by the Architect to be removed and replaced by the contractor:

1. Bars with kinks or bends not indicated on Drawings.

2. Bars injured due to bending or straightening.

3. Bars heated for bending or straightening.

4. Reinforcement not placed in accordance with the Drawings and Specifications.

5. Reinforcement with corrosion or coatings which may impair bond with concrete.

END OF SECTION

SECTION 03 31 00

CAST-IN-PLACE

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Furnish and install cast-in-place concrete required for the project as shown on the Drawings and specified herein. This Section also includes:

1. Concrete for work specified in Mechanical and Electrical Divisions unless specifically included therein.

2. Grouting of structural steel setting plates and elevator sills (if required).

3. Grouting of bases and equipment not specified under other Sections.

4. Concrete fill for metal stairs and pipe guards (bollards).

5. Coordination with other trades with regard to requirements for special bases, sleeves, chases, inserts, finishes or provisions of any nature.

6. Curing of formed concrete surfaces.

7. Installation of anchor bolts, hangers, anchors, plates, inserts and miscellaneous metal or other materials embedded in concrete and which are furnished by other trades.

B. Related Work Specified Elsewhere:

1. Concrete work beyond the building lines: See Sidewalks and Driveways.

2. Shotcrete.

3. Aggregate base for slabs on grade: See Earthwork.

4. Concrete Forms (including erection, stripping and removal).

5. Concrete Reinforcement.

6. Finish for concrete surfaces including patching and curing of concrete (except curing of formed concrete): See Concrete Finishes.

1.2 REFERENCES, CODES AND STANDARDS: The following references, codes and standards are hereby made a part of this Section and concrete work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

A. "Building Code Requirements for Reinforced Concrete", ACI 318-14.

B. California Building Code, 2022 Edition.

1.3 SOURCE QUALITY CONTROL: Refer to quality Control Section for general requirements governing testing and inspection.

A. Cement and Aggregates: Furnish to the Architect the following data:

1. Mill certificates from cement manufacturer certifying that cement meets Specifications and is suitable for purpose intended.

2. Proof of aggregate's compatibility with cement to be used and certification that aggregates meet Specifications. Owner reserves the right to have his testing agency perform any additional tests on cement and aggregates which may be deemed advisable.

1.4 ENVIRONMENTAL CONDITIONS

A. Cold Weather Requirements: Comply with ACI 306R, "Cold Weather Concreting".

B. Hot Weather Requirements: Comply with ACI 305, "Hot Weather Concreting".

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cement: ASTM C 150, Type II. Cement shall be of same brand, type and source throughout Project.

B. Aggregates:

1. Concrete for Slabs On Grade, suspended slabs: ASTM C 33 from sources with proven history of successful use. Source shall be constant unless 10 days prior notice is given for approval after recheck of mix design.

a. Fine Aggregate: Sechelt or Orcas sands.
b. Coarse Aggregate: Granite Rock Co., Kaiser Limestone or Kaiser Clayton, Sechelt or Orcas aggregates.
c. Other aggregates may be submitted for use provided the concrete mix meets the following shrinkage criteria: .040% drying shrinkage (max.), as tested per Structural Engineers Association of California recommendation, May 1989.

2. All Other Concrete: ASTM C 33 from sources with proven history of successful use. Source shall be constant unless 10 days prior notice is given for approval after recheck of mix design.

a. Fine Aggregate: Natural sand with sand equivalent of not less than 75 when tested per Test Method Calif. 217-E. Radum sand, or approved equal.
b. Coarse Aggregate: Fine grain, sound crushed stone, natural gravel or granite with cleanness value not less than 75 when tested as per Test Method Calif. 227. Granite Rock Co., Kaiser Limestone or Kaiser Clayton.

C. Water: Clean and potable, free from impurities detrimental to concrete.

D. Admixtures: The use of admixtures shall be confined to those admixtures listed below. Admixtures containing chlorides are not permitted. Admixtures shall be batched in strict accordance with manufacturer's recommendations.

1. Chemical Admixtures:

a. Water Reducing Admixture: W.R. Grace Co. "WRDA-79", Master Builders "Pozzolith 200N" or Sika Chemical Corp. "Plastocrete 161". Admixture shall conform to ASTM C 494, Type A and shall not contain more chloride ions than are present in the municipal drinking water.
b. High-Range Water Reducing Admixture: W.R. Grace Co. "WRDA-19" or approved equal. Admixture shall conform to ASTM C494 Type F and shall not contain more chloride ions than are present in the municipal drinking water.
c. Mid-Range Water Reducing Admixture: W.R. Grace Co., Daracon 50, 55, 04 65, or approved equal. Admixtures should conform to ASTM C494 Type A/F and shall not contain more chloride ions than are present in the municipal drinking water.
d. Air Entraining Agent: Air-entraining admixture conforming with ASTM C260 may be introduced into the mix. Air-entrainment shall not exceed 4 percent**.** Submit manufacturer's data to Architect for review.
e. Flyash: Pozzolanic admixtures, conforming with ASTM C618, Class F, with weight loss on ignition limited to 3%, may be utilized in mix designs where indicated on structural drawings. Maximum cement replacement shall be 15% by weight, unless otherwise noted on drawings.
f. Crystalline Waterproofing Additive: Zypex crystalline waterproofing admixture, Admix C-1000 or C-2000, by Xypex Chemical Corporation, or approved equal.

2. Certification: Written conformance to above requirements and the chloride ion content of the admixture shall be submitted by the admixture manufacturer prior to review of mix designs by the Architect.

E. Expansion Joint Fillers: ASTM D 994, asphaltic compound strips, 1/2" thick unless otherwise noted, precut to proper size.

F. Non-Shrink Grout (Non-Metallic): Euclid Chemical Co. "Euco N-S", L&M "Crystex", Upco "Upcon", U.S. Grout Corp. "Five Star", Master Builders "Masterflow 713", or approved equal, nonmetallic, nonstaining, premixed grout having a compressive strength at 28 days of not less than 6800 psi, non-shrink at all flow levels. Grout shall conform to ASTM C1107.

G. Curing Compounds (Formed Concrete): Conform to requirements of Concrete Finishes Section (for Clear Curing and Sealing Compound).

H. Volclay Waterstops: Bentonite/butyl rubber-based waterstop, RX-101 series by CETCO Building Materials Group, or approved equal.

2.2 MIXES

A. Mix Designs:

1. Mix designs for concrete shall be Contractor-designed at his expense. Designs shall be prepared by a qualified agency approved by the Architect and Structural Engineer. Four (4) copies of mix designs shall be submitted for Architect's review at least 30 days prior to placing any concrete and shall indicate completely, brands, types and quantities of admixtures included. If concrete is to be placed by pumping, recommendations of ACI Committee 304 shall be followed.

2. Mix designs shall be proportioned in accordance with Section 5.3, "Proportioning on the Basis of Field Experience and/or Trial Mixtures" of ACI 318. Submit mix designs for each class of concrete for review.

B. Structural Drawings indicate minimum compressive strengths, slumps, maximum size aggregates and minimum cement contents.

PART 3 - EXECUTION

3.1 MIXING: Concrete shall be ready mixed as per ASTM C 94a. Equipment shall be adequate for the purpose and kept in good mechanical condition at all times.

A. The rate of delivery, haul time, mixing time and hopper capacity shall be such that mixed concrete delivered shall be placed in the forms within 90 minutes or 300 revolutions of the drum from the time of introduction of cement and water to the mixer. Any interruption in placing in excess of 90 minutes or 300 revolutions will be cause for shutdown of the work for the day and the wasting of any remaining mixed concrete in hoppers or mixers. In case such interruption occurs, the Contractor shall provide construction joints where and as directed and cut concrete back to such line, cleaning forms and reinforcing as herein specified. Delivery tickets shall show departure time from plants. Revolution counters shall be set at "0" and shall commence to operate when drum revolution begins after introduction of ingredients into the mixer.

B. No water shall be added to the mix after the initial introduction of mixing water for the batch except when, on arrival at the job site, the slump of the concrete is less than that specified. In this case, and only under the direction of the Special Inspector and with not more than one application per load, additional water may be added from the truck system to bring the slump within required limits. The drum or blades shall then be turned an additional 30 revolutions or more until mix is uniform.

C. Mixers shall be equipped with an automatic device for recording number of revolutions of drum or blades prior to completion of mixing operation.

D. Concrete shall be kept continuously agitated until discharged into the hopper at the job site.

E. Contractor shall note that the appearance of unpainted exposed concrete surfaces depends upon uniform color and texture within any one area and between adjacent areas and he shall exercise strict batching and mixing controls to achieve this end.

3.2 PLACING

A. Absorbent forms shall be thoroughly wetted before concrete is placed. Aggregate base for slabs on grade shall be moist but not saturated when concrete is placed.

B. Placing of concrete shall be done immediately after mixing. No concrete shall be placed or used after it has begun to set and no retempering will be allowed. The method used in placing shall be such that concrete is conveyed to place and deposited without separation of the ingredients. No concrete shall be placed with a free unconfined fall in excess of six (6) feet. Concrete shall not be allowed to cascade through reinforcing steel in such manner as to promote segregation. Do not support runways on reinforcing steel.

C. Splash or accumulations of hardened or partially hardened concrete shall be removed. Contact faces of forms for exposed concrete shall be protected from splash during placing of adjacent concrete. Concrete containing piping shall be placed in a manner that will prevent damage to pipes.

D. Deposit concrete in approximate horizontal layers not exceeding 18" in thickness, unless otherwise authorized. Placing of concrete shall be carried on in a continuous operation without interruption until placing of course, section, panel or monolith is completed.

E. Distribution of concrete shall be even and continuous and no placement joints shall show. Before a placement is started, make certain that adequate equipment, men, and concrete will be available to place in cycles which will permit proper and thorough integration of each layer of concrete. Upon stopping of a placement, the top surface shall be on a level. Points of deposit in walls shall be so spaced that it will not be necessary for concrete to flow laterally more than 24 inches.

F. No concrete shall be placed for any element until reinforcing for same is fastened in place nor until forms are complete. No concrete shall be placed before work that is to be embedded has been set. Notify other crafts so they may deliver anchor, inserts, etc., or other work to be embedded in ample time and also notify them when their assistance in setting is required. Reinforcing or other materials that have been set in place shall not be disturbed.

G. No pipes except electrical conduits 1-1/4" and less in diameter shall be embedded in structural concrete. Before placing concrete, such pipes and large conduits shall be sleeved providing 1/4" clearance (min.) all around. Sleeves for plumbing and mechanical pipes shall be placed so as not to impair strength of concrete or interfere with reinforcing bar placement. Multiple sleeve openings shall be placed no closer than three times diameter of the larger sleeve. Reinforcing clearances to sleeves shall conform to clearances specified for concrete surfaces. Sleeves and inserts will be provided and set under other Sections of the work.

H. Remove debris, mud and water from places to receive concrete.

I. Concrete splash and/or grout shall be removed from surfaces that will receive painter's finish.

J. Place no concrete in water unless written permission has been obtained from Structural Engineer.

K. Notify Owner's Representative, Architect and Structural Engineer 48 hours minimum prior to placing of any concrete.

3.3 VIBRATION AND CONSOLIDATION

A. Concrete shall be thoroughly consolidated by means of internal mechanical vibrators. Such consolidation shall be produced as will be obtained by placing the vibrator directly in concrete at 18" - 30" intervals for a period of approximately 5 to 15 seconds and withdrawing slowly or as directed, depending on the consistency of concrete. One vibrator will be required for each location where simultaneous placing takes place, to ensure thorough vibrating of all sections. Provide sufficient spare vibrators on the job so as to have them readily available in case any vibrator in use should suddenly cease to function properly. Where spare vibrators are employed, provide additional spares. Provide smaller diameter vibrators for areas with congested reinforcing steel. Under no condition shall vibrator be placed against reinforcing steel or attached to forms. Use no vibrators to transport material.

B. Vibrator shall be of the flexible immersion type having a frequency of not less than 8,000 rpm. Use and type of vibrator shall conform to ACI 309, "Recommended Practice for Consolidation of Concrete".

C. Spading will not be permitted on exposed concrete surfaces.

D. Voids and rock pockets shall be eliminated. Voids and rock pockets in exposed concrete may subject that portion to rejection.

3.4 CONSTRUCTION JOINTS

A. Placement of construction joints and the manner in which they are provided for shall be only as approved by Owner's Representative or as shown on the Drawings. Construction joints shall be few as possible and will not be permitted simply to save forms. Submit shop drawings of construction joints showing proposed locations and details. Submit to Architect prior to forming or placing concrete.

3.5 CURING: See Section 03 35 00, Paragraph 3.01.

3.6 EQUIPMENT BASES: Verify sizes and shapes required by items specified elsewhere. Concrete bases for special equipment shall be installed in strict accordance with Drawing details and the specifications and recommendations of the equipment manufacturer.

3.7 EXPANSION JOINT FILLERS: Place filler material so that top of surfaces is level and aligned uniformly 1/4" below adjacent concrete surface.

3.8 GROUTING

A. The setting of steel base plates is specified under Structural Steel Section. The grouting of the steel base plates shall be performed as hereinafter specified and as a part of this Section.

B. Grout used for the grouting of base plates shall be non-metallic, non-shrink grout mixed and applied in strict accordance with manufacturer's directions.

C. Grouting of bases shall be carefully done so as not to leave any voids between the base plates and the concrete.

3.9 FIELD QUALITY CONTROL: Refer to Quality Control Section for general requirements governing testing and inspection.

A. Tests and inspections shall be performed by qualified individuals, engineering companies or testing laboratories who shall perform those special inspections required by Sec. 1704A of the California Building Code, those tests and inspections specified below and such other tests and inspections as the Architect or Owner may require to establish the acceptability of the work.

B. Testing and inspection services shall be retained by the Owner at his expense except that when tests or inspections reveal failure of materials to meet contract requirements, costs for subsequent tests and inspections will be deducted from the Contract Price. Excessive inspection time required by Contractor's failure to provide sufficient workmen or to properly pursue the progress of the work shall likewise be deducted from the Contract Price.

C. Furnish material and handling for test cylinders and any other samples which testing agency requires for analysis of concrete work.

D. Compression Tests; unless noted otherwise:

1. For 4” diameter x 8” long cylinders: 5 compression test cylinders will be taken for each placement of 50 cu. yd. or fraction thereof of each class of concrete placed each day. Make, cure and store test cylinders as per ASTM C 31. One cylinder will be tested at 7 days for information; three at 28 days for acceptance; and one retained as a spare.

2. For 5” diameter x 12” long cylinders: 4 compression test cylinders will be taken for each placement of 50 cu. yd. or fraction thereof of each class of concrete placed each day. Make, cure and store test cylinders as per ASTM C 31. One cylinder will be tested at 7 days for information; two at 28 days for acceptance; and one retained as a spare.

E. Slump Test: Slump tests will be performed as per ASTM C 143 (slump cone) 360-63 at time of taking test cylinders. Tests shall be taken at the truck.

F. Testing agencies shall select and prepare samples taken at job site.

END OF SECTION

SECTION 03 35 00

CONCRETE FINISHING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Finish required on exposed cast-in-place concrete and shotcrete surfaces including patching or repair of defective areas as described in Section 03 35 01 Concrete Finishes.

B. Related Work Specified Elsewhere:

1. Finish for concrete work beyond the building lines: See Sidewalks and Driveways.

2. Curing of formed concrete and expansion joint fillers: See Concrete, Cast-In-Place.

3. Caulking and Sealants.

4. Painting.

5. Moisture and alkalinity control: See Section 07 26 00.

6. Concrete Finishes: See Section 03 35 01.

1.2 PROTECTION: Protect exposed surfaces including flat work as required to prevent damage by impact or stains

PART 2 - PRODUCTS

2.1 MATERIALS

A. Curing Compounds: ASTM C 309-81, Type 1, clear resin type free of oil, wax, grease, or other substance which might prove deleterious to any material to be applied to concrete and shall be approved by Environmental Protection Agency for use in the State of California and at this Project Site. Curing compounds for exposed slabs shall be a multi-purpose curing-hardener-sealer type equivalent to Floorseal "Mirrorcrete Hardener", or Vaporseal 309 Curing/Sealing Membrane and shall meet the above requirements.

B. Sealer: Floorseal “Mirrorcrete Sealer”.

C. Weakened Plane Joint Former: Burke Co. "Zip Strip Plastic Joint Former", or approved equal, two-part, rigid PVC plastic, depth equal to 1/4 of slab thickness(min.).

PART 3 - EXECUTION

3.1 CURING

A. Curing Compound - General:

1. Follow directions and recommendations of compound manufacturer.

2. Application shall commence immediately following completion of specified finishing and/or following disappearance of surface "sheen".

3. When applying compound, the surfaces shall be damp but shall be free from standing water.

4. Surfaces shall be covered with a uniform and even film of compound, as supplied. Using pressurized spray equipment, lambswool applicator or short nap roller, apply in a single coat to achieve total coverage as recommended by manufacturer.

5. When curing compound is applied inside enclosed spaces, adequate mechanical ventilation shall be provided and maintained throughout the periods of application.

3.2 PATCHING AND REPAIR OF DEFECTIVE AREAS

A. Within 3 days after stripping formwork, surface defects such as rock pockets, honeycombs, cracks, and holes exceeding 3/16" diameter shall be filled and patched. The Architect shall distinguish between concrete which requires replacement or repair and surface defects which require patching. Permission to patch any area shall not be construed as a waiver of the Architect's right to require complete removal of the defective work if the patching, in his opinion, does not satisfactorily restore the quality and appearance of the surface.

B. Areas to be patched shall have loose material chipped away and shall be thoroughly dampened for at least 6 inches entirely surrounding the patch. Coat areas with thin brush coat of fine sand-cement grout followed by patching mortar. Patching mortar shall be prepared of the same material and proportions as used for concrete, except that coarse aggregate shall be removed. Where exposed formed concrete is to remain unpainted, trial patches using combinations of white cement and cement used in concrete mix shall be allowed to set up in order to verify that the patching mortar shall match the color of the adjacent concrete surface. Water in the mix shall be kept to a minimum. Mortar shall not be retempered by adding water. Mortar shall be allowed to stand for one hour prior to use and shall be mixed to prevent setting. Mortar shall be compacted thoroughly into place and screeded to leave patch slightly higher than surrounding surfaces and then left undisturbed for 1 to 2 hours to permit initial shrinkage. Patch shall then be finished to match adjacent surfaces.

C. Form tie holes shall be patched and finished flush with adjacent surface. For holes passing entirely through walls, a plunger type "grease gun" or other suitable device shall be used to completely fill holes.

3.3 FINISHING

A. Flatwork: Unless otherwise noted or specified, slabs shall be finished monolithically. Floor slabs which are indicated as sloped to floor drains shall be sloped uniformly so as to provide positive drainage of the indicated areas. Special care shall be taken that a smooth, even joint is obtained between successive pours.

B. Formed Surfaces: Remove fins and projections, patch, and leave "as formed". Air bubbles or "bug-holes" not exceeding 3/16" diameter need not be repaired.

C. Floor slabs that are indicated to be formed with camber specified on the drawings, shall have concrete placed to maintain the minimum thickness noted on the drawings throughout each pour. Set screed spins or other elevation devices to match camber requirements.

D. Tolerance: Comply with ACI 117 for local flatness/levelness tolerance measured in accordance with ASTM E1155. Specified Overall Value (SOV) and Minimum Local Value (MLV), all as per ACI 302 and with the following specific requirements:

1. Slabs-On-Grade Designated to Receive Resilient Flooring, Ceramic Tile or Left exposed:

a. Floor Flatness (F/F): SOV=35 MLV=25
b. Floor Levelness (F/L): SOV=30 MLV=20

2. Elevation tolerance: 80 percent points taken within individual sets of readings shall fall within +3/8 inch to –3/8 inch from design elevation indicated on Drawings.

E. Broom Finish (Typical for exterior and filled metal pan stairs): After the concrete has received a float finish, the surface shall be given a non-slip medium broom finish.

F. Trowel Finish (Typical for interior exposed areas): After the concrete slab has been float finished, the surface shall be troweled at least twice to a smooth, dense, uniform finish free of defects and blemishes. Jitterbugs shall not be used. No dry cement or mixture of dry cement and sand shall be sprinkled on the surface.

G. Treads of concrete stairs shall have a broom finish. Forms for risers shall be removed as soon as concrete has set and surfaces plastered with cement grout and troweled smooth. Treads without safety nosings shall have (4) evenly spaced grooves troweled in with grooving tool.

3.4 SEALER: At cleanup time for the entire Project, concrete slabs which will be exposed in the completed project, shall receive one (1) coat of the same curing-hardener-sealer compound used for original curing and specified herein under "Curing Materials". Follow manufacturer's directions and recommendations

3.5 FLATNESS AND LEVELNESS TESTING: Concrete slabs on grade shall be tested to verify that flatness and levelness of the completed work meets the specified tolerances in accordance with ACI and ASTM references noted above.

3.6 DEFECTIVE WORK: Finish which is not true to line and plane, which is not in conformance with specified finish and appearance requirements, which exceeds specified tolerances, which does not properly connect to adjoining work, which does not slope to drain and which has been improperly cured, will be deemed as defective. Defective work shall be repaired or removed and replaced as directed by the Architect with proper work meeting Drawing and Specification requirements and at no added cost to the Owner

END OF SECTION

SECTION 05 50 00

METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide stock and custom fabricated metal items scheduled at end of this Section, complete in respect to function as intended.

1. Metal fabrications includes items made from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of structural steel or metal systems specified elsewhere.

1.2 REFERENCES

A. American Welding Society (AWS): D1.1, Structural Welding Code.

B. National Association of Architectural Metal Manufacturers (NAAMM): Pipe Rail Manual.

C. National Association of Architectural Metal Manufacturers (NAAMM):

1. Pipe Rail Manual.
2. Heavy Duty Metal Bar Grating Manual.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Railing Design/Build: Provide special engineering for railings to ensure railings comply with applicable codes and Contract Documents.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's literature for products used in metal fabrications, including paint, grout and manufactured items.

B. Shop Drawings: Submit for fabrication and erection of metal fabrications. Indicate profiles, sizes, connection, reinforcing and anchorage.

1. Provide templates for anchorage installation by others.

PART 2 - PRODUCTS

2.1 MATERIALS

A. System Description: Provide stock and custom fabricated metal items.

B. Steel Shapes, Plates and Bars: ASTM A36.

1. Steel Bar Grating: ASTM A36 or ASTM A1011.

2. Wrought Iron: Maximum 0.3% carbon content with slag mechanically mixed with iron and conforming to ASTM E350 analysis; soft, ductile, and corrosion resistant.

C. Structural Steel Sheet: Hot rolled, ASTM A1011; or cold rolled, ASTM A1008, Class 1; of grade required for design loading.

D. Steel Pipe: ASTM A53, Type S seamless, grade as selected by fabricator and as required for design loading; minimum standard weight, STD or Schedule 40.

E. Steel Tubing: Cold formed ASTM A500; or hot rolled, ASTM A501; minimum Grade B; seamless where exposed.

F. Castings: Gray iron, ASTM A48, Class 30; malleable iron, ASTM A47.

G. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron ASTM A47, or cast steel ASTM A27. Provide bolts, washers and shims as required, hot-dip galvanized, ASTM A153.

H. Grout: Non-shrink meeting ASTM C1107, non-metallic, pre-mixed, factory-packaged, non-staining, non-corrosive; type specifically recommended by manufacturer as applicable to job condition.

I. Fasteners and Rough Hardware: Type required for specific usage; provide zinc-coated fasteners for exterior use or where built into exterior walls.

J. Welding Materials: AWS D1.1, type required for materials being welded.

K. Paint: Provide primers as recommended by paint manufacturers for substrates and paints specified in Section 09 90 00 – Painting and Coating.

1. Galvanizing Repair Paint: High zinc-dust content paint for regalvanizing welds in galvanized steel.

2.2 FABRICATION

A. Fabricate items with joints neatly fitted and properly secured.

B. Grind exposed welds continuous, smooth and flush with adjacent finished surfaces, and ease exposed edges to approximate 1/32" uniform radius.

C. Exposed Mechanical Fastenings: Flush countersunk fasteners unobtrusively located, consistent with design of structure.

D. Fit and shop assemble in largest practical sections for delivery.

E. Make exposed joints flush butt type, hairline joints where mechanically fastened.

1. Fabricate joints exposed to weather in manner to exclude water or provide weep holes where water could accumulate.

F. Supply components required for proper anchorage of metal fabrications; fabricate anchorage and related components of same material and finish as metal fabrication.

G. Railings: Comply with California and ADA Standards access requirements and NAAMM "Pipe Railing Manual"; welded construction; cap exposed ends.

1. Railing Design Requirements: Design railings to support a lateral force of 50 lbs. /lin. ft. uniform load and 200 lbs. at any single point without permanent set or damage; ASTM E935.

a. Top Rails: Design to support minimum 300 lb. concentrated single point load applied at any point vertically or horizontally.

2. Regulatory Requirements:

a. Access: Comply with California Building Standards Code and Americans with Disabilities Act (ADA) Standards for access for persons with disabilities.

b. Code: Comply with requirements of applicable codes for railing design, except where more restrictive codes are specified.

3. Handrails: Seamless steel tube rails, 1-1/2" outside diameter, continuous railings conforming to applicable code and design requirements.

4. Wall Rail Brackets: Castings as approved by Architect.

5. Wall Returns: 90° elbow return with 1/4" maximum clearance unless otherwise indicated.

a. Provide wall plates only where indicated and where required by applicable codes.

H. Steel Grating: Comply with requirements of NAAMM "Heavy Duty Metal Bar Grating Manual"; work to dimensions accepted on shop drawings, using proven details of fabrication and support.

1. Type: Welded with a plain traffic surface.

2. Loads: Provide gratings designed for minimum 100 psf based on support indicated.

I. Cast-In-Place Concrete Stair Nosing: One-piece cast aluminum nonslip stair nosing, contrasting color to stair treads, 2” nosing full tread width.

1. Provide at each tread and landing for exterior cast-in-place concrete stairs, at upper approach and last tread for interior cast-in-place concrete stairs.

2. Comply with California Building Code Requirements.

J. Finishes: Galvanize and prime paint exterior work and prime paint interior work unless otherwise noted in Schedule; comply with requirements of Section 09 90 00 - Painting and Coating for preparation and priming.

1. Thoroughly clean surfaces of rust, scale, grease and foreign matter prior to applying finish.

2. Do not shop prime surfaces in contact with concrete or requiring field welding; shop prime in one coat.

3. Galvanized Coating: Provide coating comparable to ASTM A924 and A653, minimum G90 hot dip galvanized coating.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible; do not delay job progress; allow for trimming and fitting where necessary.

3.2 ERECTION

A. Obtain Architect's review prior to site cutting and adjusting which are not part of scheduled work.

1. Perform necessary cutting and altering for installation and coordination with other work.

B. Install items square and level, accurately fitted and free from distortion or defects detrimental to appearance or performance.

1. Supply items required to be cast into or embedded in other materials to appropriate trades.

2. Ensure alignment with adjacent construction; coordinate with related work to ensure no interruption in installation.

C. Make provision for erection stresses by temporary bracing; keep work in alignment.

D. Field bolt and weld to match standard of shop bolting and welding; hide bolts and screws whenever possible, where not hidden, use flush countersunk fastenings.

1. Perform field welding in accordance with AWS D1.1.

E. After installation, touch-up field welds and scratched and damaged surfaces; use primer consistent with shop coat or recommended for galvanized surfaces, as applicable.

F. Replace items damaged in course of installation and construction.

3.3 SCHEDULE

A. Supply and install metal fabrications listed in Schedule, complete with anchorage and attachments necessary for installation.

1. Schedule lists principal items only, refer to Drawings for items not listed.

B. Schedule:

1. Miscellaneous angles, plates and attachments to be set in concrete or masonry for anchorage of other items.

2. Iron and steel shapes, sleeves, anchors, connectors and fastenings required to complete construction work, and which are not provided in other Specification sections.

    a. Rough hardware, including bolts, fabricated plates, anchors, hangers, dowels and miscellaneous metals.

    b. Ledge and shelf angles, channels and plates not attached to structural steel, and for support of metal decking.

    c. Angle and channel frames for doors and wall openings.

    d. Beams of structural shapes not supported by structural steel.

    e. Steel angle corner guards.

3. Guard rails and handrails, other than stair railings.

4. Steel bar gratings; galvanized finish.

5. Cast-in-place concrete stair nosing.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install Rough Carpentry required for the project as shown on the Drawings and specified herein. This Section also includes:

1. Structural floor, wall, and roof framing.
2. Built-up structural beams and columns.
3. Floor, wall and roof plywood sheathing.
4. Furring for wall finishes.
5. Rough hardware.
6. Blocking for roofing systems and related metal flashings.
7. Preservative treatment.
8. Concealed wood blocking and backing for support of accessories, wall cabinets, finish hardware.

B. Related work specified elsewhere:

1. Concrete Formwork.
2. Metal Fabrications.
3. Glued Laminated Structural Units.
4. Laminated Strand (LSL) Lumber.
5. Laminated Veneer (LVL) Lumber.
6. Parallel Strand (PSL) Lumber.
7. Prefabricated I-Joists.
8. Finish Carpentry.

1.2 REFERENCES, CODES AND STANDARDS: The following references, codes and standards are hereby made a part of this Section and rough carpentry work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

A. ALSC (American Lumber Standards Committee) American Softwood Lumber Standard PS-20.

B. APA (American Plywood Association) - Guide to Plywood Grades.

C. ASTM A307 - Carbon Steel Externally Threaded Standard Fasteners.

D. ASTM D3498 - Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems.

E. AWPA (American Wood Preserver’s Association) - Book of Standards.

F. DFPA (Douglas Fir Plywood Association)

G. FS FF-S-325 - Shield, Expansion; Nail, Expansion; and nail, Drive Screw (Devices, Anchoring, Masonry).

H. FS TT-W-571 - Wood Preservation - Treating Practices.

I. FSC – Forest Stewardship Council, Washington, D.C.

J. NLMA (National Lumber Manufacturers Association) – National Design Specification for Stress-Grade Lumber and its Fastenings.

K. WCLIB (West Coast Lumber Inspection Bureau) - Standard Grading Rules No. 17.

L. WWPA (Western Wood Products Association) - Western Lumber Grading Rules

M. AFPA (American Forest & Paper Association)

1. National Design Specification (NDS) for Wood Construction.
2. Special Design Provisions for Wind and Seismic.
3. Manual for Engineered Construction

N. California Building Code, 2022 Edition.

O. Bolts Used in Wood Construction, CDGS – Division of the State Architect, IR 23-5

1.3 QUALITY ASSURANCE

A. Lumber Grading Agency: Certified by ALSC.

B. Plywood Grading Agency: Certified by APA.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Product Data: Submit manufacturer's literature describing products.

C. Samples: Only as requested by the Architect.

D. Manufacturer's Certificates: Submit certificates of compliance with standards noted.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Store and protect products under provisions of Section 01 60 00.

B. Provide proper facilities for handling and storage of materials to prevent damage to edges, ends, and surfaces.

C. Deliver and store packaged products in original containers or bundles with seals unbroken and labels intact until time of use.

D. Keep materials dry. Where necessary, stack materials off ground on level flat forms, fully protected from weather.

E. Protect 'kiln-dried' and 'S-Dry' materials from moisture. Separate from contact with soil or earth or other sources of moisture.

PART 2 - PRODUCTS

2.1 LUMBER MATERIALS

A. Refer to Drawings for schedule.

2.2 PLYWOOD MATERIALS

A. Refer to Drawings for schedule.

2.3 ACCESSORIES

A. Rough Hardware: Exterior hardware nails and fasteners shall be hot-dipped galvanized, plain finish for interior locations, size and type to suit application. Nails to be common nails or ICBO approved equivalent, unless authorized otherwise in writing.

B. Bolts: Hexagonal heads, Grade A conforming to ASTM A307; galvanized for exterior, exposed applications only.

C. Sill Bolts: Galvanized conforming to ASTM F1554, Grade 36.

D. Lag Screws and Lag Bolts: Meet requirements of National Design Specifications for Stress Grade Lumber and Its Fastenings.

E. Washers: Washers for bearing against wood shall be provided under all bolt heads, lag screw heads, and nuts. Malleable iron or steel plate having an area equal to 16 times the area of bolt or lag screw. Steel washers shall have a thickness not less than 1/10 the length of the washer's longest side. Malleable iron washers shall have a thickness not less than 1/2 the bolt or lag screw diameter and having a bearing surface for the nut or head equal in diameter and having a bearing surface for the nut or head equal in diameter to not less than the long diameter of the nut or head.

F. Powder Driven Fasteners: Tempered steel pins with special corrosive-resistant plating or coating. Pins shall have guide washers to accurately control penetration, maximum 3/4 inch. Fastening shall be accomplished by low-velocity piston-driven powder-actuated tool. Pins and tool shall be same as manufactured by Hilti Fastening Systems; Impex Tool corporation; or equal product substituted under provisions of Section 01 63 00.

G. Expansion Bolts: FS FF-S-325, Group II, Type 4, size as noted. Same as Hilti, Inc. Kwik Bolt 3, or approved equal.

H. Fabricated Sheet Metal Timber Framing Connectors: Fabricate from hot-dipped galvanized steel. Connectors shall be at least 20 gauge material (1/8 inch plate materials where welded), unless otherwise noted, punched for nailing. Nails and Nailing shall conform to the manufacturer's instructions with a nail provided for each punched hole. Types as noted on the drawings. Same as Simpson Co.; KC metal Products; or equal product substituted under provisions of Section 01 60 00.

I. Glue: Conforming to ASTM D3498 and APA Performance Specification AFG-01.

2.4 WOOD TREATMENT

A. Materials:

1. Wood Preservative, Pressure Treatment: FS-TT-W-571, AWPA treatment C2 and C9 using either Alkaline Quat (ACQ Type B and D), Copper Azole (CBA-A, CA-B), Sodium Borates (SBX).
2. Wood Preservative, Surface Application: Copper green, manufactured by Willard Products.

B. Shop Treatment of Wood Materials:

1. Provide pressure treatment for lumber other than foundation grade redwood located within 1-1/2 inches of concrete, in contact with bituminous roofing, waterproofing, and related metal flashings, and where noted on Drawings.
2. Lumber: Treat in accordance with AWPB LP-3.
3. Plywood: Treat in accordance with AWPB LP-3.

C. Galvanization

1. Anchor bolts, nails, fasteners, and metal framing connectors in contact with pressure treated lumber shall be hot-dipped galvanized to a rating of G-185 per ASTM A653.

PART 3 - EXECUTION

3.1 SITE TREATMENT OF WOOD MATERIALS

A. Apply non-pressure wood preservative to lumber and plywood embedded in and placed against concrete.

3.2 FRAMING

A. Erect wood framing members level and plumb.

B. Place horizontal members laid flat, crown side up.

C. Construct framing members full length without splices.

D. Double members at openings over one sq.ft. Space short studs over and under opening to stud spacing.

E. Construct double joist headers at floor and ceiling openings. Frame rigidly into joists.

F. Make bearings full and finish bearing surfaces to give sure and even support.

G. Do not notch, bore, or cut members for pipes, vents, conduits or other reasons except as shown on the Drawings or specifically authorized by the Architect.

H. Construct double joists under discontinuous walls.

I. Coordinate delivery of glue laminated structural units and plywood web joists.

J. Layout embedded items for entire project.

K. Shim, strip and furr as necessary to achieve described tolerances.

3.3 BRIDGING

A. Install solid blocking between joists at points of support and wherever sheathing or flooring is discontinuous.

B. Blocking may be omitted where joists rests on ribbons and are nailed to studs and where joists are supported on metal hangers.

3.4 SHEATHING

A. Secure roof sheathing perpendicular to framing members with ends staggered. Secure sheet edges over firm bearing.

B. Secure wall sheathing vertically parallel to wall studs, with ends staggered, over solid blocking. Secure sheet edges over firm bearing.

C. Secure subfloor and flat roof sheathing perpendicular to floor framing with end joints staggered. Secure sheet edges over firm bearing. Attach sheathing with subfloor glue and nail as shown.

D. Nail panel edges to framing members or blocking at least 1-1/2 inches thick. Space nails at panel edges as indicated on drawings, or if not shown, in accordance with CBC requirements. Place nails not less than 3/8 inches from panel edges and drive solidly into the support.

3.5 FASTENING

A. In general, provide nail penetration into the piece receiving the point of not less than 1/2 the length of the nail or spike provided; however, 16d nails may be used to connect two pieces of 2 inch (nominal) thickness.

B. In diaphragms, the minimum penetration shall be 1-1/2 inches for 8d nails and 1-5/8 inches for 10d nails.

C. Perform nailing without splitting wood, preboring as required; replace split members.

D. Drill bolt holes 1/16 inches larger in diameter than the bolts being used; drill straight and true from one side only.

E. Bolt threads must not bear on wood; use washers under head and nut where bolts bear on wood; use washers under nuts.

F. Lag screw anchorage embedment in piece lagged to shall not be less than 0.6 times lag screw length nor less than 8 times lag screw diameter.

G. Prebore holes for lag screws same diameter as root of thread; enlarge holes to shank diameter for length of shank.

H. Do not drive lag screws.

3.6 MISCELLANEOUS ROUGH CARPENTRY

A. Install miscellaneous blocking, furring, cants, nailing strips, framing and sheathing.

B. Install members true, plumb, and level. Secure in place.

C. Space miscellaneous framing and furring at 16 inches o.c.

D. Construct members of continuous pieces of longest possible lengths.

3.7 TOLERANCES

A. Framing Members: 1/4 inch maximum from true position.

B. Surface Flatness of Floor: 1/4 inch in 10 feet maximum.

END OF SECTION

SECTION 06 18 00

GLUE-LAMINATED CONSTRUCTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Furnish and install Glued Laminated wood beams required for this projects as shown on drawings and specified herein.

B. Related work specified elsewhere:

1. Metal Fabrications.
2. Rough Carpentry.
3. Finish Carpentry.

1.2 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Metal Fabrications: Provision of steel plates, beam seats, ties, clip angles, and bolts.

1.3 REFERENCES

A. AITC - American Institute of Timber Construction

1. AITC 117 - Standard Specifications for Structural Glued Laminated Timber of Softwood Species - Design, Latest Edition.
2. AITC A190.1 - Structural Glued Laminated Timber.

B. ALSC - American Lumber Standards Committee: Softwood Lumber Standards.

C. ASTM D2559 - Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions.

D. California Building Code, 2022 Edition

1.4 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacture of glue laminated structural units with three years minimum experience, and certified by the AITC, in accordance with ANSI A190.1, to apply AITC "Quality Inspected" mark.

B. Glue Laminated Timber Members: Conform to AITC 117.

1.5 REGULATORY REQUIREMENTS

A. Conform to California Building Code.

1.6 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

1. Certificates: AITC certificate of conformance with gluing procedures.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 01 60 00.

B. Store and protect products under provisions of Section 01 60 00.

C. Protect members in accordance with AITC requirements for moisture resistant bundle wrapped material.

D. Leave wrapping in place until finishing occurs.

1.8 SCHEDULING AND COORDINATION

A. Coordinate work with the various sections of specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed later.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber: Alaskan Cedar lumber conforming to AITC A190.1. Allowable stresses for glued laminated beams as shown on drawings.

B. Lamination Combinations: Unless otherwise noted on the drawings, conform to AITC 117 requirements.

C. Adhesive: ASTM D2559 for wet condition of service.

D. Anchorage hardware and Fastenings: Refer to Section 06 10 00, Rough Carpentry.

E. Finish: See Structural Drawings for finish appearance grades.

2.2 FABRICATION

A. Fabricate glued laminated structural members in accordance with AITC A190.1, industrial grade.

B. Verify dimensions and site conditions prior to fabrication.

C. Cut and fit members accurately to length to achieve tight joint fit.

D. Fabricate member with camber built in, where shown on drawings.

E. Do not splice or join members in locations other than that indicated, without written authorization from the Architect.

F. After end trimming, seal in accordance with AITC requirements. Seal drilled out areas.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that supports are ready to receive beams.

B. Verify sufficient end bearing area.

C. Beginning of installation means acceptance of existing conditions. Do not install until improper conditions have been corrected.

3.2 PREPARATION

A. Coordinate placement of support items.

3.3 INSTALLATION REQUIREMENTS

A. Set structural members level and plumb, in correct positions.

B. Provide temporary bracing and anchorage to hold members in place until permanently secured.

C. Fit members together accurately without trimming, cutting, or any other unauthorized modification.

3.4 TOLERANCES

A. Framing Members: 1/4 inch maximum from true position.

END OF SECTION

SECTION 07 60 00

FLASHING AND SHEET METAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide metal flashings and sheet metal including accessories as required for complete weathertight installation.

1. Flashing and sheet metal includes copings, fascias, scuppers, gutters, downspouts, rainwater leaders, reglets, and similar fabricated components as applicable to Project.

2. Provide concealed sealants used in conjunction with installation of metal flashing and sheet metal.

3. Provide miscellaneous sheet metal flashing and reglets not provided by other trades or suppliers.

    a. Where reglets are to be installed in conjunction with other work, provide in adequate time for installation.

    b. Where reglets are to be surface applied, provide continuous gasket between reglet and surface.

4. Provide precast concrete splash blocks.

B. Related Sections:

1. Section 06 10 50: Miscellaneous rough carpentry.
2. Section 06 20 00: Wood louvers.
3. Section 07 28 00: Concealed flashing at weather barrier/underlayment.
4. Section 07 41 10: Flashing and sheet metal integral with metal roofing.
5. Section 07 95 00: Expansion joint cover assemblies at roofing.
6. Section 08 91 00: Louvers.

1.2 REFERENCES

A. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): Architectural Sheet Metal Manual.

1.3 SUBMITTALS

A. Product Data: Furnish literature for manufactured products.

B. Shop Drawings: Clearly indicate dimensioning, layout, general construction details including closures, flashings, locations and types of sealants, anchorages, and method of anchorage.

C. Samples: Furnish samples of typical metal flashing fabrication indicating standard soldered joints and edge conditions.

1.4 QUALITY ASSURANCE

A. Sustainability Requirements:

1) Two years' successful experience with CAL/Green requirements.

2. *CAL*Green Requirements: Refer to Section 01 35 15 – *CAL*Green Environmental Requirements and comply with applicable *CAL*Green Checklist indicating requirements applicable to Project.

1.5 DELIVERY, STORAGE AND HANDLING

A. Provide strippable film protective covering on shop finished flashing materials to protect materials through shipping, fabrication and installation.

1.6 WARRANTY

A. Extended Correction Period: Provide for correcting failure of system to resist damage from anticipated sources including damage from wind and water penetration. Repair system and pay for or replace damaged materials and surfaces.

1. Period: Two years.

PART 2 - PRODUCTS

2.1 MATERIALS

A. System Description: Provide flashing and sheet metal including reglets and accessories as required for complete weathertight installation.

B. Design Criteria: Allow for movement of components without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to 100-year seasonal temperature ranges.

C. Flashing and Sheet Metal:

1. Prefinished High-Performance Coated Aluminum: Manufacturer's standard two coat thermocured fluoropolymer system containing not less than 70-percent polyvinylidene fluoride resin by weight; AAMA 2605 and AA-C12C42R1x.

a. Manufacturers:

1) Ryerson Building Products (800.328.7800)/AlumaKlad.
2) Merchant & Evans Industries, Inc.(800.257.6215)/Custom.
3) Substitutions: Refer to Section 01 25 00.

b. Colors: Where color is not indicated on Drawings or Finish Schedule, provide custom color as directed by Architect.

c. Touch-up Paint for Prefinished Sheet Metal: Type recommended by fluoropolymer manufacturer for field touch-up.

2. Accessories: Provide strainers, outlet tubes, screens, baffles, hangers and gutter ends as required for a complete system and complying with SMACNA Manual.

3. Provide heavier gage metal where recommended by SMACNA Manual for size of component.

D. Manufactured Reglets: Snap-on type, for two-piece flashing; metal to match flashing and sheet metal.

1. Manufacturers:

a. Fry Reglet Corp./Springlok System.
b. W.P. Hickman Co./The Leading-Edge Drive Lock System.
c. Substitutions: Refer to Section 01 25 00.

E. Solder and Fasteners: As recommended by SMACNA and complying with applicable codes and regulations; hot dipped galvanized minimum coating comparable to G90.

F. Concealed Sealant: Butyl type for use in conjunction with sheet metal; non-staining; non-corrosive; non-shrinking and non-sagging; ultra-violet and ozone resistant for exterior concealed applications.

G. Bituminous Paint: Acid and alkali resistant type; black color; asbestos free.

H. Plastic Cement: Cutback asphaltic type; asbestos free.

I. Sealing Compound: Type recommended by roofing manufacturer; asbestos free.

J. Gaskets: Type suitable for use in conjunction with sheet metal; non-staining, non-corrosive, non-shrinking, non-sagging, ultra-violet resistant, and ozone resistant; for exterior concealed applications.

1. Manufacturers:

a. Emseal USA, Inc./Emseal MST Multi-Use Sealant Tape.
b. Substitutions: Refer to Section 01 25 00.

K. Splash Blocks: Precast concrete of size and profile as approved by Architect; minimum 2000 psi at 28 days with minimum 5% air entrainment.

2.2 FABRICATION

A. Fabricate sheet metal in accordance with SMACNA Architectural Sheet Metal Manual.

B. Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

1. Fabricate corners and intersections in shop with solder joints; watertight fabrication.

C. Form sections in maximum 10'-0" lengths; make allowance for expansion at joints.

D. Hem exposed edges on underside 1/2".

E. Back-paint flashings with heavy bodied bituminous paint where in contact with cementitious materials or dissimilar metals.

F. Form pitch pans watertight, with minimum 4" upstand and 4" flanges; form pans minimum 6" wider than item passing through roof membrane.

G. Form umbrella flashings with minimum 2" overhang, to shed water away from pitch pans.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install metal flashing and sheet metal in accordance with SMACNA Architectural Sheet Metal Manual.

1. Install tight in place, with corners square, surfaces true and straight in planes, and lines accurate to profiles as indicated on Drawings.

2. Lap joints in direction of water flow.

3. Hold downspouts in position, clear of wall, by hangers spaced not more than 10'-0" on center; securely fasten hangers to wall without exposed damage to wall surface.

B. Exercise care when cutting materials on site, to ensure cuttings do not remain on finished surfaces.

C. Provide expansion joints concealed within system.

D. Use concealed fasteners, continuous cleat type, except where specifically approved by Architect.

1. Exposed fasteners may be used, where clearly indicated on shop drawings and approved by Architect, at areas not exposed at exterior walls nor in sight of interior spaces.

E. Apply sealing compound at junction of metal flashing and felt flashing.

F. Lock seams and end joints; fit flashing tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

G. Counter-flash mechanical and electrical items projecting through roof membrane.

H. Install sealants where required to prevent direct weather penetration.

1. Install continuous gasket behind surface applied reglets.

I. Completed installation shall be free of rattles, noise due to thermal and air movement, and wind whistles.

J. Install pitch pans and fill with plastic cement.

K. Install umbrella flashing with draw band collars with sheet metal sealant between penetrating item and flashing; use wood blocking at angle type penetrations and cover blocking with sealant.

L. Install splash blocks at locations to interrupt fall of water and direct water flow as indicated on Drawings.

3.2 CLEANING

A. Remove protective coating from shop finished sheet metal when no longer required to protect roofing and flashing from construction.

B. Touch-up scratched and damaged finish to match new; remove and replace sheet metal units that cannot be repaired to look identical to adjacent sheet metal when viewed from 15'-0" away.

END OF SECTION

SECTION 08 11 10

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide full flush steel (hollow metal) doors and pressed steel frames, including anchors and silencers.

1. Pressed steel frames include both door and window framing.

B. Related Sections:

1. Section 08 71 00: Door hardware.
2. Section 08 80 00: Glazing.

1.2 REFERENCES

A. Steel Door Institute (SDI): SDI-100 (ANSI/SDI A250.8) - Recommended Specifications - Standard Steel Doors and Frames.

B. National Association of Architectural Metal Manuf. (NAAMM): Hollow Metal Manual.

C. Underwriters Laboratories: Standards as applicable to fire rated doors and frames.

1. Materials tested, labeled and inspected by Warnock Hersey International are acceptable upon approval of authorities.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate hardware installation with Section 08 71 00 – Door Hardware.

2. Coordinate glass installation with Section 08 80 00 - Glazing.

1.4 SUBMITTALS

A. Product Data: Submit manufacturers' literature.

B. Shop Drawings: Indicate general construction, configuration, jointing methods, reinforcements, anchorage methods, hardware locations, and locations of cut-outs.

PART 2 - PRODUCTS

2.1 SYSTEMS MANUFACTURERS

A. Amweld Building Products Inc.

B. Curries Division Assa Abloy Door Group.

C. Door Components, Inc.

D. Republic Doors and Frames.

E. Krieger Steel Products Co.

F. Substitutions: Refer to Section 01 25 00.

2.2 MATERIALS

A. System Description: Provide full flush steel (hollow metal) doors and pressed steel frames, including anchors and silencers.

B. Doors: Hollow metal flush steel door, 1-3/4" thick.

1. Typical: Full flush with steel channel or welded edge; close top with flush end closer treatment, bottom optional flush or recessed channel; steel stiffened core, insulated at exterior doors; continuous welded seam.

2. Interior Doors: Minimum 0.042” (18 gage).

3. Exterior Doors: Minimum 0.053” (16 gage).

4. Glazed and Louver Doors: Provide systems as indicated on Drawings.

C. Frames:

1. Exterior Frames: Welded (pre-assembled) type.

2. Interior Frames: Knockdown (field-assembled) type; provide 3/8” back bend return on frames at gypsum board.

3. Gage: Minimum 0.053” (16 gage) interior frames, 0.067” (14 gage) exterior frames.

4. Door Silencers: Manufacturer's standard resilient type; removable for replacement.

5. Mortar Guard Boxes: Minimum 0.026” (22 gage) mortar guard boxes welded in place; provide where frames may be grouted.

D. Glazing Stops: Full flush type with glass centered in opening, unsecured side integral with unit, secured side fastened with flush, countersunk Allen type fasteners; minimum 0.053” (16 gage).

E. Fire Rated Units: Construct in accordance with requirements for fire rating, NFPA 252 or UL 10C, and NFPA 80.

1. Labels: Place fire rating labels where visible when doors and frames are in installed, opened position.

2. Fire Ratings: Refer to Drawings for fire rating requirements.

3. Temperature Rise Rating: Provide doors with maximum 450°F Temperature Rise Rating in 30 minute fire exposure period at doors into exit enclosures and where otherwise required by applicable codes.

F. Door Louvers:

1. Interior Doors: Stationary, sightproof hood or Y type blades of 24 gage steel inserted into door panels full door thickness; no exposed trim.

2. Exterior Doors: Weatherproof Z-shaped blades with U-shaped frames; 1-3/8" thick; blades 1-1/2" on center; 0.053” (16 gage) welded construction.

a. Provide removable bird screens on interior faces, 1/2" by 1/2" bronze wire mesh.

2.3 FABRICATION

A. Conform to requirements of SDI (ANSI A250 Series) or NAAMM.

B. Reinforce and prepare doors and frames to receive hardware.

1. Refer to Section 08 71 00 for hardware requirements.

C. Frames:

1. Welded Frames: Accurately form and cut mitered corners of welded type frames; continuously weld on inside surfaces (fully welded); grind welded joints to smooth uniform finish.

2. Knocked Down Frames: Accurately form and miter interlocking joints of knocked down frames to maintain hairline alignment of parts when field assembled.

3. Head Reinforcement: Reinforce frames wider than 4'-0" with minimum 0.093” (12 gage) formed steel channels welded in place, flush with top of frames.

4. Doors at Glazed Panels: Reinforce jambs and heads of frames for doors which occur adjacent to glazed sidelights and partitions.

D. Door Silencers:

1. Place three single bumpers on single door frames; space equally along strike jambs.

2. Place two single bumpers on double door frames; place on frame heads.

3. Place three single bumpers for each door on door frames with removable mullions, spaced equally along strike jambs, and in addition place two single bumpers on frame heads to cushion door when mullion is removed.

E. Provide jamb anchors per SDI-100 (ANSI/SDI 250.8) and NAAMM; weld floor jamb anchors in place.

F. Provide double doors tested and approved without astragals.

1. Provide astragals for double doors when required to meet UL requirements for Class A, 3-hour rated doors only.

G. Edge Clearances:

1. Between Doors and Frames: Maximum 1/8" at head and jambs.
2. Door Sills (No Threshold): Maximum 1/2".
3. Door Sills (Threshold): Maximum 3/8" above finished floor.
4. Between Edges of Pairs of Doors: Maximum 1/8".
5. Fire Rated Doors: As required for fire ratings.

H. Finish: Comply with requirements of Section 09 90 00 – Painting and Coating for primer including application and compatibility with specified finishes.

1. Interior Units: Prime paint.

2. Exterior Exposed Units: Apply minimum A60 non-spangle galvanized coating, ASTM A924 and A653.

a. Surface treat after galvanizing to remove oils and prepare for painting and apply one coat of primer; comply with requirements in Section 09 90 00.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install doors and frames in accordance with SDI-100 (ANSI/SDI A250.8) and ANSI/SDI A250.11 or NAAMM "Hollow Metal Manual" and with manufacturer's recommendations and installation instructions.

1. Install fire rated units in conformance with fire label requirements and NFPA 80.

B. Install doors and frames plumb and square within 1/16”, and with maximum diagonal distortion of 1/32".

C. Remove and replace doors and frames damaged during delivery, storage, installation and construction.

1. Paste filler repair shall not be permitted.

D. After installation, touch-up scratched paint surfaces.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

B. This Section includes the following, but is not necessarily limited to:

1. Door Hardware, including electric hardware.
2. Storefront and Entrance door hardware.
3. Gate Hardware.
4. Digital keypad access control devices.
5. Hold-open closers with smoke detectors.
6. Wall or floor-mounted electromagnetic hold-open devices.
7. Power supplies for electric hardware.
8. Low-energy door operators plus sensors and actuators.
9. Thresholds, gasketing and weather-stripping.
10. Door silencers or mutes.

C. Related Sections: The following sections are noted as containing requirements that relate to this Section, but may not be limited to this listing.

1. Division 8: Section - Steel Doors and Frames.
2. Division 8: Section - Wood Doors.
3. Division 8: Section - Aluminum Storefront
4. Division 28: Section - Fire/Life-Safety Systems & Security Access Systems.

1.03 REFERENCES (USE DATE OF STANDARD IN EFFECT AS OF BID DATE.)

A. 2022 California Building Code, CCR, Title 24.

B. BHMA – Builders' Hardware Manufacturers Association

C. CCR – California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.

D. DHI – Door and Hardware Institute

E. NFPA - National Fire Protection Association.

1. NFPA 80 - Fire Doors and Other Opening Protectives
2. NFPA 105 - Smoke and Draft Control Door Assemblies

F. UL - Underwriters Laboratories.

1. UL 10C - Fire Tests of Door Assemblies
2. UL 305 - Panic Hardware

G. WHI - Warnock Hersey Incorporated

H. SDI - Steel Door Institute

1.04 SUBMITTALS & SUBSTITUTIONS

A. General: Submit in accordance with Conditions of the Contract and Division 1 Specification sections.

B. Submit product data (catalog cuts) including manufacturers' technical product information for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

C. Submit six (6) copies of schedule organized vertically into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

1. Include a Cover Sheet with;
   a. Job Name, location, telephone number.
   b. Architects name, location and telephone number.
   c. Contractors name, location, telephone number and job number.
   d. Suppliers name, location, telephone number and job number.
   e. Hardware consultant's name, location and telephone number.

2. Job Index information included;
   a. Numerical door number index including; door number, hardware heading number and page number.
   b. Complete keying information (referred to DHI hand-book "Keying Systems and Nomenclature"). Provision should be made in the schedule to provide keying information when available; if it is not available at the time the preliminary schedule is submitted.
   c. Manufacturers' names and abbreviations for all materials.
   d. Explanation of abbreviations, symbols, and codes used in the schedule.
   e. Mounting locations for hardware.
   f. Clarification statements or questions.
   g. Catalog cuts and manufacturer’s technical data and instructions.

3. Vertical schedule format sample:

Heading Number 1 (Hardware group or set number – HW -1)						
			(a) 1 Single Door #1 - Exterior from Corridor 101		(b) 90°	(c) RH
			(d) 3' 0"x7' 0" x 1-3/4" x (e) 20 Minute (f) WD x HM			
(g) 1	(h)	(i) ea	(j) Hinges - (k) 5BB1HW 4.5 x 4.5 NRP (l) ½ TMS		(m) 626	(n) IVE
2	6AA	1 ea	Lockset - ND50PD x RHO x RH x 10-025 x JTMS		626	SCH

(a) - Single or pair with opening number and location. (b) - Degree of opening (c) - Hand of door(s) (d) - Door and frame dimensions and door thickness. (e) - Label requirements if any. (f) - Door by frame material. (g) - (Optional) Hardware item line #. (h) - Keyset Symbol. (i) - Quantity. (j) - Product description. (k) - Product Number. (l) - Fastenings and other pertinent information. (m) - Hardware finish codes per ANSI A156.18. (n) - Manufacture abbreviation.

D. Make substitution requests in accordance with Division 1. Substitution requests must be made prior to bid date. Include product data and indicate benefit to the project. Furnish samples of any proposed substitution.

E. Wiring Diagrams: Provide product data and wiring and riser diagrams for all electrical products listed in the Hardware Schedule portion of this section.

F. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

G. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

H. Furnish as-built/as-installed schedule with close-out documents, including keying schedule and transcript, wiring/riser diagrams, manufacturers' installation and adjustment and maintenance information.

I. Fire Door Assembly Testing: Submit a written record of each fire door assembly to the Owner to be made available to the Authority Having Jurisdiction (AHJ) for future building inspections.

1.05 QUALITY ASSURANCE

A. Obtain each type of hardware (latch and lock sets, hinges, closers, exit devices, etc.) from a single manufacturer.

B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.

1. Responsible for detailing, scheduling and ordering of finish hardware.
2. Meet with Owner to finalize keying requirements and to obtain final instructions in writing.
3. Stock parts for products supplied and are capable of repairing and replacing hardware items found defective within warranty periods.

C. Hardware Installer: Company specializing in the installation of commercial door hardware with five years documented experience.

D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not.

1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".

E. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

1.06 DELIVERY, STORAGE AND HANDLING

A. Coordinate delivery of packaged hardware items to the appropriate locations (shop or field) for installation.

B. Hardware items shall be individually packaged in manufacturers' original containers, complete with proper fasteners. Clearly mark packages on outside to indicate contents and locations in hardware schedule and in work.

C. Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc.

D. Contractor to inventory door hardware jointly with representatives of hardware supplier and hardware installer until each all are satisfied that count is correct.

1.07 WARRANTY

A. Provide warranties of respective manufacturers' regular terms of sale from day of final acceptance as follows:

1. Locksets: "ND" Ten (10) years.
2. Electronic: One (1) year.
3. Closers: Thirty (30) years.
4. Exit devices: Three (3) years.
5. All other hardware: Two (2) years.

1.08 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.09 PRE-INSTALLATION CONFERENCE

A. Convene a pre-installation conference at least one week prior to beginning work of this section.

B. Attendance: Architect, Construction Manager, Contractor, Security Contractor, Hardware Supplier, Installer, Key District Personnel, and Project Inspector.

C. Agenda: Review hardware schedule, products, installation procedures and coordination required with related work. Review District's keying standards.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

Item	Manufacturer	Acceptable Substitutes

Hinges	Ives	Hager, Stanley, McKinney
Locks, Latches & Cylinders	Schlage	Or Approved Equal
Exit Devices	Von Duprin	Or Approved Equal
Closers	LCN	Or Approved Equal
Push, Pulls & Protection Plates	Ives	Trimco, BBW, DCI
Flush Bolts	Ives	Trimco, BBW, DCI
Dust Proof Strikes	Ives	Trimco, BBW, DCI
Coordinators	Ives	Trimco, BBW, DCI
Stops	Ives	Trimco, BBW, DCI
Overhead Stops	Glynn-Johnson	Or Approved Equal
Thresholds	Zero	Pemko, National Guard
Seals & Bottoms	Zero	Pemko, National Guard

2.02 MATERIALS

A. Hinges: Exterior out-swinging door butts shall be non-ferrous material and shall have stainless steel hinge pins. All doors to have non-rising pins.

1. Hinges shall be sized in accordance with the following:
   a. Height:
      1) Doors up to 42" wide: 4-1/2" inches.
      2) Doors 43" to 48" wide: 5 inches.
   b. Width: Sufficient to clear frame and trim when door swings 180 degrees.
   c. Number of Hinges: Furnish 3 hinges per leaf to 7'-5" in height. Add one for each additional 2 feet in height.

2. Furnish non-removable pins (NRP) at all exterior out-swing doors and interior key lock doors with reverse bevels.

B. Floor Closers: Shall be equipped with compression springs, cam and roller operating mechanism and a one piece spindle-cam for maximum operating performance and longevity.

C. Pivots: High strength forgings and castings with precision bearings for smooth operation. Positive locking vertical adjustment mechanism to allow installer to precisely position the door and balance the load.

D. Continuous Hinges: As manufactured by Ives, an Allegion Company. UL rated as required.

E. Heavy Duty Cylindrical Locks and Latches: Schlage "ND" Series as scheduled with "Rhodes" design, fastened with through-bolts and threaded chassis hubs.

1. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:
    a. Abusive Locked Lever Torque Test – minimum 3,100 inch-pounds without gaining access
    b. Offset lever pull – minimum 1,600 foot pounds without gaining access
    c. Vertical lever impact – minimum 100 impacts without gaining access

2. Cycle life - tested to minimum 16 million cycles per ANSI/BHMA A156.2 Cycle Test with no visible lever sag or use of performance aids such as set screws or spacers
3. UL 10C for 4'-0" x 10'-0" 3-hour fire door.
4. Cylinders: Refer to "KEYING" article, herein.
5. Provide solid steel anti-rotation through bolts and posts to control excessive rotation of lever.
6. Provide lockset that allows lock function to be changed to over twenty other common functions by swapping easily accessible parts.
7. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2 inch latch throw capable of UL listing of 3 hours on a 4' x 10' opening. Provide proper latch throw for UL listing at pairs.
8. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
9. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
10. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
11. Provide wired electrified options as scheduled in the hardware sets.
    a. 12 through 24 volt DC operating capability, auto-detecting
    b. Selectable EL (fail safe)/EU (fail secure) operating mode via switch on chassis
    c. 0.230A (230mA) maximum current draw
    d. 0.010A (10mA) holding current
    e. Modular / "plug in" request to exit switch

12. Lever Trim: Solid cast levers without plastic inserts, and wrought roses on both sides.

F. Networked Wireless Electronic Lock: Schlage "AD-400" Series as scheduled with "Rhodes" design, fastened with through-bolts and threaded chassis hubs.

1. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:
    a. Abusive Locked Lever Torque Test – minimum 3,100 inch-pounds without gaining access
    b. Offset lever pull – minimum 1,600 foot pounds without gaining access
    c. Vertical lever impact – minimum 100 impacts without gaining access

2. Cycle life - tested to minimum 16 million cycles per ANSI/BHMA A156.2 Cycle Test with no visible lever sag or use of performance aids such as set screws or spacers
3. UL 10C for 4'-0" x 10'-0" 3-hour fire door.
4. Cylinders: Refer to "KEYING" article, herein.
5. Programming done by owner or division 28.

G. Deadlocks: Rotating cylinder trim rings of attack-resistant design. Mounting plates and actuator shields of plated cold-rolled steel. Mounting screws of ¼" diameter steel and protected by drill-resistant ball bearings. Steel alloy deadbolt with hardened steel roller. Strike alloy deadbolt with reinforcer and two 3" long screws. ANSI A156.5, 2001 Grade 1 certified.

H. Exit devices: Von Duprin as scheduled.

1. Provide certificate by independent testing laboratory that device has completed over 1,000,000 cycles and can still meet ANSI/BHMA A156.3 - 2001 standards.
2. All internal parts shall be of cold-rolled steel with zinc dichromate coating.
3. Mechanism case shall have an average thickness of .140".
4. Compression spring engineering.
5. Non-handed basic device design with center case interchangeable with all functions.
6. All devices shall have quiet return fluid dampeners.
7. All latchbolts shall be deadlocking with ¾" throw and have a self-lubricating coating to reduce friction and wear.
8. Device shall bear UL label for fire and or panic as may be required.
9. All surface strikes shall be roller type and utilize a plate underneath to prevent movement.
10. Lever Trim: "Breakaway" design, forged brass or bronze escutcheon with a minimum of .130" thickness, match lockset lever design.
11. Removable Mullions: Removable with single turn of building key. Securely reinstalled without need for key.
12. Furnish glass bead kits for vision lites where required.
13. All Exit Devices to be sex-bolted to the doors.
14. Panic Hardware shall comply with CBC Section 11B.404.2.7 and shall be mounted between 34" and 44" above the finished floor surface.
    a. Provide exit devices UL certified to meet maximum 5 pound requirements according to the California Building Code section 11B-309.4, and UL listed for Panic Exterior Fire Exit Hardware.

I. Closers: LCN as scheduled. Place closers inside building, stairs, room, etc.

1. Door closer cylinders shall be of high strength cast iron construction with double heat treated pinion shaft to provide low wear operating capabilities of internal parts throughout the life of the installation. All door closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified testing laboratory. A written certification showing successful completion of a minimum of 10,000,000 cycles must be provided.
2. All door closers shall be fully hydraulic and have full rack and pinion action with a shaft diameter of a minimum of 11/16 inch and piston diameter of 1 inch to ensure longevity and durability under all closer applications.
3. All parallel arm closers shall incorporate one piece solid forged steel arms with bronze bushings. 1-9/16" steel stud shoulder bolts, shall be incorporated in regular arms, hold-open arms, arms with hold open and stop built in. All other closers to have forged steel main arms for strength, durability, and aesthetics for versatility of trim accommodation, high strength and long life.
4. All parallel arm closers so detailed shall provide advanced backcheck for doors subject to severe abuse or extreme wind conditions. This advanced backcheck shall be located to begin cushioning the opening swing of the door at approximately 45 degrees. The intensity of the backcheck shall be fully adjustable by tamper resistant non-critical screw valve.
5. Closers shall be installed to permit doors to swing 180 degrees.
6. All closers shall utilize a stable fluid withstanding temperature range of 120 degrees F. to -30 degrees F. without requiring seasonal adjustment of closer speed to properly close the door.
7. Provide the manufactures drop plates, brackets and spacers as required at narrow head rails and special frame conditions. NO wood plates or spacers will be allowed.
8. Maximum effort to operate closers shall not exceed 5 lbs., such pull or push effort being applied at right angles to hinged doors. Compensating devices or automatic door operators may be utilized to meet the above standards. When fire doors are required, the maximum effort to operate the closer may be increased but shall not exceed 15 lbs. when specifically approved by fire marshal. All closers shall be adjusted to operate with the minimum amount of opening force and still close and latch the door. These forces do

not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. Per 11B-404.2.8.1, door shall take at least 5 seconds to move from an open position of 90 degrees to a position of 12 degrees from the latch jamb.

J. Flush Bolts & Dust Proof Strikes: Automatic Flush Bolts shall be of the low operating force design. Utilize the top bolt only model for interior doors where applicable and as permitted by testing procedures.

1. Manual flush bolts only permitted on storage or mechanical openings as scheduled.
2. Provide dust proof strikes at openings using bottom bolts.

K. Door Stops:

1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Do not install floor stops more than four (4) inches from the face of the wall or partition (CBC Section 11B-307).
3. Overhead stops shall be made of stainless steel and non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

L. Protection Plates: Fabricate either kick, armor, or mop plates with four beveled edges. Provide kick plates 10" high and 2" LDW. Sizes of armor and mop plates shall be listed in the Hardware Schedule. Furnish with machine or wood screws of bronze or stainless to match other hardware.

M. Thresholds: As Scheduled and per details.

1. Thresholds shall not exceed 1/2" in height, with a beveled surface of 1:2 maximum slope.
2. Set thresholds in a full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 “Thermal and Moisture Protection”.
3. Use ¼” fasteners, red-head flat-head sleeve anchors (SS/FHSL).
4. Thresholds shall comply with CBC Section 11B-404.2.5.

N. Seals: Provide silicone gasket at all rated and exterior doors.

1. Fire-rated Doors, Resilient Seals: UL10C Classified complies with NFPA 80 & NFPA 252. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements.
2. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C Classified complies with NFPA 80 & NFPA 252. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required.
3. Smoke & Draft Control Doors, Provide UL10C Classified complies with NFPA 80 & NFPA 252 for use on “S” labeled Positive Pressure door assemblies.

O. Door Shoes & Door Top Caps: Provide door shoes at all exterior wood doors and top caps at all exterior out-swing doors.

P. Silencers: Furnish silencers for interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where sound or light seals occurs, or for fire-resistive-rated door assemblies.

2.03 KEYING

A. Furnish a Proprietary Schlage masterkey system as directed by the owner or architect. Key system to be designated and combinated by the Schlage Master Key Department even if pinned by the Authorized Key Center, Authorized Security Center or a local authorized commercial dealer.

B. A detailed keying schedule is to be prepared by the owner and/or architect in consultation with a representative of Allegion or an Authorized Key Center or Authorized Security Center. Each keyed cylinder on every keyed lock is to be listed separately showing the door #, key group (in BHMA terminology), cylinder type, finish and location on the door.

C. Furnish all cylinders in the Schlage conventional style except the exit device and removable mullion cylinders which will be supplied in Schlage Full Size Interchangeable Core (FSIC). Pack change keys independently (PKI).

D. Furnish construction keying for doors requiring locking during construction.

1. For FSIC systems provide 23-030-ICX Full Size Construction Cores
2. For FSIC systems provide ten 48-101-ICX Construction Keys
3. For FSIC systems provide two 48-056-ICX Control Keys (const.)
4. For FSIC systems provide two control keys for installing the permanent cores (49-056 for “Classic” keyways, 48-052-XP for “Classic Primus”) (49-003 for “Everest Conventional”, 48-005–XP for “Everest Primus”)

E. Furnish all keys with visual key control.

1. Stamp key “Do Not Duplicate”.
2. Stamp (BHMA) key symbol on key.

F. Furnish all cylinders with visual key control.

1. Stamp (BHMA) key symbol on side of cylinder (CKC).

G. Furnish mechanical keys as follows:

1. Furnish 2 cut change keys for each different change key code.
2. Furnish 1 uncut key blank for each change key code.
3. Furnish 6 cut masterkeys for each different masterkey set.
4. Furnish 3 uncut key blanks for each masterkey set.
5. Furnish 2 cut control keys cut to the top masterkey for permanent I/C cylinders.
6. Furnish 1 cut control key cut to each SKD combination.

H. Furnish Key System Management Software (SM01-287 Windows on CD)

I. Furnish Keying Transcript (50-123 in SM form) to owner for loading into key system software. End-user to provide letter of authorization to hardware dealer to allow Schlage to e-mail transcript (bitting list) to the end-user.

J. Furnish Schlage Padlocks and the cylinders to tie them into the masterkey system for gates, storage boxes, utility valve security, roof hatches and roll-up doors keyed as directed in the keying schedule.

1. Furnish KS43D2200 padlock for use with non-I/C Schlage cylinders. Furnish 47-413 (conventional) or 47-743-XP (PrimusXP) with above.
2. Furnish KS43G3200 padlock for use with FSIC Schlage cylinders. Furnish 23-030 (Classic / Everest) or 20-740 (PrimusXP) with above.

3. Furnish KS41D1200 padlock for use with SFIC Schlage cylinders. Furnish 80-037 (Everest-B) with above.

K. Furnish one Schlage cabinet lock for each cabinet door or drawer so designated on the drawings or keying schedule to match the masterkey system.

1. Furnish CL100PB for use with non-I/C Schlage cylinders.
2. Furnish CL77R for use with FSIC Schlage cylinders.
3. Furnish CL721G for use with SFIC Schlage cylinders.

2.04 FINISHES

A. Generally to be satin chrome US26D (626 on bronze and 652 on steel) unless otherwise noted.

B. Furnish push plates, pull plates and kick or armor plates in satin stainless steel US32D (630) unless otherwise noted.

C. Door closers shall be powder-coated to match other hardware, unless otherwise noted.

D. Aluminum items to be finished anodized aluminum except thresholds which can be furnished as standard mill finish.

2.05 FASTENERS

A. Screws for strikes, face plates and similar items shall be flat head, countersunk type, provide machine screws for metal and standard wood screws for wood.

B. Screws for butt hinges shall be flathead, countersunk, full-thread type.

C. Fastening of closer bases or closer shoes to doors shall be by means of sex bolts and spray painted to match closer finish.

D. Provide expansion anchors for attaching hardware items to concrete or masonry.

E. All exposed fasteners shall have a phillips head.

F. Finish of exposed screws to match surface finish of hardware or other adjacent work.

G. All Exit Devices and Lock Protectors shall be fastened to the door by the means of sex bolts or through bolts.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that doors and frames are square and plumb and ready to receive work and dimensions are as instructed by the manufacturer.

B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and requirements of DHI.

B. Use the templates provided by hardware item manufacturer.

C. Mounting heights for hardware shall be as recommended by the Door and Hardware Institute. Operating hardware will to be located between 34" and 44" AFF.

D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

F. Set thresholds for exterior doors in full bed of butyl-rubber sealant.

G. If hand of door is changed during construction, make necessary changes in hardware at no additional cost.

H. Hardware Installer shall coordinate with security contractor to route cable to connect electrified locks, panic hardware and fire exit hardware to power transfers or electric hinges at the time these items are installed so as to avoid disassembly and reinstallation of hardware.

I. Hardware Installer shall also be present with the security contractor when the power is turned on for the testing of the electronic hardware applications. Installer shall make adjustments to solenoids, latches, vertical rods and closers to insure proper and secure operation.

J. All wiring for electro-mechanical hardware mounted on the door shall be connected through the power transfer and terminated in the interface junction box specified for in the Electrical Section.

K. Conductors shall be minimum 18 gage stranded, multicolored. A minimum 12 in. loop of conductors shall be coiled in the interface junction box. Each conductor shall be permanently marked with its function.

L. If a power supply is specified in the hardware sets, all conductors shall be terminated in the power supply. Make all connections required for proper operation between the power supply and the electro-mechanical hardware. Provide the proper size conductors as specified in the manufacturer’s technical documentation.

3.03 ADJUST AND CLEAN

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

B. Clean adjacent surface soiled by hardware installation.

C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy, return to that work area and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

D. Instruct Owner's Personnel in proper adjustment and maintenance of hardware finishes, during the final adjustment of hardware.

E. Continued Maintenance Service: Approximately six months after the completion of the project, the Contractor accompanied by the Architectural Hardware Consultant, shall return to the project and re-adjust every item of hardware to restore proper functions of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.04 HARDWARE LOCATIONS

A. Conform to CCR, Title 24, Part 2; and ADAAG; and the drawings for access-compliant positioning requirements for the disabled.

3.05 FIELD QUALITY CONTROL

A. Contractor is responsible for providing the services of an Architectural Hardware Consultant (AHC) or a proprietary product technician to inspect installation and certify that hardware and its installation have been furnished and installed in accordance with manufacturers' instructions and as specified herein.

3.06 SCHEDULE

A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.

B. While the hardware schedule is intended to cover all doors, and other movable parts of the building, and establish type and standard of quality, the contractor is responsible for examining the Plans and Specifications and furnishing proper hardware for all openings whether listed or not. If there are any omissions in hardware groups in regard to regular doors they shall be called to the attention of the Architect prior to bid opening for instruction; otherwise, list will be considered Complete. No extras will be allowed for omissions.

C. The Door Schedule on the Drawings indicates which hardware set is used with each door.

Manufacturers Abbreviations (Mfr.)

ADA	=	Adams Rite Mfg.	Aluminum Door Hardware
GLY	=	Glynn-Johnson Corporation	Overhead Door Stops
IVE	=	Ives	Hinges, Pivots, Bolts, Coordinators, Dust Proof Strikes, Push Pull & Kick Plates, Door Stops & Silencers
JOH	=	L.E. Johnson	Sliding Door Hardware
LCN	=	LCN	Door Closers
SCE	=	Schlage Electronics	Electronic Door Components
SCH	=	Schlage Lock Company	Locks, Latches & Cylinders
TRI	=	Trimco	Signs
VON	=	Von Duprin	Exit Devices
ZER	=	Zero International	Thresholds, Gasketing & Weather-stripping

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HARDWARE GROUP NO. 01

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	PRIVACY W/DB & IND	LV9496T 06A L583-363	626	SCH
1	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	THRESHOLD PER DETAIL		ZER

HARDWARE GROUP NO. 02

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	VANDL STOREROOM LOCK	ND96TD RHO	626	SCH
1	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	THRESHOLD PER DETAIL		ZER

END OF SECTION

SECTION 31 13 00

SELECTIVE TREE REMOVAL AND TRIMMING

PART 1 - GENERAL

1.01 SUMMARY

A. Protecting existing trees and vegetation to remain.

B. Trimming tree limbs and roots.

C. Removing trees as designated.

1.02 DEFINITIONS

A. ANSI: American National Standards Institute.

B. CAL-OSHA: California Occupational Safety and Health Administration.

1.03 QUALITY ASSURANCE

A. Do not remove or prune trees without first securing a permit from the appropriate agency.

B. Prune to the standards of the International Society of Arborists and to ANSI A300.

PART 2 - PRODUCTS

A. NOT USED

PART 3 - EXECUTION

3.01 PREPARATION

A. Locate and clearly flag trees to remain or to be relocated.

3.02 TREE PROTECTION

A. Erect and maintain temporary fence around drip line of individual trees or around perimeter drip line of groups of trees to remain. Remove fence when construction is complete.

B. Do not store construction materials, debris, or excavated material within drip line of remaining trees.

C. Do not permit vehicles or equipment within drip line of remaining trees.

D. Do not excavate within drip line of remaining trees, unless otherwise indicated.

E. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation edge as possible.

F. Cover exposed roots with burlap and water regularly.

G. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

H. Coat cut faces of roots more than 1 ½ inches in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.

I. Cover exposed roots with wet burlap to prevent roots from drying out. Backfill with soil as soon as possible.

3.03 TREE PRUNING

A. Prune trees to balance the crown, and eliminate hazards. Perform main work to reduce sail effect through thinning, reducing end weights, shortening long heavy limbs, removing deadwood, weak limbs and sucker growth. Prune limbs back to an appropriate lateral branch.

B. Make final cuts at the outer edge of the branch collar in accordance with the arborist's recommendations.

C. Perform pruning work in a safe and proper manner, adhering to CAL-OSHA and ANSI Standards.

3.04 ROOT PRUNING

A. Do not cut tree roots greater than 3-inch in diameter and less than 12-inches below ground level without approval of the Owner.

B. Cut tree roots cleanly, as far from the trunk as possible, and not underneath any area where walkways are to be constructed. Root pruning shall be to a depth of 18-inches.

C. Tree root prune using a Vermeer root-cutting machine. Obtain the Owner's approval before using alternate equipment or techniques.

D. Complete tree root pruning prior to any excavation adjacent to the tree.

E. Do not expose tree roots to drying out. Cover root ends with soil or burlap and keep moist until the final backfill is completed.

3.05 TREE REMOVAL

A. Remove trees designated for removal prior to the construction of new improvements.

B. Perform tree removal work in a safe and proper manner, adhering to CAL-OSHA and ANSI Standards.

C. Remove or grind stumps to a minimum of 18-inches below finish subgrade. Remove surface roots to this depth within 24-inches of the tree trunk.

3.06 RESTORATION

A. Repair or replace trees indicated to remain that are damaged by construction operations, as directed by the Owner.

B. Employ a qualified arborist, licensed in jurisdiction where the Project is located, to submit details of proposed repairs and to repair damage to trees.

C. Replace trees that cannot be repaired and restored to full-growth status, as determined by the Owner.

END OF SECTION

SECTION 31 23 00

EXCAVATION AND FILL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Excavation and/or embankment from existing ground to subgrade, including soil sterilant, for roadways, driveways, parking areas, walks, paths, or trails and any other site improvements called for on the Plans.

1.02 SECTION EXCLUDES

A. Earthwork related to underground utility installation, see Section 31 23 33 – Trenching and Backfilling.

1.03 RELATED DOCUMENTS

A. ASTM:

1. D 1557, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).

2. D 1586, Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils.

3. D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

4. D 3740, Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

5. D 4318. Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

6. E 329, Standard Specification for Agencies Engaged in Construction Inspection, Testing or special Inspection.

B. California Code of Regulation Title 24, Part 2, California Building Code:

1. Chapter 11B – Accessibility to Public Buildings.

2. Chapter 33 – Safeguards During Construction.

C. Caltrans Standard Specifications:

1. Section 10-6, Watering.

2. Section 19, Earthwork.

D. CAL/OSHA, Title 8.

1.04 DEFINITIONS

A. Borrow: Approved soil material imported from off-site for use as Structural Fill or Backfill.

B. Excavation: Removal of material encountered above subgrade elevations.

1. Authorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions as shown on plans.

2. Unauthorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions. Unauthorized excavation shall be without additional compensation.

C. Structural Backfill: Soil materials used to fill excavations resulting from removal of existing below grade facilities, including trees. Any fill soil or aggregate base or crush rock under the building shall not contain recycled asphalt, asphalt grindings, or soil with petroleum products. See Section 31 23 33 – Trenching and Backfilling.

D. Structural Fill: Soil materials used to raise existing grades.

E. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material ¾-cubic yards or more in volume that, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2-inches.

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

G. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, base or topsoil materials.

H. Unsuitable Material: Any soil material that is not suitable for a specific use on the Project.

I. Utilities: onsite underground pipes, conduits, ducts and cables.

1.05 SUBMITTALS

A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.

B. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.

1.06 QUALITY ASSURANCE

A. Conform all work to the appropriate portion(s) of the California Code of Regulations, Title 24 and Caltrans Standard Specifications, Sections 10-6 and 19.

B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.

C. Upon completion of the construction work, certify that all compacted fills and foundations are in place at the correct locations, and have been constructed in accordance with sound construction practice. In addition, certify that the materials used are of the types, quality and quantity required by these Technical Specifications. The Contractor shall be responsible for the stability of all fills and backfills constructed by his forces.

D. Finish soil grade tolerance at completion of grading:

1. Building and paved areas: +0.05

2. Other areas: ±0.10 feet.

E. The project geotechnical engineer shall be notified of the construction schedule at least one week prior to the beginning of major site construction, and notified at least 48 hours (working days) before being required to perform field observation and testing.

1.07 PROJECT CONDITIONS

A. Promptly notify the Owner of surface or subsurface conditions differing from those disclosed in the construction documents. First notify the Owner verbally to permit verification and extent of condition and then in writing. No claim for conditions differing from those anticipated in the Contract Documents will be allowed unless the Contractor has notified the Owner in writing of differing conditions prior to the Contractor starting work on affected items.

B. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.

C. Prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

D. Temporarily stockpile fill material in an orderly and safe manner and in a location approved by the Owner.

E. Provide dust and noise control in conformance with Division 1 General Requirements for Cleaning and Waste Management.

F. Environmental Requirements: When unfavorable weather conditions necessitate interrupting earthwork operation, areas shall be prepared by compaction of surface and grading to avoid collection of water. Provide adequate temporary drainage to prevent erosion. After interruption, compaction specified in last layer shall be re-established before resuming work.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

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

B. On-Site Structural Fill and Structural Backfill: Soil or soil-rock mixture from on site excavations, free from organic matter or other deleterious substances. On-site structural fill and backfill shall not contain rocks or rock fragments over 4 inches in greatest dimension and not more than 15 percent shall be over 2-1/2 inches in greatest dimension and with an organic content less than 3.0 percent by weight.

C. Imported Structural Fill and Structural Backfill: Conform to the requirements of on-site structural fill. Material shall also be a non-expansive and predominantly granular soil or soil-rock mixture with plasticity index of 15 or less in accordance with ASTM D 4318 and an R-Value of 25 or greater.

PART 3 - EXECUTION

3.01 GENERAL

A. Conform to Section 19, Earthwork, Caltrans Standard Specifications as modified by the Contract Documents.

B. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.

C. The use of explosives will not be permitted.

3.02 CONTROL OF WATER AND DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding the site and surrounding area. Provide dewatering equipment necessary to drain and keep excavations and site free from water.

B. Dewater during backfilling operation so that groundwater is maintained a least one foot below level of compaction effort.

C. Obtain the Owner’s approval for proposed control of water and dewatering methods.

D. Protect subgrades from softening, undermining, washout and damage by rain or water accumulation.

E. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations.

F. Maintain dewatering system in place until dewatering is no longer required.

3.03 WET WEATHER CONDITIONS

A. Do not prepare subgrade, place or compact soil materials if above optimum moisture content.

3.04 BRACING AND SHORING

A. Conform to California and Federal OSHA requirements.

B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.

C. Be solely responsible for all bracing and shoring and, if requested by the Owner, submit details and calculations to the Owner. The Owner may forward the submittal to the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Owner.

D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

3.05 EXCAVATION

A. Excavate earth and rock to lines and grades shown on drawings and to the neat dimensions indicated on the Plans, required herein or as required to satisfactorily compact backfill.

B. Remove and dispose of large rocks, pieces of concrete and other obstructions encountered during excavation.

C. Where forming is required, excavate only as much material as necessary to permit placing and removing forms.

D. Provide supports, shoring and sheet piles required to support the sides of excavations or for protection of adjacent existing improvements.

3.06 REMOVAL OF EXISTING FILLS AND UNSUITABLE MATERIAL

A. Over-excavate areas of existing fills and other unsuitable material encountered during mass grading.

B. Compensation for increased removal widths and depths that are not required will not be considered, except when such increase is necessary for protection of life and property as determined by and approved by the Owner.

3.07 GRADING

A. Uniformly grade the Project to the elevations shown on plans.

B. Finish ditches, gutters and swales to the sections, lines and grades indicated and to permit proper surface drainage.

C. Round tops and bottoms of slopes as indicated or to blend with existing contours.

3.08 SUBGRADE PREPARATION

A. Install underground utilities and service connections prior to final preparation of subgrade and placement of base materials for final surface facilities. Extend services so that final surface facilities are not disturbed when service connections are made.

B. Prepare subgrades under paved areas, curbs, gutters, walks, structures, other surface facilities and areas to receive structural fill.

C. Prepare subgrades for paved areas, curbs and gutters by plowing or scarifying surface at least 6 inches below final subgrade elevations and 5-feet beyond edge of pavement. Uniformly moisture condition to obtain optimum moisture contents. Break clods and condition surface by harrowing or dry rolling. Remove boulders, hard ribs and solid rock. Prepare earth uniform for full depth and width of subgrade.

D. Protect utilities from damage during compaction of subgrades and until placement of final pavements or other surface facilities.

3.09 PLACEMENT OF STRUCTURAL FILL

A. Place structural fill on prepared subgrade.

B. Spread structural fill material in uniform lifts not more than 8-inches in un-compacted thickness and compact.

C. Place structural fill material to suitable elevations above grade to provide for anticipated settlement and shrinkage.

D. Overbuild fill slopes to obtain required compaction. Remove excess material to lines and grades indicated.

E. Do not drop fill on structures. Do not backfill around, against, upon concrete, or masonry structures until structure has attained sufficient strength to withstand loads imposed and the horizontal structural system had been installed.

F. Backfill in uniform lifts not exceeding 8 inches in uncompacted thickness. Each lift should be brought to a uniform moisture content of at lease 1 percent above optimum prior to

compacting by either spraying the soil with water of it is too dry or aerating the material if it is too wet.

3.10 KEYWAYS AND BENCHES

A. Provide keyways as indicated for fill slopes steeper than 6 horizontal to 1 vertical. Extend keyway -feet minimum into competent, undisturbed soil or 3-feet minimum into competent, undisturbed rock.

B. Place subsurface drains in bottom of keyway in conformance with Section 33 46 00 – Subdrainage.

C. Bench subgrade as indicated above toe of fill.

D. Place subsurface drains at benches every 20 vertical feet.

3.11 LOT FINISH GRADING

A. Blade finish lots to lines and grades indicated.

3.12 COMPACTION AND TESTING

A. Do not compact by ponding, flooding or jetting.

B. Compact soils at optimum water content. Aerate material if it is too wet. Add water to material if it is too dry. Thoroughly mix lifts before compaction to ensure uniform moisture distribution.

C. Perform compaction using rollers, pneumatic or vibratory compactors.

D. Compaction requirements:

1. Compact structural fills less than 5-feet thick to 90 percent compaction.

2. Compact structural fill 5-feet thick or greater to 95 percent compaction.

3. Compact the upper 6 inches of subgrade soils beneath pavements, curbs and gutters to 95 percent compaction. Extend compaction 5-feet beyond pavement.

4. Compact the upper 6-inches of subgrade soils to the following percentage of compaction: 95 percent under walks and pavements; 93 percent for foundations; and 90 percent for areas to receive structural fill.”

3.13 DISPOSAL

A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost to the Owner.

END OF SECTION

SECTION 31 23 33

TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Excavation, bedding, and backfill for underground storm drain, sanitary sewer, and water piping and associated structures.

1.02 SECTION EXCLUDES

A. Drainage fill material and placement around subdrains.

B. Trenching and backfill for other utilities such as underground HVAC piping, electrical conduit, telephone conduit, gas piping, cable TV conduit, etc.

1.03 RELATED DOCUMENTS

A. ASTM:

1. C 33, Standard Specification for Concrete Aggregates.

2. C 150, Standard Specification for Portland Cement.

3. C 260, Standard Specification for Air-Entraining Admixtures for Concrete.

4. C 618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

5. D 1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).

6. D 2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

7. D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

8. D 3740, Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

9. E 329, Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.

10. E 548, Guide for General Criteria Used for Evaluating Laboratory Competence.

B. California Code of Regulation Title 24, Part 2, California Building Code:

1. Chapter 11B – Accessibility to Public Buildings.
2. Chapter 33 – Safeguards During Construction.

C. Caltrans Standard Specifications:

1. Section 19, Earthwork.
2. Section 26, Aggregate Bases.
3. Section 68, Subsurface Drains.
4. Section 96, Geosynthetics.

D. CAL/OSHA, Title 8.

1.04 DEFINITIONS

A. AC: Asphalt Concrete.

B. ASTM: American Society for Testing and Materials.

C. Bedding: Material from bottom of trench to bottom of pipe.

D. CDF: Controlled Density Fill.

E. DIP: Ductile Iron Pipe.

F. Initial Backfill: Material from bottom of pipe to 12-inches above top of pipe.

G. PCC: Portland Cement Concrete.

H. RCP: Reinforced Concrete Pipe.

I. Springline of Pipe: Imaginary line on surface of pipe at a vertical distance of ½ the outside diameter measured from the top or bottom of the pipe.

J. Subsequent Backfill: Material from 12-inches above top of pipe to subgrade of surface material or subgrade of surface facility or to finish grade.

K. Trench Excavation: Removal of material encountered above subgrade elevations and within horizontal trench dimensions.

1. Authorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions as shown on plans.
2. Unauthorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions. Unauthorized excavation shall be without additional compensation.

L. Utility Structures:

1. Storm drainage manholes, catch basins, drop inlets, curb inlets, vaults, etc.

2. Sanitary sewer manholes, vaults, etc.

3. Water vaults, etc.

1.05 SUBMITTALS

A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.

B. Product Data:

1. Grading and quality characteristics showing compliance with requirements for the Work.

2. Certify that material meets requirements of the Project.

C. Samples:

1. If required, provide 40-pound samples of all imported trench bedding and backfill material sealed in airtight containers, tagged with source locations and suppliers of each proposed material.

2. Provide materials from same source throughout work. Change of source requires approval of the Owner.

1.06 QUALITY ASSURANCE

A. Conform all work to the appropriate portion(s) of the Caltrans Standard Specifications, Section 19.

B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.

C. Conform work to the requirements of the California Building Code.

1. Section 1809A.14 – Pipe and Trenches.

1.07 PROJECT CONDITIONS

A. Promptly notify the Owner of surface or subsurface conditions differing from those disclosed in the construction documents. First notify the Owner verbally to permit verification and extent of condition and then in writing. No claim for conditions differing from those anticipated in the Contract Documents will be allowed unless Contractor has notified the Owner in writing of differing conditions prior to contractor starting work on affected items.

B. Protect open, trenches, and utility structure excavations with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.

C. Stockpile on-site and imported backfill material temporarily in an orderly and safe manner.

D. Provide dust and noise control in conformance with Division 1 General Requirements for Cleaning and Waste Management.

PART 2 - PRODUCTS

2.01 PIPE BEDDING AND INITIAL BACKFILL

A. ASTM D 2321, Class IA, IB or II.

1. Clean and free of clay, silt or organic matter.

B. Permeable Material: Conform to Section 68-2.02F(3) of Caltrans Standard Specifications, Class 2 permeable.

C. Class 2 Aggregate Base: Conform to Section 26 of Caltrans Standard Specifications, ¾-inch maximum. Material shall also be non-expansive and predominantly granular soil or soil-rock mixture "(percent of passing #200: 50 maximum, 5 minimum)" with plasticity index of 15 or less.

D. Sand: Conform to Section 19-3.02F(2) of Caltrans Standard Specifications.

2.02 WARNING TAPE

A. See Section 33 10 00 – Water Utilities.

2.03 SUBSEQUENT BACKFILL

A. Conform to on-site or imported structural backfill in Section 31 23 00 – Excavation and Fill.

2.04 CONTROLLED DENSITY FILL (CDF) (IN TRENCHES)

A. Provide non-structural CDF, from bottom of trench to finish subgrade of subbase or base material, that can be excavated by hand and produce unconfined compressive 28-day strengths from 50-psi to a maximum of 150-psi. Provide aggregate no larger than 3/8-inch top size. The 3/8-inch aggregate shall not comprise more than 30% of the total aggregate content.

B. Cement: Conform to the standards as set forth in ASTM C-150, Type II Cement.

C. Fly Ash: Conform to the standards as set forth in ASTM C-618, for Class F pozzolan. Do not inhibit the entrainment of air with the fly ash.

D. Air Entraining Agent: Conform to the standards as set forth in ASTM C-260.

E. Aggregates need not meet the standards as set forth in ASTM C-33. Any aggregate, producing performances characteristics described herein will be accepted for consideration. The amount of material passing a #200 sieve shall not exceed 12% and no plastic fines shall be present.

F. Provide CDF that is a mixture of cement, Class F pozzolan, aggregate, air entraining agent and water. CDF shall be batched by a ready mixed concrete plant and delivered to the job site by means of transit mixing trucks.

G. The Contractor shall determine the actual mix proportions of the controlled density fill to meet job site conditions, minimum and maximum strengths, and unit weight. Entrained air content shall be a minimum of 4.0%. The actual entrained air content shall be established for each job with the materials and aggregates to be used to meet the placing and unit weight requirements. Entrained air content may be as high as 20% for fluidity requirements.

2.05 CONCRETE STRUCTURE BEDDING AND BACKFILL

A. Precast Structures: Same materials to the same heights as specified for pipe bedding and backfill.

B. Poured-in-Place Structures:

1. Bedding: In general, bedding is not required, pour bases against undisturbed native earth in cut areas and against engineered fill compacted to 90% relative compaction in embankment areas.

2. Side Backfill: On-site or imported structural fill meeting the requirements given in Section 31 23 00 – Excavation and Fill.

2.06 FILTER FABRIC

A. Filter Fabric:

1. Filter Fabric: Section 96-1.02B of Caltrans Standard Specifications.

2. Mirafi 140N (Mirafi Inc., Charlotte, NC) (Tel. 800-438-1855) or equal.

PART 3 - EXECUTION

3.01 TRENCHING AND EXCAVATION

A. Existing PCC or AC Areas: Cut PCC or AC to full depth at a minimum distance of 12-inches beyond the edge of the trench.

B. Excavate by hand or machine. For gravity systems begin excavation at the outlet end and proceed upstream. Excavate sides of the trench parallel and equal distant from the centerline of the pipe. Hand trim excavation. Remove loose matter.

C. Excavation Depth for Bedding: Minimum of 4-inches below bottom, except that bedding is not required for nominal pipe diameters of 2-inches or less.

D. Excavation Width at Springline of Pipe:

1. Up to a nominal pipe diameter of 24-inches: Minimum of twice the outside pipe diameter.

2. Nominal pipe diameter of 30-inches through 36-inches: Minimum of the outside pipe diameter plus 2-feet.

3. Nominal pipe diameter of 42-inches through 60-inches: Minimum of the outside pipe diameter plus 3-feet.

E. Over-Excavations: Backfill trenches that have been excavated below bedding design subgrade, with approved bedding material.

F. Comply with the Owner's limitations on the amount of trench that is opened or partially opened at any one time. Do not leave trenches open overnight without the approval of the Owner.

G. Where forming is required, excavate only as much material as necessary to permit placing and removal of forms.

H. Grade bottom of trench to provide uniform thickness of bedding material and to provide uniform bearing and support for pipe along entire length. Remove stones to avoid point bearing.

3.02 CONTROL OF WATER AND DEWATERING

A. Be solely responsible for dewatering trenches and excavations and subsequent control of ground and surface water. Provide and maintain such pumps or other equipment as may be necessary to control ground water.

B. Dewater during backfilling operation so that groundwater is maintained a least one foot below level of compaction effort.

C. Reroute surface water runoff away from open trenches and excavations. Do not allow water to accumulate in trenches and excavations.

D. Maintain dewatering system in place until dewatering is no longer required.

3.03 BRACING AND SHORING

A. Conform to California and Federal OSHA requirements.

B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the pipes and appurtenances being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.

C. Be solely responsible for all bracing and shoring and, if requested by the Owner, submit details and calculations to the Owner. The Owner may forward the submittal to the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and

estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations in trench section or around structures shall precede a response to the submittal by the Owner.

D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the line, grade, or backfill compaction or operation of the utility being installed or adjacent utilities and facilities.

3.04 PIPE BEDDING

A. Accurately shape bedding material to the line and grade called for on the Plans. Carefully place and compact bedding material to the elevation of the bottom of the pipe in layers not exceeding 8-inches in loose thickness. Compact bedding material at optimum water content to 95% relative compaction unless specified otherwise on the. Compact by pneumatic tampers or other mechanical means. Jetting or ponding of bedding material will not be permitted.

3.05 WARNING TAPE

A. Install in accordance with Section 33 10 00 – Water Utilities.

3.06 BACKFILLING

A. Bring initial backfill up simultaneously on both sides of the pipe, so as to prevent any displacement of the pipe from its true alignment. Carefully place and compact initial backfill material to an elevation of 12-inches above the top of the pipe in layers not exceeding 8-inches in loose thickness. Compact bedding material at optimum water content to 90% relative compaction unless specified otherwise on the. Compact by pneumatic tampers or other mechanical means. Jetting or ponding of initial backfill material will not be permitted.

B. Bring subsequent backfill to subgrade or finish grade as indicated. Carefully place and compact subsequent backfill material to the proper elevation in layers not exceeding 8-inches in loose thickness. Compact bedding material at optimum water content to 90% relative compaction, unless specified otherwise on the Plans. Compact by pneumatic tampers or other mechanical means. Jetting or ponding of subsequent backfill material will not be permitted.

C. Do not use compaction equipment or methods that produce horizontal or vertical earth pressures that may cause excessive pipe displacement or damage the pipe.

3.07 CLEANUP

A. Upon completion of utility earthwork all lines, manholes catch basins, inlets, water meter boxes and other structures shall be thoroughly cleaned of dirt, rubbish, debris and obstructions of any kind to the satisfaction of the Owner.

B. See Section 01 74 00 – Refer to Division 1 General Requirements for Cleaning and Waste Management for further cleanup requirements.

END OF SECTION

SECTION 32 05 23

CONCRETE FOR EXTERIOR IMPROVEMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES
- A. Materials for portland cement concrete.
- B. Aggregate and aggregate grading for portland cement concrete.
- C. Water for portland cement concrete.
- D. Admixtures for portland cement concrete.
- E. Proportioning for portland cement concrete.
- F. Mixing and transporting portland cement concrete.
- G. Formwork for cast in place portland cement concrete.
- H. Embedded materials for portland cement concrete.
- I. Steel reinforcement for portland cement concrete.
- J. Placing and finishing portland cement concrete.
- K. Curing portland cement concrete.
- L. Protecting portland cement concrete.

1.02 RELATED DOCUMENTS
- A. ASTM Standards
  1. A 1064, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
  2. A 615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
  3. C 94, Standard Specification for Ready-Mixed Concrete.
  4. C 114, Standard Test Methods for Chemical Analysis of Hydraulic Cement.
  5. C 150, Standard Specification for Portland Cement.
  6. C 618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
  7. D 1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruded and Resilient Bituminous Types).
- B. Caltrans Standard Specifications:
  1. Section 51: Concrete Structures.
  2. Section 73: Concrete Curbs and Sidewalks.
  3. Section 90-1: General section of Concrete section.
- C. California Building Code:
  1. Chapter 11B – Accessibility To Public Buildings, Public Accommodations, Commercial Buildings and Public Housing.
  2. Chapter 19A – Concrete.
  3. Chapter 33 – Safeguards During Construction.

1.03 DEFINITIONS
- A. ASTM: American Society for Testing and Materials.

1.04 SUBMITTALS
- A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.

B. Design Mixes: Have all concrete mixes designed by a testing laboratory and approved by the Consulting Engineer. Conform all mixes to the applicable building code requirement, regardless of other minimum requirements listed herein or on the drawings. Submit mix designs for review before use. Show proportions and specific gravities of cement, fine and coarse aggregate, and water and gradation of combined aggregates.
C. Reinforcing Steel Shop-Drawings

1.05 QUALITY ASSURANCE
A. Concrete shall be subject to quality assurance in accordance with Section 90 of the Standard Specifications.
   1. Slump tests: Have available, at job site, equipment required to perform slump tests. Make one slump test for each cylinder sample, from same concrete batch. Allowable maximum slump shall be 4 inches for walls and 3 inches for slabs on grade and other work.
B. Certifications:
   1. Provide Owner's Representative at the time of delivery with certificates of compliance signed by both Contractor and Supplier containing the following statements:
   2. Materials contained comply with the requirements of the Contract Documents in all respects.
   3. Proportions and mixing comply with the design mix approved by the Consulting Engineer. Design mix shall have been field tested in accordance with the herein requirements of the Caltrans Standard Specifications and produces the required compressive strength under like conditions.
   4. Statement of type and amount of any admixtures.
   5. Provide Owner's Representative, at time of delivery, with certified delivery ticket stating volume of concrete delivered and time of mixing, or time of load-out in case of transit mixers.
C. Conform to the applicable provisions of Section 51, 73 and 90 of the Caltrans Standard Specification and these Technical Specifications.
   1. Conform construction of portland cement concrete surface improvements (including curbs, gutters, medians, valley gutters, walks) to the requirements of Section 73 of the Caltrans Standard Specifications unless otherwise required in these Technical Specifications or shown on the Plans.
   2. Construct "V" ditches in accordance with Section 72-5.03 of the Standard Specifications; except that finishing shall be in accordance with Standard Specification Section 73 instead of 53, or as otherwise required in these Technical Specifications or shown on the Plans.
   3. Conform other construction of portland cement concrete items to the requirements of Section 51 of the Caltrans Standard Specifications unless otherwise required in these Technical Specifications or shown on the Plans.
D. Conform to the requirements of the California Building Code section 1929A.2 for testing of reinforcing bars.

1.06 DESIGNATION
A. General: Whenever the 28-day compressive strength is designated herein or on the plans is greater than 3,600 psi, the concrete shall considered to be designated by

compressive strength. The 28-day compressive strength shown herein or on the plans which are 3,600 psi or less are shown for design information only and are not considered a requirement for acceptance of the concrete. Whenever the concrete is designated by class or as minor concrete herein or on the plans, the concrete shall contain the cement per cubic meter shown in section 90-1.01 of the Caltrans Standard Specifications.

B. Unless specified otherwise herein or on the Plans, Portland Cement Concrete for this Project shall be Class "2" as specified in the Caltrans Standard Specifications.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT

A. General: Type V or type II (modified) cement conforming to the requirements of ASTM C 150, with the following modifications:
   1. Cement shall not contain more than 0.60% by weight of alkalies, calculated as the percentage of Na_2O plus 0.658 times the percentage of K_2O when determined by either 4 intensity flame photometry or by the atomic absorption method. The instrument and procedure used shall be qualified as to precision and accuracy in accordance with the requirements of ASTM C 114.
   2. The autoclave expansion shall not exceed 0.50%.
   3. Mortar containing the Portland Cement to be used and the sand, when tested in accordance with Test Method No. Calif. 527, shall not expand in water more than 0.010% and shall have an air content less than .048%.
   4. Allowable tri-calcium Aluminate (C_3A) by weight shall not exceed 5%. Allowable tetracalcium alumino ferrite plus twice the tricalcium aluminate (C_4AF+2C_3A) by weight shall not exceed 25%. The sulfate expansion test (ASTM C 452) may be used in lieu of the above chemical requirements, provided the sulfate expansion does not exceed 0.040% at 14 days (max.).
   5. Contractor may substitute pozzolan for Portland Cement in amounts up to 15% of the required mix unless high early strength concrete is specified. Pozzolan shall consist of Class F Fly Ash meeting the requirements of ASTM C 618.

B. Cement for Surface Improvements: Provide a coloring equivalent to ¼ pound of lampblack per cubic yard. Add to the concrete at the central mixing plant.

C. Liquiblack, as supplied by Concrete Corporation of Redwood City, California, may be used in lieu of lampblack. One pint of liquiblack shall be considered equal to one pound of lampblack.

2.02 AGGREGATE AND AGGREGATE GRADING

A. General: Conform to the requirements of Section 90-1.02C(1), 1.02C(2) and 1.02C(3) of the Caltrans Standard Specifications.

B. Aggregate Size and Gradation: Conform to the requirements of the Caltrans Standard Specifications for 25-mm (1-inch) maximum combined aggregate.

2.03 WATER

A. General: Conform to the requirements of section 90-1.02D of the Caltrans Standard Specifications, for mixing and curing portland cement concrete and for washing aggregates.

2.04 CLASSIFICATION OF PORTLAND CEMENT CONCRETE

A. Concrete for the following items shall be designated by the following classes per the Caltrans Standard Specifications:
   1. Vehicular Pavement: Class 2.
   2. Curbs, Gutters, and Sidewalks: Minor Concrete.
   3. Cast in place Concrete Pipe: The concrete shall consist of a minimum of 564 pounds of Portland cement per cubic yard of concrete.
   4. Thrust Blocks: The concrete shall have a minimum compressive strength of 3,000 psi.
   5. Sign and Fence Footings: The concrete shall consist of a minimum of 376 pounds of Portland cement per cubic yard of concrete.
   6. Water, Storm, and Sanitary Structures: The concrete shall consist of a minimum of 564 pounds of Portland cement per cubic yard of concrete.

2.05 EXPANSION JOINT MATERIAL

A. Material for expansion joints in portland cement concrete improvements shall be premolded expansion joint fillers conforming to the requirements of ASTM Designation D 1751. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site. Unless noted otherwise herein or on the Plans expansion joint thickness shall be as follows:
   1. Curbs, Curb Ramps, Island Paving, Sidewalks, Driveways and Gutter Depressions: ¼-inch.
   2. Concrete Slope Protection, Gutter Lining, Ditch Lining and Channel Lining: ½-inch.
   3. Structures: As indicated.

2.06 REINFORCEMENT AND DOWELS

A. Bar reinforcement for concrete improvements shall be deformed steel bars of the size or sizes called for on the plans conforming to the requirements of ASTM Designation A 615 for Grade 60 bars. Size and shape for bar reinforcement shall conform to the details shown or called for on the Plans. Substitution of wire mesh reinforcement for reinforcing bars will not be allowed.
B. Slip dowels, where noted or called for on the plans or detail drawings shall be smooth billet-steel bars as designated and conforming to the requirements of ASTM Designation A 615 for Grade 60 bars. Ends of bars inserted in new work shall be covered with a cardboard tube sealed with cork; no grease or oil shall be used.
C. Mesh for reinforcement for concrete improvements shall be cold drawn steel wire mesh of the size and spacing called for on the plans conforming to the requirements of ASTM Designation A 1064 for the material and mesh. Size and extent of mesh reinforcement shall conform to the details shown or called for on the plans.
D. Tie wire for reinforcement shall be eighteen (18) gauge or heavier, black, annealed conforming to the requirements of ASTM Designation A 1064.
E. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.

2.07 COLOR AND PATTERN FOR DECORATIVE SURFACES

A. Colors for decorative surfacing shall be CHROMIX admixtures as manufactured by the L. M. Scofield Company, Schedule A-312.05 or approved equal. The specific color shall be as designated or called for on the Plans.

B. Patterns for decorative surfacing shall be standard "Bomanite" patterns as copyrighted by the Bomanite Corporation of Palo Alto, California or equal. The specific pattern shall be as designated or called for on the Plans.

2.08 ACCESSORY MATERIALS

A. Conform water stops and other items required to be embedded in of Portland Cement Concrete structures to the applicable requirements of Section 51 of the Caltrans Standard Specifications unless otherwise specifically noted or called for on the Plans or detail drawings.

B. Curing Compounds:

1. Regular Portland Cement Concrete: "Non-Pigmented Curing Compound - chlorinated Rubber Base-Clear" conforming to the requirements contained in Section 90-1.03B(3), of the Caltrans Standard Specifications.
2. Color Conditioned Decorative Portland Cement Concrete: LITHOCHROME colorwax as manufactured by the L. M. Scofield Company or approved equal.

2.09 FORMS

A. Conform to the requirements of Section 51-1.03C(2) of the Caltrans Standard Specifications.

2.10 PRECAST CONCRETE STRUCTURES

A. Conform to the following Sections of Caltrans Standard Specifications:

1. 51-7, Minor Structures.
2. 70-5.02, Flared End Sections.
3. 70-1.02H, Precast Concrete Structures.

2.11 PORTLAND CEMENT CONCRETE VEHICULAR PAVEMENT

A. General: See Section 32 13 00 – Rigid Paving.

PART 3 - EXECUTION

3.01 STRUCTURAL EXCAVATION

A. Structural excavation may be either by hand, or by machine and shall be neat to the line and dimension shown or called for on the plans. Excavation shall be sufficient width to provide adequate space for working therein, and comply with CAL-OSHA requirements.

B. Where an excavation has been constructed below the design grade, refill the excavation to the bottom of the excavation grade with approved material and compact in place to 95% of the maximum dry density.

C. Remove surplus excavation material remaining upon completion of the work from the job site, or condition it to optimum moisture content and compact it as fill or backfill on the site.

3.02 SOIL STERILANT

A. Furnish and apply to areas indicated in accordance with Section 31 31 19 – Vegetation Control.

3.03 BRACING AND SHORING

A. Conform to California and Federal OSHA requirements.
B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
C. Be solely responsible for all bracing and shoring and, if requested by the Owner's Representative, submit details and calculations to the Owner's Representative. The Owner's Representative may forward the submittal to the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Owner's Representative.
D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

3.04 PLACING CONCRETE FORMS

A. Form concrete improvements with a smooth and true upper edge. Side of the form with a smooth finish shall be placed next to concrete. Construct forms rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.
B. Thoroughly clean all forms prior to placement and coat forms with an approved form oil in sufficient quantity to prevent adherence of concrete prior to placing concrete.
C. Carefully set forms to the alignment and grade established and conform to the required dimensions. Rigidly hold forms in place by stakes set at satisfactory intervals. Provide sufficient clamps, spreaders and braces to insure the rigidity of the forms.
D. Provide forms for back and face of curbs, lip of gutters and edge of walks, valley gutters or other surface slabs that are equal to the full depth of the concrete as shown, noted or called for on the Plans. On curves and curb returns provide composite forms made from benders or thin planks of sufficient ply to ensure rigidity of the form.

3.05 **PLACING STEEL REINFORCEMENT**

A. Bars shall be free of mortar, oil, dirt, excessive mill scale and scabby rust and other coatings of any character that would destroy or reduce the bond. All bending shall be done cold, to the shapes shown on the plans. The length of lapped splices shall be as follows:
    1. Reinforcing bars No. 8, or smaller, shall be lapped at least 45 bar diameters of the smaller bar joined, and reinforced bars Nos. 9, 10, and 11 shall be lapped at least 60 bar diameters of the smaller bars joined, except when otherwise shown on the plans.

2. Splice locations shall be made as indicated on the plans.

B. Accurately place reinforcement as shown on the plans and hold firmly and securely in position by wiring at intersections and splices, and by providing precast mortar blocks or ferrous metal chairs, spacers, metal hangers, supporting wires, and other approved devices of sufficient strength to resist crushing under applied loads. Provide supports and ties of such strength and density to permit walking on reinforcing without undue displacement.

C. Place reinforcing to provide the following minimum concrete cover:
   1. Surfaces exposed to water: 4-inches.
   2. Surfaces poured against earth: 3-inches.
   3. Formed surfaces exposed to earth or weather: 2-inches.
   4. Slabs, walls, not exposed to weather or earth: 1-inch.

D. Minimum spacing, center of parallel bars shall be two and one half (2-1/2) times the diameter of the larger sized bar. Accurately tie reinforcing securely in place prior to pouring concrete. Placing of dowels or other reinforcing in the wet concrete is not permitted.

3.06 MIXING AND TRANSPORTING PORTLAND CEMENT CONCRETE

A. Transit mix concrete in accordance with the requirements of ASTM Designation C 94. Transit mix for not less than ten (10) minutes total, not less than three (3) minutes of which shall be on the site just prior to pouring. Mix continuous with no interruptions from the time the truck is filled until the time it is emptied. Place concrete within one hour of the time water is first added unless authorized otherwise by the Owner's Representative.

B. Do not hand mix concrete for use in concrete structures.

3.07 PLACING PORTLAND CEMENT CONCRETE

A. Thoroughly wet subgrade when concrete is placed directly on soil. Remove all standing water prior to placing concrete.

B. Do not place concrete until the subgrade and the forms have been approved.

C. Convey concrete from mixer to final location as rapidly as possible by methods that prevent separation of the ingredients. Deposit concrete as nearly as possible in final position to avoid re-handling.

D. Place and solidify concrete in forms without segregation by means of mechanical vibration or by other means as approved by the Owner's Representative. Continue vibration until the material is sufficiently consolidated and absent of all voids without causing segregation of material. The use of vibrators for extensive shifting of fresh concrete will not be permitted.

E. Concrete in certain locations may be pumped into place upon prior approval by the Owner's Representative. When this procedure requires redesign of the mix, such redesign shall be submitted for approval in the same manner as herein specified for approval of design mixes.

3.08 PLACING ACCESSORY MATERIALS

A. Place water stops and other items required to be embedded in of portland cement concrete structures at locations shown or required in accordance with Section 51 of the Caltrans Standard Specifications unless otherwise specifically noted or called for on the Plans.

B. Curing Compounds:
   1. Regular Portland Cement Concrete: Apply "Non-Pigmented Curing Compound - chlorinated Rubber Base-Clear" in accordance with Section 90-1.03B(3), 1.03B(5) and 1.03B of the Caltrans Standard Specifications.
   2. Color Conditioned Decorative Portland Cement Concrete: Apply LITHOCHROME colorwax in accordance with the manufactures instructions.

3.09 **EXPANSION JOINTS**

A. Construct expansion joints incorporating premolded joint fillers at twenty (20) foot intervals in all concrete curbs, gutters, sidewalks, median/island paving, valley gutters, driveway approaches and at the ends of all returns. At each expansion joint install one-half inch by twelve inch (1/2" x 12") smooth slip dowels in the positions shown or noted on the detail drawings.
B. Orient slip dowels at right angles to the expansion joint and hold firmly in place during the construction process by means of appropriate chairs.

3.10 **WEAKENED PLANE JOINTS**

A. Construct weakened plane joints in concrete curbs, gutters, sidewalks, median/island paving and valley gutters between expansion joints at ten (10) foot intervals throughout, or as otherwise indicated. Depth of joint score depth to be one-fourth (25%) the thickness of the concrete.
   1. Grooved Joints: Form weakened plane joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8-inch. Repeat grooving of weakened plane joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

3.11 **FINISHING CONCRETE**

A. Finish curb and gutter in conformance with the applicable requirements of Section 73-1.03C and 73-1.05A of the Caltrans Standard Specifications as modified herein.
B. Where monolithic curb, gutter and sidewalk is specified, separate concrete pours will not be allowed.
C. Provide a medium broom finish to all horizontal surfaces unless otherwise shown.

3.12 **FORM REMOVAL**

A. Remove forms without damage to the concrete. Remove all shores and braces below the ground surface, before backfilling.
B. Do not backfill against concrete until the concrete has developed sufficient strength to prevent damage.
C. Leave forms for cast-in-place walls in place at least 72 hours after pouring.
D. Leave edge forms in place at least 24 hours after pouring.

3.13 **CONSTRUCTION**

A. Form, place and finish concrete walkways, island paving, valley gutters and driveway approaches in conformance with the applicable requirements of the Caltrans Standard Specifications as modified herein.
B. Construct new concrete curb, curb and gutter and valley gutters against existing asphalt concrete by removing a minimum of 12-inches of the asphalt concrete to allow placement of curb or gutter forms. Patch pavement with a 6-inch deep lift of

asphalt concrete after gutter form is removed.

3.14 **CONNECTING TO EXISTING CONCRETE IMPROVMENTS**

A. New curb, gutter, or sidewalk is to connect to existing improvements to remain by saw cutting to existing sound concrete at the nearest score line, expansion joint or control joint. Drill and insert ½-inch diameter by 12-inch long dowels at 24-inches on center into existing improvements. Install pre-molded expansion joint filler at the matching joint.
B. A cold joint to the existing curb is not acceptable.

3.15 **DECORATIVE SURFACING CONSTRUCTION**

A. Decorative surfacing concrete walks, concrete median islands or other installations shall be formed and placed as a concrete slab conforming to the details shown or noted on the Plans.

3.16 **FIELD QUALITY CONTROL**

A. Finish subgrade for concrete improvements shall be subject to approval prior to placement of forms.
B. No concrete shall be placed prior to approval of forms.
C. Concrete improvements constructed shall not contain "bird baths" or pond water and shall be smooth and ridge free.
D. Conform the finish grade at top of curb, flow line of gutter, and the finish cross section of concrete improvements to the design grades and cross sections.
E. Variation of concrete improvements from design grade and cross section as shown or called for on the plans shall not exceed the tolerances established in Sections 73-1.03 and/or 73-3 of the Caltrans Standard Specifications.

3.17 **RESTORATION OF EXISTING IMPROVEMENTS**

A. Replace in kind all pavement or other improvements removed or damaged due to the installation of concrete improvements.
B. Remove, landscaping or plantings damaged or disturbed due to the installation of concrete improvements. Replace in kind.

END OF SECTION

SECTION 32 11 00

BASE COURSES

PART 1 - GENERAL

1.01 SECTION INCLUDES
- A. Aggregate subbase.
- B. Aggregate base.
- C. Cement treated base.
- D. Lime stabilization.

1.02 RELATED DOCUMENTS
- A. ASTM:
  1. D 3740, Standard Practice for Minimum Requirement for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
  2. E 329, Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
  3. E 548, Standard Guide for General Criteria Used for Evaluating Laboratory Competence.
- B. Caltrans Standard Specifications:
  1. Section 24-2, Lime Stabilized Soil.
  2. Section 25, Aggregate Subbases.
  3. Section 26, Aggregate Bases.
  4. Section 27, Cement Treated Bases.

1.03 DEFINITIONS
- A. Geotechnical Testing Agency: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock definition testing, as documented according to ASTM D 3740 and ASTM E 548.
- B. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material ¾-cubic yards or more in volume that when tested, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2-inches.
- C. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man made stationary features constructed above or below grade.
- D. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, base or topsoil materials.

1.04 SUBMITTALS
- A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.
- B. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.

1.05 QUALITY ASSURANCE
- A. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.
- B. Do not mix or place cement treated base when the temperature is below is below 36 degrees F or when the ground is frozen.
- C. Finish surface of material to be stabilized prior to lime treatment shall be as specified in Section 24-2.01D(1)(a) of Caltrans Standard Specifications.
- D. Finish surface of the stabilized material after lime treatment shall be as specified in Section 24-2.03F of Caltrans Standard Specifications.
- E. Finish surface of cement treated base shall be as specified in Section 27 of Caltrans Standard Specifications.
- F. Do not project the finish surface of aggregate subbase above the design subgrade.
- G. Finish grade tolerance at completion of base installation: +0.05’

1.06 PROJECT CONDITIONS
- A. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- B. Temporarily stockpile material in an orderly and safe manner and in a location approved by the Owner.
- C. Provide dust and noise control in conformance with Division 1 General Requirements.

PART 2 - PRODUCTS

2.01 AGGREGATE SUBBASE
- A. Material: Caltrans Standard Specification Section 25.
  1. Class 1, 2, or 3: Section 25-1.02B.
  2. Class 4: Section 25-1.02C.
  3. Class 5: Section 25-1.02D.

2.02 AGGREGATE BASE
- A. Material: Caltrans Standard Specification Section 26.
  1. Class 2, 1-1/2-inch Maximum: Section 26-1.02B.
  2. Class 2, 3/4-inch Maximum: Section 26-1.02B.
  3. Class 3: Section 26-1.02C.

2.03 CEMENT TREATED BASE
- A. Materials: Caltrans Standard Specification Section 27-1.02.

2.04 LIME STABILIZATION
- A. Lime Treatment Material: Conform to Section 24-2.03B and 24-2.03C of Caltrans Standard Specifications.

PART 3 - EXECUTION

3.01 GENERAL
- A. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.

3.02 WET WEATHER CONDITIONS
A. Do not place or compact subgrade if above optimum moisture content.

3.03 AGGREGATE SUBBASE
A. Spreading and Compacting: Sections 25-1.03D and 25-1.03E of Caltrans Standard Specifications.

3.04 AGGREGATE BASE
A. Spreading and Compacting: Section 26-1.03D and 26-1.03E of Caltrans Standard Specifications.

3.05 CEMENT TREATED BASE
A. Cement treated base shall be as follows: Proportioning and Mixing Plant-Mixed: Section 27-1.03D of Caltrans Standard Specifications.

3.06 LIME STABILIZATION
A. Performing the stabilization shall conform to Section 24-2.03C through 24-2.03F of Caltrans Standard Specifications and the following:
1. Add lime in the amount specified by a Geotechnical Consultant.
2. Lime treat subgrade soils from back of curb to back of curb to a depth specified by a Geotechnical Consultant.
3. Mix in two mixing periods, both with the tines lowered to the same depth. Both mixing periods shall be monitored and verified by a Geotechnical Consultant. The second mixing shall occur at about 36 hours after the initial mixing.
4. Compact and grade the lime mixed subgrade immediately after the second mixing.
5. Compact the lime treated subgrade to 95 percent as determined by ASTM D1557.
6. After application of the curing seal, do not allow traffic on the lime treated material for a period of 7 days in lieu of the 3 days specified in Section 24-2.03A of Caltrans Standard Specifications.
7. Proof-roll the stabilized subgrade after compacting to confirm that a non-yielding surface has been achieved. Yielding areas, if any, shall be mitigated. Mitigation could consist of over-excavation, utilization of stabilization fabric, or chemical treatment. Each case shall be addressed individually in the field by a Geotechnical Consultant.

3.07 DISPOSAL
A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost to the Owner.

END OF SECTION

SECTION 32 12 00

FLEXIBLE PAVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Prime coat.
B. Tack coat.
C. Asphaltic concrete paving.
D. Asphaltic concrete overlay and slurry seals.
E. Speed bumps.
F. Asphalt curbs.
G. Pavement grinding.

1.02 RELATED DOCUMENTS

A. ASTM:

1. D 979: Standard Practice for Sampling Bituminous Paving Mixtures.
2. D 1073: Standard Specification for Fine Aggregate for Asphalt Paving Mixtures.
3. D 1188: Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples.
4. D 2041: Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures.
5. D 2726: Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Asphalt Mixtures.
6. D 2950: Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
7. D 3549: Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
8. D 3666: Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Mixtures.

B. Caltrans Standard Specifications.

1. Section 37: Bituminous Seals.
2. Section 39: Asphalt Concrete.
3. Section 96: Geosynthetics.
4. Section 92: Asphalt Binders.
5. Section 94: Asphaltic Emulsions.

C. California Building Code:
1. Chapter 11B – Accessibility to Public Buildings, Public Accommodations, Commercial Buildings, and Public Housing.
2. Section 1127B – Exterior Routes of Travel.

1.03 DEFINITIONS

A. ASTM: American Society for Testing Materials.

1.04 QUALITY ASSURANCE

A. Testing Agency: Owner will engage a qualified independent testing agency to perform field inspections and tests and to prepare test reports.

1. Testing agency will conduct and interpret tests and state in each report whether tested work complies with or deviates from specified requirements.

B. Additional testing, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements.
C. Thickness of Asphaltic Concrete: In-place compacted thickness of asphalt courses will be determined according to ASTM D 3549.
D. Surface Smoothness: Finished surface of each asphalt course will be tested for compliance with smoothness tolerances.
E. In-Place Density: Samples of uncompacted paving mixtures and compacted pavement will be secured by testing agency according to ASTM D 979.

1. Reference maximum theoretical density will be determined by averaging results from 4 samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
2. In-place density of compacted pavement may be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.

(a) One core sample may be taken for every 1000 sq. yd. or less of installed pavement, but in no case will fewer than 3 cores be taken.
(b) Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

1.05 SUBMITTALS

A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.
B. Job-Mix Designs: Certificates signed by manufacturers certifying that each asphaltic concrete mix complies with requirements.
C. Material Certificates: Certificates signed by manufacturers certifying that each material complies with requirements.

1.06 PROJECT CONDITIONS

A. Environmental Limitations:

1. Prime Coat: Minimum surface temperature of 60 deg F at application.
2. Tack Coat: Minimum surface temperature of 60 deg F at application.

3. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at application.
4. Asphalt Surface Course: Minimum surface temperature of 60 deg F at application.
5. Reinforcing Fabric: Air temperature is 50 deg F and rising and pavement temperature is 40 deg F and rising.

PART 2 - PRODUCTS

2.01 ASPHALTIC CONCRETE

A. Caltrans Standard Specifications Section 39, Type B.
B. Asphalt Materials:

1. Asphalt: Caltrans Standard Specification Section 92, steam refined paving asphalt.
   (a) Asphalt Curbs: use grade PG 70-10
   (b) All other asphalt products: use grade PG 64-10.
2. Prime Coat: Caltrans Standard Specification Section 93, SC-70.
3. Tack Coat: Caltrans Standard Specification Section 94, SS1.
4. Asphaltic Emulsion: Caltrans Standard Specification Section 94, quick-setting type, Grade QS1h anionic or CQS1h cationic.

C. Aggregates: Conform to Caltrans Standard Specification Sections 37-3.02B(2) and 39-2.02 as applicable.
D. Storing, Proportioning and Mixing Materials: Caltrans Standard Specification Section 39-3.
E. Pavement Reinforcing Fabric: Caltrans Standard Specification Section 96.
F. Sand: ASTM D 1073, Grade No. 2 or 3.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.
B. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.
C. Notify Owner in writing of any unsatisfactory conditions. Do not begin paving until these conditions have been satisfactorily corrected.

3.02 PAVEMENT GRINDING

A. Clean existing paving surface of loose or deleterious material immediately before pavement grinding.
B. Grind conforms as indicated.

3.03 SOIL STERILANT

A. Furnish and apply to areas indicated in accordance with Section 31 31 19 – Vegetation Control.

3.04 SURFACE PREPARATION FOR AGGREGATE BASE MATERIALS

A. General: Immediately before placing asphalt materials remove loose and deleterious material from substrate surfaces and ensure that prepared subgrade is ready to receive paving according to the Caltrans Standard Specifications.
B. Prime Coat: Apply uniformly over surface of compacted-aggregate base according to the Caltrans Standard Specifications. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure for 24 hours minimum.

    1. If prime coat is not entirely absorbed within 8 hours after application, spread excess prime coat with hand tools and broadcast sand over surface to blot excess asphalt. Use just enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
    2. Protect primed substrate from damage until ready to receive paving.

C. Tack Coat: Apply uniformly to all vertical surfaces against which asphaltic concrete is to be placed, including existing surfaces of previously constructed asphalt or portland cement concrete paving and to surfaces abutting or projecting into new asphalt pavement, according to the Caltrans Standard Specifications.

    1. Allow tack coat to cure undisturbed before paving.
    2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.05 SURFACE PREPARATION FOR PAVEMENT AT ASPHALTIC CONCRETE OVERLAYS AND SLURRY SEALS

A. Pavement Irregularities: Level with asphaltic concrete, Type B, No. 4 maximum.
B. Pavement Cracks:

    1. Less than 1/8-inch wide: Clean of all dirt by compressed air jet, spray and seal with RS-1 asphaltic emulsion.
    2. Wider than 1/8-inch: Clean of all dirt by compressed air jet, spray and seal with RS-1 asphaltic emulsion and skin patch.

C. Clean surface of all material, such as leaves, dirt, sand, gravel, water and vegetation including roots prior to applying binder of paving asphalt to existing surface.
D. Oil spots shall be removed with brush and detergents and covered with Oil Spot Sealer by OverKote or an equal product.
E. Prior to first application in exceptionally hot weather, dampen surface with water. Remove excess water and leave surface slightly damp.

3.06 APPLYING ASPHALT PAVEMENT OVERLAYS AND SLURRY SEALS

A. Use OverKote Asphalt Pavement Coating or equal product.
B. Apply at a rate of 25 gallons per 1,000 sf of surface area.
C. Follow all manufacturers' recommendations for preparation and applications procedure of the products used.
D. Apply second coat as soon as first coat is dry.

3.07 PAVEMENT REINFORCING FABRIC

A. Protect from exposure to ultraviolet rays until placed.
B. Reject rolls with broken or damaged cores, or factory wrinkled fabric that prevents wrinkle free placement.
C. Place with binder of paving asphalt in accordance with Caltrans Standard Specifications.

3.08 ASPHALTIC CONCRETE SPREADING AND COMPACTING EQUIPMENT

A. Spreading Equipment: Caltrans Standard Specification Section 39-5.01.
B. Compaction Equipment: Caltrans Standard Specification Section 39-5.02.

3.09 ASPHALTIC CONCRETE PLACEMENT

A. Place, spread and compact asphaltic concrete to required grade, cross section, and thickness according to the Caltrans Standard Specifications.
B. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.10 JOINTS

A. Construct joints to ensure continuous bond between adjoining paving sections according to the Caltrans Standard Specifications.

    1. Construct joints free of depressions with same texture and smoothness as other sections of asphalt course.
    2. Clean contact surfaces and apply tack coat.
    3. Offset longitudinal joints in successive courses a minimum of 6 inches.
    4. Offset transverse joints in successive courses a minimum of 24 inches.
    5. Compact joints as soon as asphaltic concrete will bear roller weight without excessive displacement.

3.11 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact according to the Caltrans Standard Specifications.
B. Compaction Requirements: Average Density to be 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.
C. Finish Rolling: Finish roll paved surfaces to remove roller marks while asphalt is still warm.
D. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while still hot, with back of rake or smooth iron. Compact thoroughly using tamper or other satisfactory method.
E. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh asphalt. Compact by rolling to specified density and surface smoothness.
F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.12 ASPHALT CURBS

A. Construction: Place over compacted surfaces according to Caltrans Standard Specification Section 39-7.01 as specified for dikes. Apply a light tack coat prior to construction, unless pavement surface is still tacky and free of dust.
B. Shape: Place asphaltic concrete to curb cross section indicated.

3.13 SPEED BUMPS

A. Construct speed bumps over compacted pavement surfaces according to Caltrans Standard Specifications. Apply a light tack coat prior to construction, unless pavement surface is still tacky and free of dust.
B. Place asphaltic concrete by hand using a template/screed designed to result in speed bump cross-section indicated after compaction.
C. Compact speed bumps with 8-ton static roller.

3.14 INSTALLATION TOLERANCES

A. Asphalt Pavement:

1. Course thickness and surface smoothness within the tolerances in the Caltrans Standard Specifications.
2. Total Thickness: Not less than indicated.

B. Trench Patch:

1. Compacted surface: Within 0.01 foot of adjacent pavement.
2. Do not create ponding.

END OF SECTION

SECTION 32 13 00

RIGID PAVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Furnishing, placing, spreading, compacting and shaping portland cement concrete pavement with undoweled transverse weakened plane joints, for vehicular traffic.

B. Form construction and use in placing portland cement concrete pavement.

C. Joints for portland cement concrete pavement.

D. Finishing portland cement concrete pavement.

E. Curing and protecting portland cement concrete pavement.

1.02 RELATED DOCUMENTS

A. AASHTO Standard Specifications

1. T 53: Standard Method of Test for Softening Point of Bitumen (Ring-and-Ball Apparatus).

B. ASTM Standards

1. A 615: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

2. A 775: Standard Specification for Epoxy-Coated Steel Reinforcing Bars.

3. A 934: Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.

4. C 881: Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.

5. D 2628: Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.

6. D 2835: Standard Specification for Lubricant for Installation of Preformed Compression Seals in Concrete Pavements.

7. D 6690: Standard Specification for Joint and Crack Sealants, Hot-Applied , for Concrete and Asphalt Pavements.

8. D 3963: Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars.

C. Caltrans Standard Specifications:

1. Section 40, Concrete Pavement.
2. Section 52, Reinforcement.
3. Section 90, Concrete.
4. Section 95, Epoxy.

D. Caltrans Standard Plans:

1. Plan A35A: Portland Cement Concrete Pavement (Undoweled Transverse Joints).
2. Plan A35C: Portland Cement Concrete Pavement Joint and End Anchor Details.

1.03 DEFINITIONS

A. AASHTO: American Association of State Highway and Transportation Officials.

B. ASTM: American Society for Testing and Materials.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer must be certified according to the National Ready Mix Concrete Plant Certification Program.

B. Installer Qualification: An experienced installer who has completed pavement work similar in material, design and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer’s plant and each aggregate from one source.

1.05 SUBMITTALS

A. Follow submittal procedures outlined in Section 01 33 00 – Submittal Procedures.

B. Design Mixes: For each concrete pavement mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results or other circumstances warrant adjustments.

C. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements.

1. Cementitious materials and aggregates.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.

4. Curing compound.
5. Applied finish material.
6. Bonding agent of adhesive.
7. Joint filler.
8. Joint Sealant.
9. Tie Bars.
10. Epoxy.
11. Backer Rods.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT CONCRETE

A. General: Conform to Caltrans Standard Specifications, Section 90. Use Class 2 Concrete.

2.02 TIE BARS

A. Deformed reinforcing steel bars conforming to the requirements of ASTM Designation A 615/A (615M), Grade 40 or 60 (Grade 300 or 420).

B. Epoxy-coat in conformance with the provisions in Section 52-2.02 of Caltrans Standard Specifications, except that references made to ASTM Designation D 3963/D 3963M shall be deemed to mean ASTM Designation A 934/A 934M or A 775/775M.

C. Do not bend tie bars.

2.03 EPOXY

A. Bond tie bars to existing concrete with epoxy resin conforming to Section 95-1.02D, "Epoxy Resin Adhesive for Bonding Freshly Mixed Concrete to Hardened Concrete," of the Caltrans Standard Specifications.

2.04 SILICONE JOINT SEALANT

A. Furnish low modulus silicone joint sealant in a one-part silicone formulation. Do not use acid cure sealants. Compound to be compatible with the surface to which it is applied and conform to the following requirements:

Specification	Test Method	Requirement
Tensile stress, 150% elongation, 7-day cure at 25°± 1°C and 45% to 55% R.H.[e]	ASTM D 412 (Die C)	310 kPa max.

Flow at 25° ± 1°C	ASTM C 639[a]	Shall not flow from channel
Extrusion Rate at 25° ± 1°C	ASTM C 603[b]	75-250 g/min.
Specific Gravity	ASTM D 792 Method A	1.01 to 1.51
Durometer Hardness, at -18°C, Shore A, cured 7 days at 25° ± 1°C	ASTM C 661	10 to 25
Ozone and Ultraviolet Resistance, after 5000 hours	ASTM C 793	No chalking, cracking or bond loss
Tack free at 25° ± 1°C and 45% to 55% R.H.[e]	ASTM C 679	Less than 75 minutes
Elongation, 7 day cure at 25° ± 1°C and 45% to 55% R.H.[e]	ASTM D 412 (Die C)	500 percent min.
Set to Touch, at 25° ± 1°C and 45% to 55% R.H.[e]	ASTM D 1640	Less than 75 minutes
Shelf Life, from date of shipment	—	6 months min.
Bond, to concrete mortar-concrete briquets, air cured 7 days at 25° ± 1°C	AASHTO T 132[c]	345 kPa min.
Movement Capability and Adhesion, 100% extension at -18°C after, air cured 7 days at 25° ± 1°C, and followed by 7 days in water at 25° ± 1°C	ASTM C 719[d]	No adhesive or cohesive failure after 5 cycles

Notes:

ASTM Designation: C 639 Modified (15 percent slope channel A).

ASTM Designation: C 603, through 3-mm opening at 345 kPa.

Mold briquets in conformance with the requirements in AASHTO Designation: T 132, sawed in half and bonded with a 1.5 mm maximum thickness of sealant and tested in conformance with the requirements in AASHTO Designation: T 132. Briquets shall be dried to constant mass at 100 ± 5° C.

Movement Capability and Adhesion: Prepare 305 mm x 25 mm x 75 mm concrete blocks in conformance with the requirements in ASTM Designation: C 719. A sawed face shall be used for bond surface. Seal 50 mm of block leaving 12.5 mm on each end of specimen unsealed. The depth of sealant shall be 9.5 mm and the width 12.5 mm.

a. R.H. equals relative humidity.

B. Formulate the silicon joint sealant to cure rapidly enough to prevent flow after application on grades of up to 15 percent.

C. Furnish to the Owner a Certificate of Compliance. Accompany certificate with a certified test report of the results of the required tests performed on the sealant material within the previous 12 months prior to proposed use. Provide the certificate and accompanying test report for each lot of silicone joint sealant prior to use on the project.

2.05 ASPHALT RUBBER JOINT SEALANT

A. Conform to the requirements of ASTM Designation: D 6690 as modified herein or to the following:

1. Provide a mixture of paving asphalt and ground rubber. Ground rubber to be vulcanized or a combination of vulcanized and de-vulcanized materials ground so that 100 percent will pass a 2.36-mm sieve and contain not less than 22 percent ground rubber, by mass. Modifiers may be used to facilitate blending.

2. The Ring and Ball softening point shall be 57°C minimum, when tested in conformance with the requirements in AASHTO Designation: T 53.

3. Provide asphalt rubber sealant material capable of being melted and applied to cracks and joints at temperatures below 204°C.

B. The penetration requirement of Section 4.2 of ASTM Designation: D 6690 do not apply. The required penetration at 25°C, 150g, 5s, shall not exceed 120.

C. The resilience requirement of Section 4.5 of ASTM Designation: D 6690 do not apply. The required resilience, when tested at 25°C, shall have a minimum of 50 percent recovery.

D. Accompany each lot of asphalt rubber joint sealant shipped to the job site, whether as specified herein or conforming to the requirements of ASTM Designation D 6690, as modified herein, by a Certificate of Compliance, storage and heating instructions and precautionary instructions for use.

E. Heat and place in conformance with the manufacturer's written instructions and the details shown on the plans. Provide manufacturer's instructions to the Owner. Do not place when the pavement surface temperature is below 10°C.

2.06 PREFORMED COMPRESSION JOINT SEALANT

A. Material: ASTM Designation: D 2628.

1. Number of cells: 5 or 6.

2. Lubricant Adhesive: ASTM Designation D 2835.

3. Install compression seals along with lubricant adhesive according to the manufacturer's recommendations. Submit manufacture's recommendations to the Owner’s Representative`.

B. Accompany each lot of compression seal and lubricant adhesive by a Certificate of Compliance, storage instructions and precautionary instructions for use. Also submit the manufacturer's data sheet with installation instructions and recommended model or type of preformed compression seal for the joint size and depth as shown on the plans. Show evidence that the selected seal is being compressed at level between 20 and 50 percent at all times for the joint width and depth shown on the plans.

2.07 BACKER RODS

A. Provide backer rods that have a diameter prior to placement at least 25 percent greater than the width of the saw cut after sawing and are expanded, crosslinked, closed-cell polyethylene foam that is compatible with the joint sealant so that no bond, adverse reaction occurs between the rod and sealant. In no case use a hot pour sealant that will melt the backer rod. Submit a manufacturer's data sheet verifying that the backer rod is compatible with the sealant to be used.

PART 3 - EXECUTION

3.01 WATER SUPPLY

A. Conform to Section 40-1.02 of Caltrans Standard Specifications.

3.02 SUBGRADE

A. Conform to Section 40-1.04 of Caltrans Standard Specifications.

3.03 SOIL STERILANT

A. Furnish and apply to areas indicated in accordance with Section 31 31 19 – Vegetation Control.

3.04 PLACING

A. Conform to Section 40-1.03F of Caltrans Standard Specifications.

3.05 SPREADING COMPACTING AND SHAPING

A. Conform to Section 40-1.07 of Caltrans Standard Specifications.

1. Stationary Side Form Construction: Section 40-1.03F(4) of Caltrans Standard Specifications.

2. Slip Form Construction: Section 40-1.03F(5) of Caltrans Standard Specifications.

3.06 INSTALLING TIE BARS

A. Install at longitudinal contact joints, longitudinal weakened plane joints, and transverse contact joints as shown on the plans. In no case, shall any consecutive width of new portland cement concrete pavement tied together with tie bars exceed 15 meters. In no case shall tie bars be used at a joint where portland cement concrete and asphalt concrete pavements abut.

B. Tie bars shall be installed at longitudinal joints by one of the 3 following methods:

1. Drilling and bonding in conformance with the details shown on the plans. Provide a two-component, epoxy-resin, conforming to the requirements of ASTM Designation: C 881, Type V. Grade 3 (Non-Sagging), Class shall be as follows:

Temperature of Concrete	Required Class of Epoxy Resin
Lower than 40° F (4.5 °C)	A
40˚ F (4.5˚ C) through 60˚ F (15.5˚ C)	B
Above 60˚ F (15.5˚ C)	C

2. Provide, at least 7 days prior to start of work, a Certificate of compliance and a copy of the manufacturer's recommended installation procedure. The drilled holes shall be cleaned in accordance with the epoxy manufacturer's instructions and shall be dry at the time of placing the epoxy and tie bars. Immediately after inserting the tie bars into the epoxy, the tie bars shall be supported as necessary to prevent movement during the curing and shall remain undisturbed until the epoxy has cured a minimum time as specified by the manufacturer. Tie bars that are improperly bonded, as determined by the Owner, will be rejected. If rejected, adjacent new holes shall be drilled, as directed by the Owner, and new tie bars shall be placed and securely bonded to the concrete. All work necessary to correct improperly bonded tie bars shall be performed at the Contractor's expense.

3. Insert the tie bars into the plastic slip-formed concrete before finishing the concrete. Inserted tie bars shall have full contact between the bar and the concrete. When tie bars are inserted through the pavement surface, the concrete over the tie bars shall be reworked and refinished to such an extent that there is no evidence on the surface of the completed pavement that there has been any insertion performed. Any loose tie bars shall be replaced by drilling and grouting into place with epoxy as described in method 1 above at the Contractor's expense.

4. By using threaded dowel splice couplers fabricated from deformed bar reinforcement material, free of external welding or machining. Threaded dowel splice couplers shall be accompanied by a Certificate of Compliance and installation instructions. Installation of threaded dowel splice couplers shall conform to the requirements of the manufacturer's recommendations.

3.07 JOINTS

A. Conform to Section 40-1.03B of Caltrans Standard Specifications, except that tie bars shall be as specified under Part 2, Products.

1. Transverse Contact Joints: Section 40-1.08A of Caltrans Standard Specifications.

(a) Construct a transverse contact (construction) joint at the end of each day's work, or where concrete placement is interrupted for more than 30 minutes, to coincide with the next weakened plane joint location.

(b) If sufficient concrete has not been mixed to form a slab to match the next weakened plane joint, when an interruption occurs, the excess concrete shall be

removed and disposed of back to the last preceding joint. The cost of removing and disposing of any excess concrete shall be at the Contractor's expense. Any excess material shall become the property of the Contractor and shall be properly disposed of.

(c) A metal or wooden bulkhead (header) shall be used to form the joint. The bulkhead shall be designed to accommodate the installation of tie bars.

2. Weakened Plane Joints: Section 40-1.08B, except that the insert method of forming joints in pavement shall not be used.

3.08 FINISHING

A. Conform to Sections 40-1.03H(2) and 40-1.103H(3) of Caltrans Standard Specifications.

3.09 CURING

A. Conform to Section 40-1.03I of Caltrans Standard Specifications.

3.10 SEALING JOINTS

A. Liquid Joint Sealant Installation.

1. The joint sealant detail for transverse and longitudinal joints, as shown on the plans, shall apply only to weakened plane joints. Construct weakened plane joints by the sawing method. Should grinding or grooving be required over or adjacent to any joint after sealant has been placed, completely remove the joint material and disposed of, and replace at the Contractor's expense. Recess sealant below the final finished surface as shown on the plans.

2. At the Contractor's option, transverse weakened plane joints shall be either Type DSC or Type SSC as shown on the plans. Longitudinal weakened plane joints shall be Type SSC only as shown on the plans.

3. Seven days after the concrete pavement placement and not more than 4 hours before placing backer rods and joint sealant materials, clean the joint walls by the dry sand blast method and other means as necessary to completely remove from the joint all objectionable material such as soil, asphalt, curing compound, paint and rust. After cleaning the joint, remove all traces of sand, dust and loose material from and near the joint for a distance along the pavement surfaces of at least 50 mm on each side of the joint by the use of a vacuum device. Remove surface moisture at the joints by means of compressed air or moderate hot compressed air or other means approved means. Do not use drying procedures that leave a residue or film on the joint wall. Sandblasting equipment shall have a maximum nozzle diameter size of 6 ± 1 mm and a minimum pressure of 0.62-MPa.

4. Install backer rod as shown on the plans. Provide an expanded, closed-cell polyethylene foam backer rod that is compatible with the joint sealant so that no bond or adverse reaction occurs between the rod and sealant. Install backer rod when the temperature of the portland cement concrete pavement is above the dew point of the air and when the air temperature is 4°C or above. Install backer rod

when the joints to be sealed have been properly patched, cleaned and dried. Do not use a method of placing backer rod that leave a residue or film on the joint walls.

5. Immediately after placement of the backer rod, place the joint sealant in the clean, dry, prepared joints as shown on the plans. Apply the joint sealant by a mechanical device with a nozzle shaped to fit inside the joint to introduce the sealant from inside the joint. Apply adequate pressure to the sealant to ensure that the sealant material is extruded evenly and that full continuous contact is made with the joint walls. After application of the sealant recess the surface of the sealant as shown on the plans.

6. Any failure of the joint material in either adhesion or cohesion of the material will be cause for rejection of the joint. Conform the finished surface of joint sealant to the dimensions and allowable tolerances shown on the plans. Rejected joint materials or joint material whose finished surface does not conform to the dimensions shown on the plans shall be repaired or replaced, at the Contractor's expense, with joint material that conforms to the requirements.

7. After each joint is sealed, remove all surplus joint sealer on the pavement surface. Traffic shall not be permitted over the sealed joints until the sealant is tack free and set sufficiently to prevent embedment of roadway debris into the sealant.

B. Preformed Compression Joint Seal Installation

1. The compression seal alternative joint detail for transverse and longitudinal joints, as shown on the plans, shall apply only to weakened plane joints. Construct weakened plane joints by the sawing method. Should grinding or grooving be required over or adjacent to any joint after the compression seal has been placed, completely remove the joint materials and disposed of, and replace at the Contractor's expense. Compression seal shall be recessed below the final finished surface as shown on the plans.

2. At the Contractor's option, transverse weakened plane joints shall be either Type DSC or Type SSC as shown on the plans. Longitudinal weakened plane joints shall be Type SSC only as shown on the plans.

3. Seven days after the concrete pavement placement and not more than 4 hours before placing preformed compression joint seals, clean the joint walls by the dry sand blast method and other means as necessary to completely remove from the joint all objectionable material such as soil, asphalt, curing compound, paint and rust. After cleaning the joint, remove all traces of sand, dust and loose material from and near the joint for a distance along the pavement surfaces of at least 50 mm on each side of the joint by the use of a vacuum device. Remove surface moisture at the joints by means of compressed air or moderate hot compressed air or other means. Do not use drying procedures that leave a residue or film on the joint wall. Sandblasting equipment shall have a maximum nozzle diameter size of 6 ± 1 mm and a minimum pressure of 0.62-MPa.

3.11 PROTECTING CONCRETE PAVEMENT

A. Conform to Section 40-1.12 of Caltrans Standard Specifications.

END OF SECTION

SECTION 32 16 13
CONCRETE CURBS AND GUTTERS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Concrete curbs and gutters.

1.02 RELATED DOCUMENTS

A. American Concrete Institute (ACI):

1. ACI 301 - Specifications for Structural Concrete for Buildings.

2. ACI 308 - Standard Practice for Curing Concrete.

B. American society for Testing and Materials (ASTM):

1. ASTM A 185 - Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.

2. ASTM A 615 - Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

3. ASTM D 1751 - Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

C. Caltrans Standard Specifications:

1. Section 73: Concrete Curbs and Sidewalks.

2. Section 90: Portland Cement Concrete.

1.03 DEFINITIONS

A. ASTM: American Society for Testing Materials

1.04 SUBMITTALS

A. Submittal procedures shall be as outlined in Section 01 33 00 – Submittal Procedures.

B. Concrete Mix Design: Have all concrete mixes designed by a testing laboratory and approved by the Owner. Conform all mixes to the applicable building code requirement, regardless of other minimum requirements listed herein or on the drawings. Submit mix designs for review before use. Show proportions and specific gravities of cement, fine and coarse aggregate, and water and gradation of combined aggregates.

1.05 QUALITY ASSURANCE

A. Concrete shall be subject to quality assurance in accordance with Section 90 of the Standard Specifications.

B. Certifications:

1. Provide Owner at the time of delivery with certificates of compliance signed by both Contractor and Supplier containing the following statements:

(a) Materials contained comply with the requirements of the Contract Documents in all respects.

(b) Proportions and mixing comply with the design mix approved by the Consulting Engineer. Design mix shall have been field tested in accordance with the herein requirements of the Caltrans Standard Specifications and produces the required compressive strength under like conditions.

(c) Statement of type and amount of any admixtures.

2. Provide Owner, at time of delivery, with certified delivery ticket stating volume of concrete delivered and time of mixing, or time of load-out in case of transit mixers.

C. Conform to the applicable provisions of Section 51, 73 and 90 of the Caltrans Standard Specification and these Technical Specifications.

1. Conform construction of portland cement concrete surface improvements (including curbs, gutters, medians, valley gutters, walks) to the requirements of Section 73 of the Caltrans Standard Specifications unless otherwise required in these Technical Specifications or shown on the Plans.

2. Construct "V" ditches in accordance with Section 72-4 of the Standard Specifications; except that finishing shall be in accordance with Standard Specification Section 73 instead of 53, or as otherwise required in these Technical Specifications or shown on the Plans.

1.06 DESIGNATION

A. General: Whenever the 28-day compressive strength is designated herein or on the Plans is 3,500 psi or greater, the concrete shall considered to be designated by compressive strength. The 28-day compressive strength shown herein or on the plans which are less than 3,500 psi are shown for design information only and are not considered a requirement for acceptance of the concrete. Whenever the concrete is designated by class or as minor concrete herein or on the Plans, the concrete shall contain the cement per cubic yard shown in Section 90-1.01 of the Caltrans Standard Specifications.

PART 2 - PRODUCTS

2.01 GENERAL

A. Comply with requirements of Section 32 05 23 – Concrete for Exterior Improvements.

2.02 PORTLAND CEMENT CONCRETE

A. Unless specified otherwise herein or on the Plans, Portland Cement Concrete for items in this section shall be Minor Concrete as specified in Section 90-1.01 of the Caltrans Standard Specifications.

2.03 CURBS AND GUTTERS FORMS

A. Use flexible spring-steel forms or laminated boards to form radius bends. Tolerance: Not to deviate more than 1/4 inch in 10 feet in grade and alignment.

2.04 EXPANSION JOINT MATERIAL

A. Material for expansion joints in portland cement concrete improvements shall be premolded expansion joint fillers conforming to the requirements of ASTM Designation D 1751. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.

B. Unless noted otherwise herein or on the Plans expansion joint thickness shall be as follows:

1. Curbs, Curb Ramps, Island Paving, Driveways and Gutter Depressions: ¼-inch.

PART 3 - EXECUTION

3.01 GENERAL

A. Comply with requirements of Section 32 05 23 – Concrete for Exterior Improvements.

B. Form, place and finish concrete walkways, island paving, valley gutters and driveway approaches in conformance with the applicable requirements of Section 73-2.03B and 73-3 of the Caltrans Standard Specifications as modified herein.

C. Construct new concrete curb, curb and gutter and valley gutters against existing asphalt concrete by removing a minimum of 12-inches of the asphalt concrete to allow placement of curb or gutter forms. Patch pavement with a 6-inch deep lift of asphalt concrete after gutter form is removed.

3.02 SUBGRADE

A. Conform to Section 40-1.04 of Caltrans Standard Specifications.

3.03 SOIL STERILANT

A. Furnish and apply to areas indicated in accordance with Section 31 31 19 – Vegetation Control.

3.04 PLACING CONCRETE FORMS

A. Form concrete improvements with a smooth and true upper edge. Side of the form with a smooth finish shall be placed next to concrete. Construct forms rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.

B. Thoroughly clean all forms prior to placement and coat forms with approved form oil in sufficient quantity to prevent adherence of concrete prior to placing concrete.

C. Carefully set forms to the alignment and grade established and conform to the required dimensions. Rigidly hold forms in place by stakes set at satisfactory intervals. Provide sufficient clamps, spreaders and braces to insure the rigidity of the forms.

D. Provide forms for back and face of curbs, lip of gutters and edge of walks, valley gutters or other surface slabs that are equal to the full depth of the concrete as shown, noted or called for on the Plans. On curves and curb returns provide composite forms made from benders or thin planks of sufficient ply to ensure rigidity of the form.

3.05 PLACING STEEL REINFORCEMENT

A. Bars shall be free of mortar, oil, dirt, excessive mill scale and scabby rust and other coatings of any character that would destroy or reduce the bond.

B. Accurately place reinforcement as shown on the plans and hold firmly and securely in position by wiring at intersections and splices, and by providing precast mortar blocks or ferrous metal chairs, spacers, metal hangers, supporting wires, and other approved devices of sufficient strength to resist crushing under applied loads. Provide supports and ties of such strength and density to permit walking on reinforcing without undue displacement.

C. Place reinforcing to provide the following minimum concrete cover:

1. Surfaces exposed to water: 4-inches.

2. Surfaces poured against earth: 3-inches.

3. Formed surfaces exposed to earth or weather: 2-inches.

4. Slabs, walls, not exposed to weather or earth: 1-inch.

D. Minimum spacing, center of parallel bars shall be two and one half (2-1/2) times the diameter of the larger sized bar. Accurately tie reinforcing securely in place prior to pouring concrete. Placing of dowels or other reinforcing in the wet concrete is not permitted.

3.06 PLACING PORTLAND CEMENT CONCRETE

A. Thoroughly wet subgrade when concrete is placed directly on soil. Remove all standing water prior to placing concrete.

B. Do not place concrete until the subgrade and the forms have been approved.

C. Convey concrete from mixer to final location as rapidly as possible by methods that prevent separation of the ingredients. Deposit concrete as nearly as possible in final position to avoid re-handling.

D. Place and solidify concrete in forms without segregation by means of mechanical vibration or by other means as approved by the Owner. Continue vibration until the material is sufficiently consolidated and absent of all voids without causing segregation of material. The use of vibrators for extensive shifting of fresh concrete will not be permitted.

E. Concrete in certain locations may be pumped into place upon prior approval by the Owner. When this procedure requires redesign of the mix, such redesign shall be submitted for approval in the same manner as herein specified for approval of design mixes.

3.07 EXPANSION JOINTS

A. Construct expansion joints incorporating pre-molded joint fillers at twenty (20) foot intervals in all concrete curbs, gutters, median/island paving, valley gutters, driveway approaches and at the ends of all returns. At each expansion joint install one-half inch by twelve inch (1/2" x 12") smooth slip dowels in the positions shown or noted on the detail drawings.

3.08 WEAKENED PLANE JOINTS

A. Construct weakened plane joints in concrete curbs, gutters, median/island paving and valley gutters between expansion joints at ten (10) foot intervals throughout, or as otherwise indicated. Depth of joint score depth to be one-fourth (25%) the thickness of the concrete.

B. Grooved Joints: Form weakened plane joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8-inch. Repeat grooving of weakened plane joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

3.09 FINISHING CONCRETE

A. Finish curb and gutter in conformance with the applicable requirements of Section 73-2.03B and 73-1.03C of the Caltrans Standard Specifications as modified herein.

B. Where monolithic curb, gutter and sidewalk is specified, separate concrete pours will not be allowed.

C. Provide a medium broom finish to all horizontal surfaces unless otherwise shown.

3.10 FORM REMOVAL

A. Remove forms without damage to the concrete. Remove all shores and braces below the ground surface, before backfilling.

B. Do not backfill against concrete until the concrete has developed sufficient strength to prevent damage.

C. Leave edge forms in place at least 24 hours after pouring.

3.11 CONNECTING TO EXISTING CONCRETE IMPROVEMENTS

A. New curb or gutter is to connect to existing improvements to remain by saw cutting to existing sound concrete at the nearest score line, expansion joint or control joint. Drill and insert ½-inch diameter by 12-inch long dowels at 24-inches on center into existing improvements. Install pre-molded expansion joint filler at the matching joint.

B. A cold joint to the existing curb is not acceptable.

3.12 FIELD QUALITY CONTROL

A. Conform the finish grade at top of curb, flow line of gutter, and the finish cross section of concrete improvements to the design grades and cross sections.

B. Variation of concrete improvements from design grade and cross section as shown or called for on the plans shall not exceed the tolerances established in Sections 73-1.05 and/or 73-1.06 of the Caltrans Standard Specifications.

3.13 RESTORATION OF EXISTING IMPROVEMENTS

A. Replace in kind all pavement or other improvements removed or damaged due to the installation of concrete improvements.

B. Remove, landscaping or plantings damaged or disturbed due to the installation of concrete improvements. Replace in kind.

END OF SECTION

SECTION 32 17 23

PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. General: The Contract General Conditions and Division 1, General Requirements, including, but not limited to, Summary of Work, Submittals and Cleaning, shall form a part of these Specifications with the same force and effect as though repeated herein. Work shall be done according to the Contract Documents and to the satisfaction of the Owner. That which is called for in one of the Contract Documents is binding as though called for in all.

B. Scope: The Work included under this Section consists of furnishing and/or paying for all fees and permits, all labor, tools, equipment, transportation and services required to complete all on and off site parking and traffic controls as required by the contract drawings and specifications, including, but not necessarily limited to the following:

1. Directional pavement markings.

2. Painted stall striping, including handicapped stencils.

3. Painted crosshatch on walkways.

2. Handicap signs as per code, installed.

5. Street name signs.

6. No parking signs.

7. Miscellaneous signs as required.

8. Wheel Stops

1.02 REFERENCES

A. ANSI A117.1: Standards of Accessible and Usable Buildings and Facilities.

B. Caltrans Standard Specifications

1. Section 84 - Markings

2. Traffic Manual

3. Section No. PTWB-01 Paint Waterborne Traffic Line.

PART 2 - PRODUCTS

2.01 MATERIALS

A. At locations shown on the plans, traffic stripes and pavement markings shall be painted with paint meeting the applicable State Standard Specifications for traffic line paint, and as required by the City.

B. Paint: Latex, water-borne and chromate free, ready mixed. Caltrans No. PTWB-01
   1. VOC Content: No more than is allowed by local and federal regulations.
   2. Color White: Parking stall striping and accessible parking symbols.
   3. Color Blue (Federal Standard No. 15090): Striping for accessible parking stall loading area at perimeter border and diagonal hatching. Accessible parking symbol background.

C. Wheel Stops: Prefabricated Recycled Plastic or Rubber: 4-in. high by 6-in. wide by 6-ft long. Adhered to asphalt paving with Overkote Bumper adhesive or equal product. Overdrive five (5) ½-in. diameter by 14-in. long galvanized spikes into asphalt. Head to set below finish by 1/4-in.

PART 3 - EXECUTION

3.01 APPLICATION

A. Preparation of Surface: All dirt, oil, grease and other foreign matter shall be removed from the areas of the pavement to be painted with traffic paint.
   1. Traffic paint shall not be applied to pavements which are excessively dirty, damp or cold. Traffic paint shall not be applied when temperature is less than 60º F, or when the pavement is wet or damp.

B. Paint Application: Traffic paint shall be applied with approved atomizing spray type striping machine. Where required, the paint striping machine shall be equipped with separate thermostatically controlled heating devices for paint and bead pots.
   1. The machine shall be capable of applying paint whereby the lines and markings have clear-cut edges, true and smooth alignments and uniform thickness.
   2. All completed lines and markings shall be clean and sharp as to dimensions. Ragged ends of segments, fogginess along the sides or objectionable dribbling of paint along the unpainted portions of the stripes will be not be permitted.
   3. The Subcontractor shall exercise all reasonable precautions to protect the paint, as applied, during drying time and shall remove all objectionable tracking.

4. The finished paint shall have an opaque, well painted appearance with no black or other discoloration showing through.

C. Rate of Application: Traffic paint shall be applied at the following rates:
Parking Stripe Rate of Application /Square Feet Per Gallon
First Coat 150 square feet per gallon

D. Traffic Paint Removal

1. Traffic stripes and other pavement markings shall be removed by sand blasting only. Under no circumstances are traffic lines to be obliterated with black traffic paint.

2. When temporary traffic lines are to be painted for construction detours or for some other reason, the old lines, which do not apply, shall be entirely obliterated by sand blasting.

END OF SECTION

SECTION 32 31 00

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide chain link fence and gates with framing and fabric, gate hardware, and accessories as required for complete installation.
   1. Provide plastic coated steel chain link fence and gates.
   2. Excavate for post bases and provide concrete anchorage for posts.
   3. Provide privacy slats in chain link fabric.

B. Related Work:

   1. Section 01 50 00: Temporary construction fence.

1.2 REFERENCES

A. Chain Link Fence Manufacturer's Institute (CLFMI): Chain Link Fence Installation Standard.

B. ASTM F567: Installation of Chain Link Fence.

1.3 SUBMITTALS

A. Product Data: Submit product literature, including standard details.

B. Shop Drawings: Indicate plan layout, grid, spacing of components, accessories, and anchorage.

PART 2 - PRODUCTS

2.1 SYSTEMS MANUFACTURERS

A. Anchor Fence, Inc.

B. Master Halco, Inc.

C. Iron World Manufacturing.

D. Substitutions: Refer to Section 01 25 00.

2.2 MATERIALS

A. System Description: Provide chain link fence and gates with framing and fabric, gate hardware, and accessories.

   1. Provide complete system from single manufacturer including framing, fabric, and accessories.

B. Framework: Design fence framework to comply with strength requirements conforming to ASTM F1043; ASTM A1083, Schedule 40, butt weld, standard weight, hot dip galvanized to 1.8 oz/sf coating; Type I weight.

1. Line Posts, Corner Posts, Terminal Posts, Caps, Brace Rails:

a. End, Corner and Pull Posts: Minimum 2.875" outside diameter, and 5.79 pounds per linear foot.

b. Rails and Braces: Minimum 1.66", 1.35 lbs/lin. ft.

c. Caps: Galvanized castings as approved by Architect and as appropriate for applications specified.

d. Gate Posts: Minimum 4" outside diameter; 9.1 lbs/lin. ft.

2. Types and Sizes: As indicated, where not indicated, sizes as recommended by manufacturer.

a. Fence Height: Verify in Field, unless otherwise indicated.

3. Fittings: Provide sleeves, bands, clips, rail ends, tension bars, fasteners, fittings, tie wire, and accessories as required for complete installation.

C. Fabric: 2" diamond mesh, interwoven, 9-gage top selvage twisted tight, bottom selvage knuckle end closed; one-piece fabric widths unless fence height exceeds maximum available width.

1. Mesh: ASTM A392 Class 2, zinc-coated steel or ASTM A428 aluminum coated steel, minimum 0.40 oz/sf coating.

2. Plastic Coating: ASTM F668, minimum Class 2a extruded and adhered or Class 2b fusion bonded PVC coating on minimum 0.3 oz/sf zinc coated steel wire or comparable aluminum coated steel wire.

a. Colors: Where color is not indicated on Drawings or Finish Schedule, provide custom color as directed by Architect.

D. Tension Wire: Minimum 7-gage galvanized steel single strand or comparable aluminum coated steel.

E. Plastic Coating: Manufacturer's standard virgin polyvinyl chloride (PVC) vinyl coating; Shore D hardness of 40 to 60; bond of coating to metal to be greater than or equal to cohesive strength of vinyl.

1. Coat factory cut ends with same vinyl material.

2. Colors: Where color is not indicated on Drawings or Finish Schedule, provide custom color as directed by Architect.

3. Where plastic coating is indicated provide coating on fence components other than gate hardware; provide plastic coating on gate hardware where required hardware is available with plastic coating matching coating on gates.

F. Concrete: ASTM C94, normal Portland cement, 2,500 psi at 28 days, 2" to 3" slump, 2 to 4 percent entrained air.

2.3 FABRICATION

A. Gates: Assemble gate frames by welding with both horizontal and vertical members and with diagonal cross-bracing of minimum 3/8" diameter adjustable length truss rods to ensure rigidity.

1. Swing Gates: Conform to ASTM F900; manufacturer's standard galvanized steel gates, 3'-0" wide unless otherwise indicated; complete with hardware including hasp for padlock.

a. Gate Frames: Minimum 1.9" outside diameter; 2.60 lbs/lin. ft.

b. Hinges: Non-lift-off type, offset to permit 180 degree opening, minimum 1-1/2 pair per gate leaf.

c. Locksets: Where gates are indicated to be locked provide mortise type locksets conforming to general requirements specified in Section 08 71 00 – Door Hardware.

1) Panic Devices (Where Indicated): Provide panic devices conforming to general requirements specified in Section 08 71 00.

2) Provide security casing for mortise locksets and panic devices and provide security screening for gates to prevent opening gates from secured side while allow egress from direction of travel for egress.

d. Accessories: Keepers, stops, and accessories as required for complete, secure fence gate installation.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install line posts, corner posts, gates, rails, post caps, and fabric to provide rigid structure for fence of heights indicated and in accordance with CLFMI Installation Standard and ASTM F567.

1. Use manufacturer's standard fittings, fasteners and hardware.

B. Maximum Spacing of Posts: Comply with ASTM F567 and CLFMI Installation Standard.

C. Install line, corner, and terminal posts plumb in accordance with recommendations of ASTM F567 and CLFMI Standard for locations indicated on Drawings.

1. Coordinate embedded post sleeves with concrete work.

D. Position bottom rail continuous between posts and centered nominal 4” above finished grade or surface with bottom of fabric nominal 2” above finished grade or surface.

E. Position bottom of fabric 2" above finished grade or surface with tension wire stretched taut between posts.

F. Pass top rail through line post tops to form continuous bracing; install 7" long couplings mid-span at pipe ends.

G. Brace corner posts back to adjacent line post with horizontal center brace rail; install brace rail, one bay from end posts.

H. Fasten fabric to rails, line posts, braces and tension wires with wire ties maximum 12" centers.

I. Attach fabric to end, corner and gate posts with tension bars and tension bar clips.

J. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is least dimension.

K. Install gates for free, easy operation, ready for Owner supplied padlock.

1. Install automatic gate operators in accordance with manufacturer recommendations and installation instructions for proper smooth operation; test gate operation and adjust as necessary for maximum lifespan of system.

END OF SECTION

PROJECT ADDRESS:
170 N SAN PEDRO RD
SAN RAFAEL, CA 94903

PROJECT DESCRIPTION:
NEW RESTROOMS ADDITION BUILDING AND ASSOCIATED WORK

CODE ANALYSIS
SEE SHEET GEN-2 FOR COMPLETE CODE ANALYSIS

PROJECT SUMMARY

DIVISION OF THE STATE ARCHITECT (DSA)
DSA OAKLAND REGIONAL OFFICE
1515 CLAY STREET, SUITE 1201
OAKLAN, CA 94162

LOCAL FIRE AUTHORITY
CITY FIRE DEPARTMENT
1600 LOS GAMOS DRIVE
SAN RAFAEL CA 94903
P: 415.485. 3304

GOVERNING AGENCIES

THIS PROJECT SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL CODES INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

FEDERAL:
AMERICANS WITH DISABILITIES ACT (ADA)

ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAAG)

STATE OF CALIFORNIA PARTIAL LIST OF APPLICABLE CODES AS OF JAN 1, 2020

2022 BUILDING STANDARDS ADMINISTRATIVE CODE
CALIFORNIA CODE OF REGULATIONS (CCR) PART 1, TITLE 24 C.C.R.

2022 CALIFORNIA BUILDING CODE (CBC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 2
(2018 INTERNATIONAL BUILDING CODE WITH THE INTERNATIONAL CODE COUNCIL WITH CALIFORNIA AMENDMENTS)

2022 CALIFORNIA ELECTRICAL CODE (CEC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 3
(2018 NATIONAL ELECTRICAL CODE OF THE NATIONAL FIRE PROTECTION ASSOCIATION, NFPA)

2022 CALIFORNIA MECHANICAL CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 4
(2018 UNIFORM MECHANICAL CODE OF THE INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS, IAPMO)

2022 CALIFORNIA PLUMBING CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 5
(2018 UNIFORM PLUMBING CODE OF THE INTERNATIONAL ASSOCIATION OF THE PLUMBING AND MECHANICAL OFFICIALS, IAPMO)

2022 CALIFORNIA ENERGY CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 6

2022 CALIFORNIA FIRE CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 9
(2018 INTERNATIONAL FIRE CODE OF THE INTERNATIONAL CODE COUNCIL)

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CAL GREEN CODE)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 11

2022 CALIFORNIA REFERENCED STANDARDS CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 12

PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 19

PARTIAL LIST OF APPLICABLE STANDARDS:

2022 BUILDING CODE (FOR SFM) REFERENCED STANDARDS CHAPTER 35

NFPA 13	AUTOMATIC SPRINKLER SYSTEM	2022 EDITION
NFPA 17	DRY CHEMICAL EXTINGUISHING SYSTEMS	2021 EDITION
NFPA 17A	WET CHEMICAL SYSTEMS	2021 EDITION
NFPA 72	NATIONAL FIRE ALARM CODE	2022 EDITION
NFPA 80	FIRE DOORS AND OTHER OPENING PROTECTIVES	2022 EDITION
NFPA 2001	CLEAN AGENT FIRE EXTINGUISHING SYSTEMS	2022 EDITION
UL 464	AUDIBLE SIGNAL APPLIANCES	2023 EDITION
UL 521	HEAT DETECTORS FOR FIRE PROTECTION SIGNAL SYSTEMS	2023 EDITION

APPLICABLE CODES

SVA ARCHITECTS IS THE DESIGNATED ARCHITECT OF RECORD AS REQUIRED BY THE STATE OF CALIFORNIA. THE ARCHITECT OF RECORD SHALL REVIEW SUBMITTALS AND COORDINATE SUBMITTALS AND DEFERRED SUBMITTALS THROUGH THE DIVISION OF THE STATE ARCHITECT. DEFERRED SUBMITTALS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE DIVISION OF THE STATE ARCHITECT.

DSA SHALL BE NOTIFIED IN WRITING BY THE OWNER IF THE ARCHITECT OF RECORD IS CHANGED OR IS UNABLE TO CONTINUE TO PERFORM THE DUTIES. THE OWNER SHALL DESIGNATE A SUBSTITUTE ARCHITECT OR ENGINEER OF RECORD WHO SHALL PERFORM ALL OF THE DUTIES REQUIRED OF THE ORIGINAL ARCHITECT OF RECORD.

REVIEW AND COMMENT ON SUBMITTALS AND DEFERRED SUBMITTALS SHALL NOT RELIEVE THE AUTHOR OF THE DOCUMENTS OR THE CONTRACTOR FROM COMPLIANCE WITH ALL APPLICABLE CODES AND THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THE REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATING HIS WORK WITH THAT OF OTHER TRADES, AND PERFORMING HIS WORK IN A SAFE AND SATISFACTORY MANNER.

ARCHITECT OF RECORD

STATEMENT OF GENERAL CONFORMANCE
THE DRAWINGS OR SHEETS LISTED IN THE INDEX ON THIS SHEET HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAD BEEN EXAMINED BY ME FOR:

1. DESIGN INTENT AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIONS PREPARED BY ME
2. COORDINATION WITH MY PLANS AND SPECIFICATIONS AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THE PROJECT.

THIS STATEMENT OF GENERAL CONFORMANCE "SHALL" NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES AND RESPONSIBILITIES UNDER SECTION 17302 AND 81138 OF THE EDUCATION CODE AND SECTION 4-336, 4-341 AND 4-344 OF TITLE 24, PART 1 (TITLE 24, PART 1 SECTION 4-317) (B))

GENERAL CONFORMANCE STATEMENT

OWNER
SAN RAFAEL CITY SCHOOLS
320 NOVA ALBION WAY,
SAN RAFAEL, CA 94903
CONTACT: DAN ZAICH
P: (415) 492-3200

ARCHITECT
SVA ARCHITECTS
6 HUTTON CENTRE DRIVE, SUITE 1150
SANTA ANA,CA 92707
CONTACT: PROJECT MANAGER
P: 949.809.3380

CONSTRUCTION MANAGER
X
203 X ST. SUITE X
OAKLAND,CA 94XXX
CONTACT: XX
P: X

CIVIL ENGINEER
HOHBACH-LEWIN, INC
260 SHERIDAN AVE, SUITE 150
CONTACT: BILL HENN
PALO ALTO,CA 94306
CONTACT:BILL HENN
P: 650.617.5930

STRUCTURAL ENGINEER
KPFF, INC
45 FREMONT STREET, 28th FLR.
SAN FRANCISCO,CA 94105
CONTACT: DAVID ROSSI
P.650.617.5930

MECHANICAL ENGINEER
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11870 PIERCE ST. SUITE 160
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P.951.299.4160

PROJECT DIRECTORY

1. ALL WORK SHALL CONFORM TO TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
2. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY AN ADDENDUM OR A CHANGE ORDER APPROVED BY THE DIVISION OF THE STATE ARCHITECT (DSA), AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR.
3. A PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR: CLASS 1.
4. CCD MUST BE SIGNED AS REQUIRED BY DSA IR A-6.
5. A COPY OF CCR TITLE 24, PARTS 1 THROUGH 5 MUST BE KEPT ON SITE DURING CONSTRUCTION.

6. THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTHING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUPMENT IS OPERANTING AND COMPLIANCE WITH THE ENERGY CODE.
7. LIGTHING CONTROLS ACCEPTANCE TEST MUST BE PEFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCVE TEST TECHNICIAN (ATT).
8. MECHANICAL SYSTEM ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECT SUBMITTED ON OR AFTER OCTOBER 1, 2021. ENVELOPE AND PROCESS EQUIPMENT ACCEPTANCE TESTS SHALL BE PERFOMED BY THE INSTALLING CONTRACTOR, ENGINEEER /ARCHITECT OF RECORD OR THE OWNER'S AGENT.

A LISTING OF CERTIFIED ATT CAN BE FOUND AT:
https://www.energy.ca.gov/programs-and-topics/programs/acceptance-test-technician-certification-provider-program/acceptance.

THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION /INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.
PROJECT INSPECTORS WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TEST HAVE BEEN COMPLETED.

GENERAL NOTES

NEW BUILDING SHALL BE PROVIDED WITH EMERGENCY RESPONDER RADIO COVERAGE IN ACCORDANCE WITH CFC SECTION 510. ARCHITECT SHALL CONTACT LOCAL FIRE DEPARTMENT TO OBTAIN DESIGN, EQUIPMENT SPECS, TESTING AND ACCEPTANCE CRITERIA. PLANS AND REQUESTED DOCUMENTATION SHALL BE SUBMITTED TO THE LOCAL AUTHORITY HAVING JURISDICTION FOR REVIEW AND APPROVAL. UPON COMPLETION, COPIES OF THE APPROVED PLANS, EQUIPMENT DATA SHEETS, TESTING AND ACCEPTANCE DOCUMENTATION SHALL BE PROVIDED TO THE SCHOOL DISTRICT.

THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE . LIGHTING CONTROLS ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT) MECHANICAL SYSTEM ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECT SUBMITTED ON OR AFTER OCTOBER 1, 2021. ENVELOPE AND PROCESS EQUIPMENT ACCEPTANCE TEST SHALL BE PERFORMED BY THE INSTALLING CONTRACTOR, ENGINNER/ARCHITECT OF RECORD OR THE OWNER'S AGENT A LISTING OF CERTIFIED ATT CAN BE FOUND At: https://www.energy.ca.gov/programss/acceptance-test-technician-certification-provider-program/acceptance. THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA. PROJECT INSPECTORS WILL COLLECT THE FORMS TO COMFIRM THAT THE REQUIRED ACCEPTANCE TEST HAVE BEEN COMPLETED.

EMERGENCY RESPONDER RADIO COVERAGE

THE FOLLOWING ITEMS ARE DESIGN-BUILD SYSTEMS AND WILL BE A DEFERRED SUBMITTAL BY THE CONTRACTOR AT A LATER DATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENGINEERING AND CALCULATIONS FOR APPLICABLE ITEMS. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A CIVIL OR STRUCTURAL ENGINEER WHO SHALL BE RESPONSIBLE FOR THE DESIGN. THE CONTRACTOR SHALL SUBMIT CALCULATIONS AND SHOP DRAWINGS TO THE ARCHITECT OF RECORD, WHO SHALL REVIEW THEM AND FORWARD THEM TO THE DIVISION OF THE STATE ARCHITECT WITH NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING. THE SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE DIVISION OF THE STATE ARCHITECT.

1. NONE

DEFERRED APPROVALS

I CERTIFY THAT ALL DRAWINGS OR SHEETS LISTED IN THE INDEX ON THIS SHEET (CIVIL, STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL, FIRE PROTECTION AND THEATRICAL) ARE IN GENERAL CONFORMANCE AND HAVE BEEN COORDINATED.

GENERAL

CIVIL

ARCHITECTURAL

STRUCTURAL

MECHANICAL

ELECTRICAL

PLUMBING

SHEET INDEX

VICINITY MAP

OWNER: San Rafael City Schools

PROJECT NAME: Venetia Valley - Middle School Restroom Addition

CLIENT ADDRESS: 177 N SAN PEDRO RD., SAN RAFAEL, CA 94903

REVISIONS:

	DESCRIPTION	DATE
3	ADDENDUM 2	08/04/23

PROJECT NO: 2022-40125
DATE ISSUED: 06.29.2023
SCALE:

GEN-1

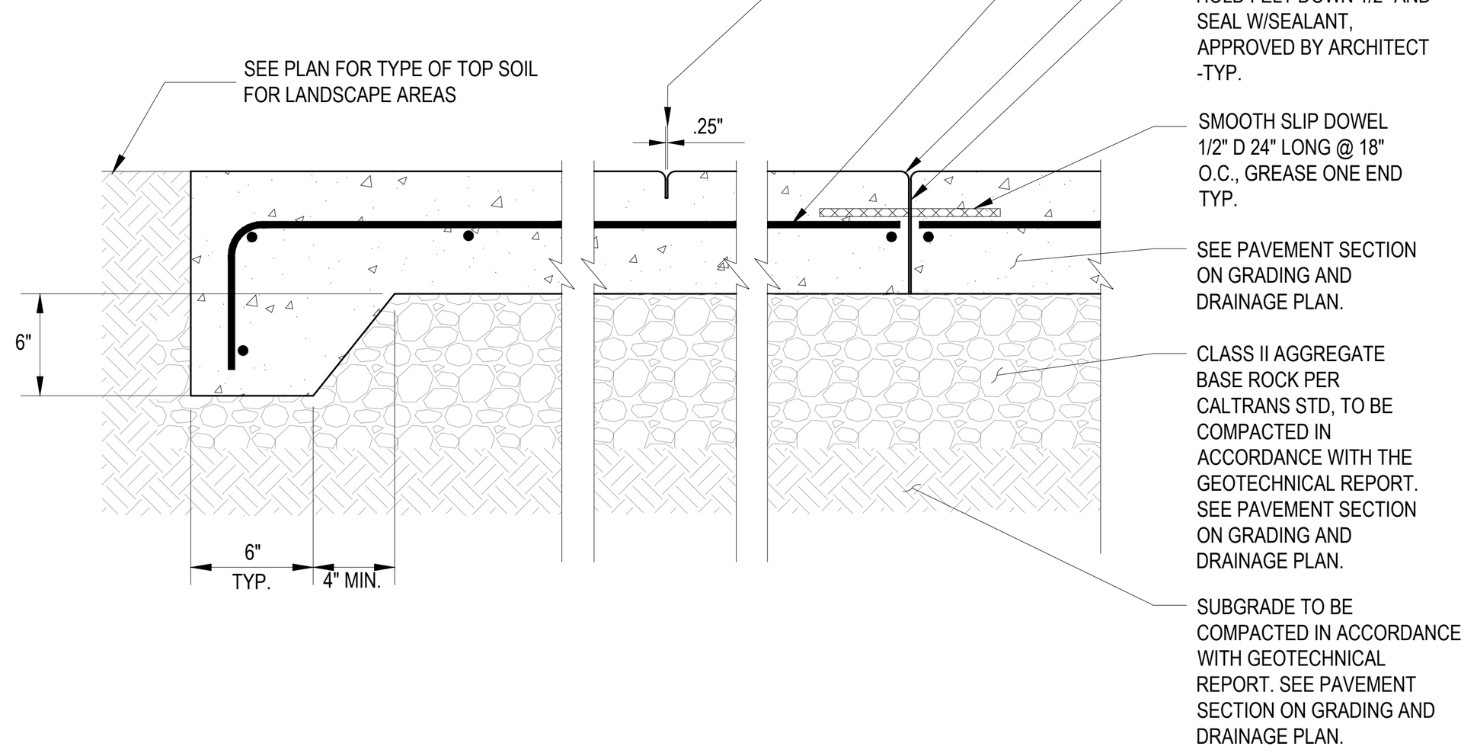
PROJECT INFORMATION & SHEET INDEX

SVA ARCHITECTS

6 HUTTON CENTRE DR, SUITE 1150 SANTA ANA, CA 92707
T 949.809.3380 WWW.SVA-ARCHITECTS.COM

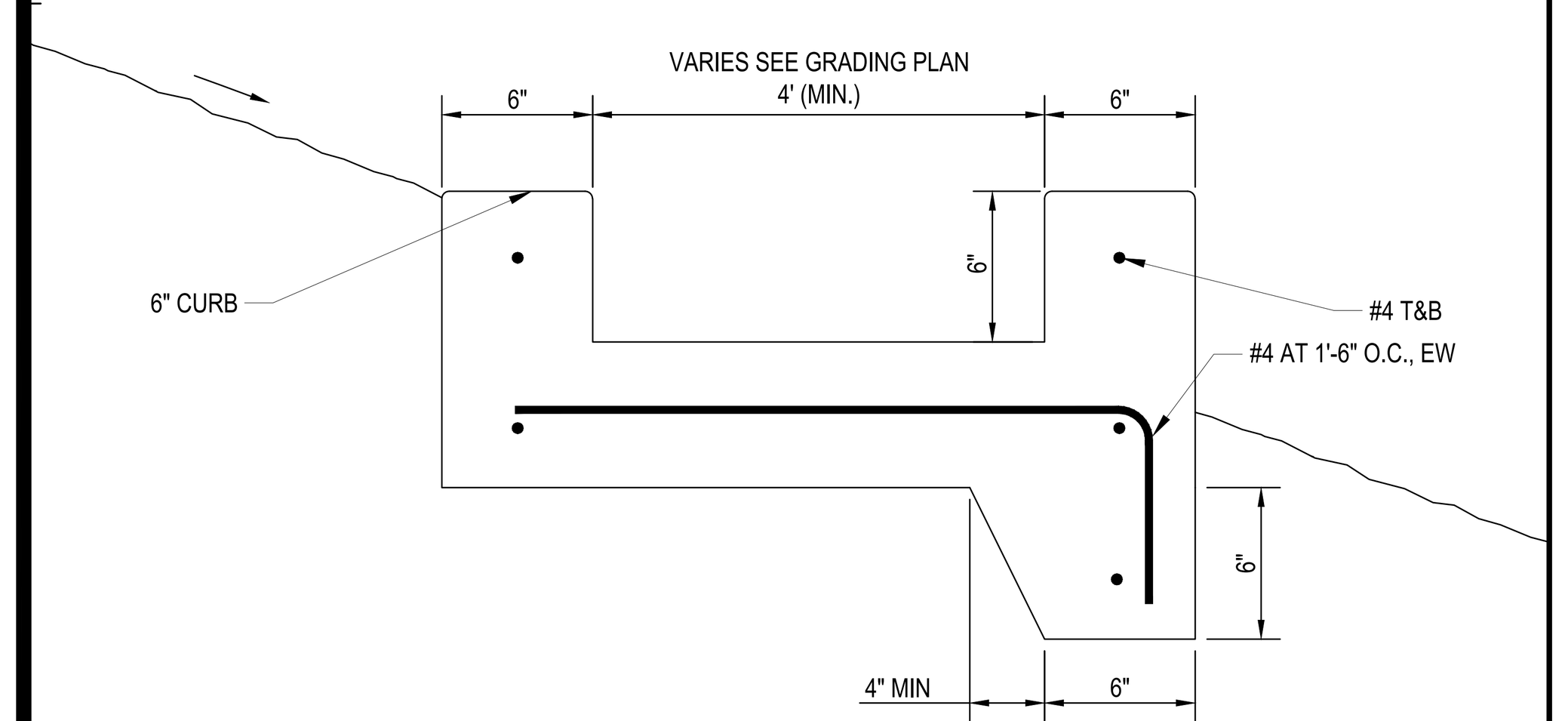
NOTES:

1. SLOPE ALL CONCRETE TO DRAIN 1% TO STREET UNLESS SHOWN OTHERWISE.
2. SEE ARCHITECTURAL PLANS FOR CONCRETE COLORS AND FINISHES.
3. EASE ALL EDGES R=1/2".
4. FELT SHALL BE NON-ASPHALTIC IMPREGNATED.
5. CONCRETE SECTION TO BE PER GEOTECHNICAL REPORT.

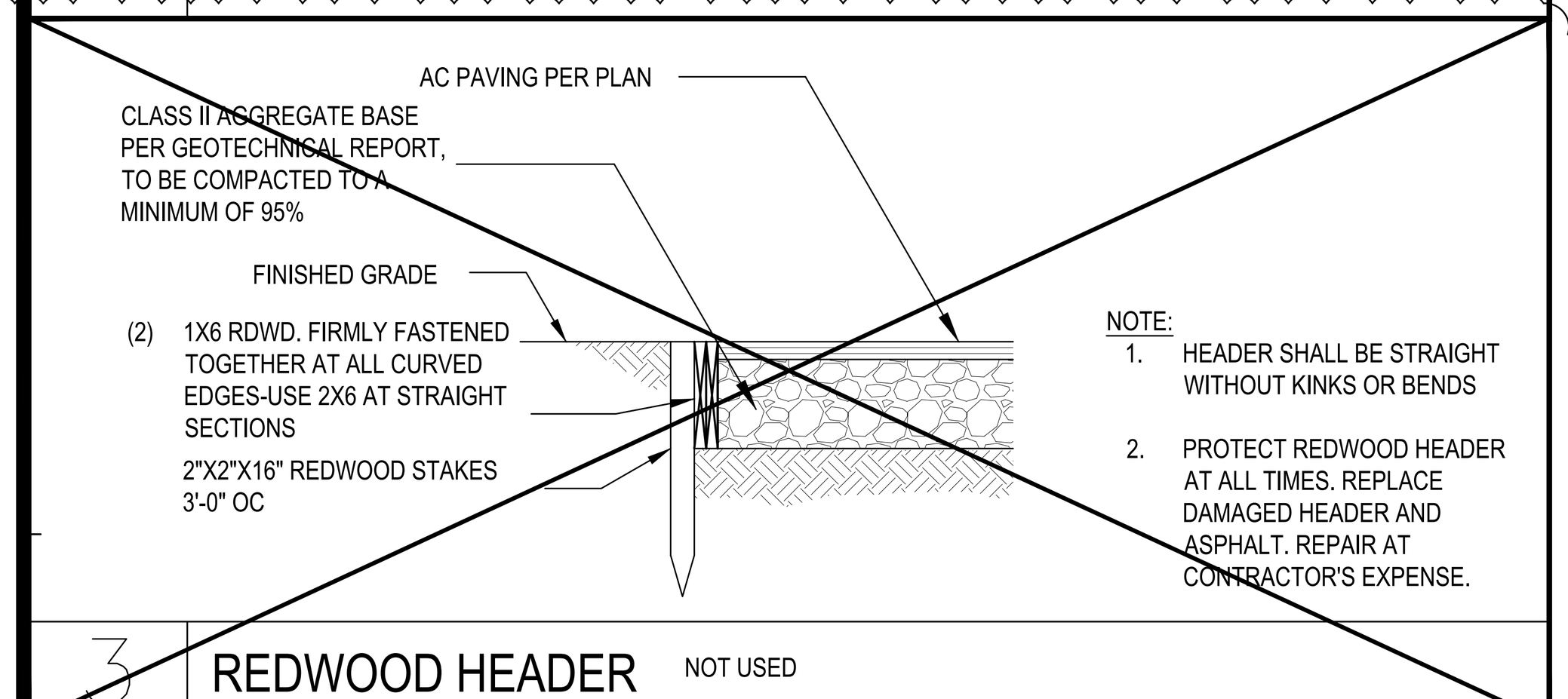


1 TYPICAL CONCRETE PAVING DETAIL

NOTES:
1. CONCRETE WALK & BASE PER PAVEMENT LEGEND

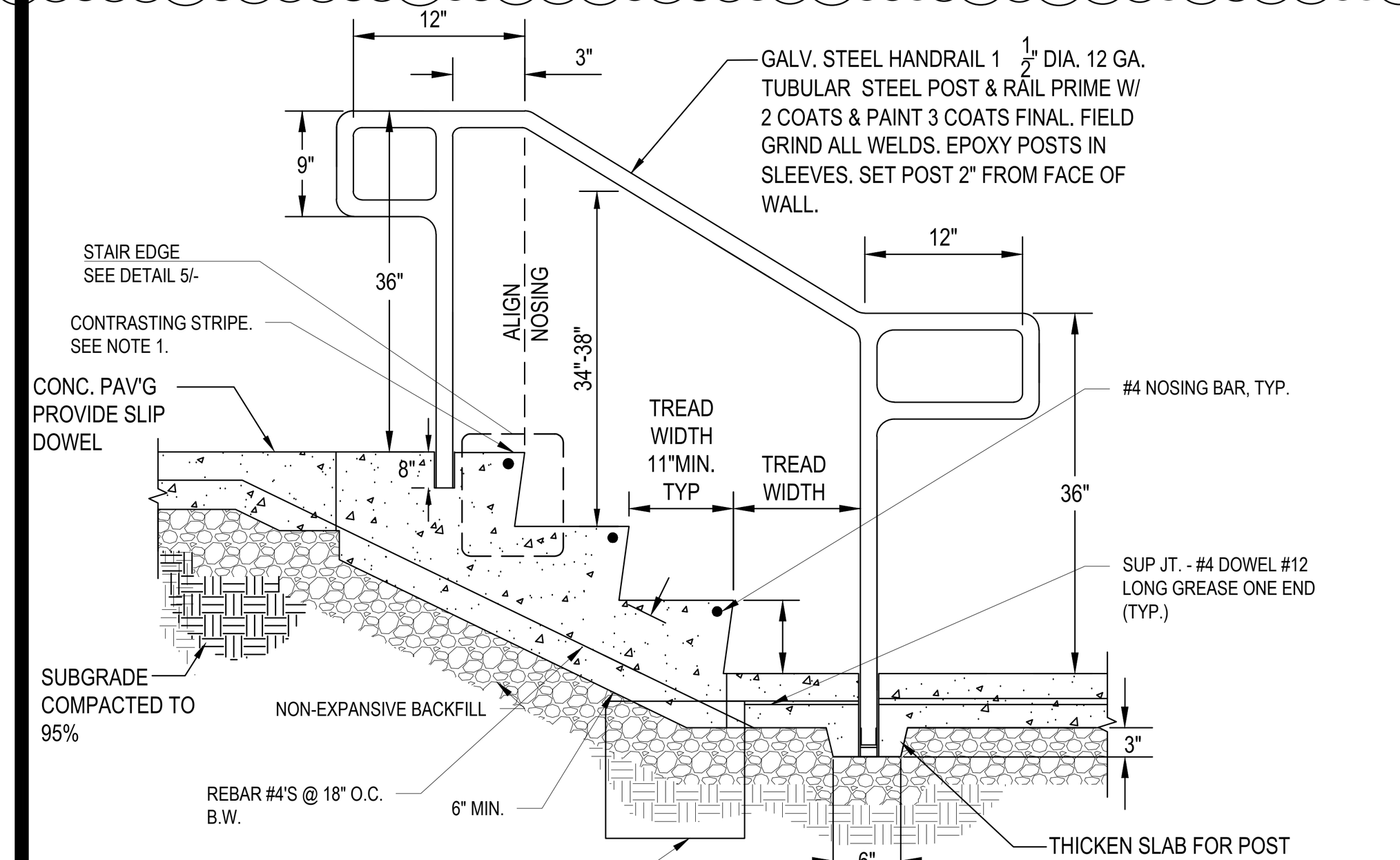


2 SIDEWALK WITH MONOLITHIC CURBS



NOTE:
1. HEADER SHALL BE STRAIGHT WITHOUT KINKS OR BENDS
2. PROTECT REDWOOD HEADER AT ALL TIMES. REPLACE DAMAGED HEADER AND ASPHALT. REPAIR AT CONTRACTOR'S EXPENSE.

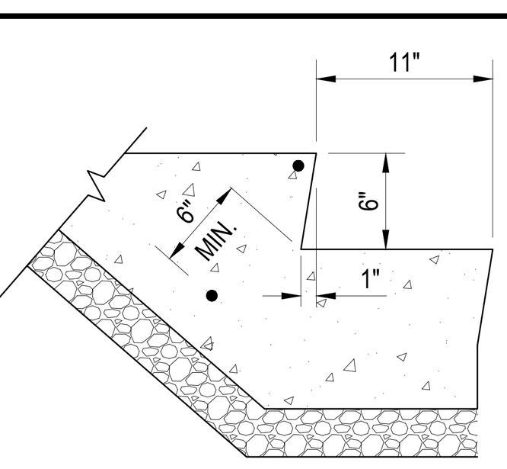
3 REDWOOD HEADER NOT USED



NOTE:
1. EXTERIOR STAIRS SHALL HAVE THE UPPER APPROACH AND ALL TREADS MARKED BY A STRIPE PROVIDING CLEAR VISUAL CONTRAST. THE STRIPE SHALL BE A MINIMUM OF 2 INCHES WIDE TO A MAXIMUM OF 4 INCHES WIDE PLACED PARALLEL TO, AND NOT MORE THAN 1 INCH FROM, THE NOSE OF THE STEP OR UPPER APPROACH. THE STRIPE SHALL EXTEND THE FULL WIDTH OF THE STEP OR UPPER APPROACH AND SHALL BE OF MATERIAL THAT IS AT LEAST AS SLIP RESISTANT AS THE OTHER TREADS OF THE STAIR. A PAINTED STRIPE SHALL BE ACCEPTABLE. GROOVES SHALL NOT BE USED TO SATISFY THIS REQUIREMENT. (CBC SEC.11B-504.4.1)

NOT TO SCALE

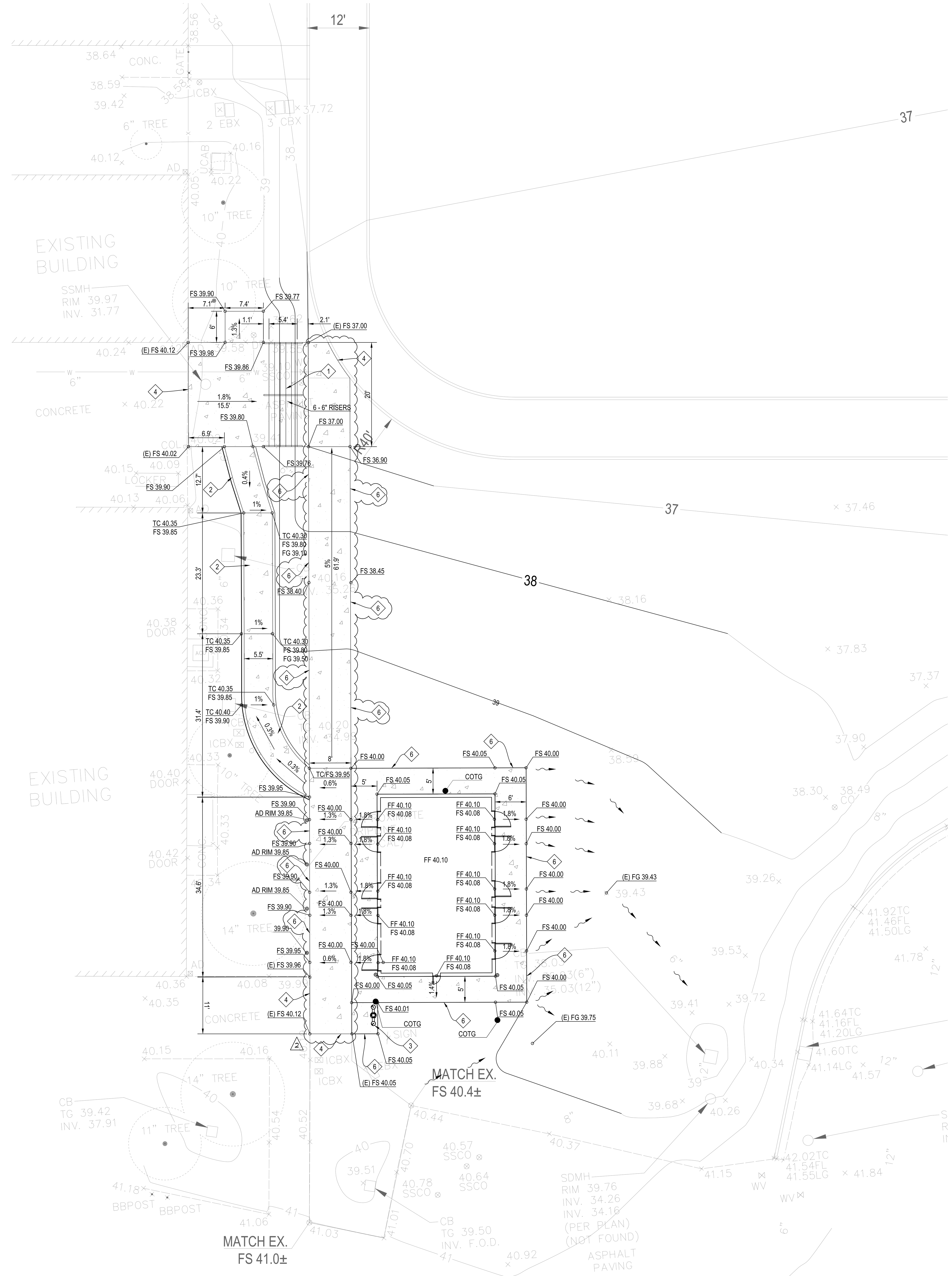
4 TYPICAL CONCRETE STAIRS



NOTE:
1. THE UPPER APPROACH AND ALL SHALL BE MARKED BY A STRIP OF CLEARLY CONTRASTING COLOR AT LEAST 2" WIDE AND PLACED PARALLEL TO AND NOT MORE THAN 1" FROM THE NOSE OF THE STEP OR LANDING TO ALERT THE VISUALLY IMPAIRED. THE STRIP SHALL BE OF A MATERIAL THAT IS AT LEAST AS SLIP OF RESISTANT AS THE OTHER TREADS OF THE STAIRS. A PAINTED STRIP SHALL BE ACCEPTABLE. GROOVES SHALL NOT BE USED TO SATISFY THIS REQUIREMENT (CDC SEC. 11B-504.4.1)
2. EXTERIOR STAIRS ALL TREADS ARE TO HAVE WARNING STRIPES PER CBC SEC. 11B-504.4.1

5 TYPICAL STAIR EDGE

Plot Date: Aug 7, 2023 - 10:26 AM



GRADING LEGEND

XX.XX	GRADE ELEVATION
X%	SLOPE AND DIRECTION

GRADING KEYNOTES

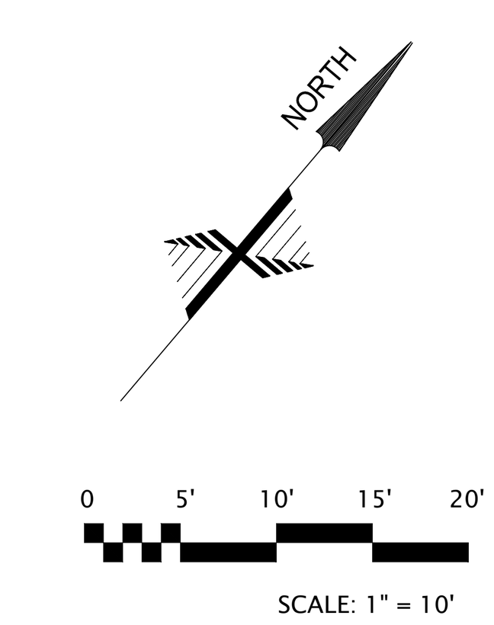
1. SITE STAIRS, SEE ARCHITECTURAL PLAN FOR DETAILS AND 4/-
2. SIDEWALK WITH MONOLITHIC CURBS , SEE DETAIL 2/-
3. DRINKING FOUNTAIN, SEE ARCHITECTURAL PLAN FOR DETAILS
4. LIMIT OF WORK
5. ~~INSTALL REDWOOD HEADER, SEE DETAIL 3/-~~ NOT USED
6. CONCRETE PAVEMENT TO HAVE TURNDOWN EDGE

PAVEMENT LEGEND

PAVEMENT SECTION TO BE APPROVED BY GEOTECHNICAL ENGINEER.

CONCRETE PAVEMENT SURFACES TO HAVE 28-DAY COMPRESSIVE STRENGTH OF AT LEAST 3,200 PSI. CONCRETE PAVING IN VEHICULAR TRAVEL AREA TO MEET ADTT (AVERAGE DAILY TRUCK TRAFFIC) OF 1.

SIDEWALK CONCRETE	5" CONCRETE W/ #4 @ 12" O.C. E.W. OVER 4" CLASS 2 BASEROCK COMPACTED TO 95% R.C. OVER NATIVE SOILS COMPACTED TO 90% R.C.
NOT USED ~~AC PAVEMENT~~	~~3.5" AC PAVEMENT OVER 11" CLASS 2 BASEROCK COMPACTED TO 95% R.C. OVER 90% R.C. COMPACTED NATIVE SOILS~~



OWNER: SAN RAFAEL CITY SCHOOLS

PROJECT NAME: VENETIA VALLEY SCHOOL MIDDLE SCHOOL RESTROOM ADDITION

CLIENT ADDRESS: 177 N SAN PEDRO RD, SAN RAFAEL, CA 94903

SEAL: REGISTERED PROFESSIONAL ENGINEER DANIEL G. LEWIN NO. C38406 STATE OF CALIFORNIA

REVISIONS:

	DESCRIPTION	DATE
2	ADDENDUM #2	8/3/23

DATE ISSUED:

PROJECT NO:

SCALE: AS SHOWN

SHEET NUMBER: C3.0

SHEET TITLE: GRADING AND DRAINAGE PLAN

HOHBACH-LEWIN #14997.33

HOHBACH–LEWIN, INC.
STRUCTURAL & CIVIL ENGINEERS
260 Sheridan Avenue, Suite 150
Palo Alto, CA 94306
(650) 617-5930, Fax (650) 617-5932

REFERENCE SHEET A1.1 FOR CODE ANALYSIS

ACCESSIBLE PARKING CALCULATION

PARKING LOT A	PARKING LOT B
USE: STAFF AND VISITOR PARKING	USE: STAFF ND VISITOR PARKING
TOTAL NUMBER OF STALLS: 38	TOTAL NUMBER OF STALLS: 35
VAN ACCESSIBLE STALLS REQUIRED: 1	VAN ACCESSIBLE STALLS REQUIRED: 1
VAN ACCESSIBLE STALLS PROVIDED: 1	VAN ACCESSIBLE STALLS PROVIDED: 1
TOTAL ACCESSIBLE STALLS (VAN + STANDARD) REQUIRED: 2	TOTAL ACCESSIBLE STALLS (VAN + STANDARD) REQUIRED: 2
TOTAL ACCESSIBLE STALLS (VAN + STANDARD) PROVIDED: 3	TOTAL ACCESSIBLE STALLS (VAN + STANDARD) PROVIDED: 2

OVERALL SITE PLAN | 1" = 40'-0" | **1**

DSA **810**

FIRE & LIFE SAFETY SITE CONDITIONS SUBMITTAL

Division of the State Architect (DSA) documents referenced within this publication are available on the DSA Forms or DSA Publications webpages.

To facilitate the Division of the State Architect's (DSA) fire and life safety plan review of project site conditions, DSA requires the design professional to provide the following information at time of project submittal for projects consisting of construction of a new campus, construction of new building(s), additions to existing buildings, and for site alternate design means for fire department emergency vehicle access, and fire suppression water supply.

Information associated with compliance items 1 through 3 below is to be provided for all project types indicated above. Information associated with items 4 through 7 is to be completed when an alternate means is utilized. Acknowledgement by the school district and signature from the Local Fire Authority (LFA) is only required when an alternate design means is being requested.

The Project Information and Fire & Life Safety Information sections are to be completed for all projects and imaged onto the fire access site plan. When an alternate design/means is proposed, all sections on pages 1 and 2 are to be completed and imaged on the fire access site plan.

For additional information refer to the instructions at the end of this form and DSA Policy *PL 09-01: Fire Flow for Buildings*.

PROJECT INFORMATION

School District/Owner:	San Rafael City Schools
Project Name/School:	Venetia Valley School Restroom Addition
Project Address:	177 N San Pedro Rd, San Rafael, CA 94903

FIRE & LIFE SAFETY INFORMATION

1.	Has a fire hydrant flow test been performed within the past 12 months? *(If yes, provide a copy of the test data.)*	Yes ☒		No ☐
2.	Was the fire hydrant water flow test performed as part of this LFA review?	Yes ☐		No ☑
3.	Is the project located within a designated fire hazard severity zone (FHSZ) as established by Cal-Fire? *(If yes, indicate FHSZ classification below.)*	Yes ☐		No ☑
	Refer to the following website for FHSZ locations: http://egis.fire.ca.gov/FHSZ/	Moderate ☐	High ☐	Very High ☐
	Wildland Interface Area (WIFA) *(If any designations are checked, project design must meet the requirements of CBC Chapter 7A.)*			WIFA ☐

CONDITION MEANS AND METHODS RESOLUTION		ALTERNATE ACCEPTED			
		Yes	No	N/A	N/R
4.	Emergency vehicle access roadways do not meet CFC requirements.			X	
4a.	**Acceptable Alternate:** Emergency vehicle and personnel access as proposed by the project architect is acceptable for providing fire suppression and protection of life and property.				
5.	**Fire Hydrants:** Number and spacing does not meet CFC requirements.			X	
5a.	**Acceptable Alternate:** Number of fire hydrants and spacing as proposed by the project architect is acceptable for fire suppression and protection of life and property.				
6.	**Fire Hydrants:** Water flow and pressure are less than CFC minimum.			X	
6a.	**Acceptable Alternate:** The available flow and pressure is acceptable for providing fire suppression and protection of life and property.				
7.	Location of fire department connection(s) serving fire sprinkler systems or standpipe systems does not meet CFC requirements.			X	
7a.	**Acceptable Alternate:** The location of fire department connection serving the fire sprinkler system and/or standpipe system is acceptable for providing fire suppression and protection of life and property.				

School District Acceptance of Acceptable Design Alternates

By signing this form, the school district acknowledges and accepts the proposed design as an alternative to California Building Code (CBC) and California Fire Code (CFC) minimum requirements, as indicated by one or more of the conditions indicated at items 4a, 5a, 6a or 7a, for providing fire and life safety protection of life and property.

Accepted by: _____ Title: _____

Signature: _____ Date: _____

LOCAL FIRE AUTHORITY (LFA) INFORMATION

LFA Agency Name:	
LFA Review Official:	
Title:	Work Phone:
Work Email:	

LFA Reviewer's Signature: _____ Date: _____

DSA 810 FORM

FUNCTION		EXISTING DSA APPLICATION HISTORY		
			DSA App #	Date Certified
BUILDING A	**LIBRARY**	BUILDING A	APPL # 105957 APPL # 26987	11/30/2016 04/12/1967
BUILDING B	**GYM**	BUILDING B	APPL # 18374 APPL # 26987 APPL # 34077 APPL # 34652 APPL # 01-105957	06/22/1960 04/12/1967 04/02/1973 07/12/1973 11/30/2016
BUILDING C	**ADMIN**	BUILDING C	APPL # 8426 APPL # 34077 APPL # 01-105957	03/17/1952 04/02/1973 11/30/2016
BUILDING D	**MULTIPURPOSE**	BUILDING D	APPL # 117438	07/20/21
BUILDING E	**CLASSROOMS**	BUILDING E	APPL # 117438	07/20/21
BUILDING G	**CLASSROOMS**	BUILDING G	APPL # 19093	06/28/1960
BUILDING H	**CLASSROOMS**	BUILDING H	APPL # 19093 APPL # 34077	06/28/1960 04/02/1973
BUILDING I	**CLASSROOMS**	BUILDING I	APPL # 27434	05/11/1967
BUILDING K	**RESTROOM (PORTABLE)**	BUILDING K	APPL # 01-104884	8/23/2006
BUILDING L1-3	**CLASSROOMS (PORTABLE)**	BUILDING L1-3	APPL # 01-106302	12/20/2016
BUILDING P1-4	**CLASSROOMS (PORTABLE)**	BUILDING P1-4	APPL # 01-111334	6/27/2011
BUILDING P5-6	**CLASSROOMS (PORTABLE)**	BUILDING P5-6	APPL # 01-115903	2/7/2017

DSA APPLICATION NUMBER

- S01 EXISTING ACCESSIBLE PARKING PER 01-117438- 2/A05.1(CCD80)
- D02 DEMO (E) RESTROOM - AFTER FINAL COMPLETION OF NEW RESTROOMS; PATCH ASPHALT AROUND THE BLDG TO MATCH EXISTING PAVING. REFER TO SHEET A1.2 FOR ADDITIONAL INFORMATION. 3
- D03 DEMO DOOR FRAME AND HARDWARE, ENTIRE FLOOR FINISH, WALLS, ROOF - CEILING
- D04 REMOVE & DISPOSE ALL PLUMBING FIXTURES AND ASSOCIATED PIPING AS REQ'D W/ IN 5FT OF REMOVED BDLG.
- S05 EXISTING ACCESSIBLE RAMP PER 01-117438 REF. 1/A05.1(CCD 80)
- S06 EXISTING ACCESSIBLE GATES PER 01-117438, REF. 9/A04.1(INCREMENT 1
- S07 EXISTING TRACK AND ACCESSIBLE PATH,
- S08 EXISTING ACCESSIBLE PARKING AND PATH OF TRAVEL, REF. CIVIL
- S09 NOT USED
- S10 EXISTING FACE OF CURB
- S11 EXISTING ACCESSIBLE DROP OFF PER 01-117438 C3.0 (CCD B79).
- S12 EXISTING TOW AWAY PARKING SIGN
- S13 EXISTING ACCESSIBLE PARKING AND STANDARD PARKING STALLS
- S14 EXISTING ACCESSIBLE GATE AND FENCING, REF. DSA A# 01-119706-
- S15 EXISTING CHAINLINK FENCING.
- S16 EXISTING FENCE TO REMAIN. PROTECT IN PLACE.
- S17 EXISTING VEHICULAR GATE
- S18 (N) CONCRETE SIDEWALK , REFER TO CIVIL DWGS.
- S19 EXISTING TREES TO REMAIN
- S20 EXISTING ACCESS GATE & KNOB GATE
- S21 (N) RESTROOMS, REFER TO SHEETS A11.2 & A11.1
- S22 (N) CONCRETE CURB, REFER TO CIVIL DET. 2/C3.0
- S23 (N) DEPRESS SLAB & FLOOR SLOPE DRAIN, REFER TO CIVIL DWG.
- S24 (N) PEDESTAL DRINKING FOUNTAIN, REFER TO CIVIL & PLUMBING DWG.
- S25 (N) CONCRETE PAVING, REFER TO CIVIL DWGS
- S26 (N) CONCRETE STAIRS/ RAILING, REFER TO CIVIL & ARCH. DWGS.
- S27 (N) SLOPE CONCRETE WALKWAY, REFER TO CIVIL DWGS
- S28 (E) FIRE ACCESS LANE, 20'-0" MIN. WIDE.
- S29 NOT USED
- S30 (N) FENCE TO MATCH (E) ADJACENT FENCE, REFER TO SHEET A1.2

NOTE:
1. SLOPE CONCRETE FLOOR 2% MAX. TO FLOOR DRAIN IN RESTROOMS
2. DEPRESS CONCRETE FLOOR SLAB 1" & 1.5" IN THE RESTROOMS FOR FLOOR TILE & MUD BED TO SLOPE TO THE FLOOR.

OVERALL SITE PLAN KEYNOTES

PATH OF TRAVEL
PATH OF TRAVEL (P.O.T) AS INDICATED MEETS THE FOLLOWING REQUIREMENTS:
1. IS A BARRIER-FREE ACCESSIBLE ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" BEVELED AT A SLOPE NOT STEEPER THAN 1:2 EXCEPT THAT LEVEL CHANGES ARE 1/4" MAX VERTICAL & IS AT LEAST 48" WIDE.
2. SURFACE SHALL BE STABLE, FIRM AND SLIP RESISTANT.
3. CROSS-SLOPE SHALL NOT BE STEEPER THAN 1:48 AND RUNNING SLOPE SHALL NOT BE STEEPER THAN 1:20 UNLESS OTHERWISE INDICATED (SEC 11B-403.3)
4. P.O.T. SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM (SECTION 11B-307.4) AND PROTRUDING OBJECTS GREATER THAN 4"
PROJECTION FROM WALL SURFACE BETWEEN 27" AND 80" ABOVE FINISH FLOOR
OR GROUND (SECTION 11B-307.2)
5. PROVIDE FLUSH TRANSITIONS AT ANY ADJOINING JOINTS BETWEEN DIFFERENT WALK SURFACES IN P.O.T.
6. ACCESS TO A PUBLIC WAY . THE EXIT DISCHARGE SHALL PROVIDE A DIRECT AND UNOBSTRUCTED ACCESS TO A PUBLIC WAY

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT:
THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IN COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR **PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS.** AS PART OF THE DESIGN OF THIS PROJECT, THE POT WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NONCOMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED UPON THE VALUATION THRESHOLD OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF P.O.T. ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

- PROPERTY LINE
- LIMITS OF WORK FOR THIS PROJECT
- FIRE HOSE PULL
- FIRE TRUCK ACCESS LANE (MIN. 20'-0" WIDTH)
- (N) RESTROOMS
- (N) CONCRETE SIDEWALK, REFER TO CIVIL DWGS
- (E) RESTROOMS TO BE DEMOLISHED
- (E) CONCRETE SIDEWALK.

SITE PLAN LEGEND - DSA

OWNER: San Rafael City Schools

PROJECT NAME: Venetia Valley - Middle School Restroom Addition

CLIENT ADDRESS: 177 N SAN PEDRO RD., SAN RAFAEL, CA 94903

REVISIONS:

	DESCRIPTION	DATE
3	ADDENDUM 2	08/04/23

PROJECT NO: 2022-40125
DATE ISSUED: 06.29.2023
SCALE: As indicated

A1.0

OVERALL SITE PLAN

SVA ARCHITECTS
6 HUTTON CENTRE DR. SUITE 1150 SANTA ANA, CA 92707
T 949.809.3380 WWW.SVA-ARCHITECTS.COM

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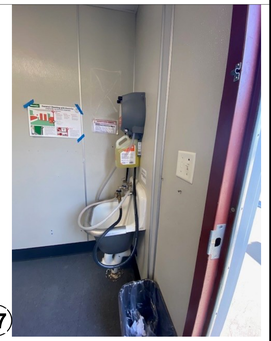

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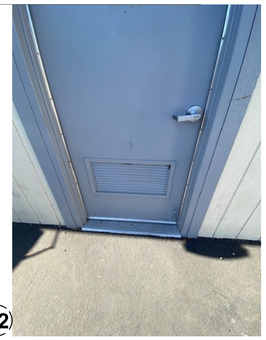

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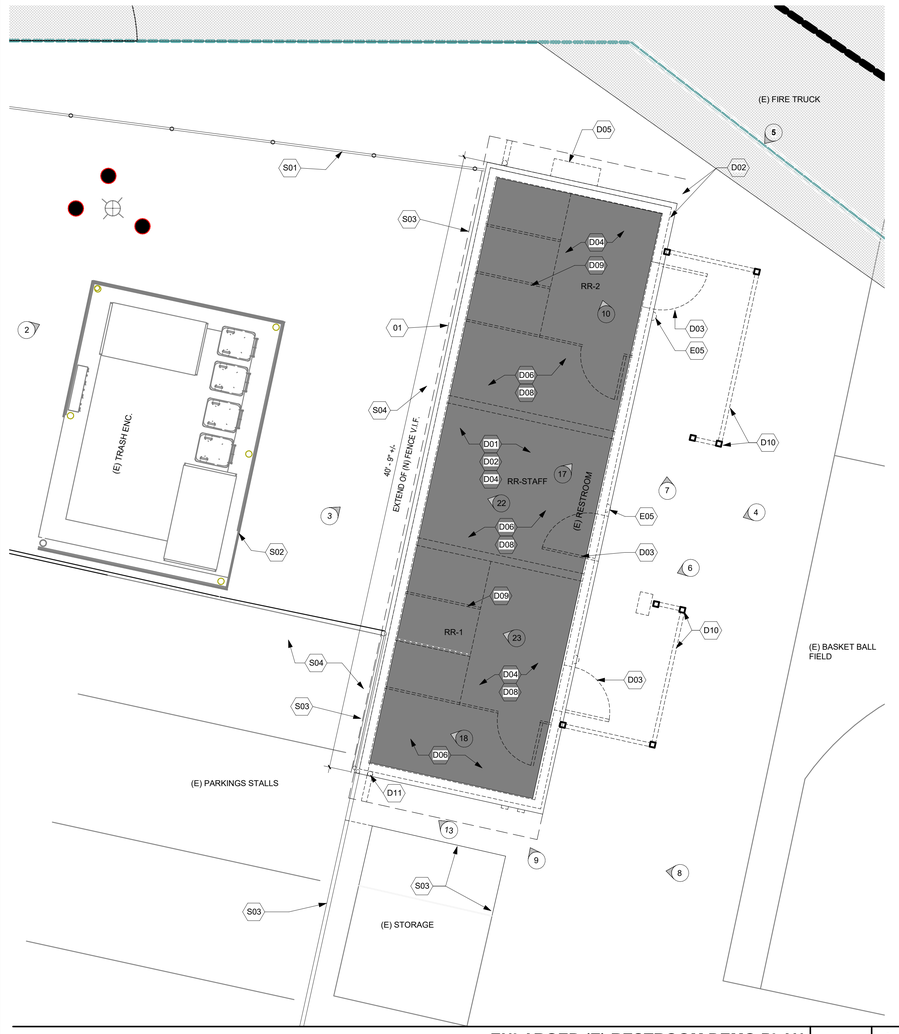

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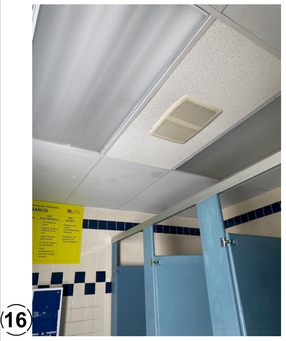

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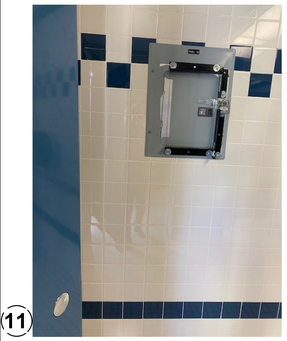

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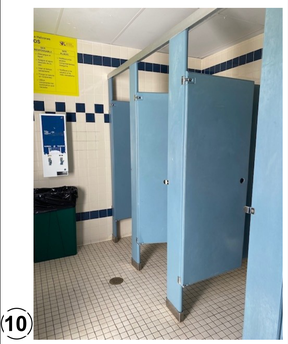

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ENLARGED (E) RESTROOM DEMO PLAN

1/4" = 1'-0"

1

- S01 PROTECT IN PLACE (E) METAL FENCE
- S02 PROTECT IN PLACE (E) METAL TRASH IN CLOSURE
- S03 PROTECT IN PLACE (E) WALL STRUCTURAL & BLDG STRUC.
- S04 PROTECT IN PLACE ASPHALT PAVING AND REPLACE IF DAMAGE
- D01 REMOVE /DEMO (E) PORTABLE PAD IN IT ENTIRETY ,
- D02 REMOVE /DEMO (E) PORTABLE STRUCTURAL AND ALL THEIR COMPONANTS / ROOF. PATCH ASPHALT AROUND THE BLDG. TO MATCH (E) PAVING. FIG. 5
- D03 REMOVE AND DISPOSE (E) DOORS, FRAME, AND HARDWARE/ THRESHOLD. FIG. 4, 12 , 24 TYP.
- D04 REMOVE AND DISPOSE (E) FLOOR TILE,TYP AT ALL RESTROOMS. FIG. 13
- D05 REMOVE AND DISPOSE (E) CONC. STOOP, PATCH ASPHALT TO MATCH (E) PAVING.
- D06 REMOVE AND DISPOSE ALL (E) PLUMBING FIXTURES AND TOILET ACCESSORIES & MIRRORS, AND FLOOR SINK & UTILITIES. FIG. 15, 17, 18, 20, 22, 23. TYP.
- D07 REMOVE AND DISPOSE ALL (E) CEILING SYSTEM, FIG. 16, 21 22 TYP.
- D08 REMOVE AND DISPOSE (E) WALL FINISH TYP.
- D09 REMOVE AND DISPOSE ALL (E) PANEL PARTITION, FIG. 23
- D10 REMOVE AND DISPOSE (E) EXTERIOR WOOD FENCE/ POST, PATCH AND FILL AS REQUIRED TO MATCH (E) PAVING., FIG. 4, 7
- D11 REMOVE AND DISPOSE DOWNSPOUT LEADER AND GUTTER. FIG.14
- 01 PROVIDE (N) METAL FENCE AFTER REMOVAL OF PORTABLE BLDG. FENCE HEIGHT AND TYPE TO MATCH (E) ADJECENT METAL FENCE V.I.F. FIG. 3
- E01 DISCONNECT AND CAP (E) UTILITY POWER, FIRE ALARM AND TECHNOLOGY FIG. 9, 21
- E02 REMOVE ELECTRICAL PANEL AND ASSOCIATE FEEDERS, FIG.11.
- E03 REMOVE AND DISPOSE ELEC.OUTLETS, SWITCHES AND ELEC. CONNECTIONS, FIG. 9, 17
- E04 REMOVE AND DISPOSE (E) INTERIOR LIGHTING AND ELEC. CABLING TO SOURCE, FIG. 16,19,& 22
- E05 REMOVE AND DISPOSE (E) EXTERIOR LIGHTING AND ELEC. CABLING TO SOURCE, FIG. 4, 7
- E06 REMOVE, DISCONNECT AND DISPOSE (E) FIRE ALARMS AND TECHNOLOGY, FIG. 21, 22
- M01 REMOVE, DISCONNECT AND DISPOSE ANY (E) EXHAUS FAN/ GRILL OR ANY MECH. DUCT. FIG. 16 & 19
- P01 DISCONNECT AND CAP (E) UTILITY, SEWER LINE, WATER CONNECTION AND ABANDON IN PLACE FOR FUTURE USE.

NOTE: PROVIDE LEVELS AND MARKERS FOR EXISTING UTILITY CAPS TO IDENTIFY EA. UTILITY SOURCE FOR FUTURE USE. PROTECT N PLACE UTILITY COVERS FIG. 6, 9

DEMOLITION KEYNOTES

1. DEMOLITION DRAWINGS PREPARED BY THE ARCHITECT ARE FOR A GENERAL DESCRIPTION OF EXISTING BUILDING COMPONENTS, ASSEMBLIES AND MATERIALS TO BE REMOVED. DEMOLITION CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITION AND QUANTITIES.

2. DEMOLITION CONTRACTOR IS RESPONSIBLE FOR PROVIDING NECESSARY PERMITS REQUIRED BY FEDERAL, STATE AND LOCAL MUNICIPAL AGENCIES HAVING JURISDICTIONAL AUTHORITY OVER ANY ASPECT OF THE DEMOLITION SCOPE.

3. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS PRIOR TO DEMOLITION WORK.

4. DEMOLITION CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ALL DEMOLISHED MATERIALS IN A MANNER COMPLIANT TO FEDERAL, STATE AND LOCAL MUNICIPAL REQUIREMENTS AND GUIDELINES.

5. DEMOLITION CONTRACTOR SHALL COORDINATE ALL WORK SCHEDULES WITH OWNER. IN NO CASE SHALL DEMOLITION WORK BE CONDUCTED DURING HOURS PROHIBITED BY LOCAL MUNICIPALITY.

6. PLANS ARE BASED ON EXISTING RECORD DRAWINGS AND VISUAL OBSERVATION. UNIDENTIFIED ITEMS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNERS REPRESENTATIVE PRIOR TO REMOVAL.

7. CONTACT OWNER'S REPRESENTATIVE FOR LIST OF SALVAGEABLE ITEMS.

8. REMOVE EXISTING CEILING FINISHES (ACOUSTICAL TILE) AND SUBSTRATE (GYPSUM BOARD, AND RELATED SUSPENSION SYSTEMS WHERE NOTED ON DRAWINGS IN ALL ROOMS

9. REMOVE EXISTING WALL FINISHES (CERAMIC TILE, GYPSUM BOARD SUBSTRATES, ETC.)

10. REMOVE EXISTING FLOORING & BASE (CERAMIC TILE,) IN ALL RESTROOMS

11. AFTER REMOVAL OF (E) BUILDING STRUCTURE, PATCH ASPHALT AROUND THE BLDG. TO MATCH EXISTING PAVING.

12. ALSO REFERENCE CIVIL, PLUMBING, MECHANICAL AND ELECTRICAL DEMOLITION NOTES FOR ADDITIONAL COORDINATION OF ITEMS TO BE REMOVED OR PROTECTED IN PLACE.

DEMOLITION GENERAL NOTES

- (N) METAL FENCE
- DEMO PARTITION WALL & EXTERIOR FENCE
- DEMO DOORS
- DEMO (E) BLDG . STRUCTURE

OWNER: San Rafael City Schools

PROJECT NAME: Venetia Valley - Middle School Restroom Addition

CLIENT ADDRESS: 177 N SAN PEDRO RD., SAN RAFAEL, CA 94903

REVISIONS:

	DESCRIPTION	DATE
3	ADDENDUM 2	08/04/23
2		
1		
01		
E01		
E02		
E03		
E04		
E05		
E06		
M01		
P01		

PROJECT NO: 2022-40125

DATE ISSUED: 06.29.2023

SCALE: As indicated

A1.2

SITE PLAN- DEMO- (E) RESTROOM

3

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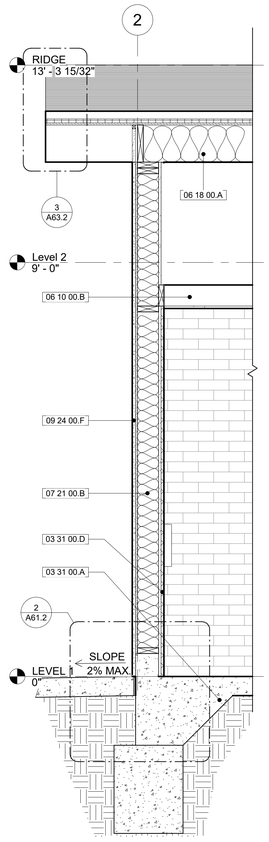
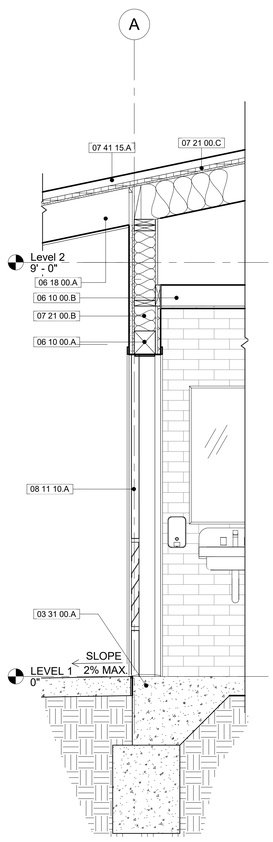
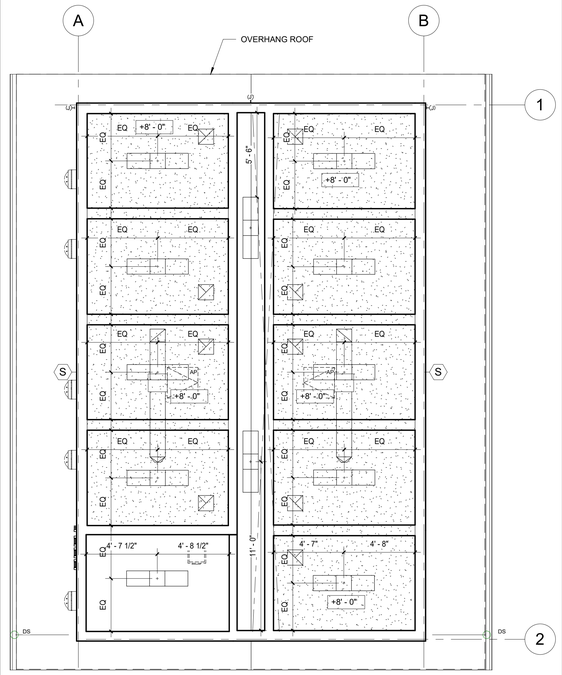
6 HUTTON CENTRE DR, SUITE 1150 SANTA ANA, CA 92707
T 949.809.3380 WWW.SVA-ARCHITECTS.COM



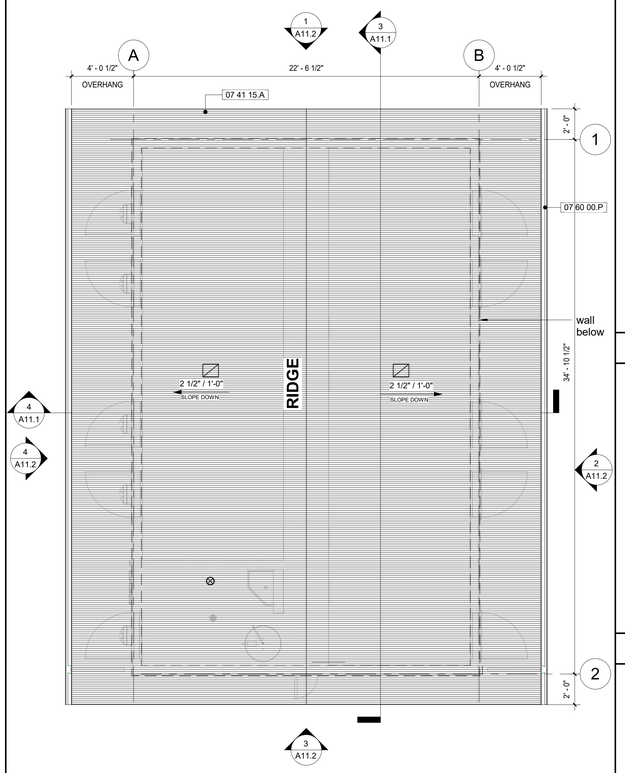
WALL SECTION 2 3/4" = 1'-0" **9**



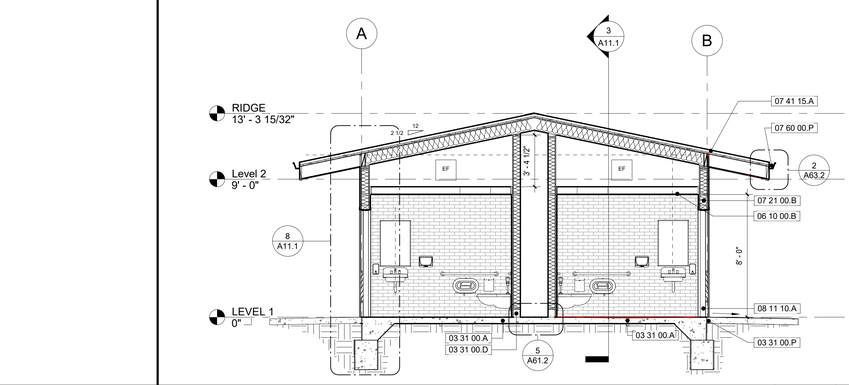
WALL SECTION 1 3/4" = 1'-0" **8**



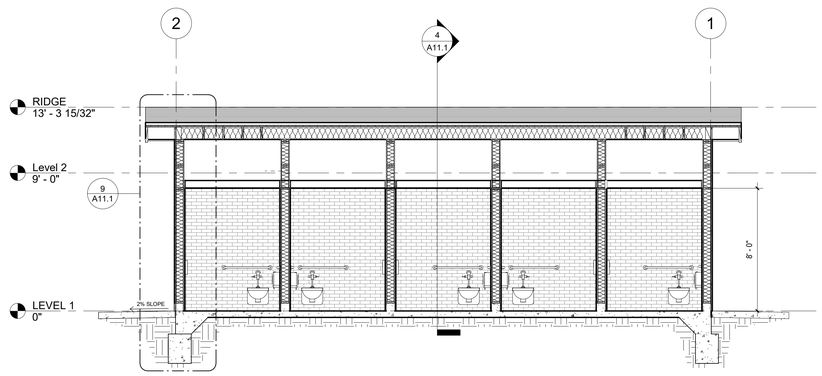
MS RESTROOM - REFLECTED CEILING PLAN 1/4" = 1'-0" **5**



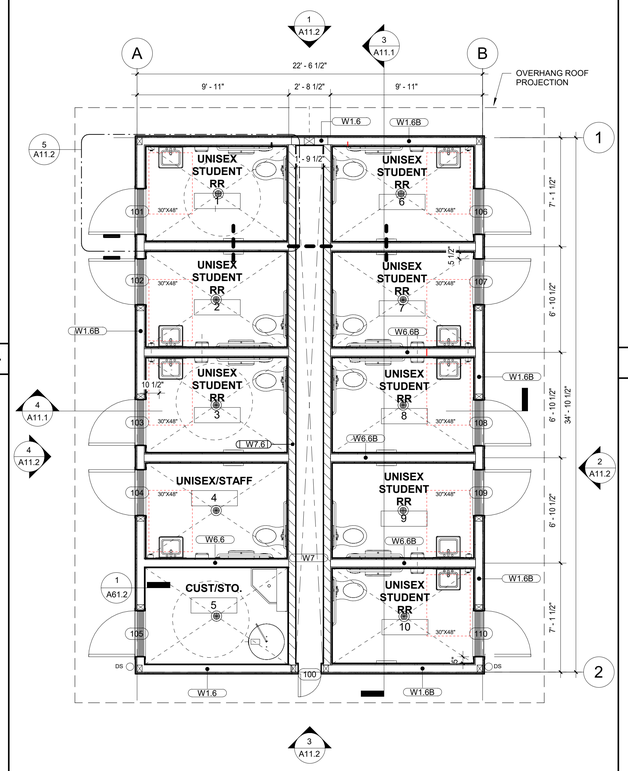
MS RESTROOM - ROOF PLAN 1/4" = 1'-0" **2**



BUILDING SECTION 1 1/4" = 1'-0" **4**



BUILDING SECTION 2 1/4" = 1'-0" **3**



MS RESTROOMS - FLOOR PLAN 1/4" = 1'-0" **1**

RCP LEGEND

	30"X48" MIN. ACCESSIBLE WHEELCHAIR CLEAR FLOOR SPACE
60" MIN. CLR.	60" MIN. ACCESSIBLE WHEELCHAIR CLEAR TURNING SPACE
	WOOD FRAMING STUD WALL PER SHEET A61.1
	PLUMBING WALL PER SHEET A61.1 & A61.2
	EXTERIOR WALL PER SHEET A61.1
1	WALL TYPE ANNOTATIONS, SEE SHEET A61.1 FOR DETAILS
101	NUMBER INDICATES DOOR PER SCHEDULE, REFER TO SHEET A52.1

FLOOR PLAN GENERAL NOTES:
1. ALL DIMENSIONS ARE TO CENTERLINE OF THE GRID LINES AND/OR TO THE FACE OF STUDS, U.N.O.

2. UNLESS NOTED OTHERWISE, ALL WALLS ARE FULL HEIGHT.

3. REFER TO SHEET GEN-5 FOR TYPICAL ACCESSIBILTY REQUIREMENTS AND DIMENSIONS.

4. REFER TO ENLARGED PLANS 5/A11.2 FOR DIMENSIONS AND CALLOUTS NOT SHOWN HERE.

FLOOR PLAN LEGEND

?	DESCRIPTION
03 31 00.A	CONCRETE SLAB ON GRADE, REFER TO STRUCL.DWGS
03 31 00.D	PLUMBING WALL CONCRETE CURB
03 31 00.P	CONCRETE SIDEWALK SLOPE 2% MAX.,SEE CIVIL DRAWINGS
06 10 00.A	WALL WOOD FRAMING SYSTEM, SAD, SSD
06 10 00.B	SOFFIT WOOF FRAMING SYSTEM, SAD, SSD
06 18 00.A	ROOF WOOD JOIST FRAMING , SSD (3)
07 21 00.B	THERMAL BATT WALL INSULATION, SEE SPECS.
07 21 00.C	THERMAL INSULATION- RIGID
07 41 15.A	ROOF TYPE B: STANDING SEAM METAL ROOFING OVER WOOD STRUCTURE, SEE SEE SHEET 1/A63.2
07 60 00.P	METAL GALVANIZED GUTTER, SEE DET. 2/A63.2
08 11 10.A	HOLLOW METAL DOOR AND FRAME SYSTEM REFER TO DOOR SCHEDULE FOR TYPE AND FINISH
09 24 00.F	EXTERIOR CEMENT PLASTER, REFER TO SHEET 1/A61.1 (3)

PLAN - KEYNOTES

?	DESCRIPTION

RCP - KEYNOTES

	EXHAUST AIR DISCHARGE, SEE MECH. DRAWINGS & ARCH. DET . (8 A63.1)
	RECESSED EXHAUST FAN, SEE MECH. DRAWINGS
	SUSPENDED FLUORESCENT FIXTURE, SEE ELEC. DRAWINGS*
	WALL MOUNTED EXTERIOR LIGHTING FIXTURE, SEE ELEC. DRAWINGS*
⊗	EXHAUST AIR DISCHARGE UTR. TO ROOF CAP, SEE ELECTRICAL DRAWINGS
S	SPEAKERS, SEE ELECTRICAL DRAWINGS,
J	CAMERAS OFCI , SEE ELECTRICAL DWGS
	EF MECH. EQUIPMENT , SEE ELECTRICAL DWGS
AP	ACCESS PANEL, SEE ELEC. DRAWINGS.
	GYP. BOARD CEILING, REFER TO NOTE 1
	EXPOSED CEILING, REFER TO NOTE 9
	EXTERIOR PLASTER SOFFIT, REFER TO NOTE 3

NOTES:
1. GYPSUM BOARD CEILINGS SHALL BE FRAMED WITH WOOD FRAME JOISTS, U.N.O. SEE DETAIL 13/A61.3 FOR MORE INFORMATION.
2. NOT USED
3. FOR PLASTER DETAILS, SEE DETAIL 1/A61.3.
4. AT ALL ROOMS WITHOUT CEILINGS (LABELLED AS "EXP" ON PLAN AND/OR ON THE FINISH SCHEDULE), ALL EXPOSED SURFACES AND ELEMENTS SHALL BE PAINTED, INCLUDING STRUCTURE, DECK ABOVE, AND ALL UTILITIES INCLUDING PIPING, CONDUITS, DUCTWORK, ETC.
5. PLUMBING, ELECTRICAL, MECHANICAL AND FIRE PROTECTION COMPONENTS ARE SHOWN FOR REFERENCE AND COORDINATION PURPOSES. REFER TO PLUMBING, ELECTRICAL, MECHANICAL AND FIRE PROTECTION DRAWINGS FOR COMPONENT AND SYSTEM QUANTITIES, TYPES AND REQUIREMENTS
6. CENTER LIGHTING FIXTURES BETWEEN OPPOSITE WALLS, U.N.O.
7. ALL DIMENSIONS, NOTES, KEYNOTES AND DETAILS CALLOUTS ARE TYPICAL, U.N.O.
8. SEE SHEET A52-1 FOR INTERIOR FINISH SCHEDULE
9. AT EXPOSED CEILINGS, ALL DUCTS, PIPES AND CONDUITS SHALL RUN PARALLEL OR PERPENDICULAR TO WALL, AND AS CLOSE TO THE DECK ABOVE AS POSSIBLE. PROVIDE ESCUTCHEONS FOR CONDUIT/PIPES AT WALLS WHERE EXPOSED.

* REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS OF EMERGENCY LIGHTING.

OWNER: San Rafael City Schools

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REVISIONS:

	DESCRIPTION	DATE
3	ADDENDUM 2	08/04/23

PROJECT NO:	2022-40125
DATE ISSUED:	06.29.2023
SCALE:	As indicated

A11.1

FLOOR & RCP PLAN, INT. ELEV & SECTIONS

SVA ARCHITECTS
6 HUTTON CENTRE DR, SUITE 1150 SANTA ANA, CA 92707
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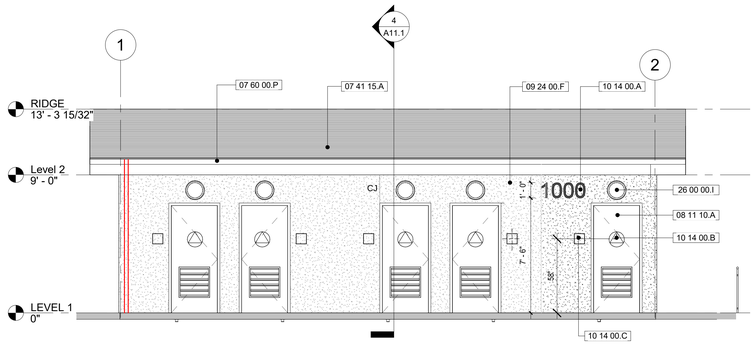
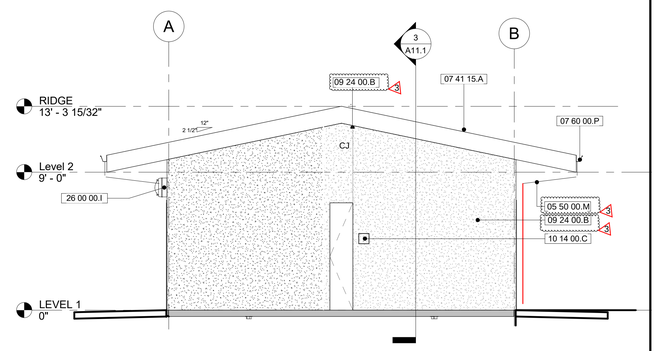


EXTERIOR WEST ELEVATION | 1/4" = 1'-0" | **4**

?	DESCRIPTION
06 18 43.D	ROOF WOOD JOIST FRAMING , SSD
07 21 00.B	THERMAL BATT WALL INSULATION, SEE SPECS.
07 28 00.C	CEMENT PLASTER WALL ASSEMBLY, SEE WALL TYPES
07 41 15.A	ROOF TYPE B: STANDING SEAM METAL ROOFING OVER WOOD STRUCTURE, SEE SEE SHEET 1/A63.2
05 50 00. M	DOWNSPOUT PIPE - SCHEDULE 40 PIPE, SEE PLUMBING & CIVIL DWGS
07 60 00.P	GUTTER, SEE DET. 2/A63.2
08 11 10.A	HOLLOW METAL DOOR AND FRAME SYSTEM REFER TO DOOR SCHEDULE FOR TYPE AND FINISH
09 24 00.F	EXTERIOR CEMENT PLASTER, REFER TO SHEET 1/A61.1
10 14 00.A	BUILDING SIGNAGE, SEE DETAIL 10/GEN-4
10 14 00.B	ROOM IDENTIFICATION SIGNAGE,TYP. SEE DETAIL 1&6/GEN-4
10 14 00.C	RESTROOM DOOR SIGNAGE, TYP. SEE DETAIL 1&4/GEN-4
26 00 00.I	SURFACE MOUNTED LIGHT FIXTURE,TYP. SED
09 24 00 B	CEMENT PLATER CONTROL JOINT, DET.5/61.3

KEYNOTES



EXTERIOR SOUTH ELEVATION | 1/4" = 1'-0" | **3**

LEGEND

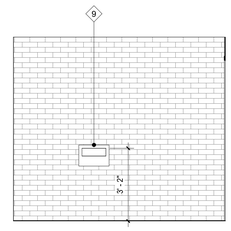
#	FIXTURE
1	1-1/4" DIA. STAINLESS STEEL GRAB BAR, 42" LENGHT, BOBRICK B-5806X42
1.1	1-1/4" DIA. STAINLESS STEEL GRAB BAR, 36" LENGHT, BOBRICK B-5806X 36
2	SURFACE MOUNTED SOAP DISPENSER - OFCI
3	SURFACE- MOUNTED JUMBO TOILET TISSUE DISPENSER- OFCI
4	WATER CLOSET - REFER TO PLUMBING DWGS
5	24" x 36" FRAMED MIRROR, BOBRICK B-290 2436
6	UTILITY SHELF W/ MOP & BROOM HOLDERS, BOBRICK: B-239 X 34
7	WALL HUNG URINAL, REFER TO PLUMBING DWGS
9	SEAT COVER DISPENSER - OFCI
10	PAPER TOWEL WASTE RECEPTACLE - OFCI
11	WALL MOUNTED MOP & BROOM HOLDER, BOBRICK: B-223X34
12	PAPER TOWEL DISPENSER, OFCI.
13	SANITARY NAPKIN DISPENSER, OFCI.
14	LAVATORY SINK, REFER TO PLUMBING DWGS

* REFER TO SHEET GEN-05 FOR MOUNTING HEIGHTS AND LOCATIONS FOR ALL ACCESSIBLE RESTROOM ACCESSORIES AND FIXTURES.

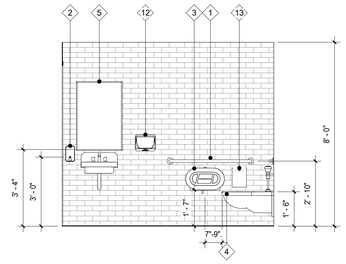
** REFER TO SHEET GEN-05 FOR SIGNAGE AND MOUNING HEIGHTS.

*** REFER TO GEN-05 FOR PLUMBING ACCESSORIES ATTACHMENT TO WALL DET. 20/GEN-05

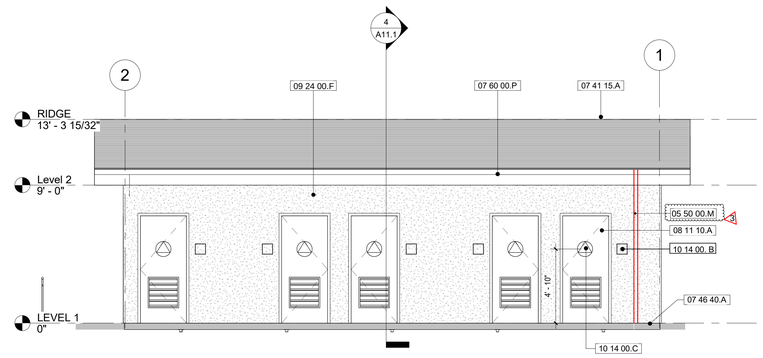
PLUMBING FIXTURES REFER TO PLUMBING DWGS. & SPECS. FOR PLUMBING ACCESSORIES REFER TO SPEC.



RR1 - INT. ELEV- D | 3/8" = 1'-0" | **10**



RR1- INT. ELEV - B | 3/8" = 1'-0" | **6**



EXTERIOR EAST ELEVATION | 1/4" = 1'-0" | **2**

RESTROOM ACCESSORY LEGEND

	30"X48" MIN. ACCESSIBLE WHEELCHAIR CLEAR FLOOR SPACE
60" MIN. CLR.	60" MIN. ACCESSIBLE WHEELCHAIR CLEAR TURNING SPACE
	WOOD FRAMING STUD WALL PER SHEET A61.1
	PLUMBING WALL PER SHEET A61.1 & A61.2
	EXTERIOR WALL PER SHEET A61.1
1	WALL TYPE ANNOTATIONS, SEE SHEET A61.1 FOR DETAILS
101	NUMBER INDICATES DOOR PER SCHEDULE, REFER TO SHEET A52.1

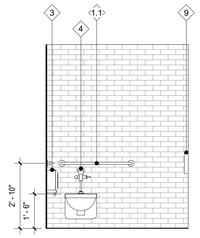
FLOOR PLAN GENERAL NOTES:

1. ALL DIMENSIONS ARE TO CENTERLINE OF THE GRID LINES AND/OR TO THE FACE OF STUDS, U.N.O.

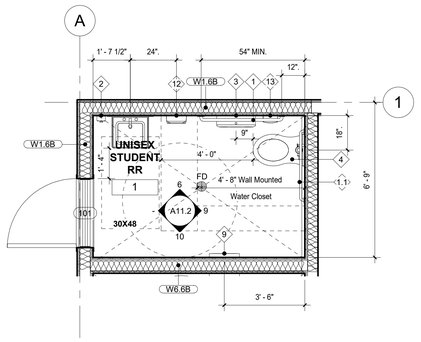
2. UNLESS NOTED OTHERWISE, ALL WALLS ARE FULL HEIGHT.

3. REFER TO SHEET GEN-5 FOR TYPICAL ACCESSIBILTY REQUIREMENTS AND DIMENSIONS.

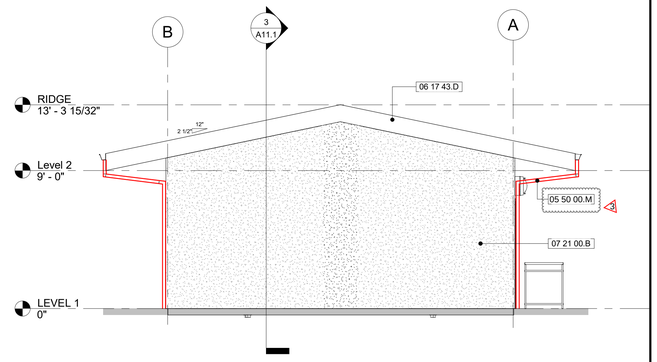
4. REFER TO ENLARGED PLANS 5/A11.2 FOR DIMENSIONS AND CALLOUTS NOT SHOWN HERE.



RR1 - INT. ELEV- C | 3/8" = 1'-0" | **9**



ENLARGED PLAN - STUDENT RR1 | 3/8" = 1'-0" | **5**



EXTERIOR NORTH ELEVATION | 1/4" = 1'-0" | **1**

FLOOR PLAN LEGEND

OWNER: San Rafael City Schools

PROJECT NAME: Venetia Valley - Middle School Restroom Addition

CLIENT ADDRESS: 177 N SAN PEDRO RD., SAN RAFAEL, CA 94903

REVISIONS:

	DESCRIPTION	DATE
3	ADDENDUM #3	06.03.2023

PROJECT NO: 2022-40125

DATE ISSUED: 06.29.2023

SCALE: As indicated

A11.2

FLOOR PLAN ENLARGED TYP. RESTROOM & EXTERIOR ELEVATIONS

SVA ARCHITECTS

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DOOR SCHEDULE

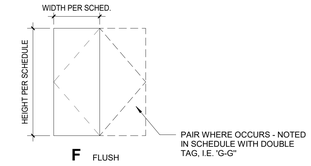
NUMBER	ROOM NAME	WIDTH	HEIGHT	DOOR			FRAME		DETAILS					HARDWARE		FIRE RATING	REMARKS
				TYPE	MATERIAL	FINISH	MATERIAL	FINISH	HEAD DETAIL	TRANSOM	JAMB 1	JAMB 2	THRESHOLD	GROUP	PH		
100	PLUMB-RM	1' - 6"	7' - 0"	F	HM	FPFP	HM	FHFP	2/A62.2		1/A62.2		5A/A62.1	02			
101	UNISEX -1	3' - 0"	7' - 0"	L	HM	FPFP	HM	FHFP	2/A62.2		1/A62.2		5B/A62.1	01			
102	UNISEX -2	3' - 0"	7' - 0"	L	HM	FPFP	HM	FHFP	2/A62.2		1/A62.2		5B/A62.1	01			
103	UNISEX -3	3' - 0"	7' - 0"	L	HM	FPFP	HM	FHFP	2/A62.2		1/A62.2		5B/A62.1	01			
104	UNISEX-4- STAFF	3' - 0"	7' - 0"	L	HM	FPFP	HM	FHFP	2/A62.2		1/A62.2		5B/A62.1	01			
105	CUST/STO.	3' - 0"	7' - 0"	L	HM	FPFP	HM	FHFP	2/A62.2		1/A62.2		5B/A62.1	02			
106	UNISEX -6	3' - 0"	7' - 0"	L	HM	FPFP	HM	FHFP	2/A62.2		1/A62.2		5B/A62.1	01			
107	UNISEX -7	3' - 0"	7' - 0"	L	HM	FPFP	HM	FHFP	2/A62.2		1/A62.2		5B/A62.1	01			
108	UNISEX -8	3' - 0"	7' - 0"	L	HM	FPFP	HM	FHFP	2/A62.2		1/A62.2		5B/A62.1	01			
109	UNISEX -9	3' - 0"	7' - 0"	L	HM	FPFP	HM	FHFP	2/A62.2		1/A62.2		5B/A62.1	01			
110	UNISEX-10	3' - 0"	7' - 0"	L	HM	FHFP	HM	FHFP	2/A62.2		1/A62.2		5A/A62.1	01			
111		3' - 0"	7' - 0"	L													
112		3' - 0"	7' - 0"	L													
113		3' - 0"	7' - 0"	L													

FINISH SCHEDULE

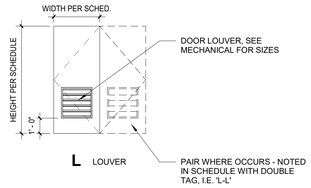
#	ROOM NAME	FLOOR	BASE	WALL FINISH		CEILING	COMMENTS
				MATERIAL	FINISH	FINISH	
1	UNISEX STUDENT RR	CT	CT	CTB	SG,CT	GYP-MR, P-SG	
2	UNISEX STUDENT RR	CT	CT	CTB	SG,CT	GYP-MR, P-SG	
3	UNISEX STUDENT RR	CT	CT	CTB	SG,CT	GYP-MR, P-SG	
4	UNISEX/STAFF	CT	CT	CTB	SG,CT	GYP-MR, P-SG	
5	CUST/STO.	S2, EXP	RB	GYP	GYP, P-SG	GYP, -P-SG	
6	UNISEX STUDENT RR	CT	CT	CTB	SG,CT	GYP-MR, P-SG	
7	UNISEX STUDENT RR	CT	CT	CTB	SG,CT	GYP-MR, P-SG	
8	UNISEX STUDENT RR	CT	CT	CTB	SG,CT	GYP-MR, P-SG	
9	UNISEX STUDENT RR	CT	CT	CTB	SG,CT	GYP-MR, P-SG	
10	UNISEX STUDENT RR	CT	CT	CTB	SG,CT	GYP-MR, P-SG	

2

DOOR LEGEND



F FLUSH



L LOUVER

AL	-	ALUMINUM
AC	-	ANODIZED CLEAR
BZ	-	ANODIZED BRONZE
CC	-	CONCEALED CLOSER
CLR	-	CLEAR
FC	-	FLOOR CLOSER
FF	-	FACTORY FINISH
FLFD	-	FUSIBLE LINK FIRE DAMPER
FP	-	FIELD PAINT
FPFP	-	FACTORY PRIMED, FIELD PAINTED
FRA	-	FIRE RATED ASSEMBLY
FS	-	FIELD STAINED
GA	-	GALVANIZED
GL	-	GLASS OR GLAZING
GS	-	GALVANIZED STEEL
HM	-	HOLLOW METAL
KY	-	FLUOROPOLYMER FINISH (SEE SPECS)
LVR	-	LOUVER
MF	-	MILL FINISH
MR	-	MIRRORED GLASS
MAG	-	MAGNETIC HOLD OPEN
P	-	PAINTED (FOR EXISTING FRAMES - PAINT SHALL INCLUDE PREP AND REPAIR OF EXISTING FRAME, TYPICAL)A\
PG	-	PAINT GRADE
PH	-	PANIC HARDWARE
PR	-	PAIR
SCW	-	SOLID CORE WOOD
SG	-	STAIN GRAIN
SMC	-	SURFACE MOUNTED CLOSER
ST	-	STEEL
SS	-	STAINLESS STEEL
TEMP	-	TEMPERED

DOOR NOTES LEGEND

1. LETTER "P" FOLLOWING DOOR TYPE LETTER IN SCHEDULE INDICATES A PAIR OF DOORS. SCHEDULED DIMENSION IS TOTAL FRAME OPENING. BOTH DOOR LEAVES ARE THE SAME SIZE UNLESS OTHERWISE NOTED.

2. LOUVERS IN FIRE-RATED DOOR ASSEMBLIES TO BE FLFD (FUSIBLE LINK FIRE DAMPER), LOUVERS IN EXTERIOR DOORS TO BE VANDAL-PROOF SECURITY TYPE.

3. ALL EXTERIOR DOORS TO HAVE WEATHERSTRIPPING ALL SIDES PER TITLE 24, SECTION T20-1451-1542.

4. EXIT DOORS SERVING 50 OR MORE OCCUPANTS SHALL OPEN IN THE DIRECTION OF EXIT.

5. EVERY EXIT DOOR SHALL BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. ANY SPECIAL LOCKING DEVICES SHALL BE OF THE APPROVED TYPE. CBC CHAPTER 33 AND UFC SECTION 12.104(B).

6. DOOR HARDWARE SHALL COMPLY WITH THE FOLLOWING PER CBC 1133B.2.5

   1. OPERABLE BY A SIMPLE EFFORT, NOT GRASPING WRIST MOVEMENT (LEVERS, PANIC DEVICES, OR PULLS).
   2. 5-LB CLOSURE PRESSURE AT INTERIOR DOORS.
   3. 5-LB CLOSURE PRESSURE AT EXTERIOR DOORS.
   4. 5-LB CLOSURE PRESSURE AT FIRE DOORS.
   5. WHEN FIRE DOORS ARE REQUIRED, THE MAXIMUM EFFORT TO OPERATE THE DOOR MAY BE INCREASED TO THE MINIMUM ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY, NOT TO EXCEED 15 POUNDS.

7. DOORS SHALL BE A MINUMUM OF 36" WIDE X 80" HIGH WITH NO SINGLE LEAF EXCEEDING 4'-0" IN WIDTH.

8. BOTTOM 10" OF DOOR TO HAVE SMOOTH UNINTERUPTED SURFACE FOR OPENING BY WHEELCHAIR FOOT REST.

9. CENTER OF HARDWARE TO BE 30" TO 40" ABOVE FLOOR. LATCHING AND LOCKING DOOR TO BE OPERABLE WITH A SINGLE EFFORT BY LEVER OR PUSH-PULL TYPE HARDWARE.

10. PROVIDE DOOR SYMBOLS ON DOORWAYS LEADING TO SANITARY FACILITIES (SEE TOILET ROOM DOOR SIGNAGE). CENTER SYMBOLS ON DOORS AT 60" HEIGHT, AND FINISH IN COLOR CONTRASTING TO THAT OF THE DOOR.

11. THRESHOLDS SHALL BE 1/2" HIGH MAXIMUM WITH A 2:1 DEGREE BEVELED EDGE.

12. THRESHOLD HEIGHT BETWEEN 1/4" AND 1/2" SHALL BE BEVELED AT MAZIMUM 50% SLOPE.

13. ALL EXTERIOR DOOR SHALL HAVE PERIMETER DOOR SOUND SEAL/GASKET.

14. EACH DOOR IN A MEANS OF EGRESS FROM A GROUP A, OR ASSEMBLY AREA NOT CLASSIFIED AS AN ASSEMBLY OCCUPANCY, HAVING AN OCCUPANT LOAD OF 50 OR MORE SHALL NOT BE PROVIDED WITH A LATCH OR LOCK UNLESS IT IS PANIC HARDWARE OR FIRE EXIT HARDWARE. BUILDING CODE 1008.1.10 FIRE CODE 1008.1.10

DOOR GENERAL NOTES

COMMENTS:

1. PROVIDE ELECTRONIC HOLD-OPENS FOR EACH LEAF W/ CONNECTION TO FIRE ALARM.

DOOR COMMENTS LEGEND

FLOORS

T / 1 — CERAMIC FLOOR TILE;

E / 1 — EXPOSED CONCRETE FLOOR SLAB; CLEANED AND SEALED WITH SATING GLOSS FINISH

BASE

B / 1 — GENERAL WALL BASE - CERAMIC TILE DALTILE 4-1/4"X4 1/4" SEMIGLOSS

B / 2 — GENERAL WALL BASE - COVED BASE - 4" HIGH RUBER BASE

WALLS

C / 1 — RESTROOM WALL TILE T-1 - DALTILE FIELD - WALL SEMI-GLOSS AND MATTED GLAZED, 4"X12" MODERN DIMENSION
FIELD COLOR: TBD

P / 1 — GENERAL AREA PAINT COLOR P-1 - SHERWIN WILLIAMS - SW75757 HIGH REFLECTIVE WHITE FINISH SEMI-GLOSS

CEILING

P / 2 — GENERAL AREA PAINT COLOR SEMIGLOSS

P / 3 — GENERAL AREA PAINT COLOR EGGSHELF

ABBREVIATION:

CT	CERAMIC TILE
EXP	EXPOSED CONC.
GYB	GYP. BOARD
MR	MOUSTURE RESISTANCE
P-E	PAINT EGG SHELL
P-SG	PAINT SEMI-GLOSS
RB	RUBER BASE

INTERIOR FINISH LEGEND

OWNER: San Rafael City Schools

PROJECT NAME: Venetia Valley - Middle School Restroom Addition

CLIENT ADDRESS: 177 N SAN PEDRO RD., SAN RAFAEL, CA 94903

REVISIONS:

	DESCRIPTION	DATE
2	ADDENDUM 1	07.31.2023

PROJECT NO: 2022-40125

DATE ISSUED: 06.29.2023

SCALE: 1/4" = 1'-0"

A52.1

DOOR SCHEDULE & FINISH SCHEDULE

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