# PROJECT MANUAL

## NEW SECURITY FENCING

**Maricopa Unified**
**School District**
**Maricopa, CA 93252**

**April 21, 2022**

PREPARED BY

**Ron Edwards Architect**
7400 Pedrick Ct
Bakersfield, CA 93313
(661) 394-0053

## INDEX OF DOCUMENTS



**END OF INDEX**

# PROJECT MANUAL

## NEW SECURITY FENCING

**Maricopa Unified**
**School District**
**Maricopa, CA 93252**

**April 21, 2022**

PREPARED BY

**Ron Edwards Architect**
7400 Pedrick Ct
Bakersfield, CA 93313
(661) 394-0053

**SECTION 03300**

**CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Furnishing, placing, patching, and initial curing of cast-in-place concrete unless otherwise specified.
2. Grout and drypack, except as otherwise specified.
3. Placing of embedded anchor bolts and inserts.
4. Vapor barrier under interior floor slabs on grade.

B. Related Work Specified Elsewhere:

1. Preparation and grading of earth subgrade under concrete.
2. Furnishing, erection, and removal of forms.
3. Furnishing and placing reinforcing for cast-in-place concrete.
4. Finishing and final curing of cast-in-place concrete.
5. Reinforcing bars for masonry.
6. Gravel fill under interior floor slabs.
7. Subslab drainage fill.
8. Cement fill in metal stair pans.
9. Metal decking.
10. Trench grates

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01330.

B. Shop Drawings: Submit for structural concrete and concrete slabs showing dimensioned locations and types of construction and expansion joints and Structural Concrete Mix Designs.

C. Product Data: Submit the coloring admix manufacturer's technical data for products, methods, and color control procedures.

D. Samples: Conform to requirements specified in Section 03350.

1.3 QUALITY ASSURANCE

A. Concrete Manufacturer: Furnish concrete from licensed commercial ready-mix concrete plant conforming to CBC sections 1903, 1904, & 1905, CBC Std. 19-3. Requirements herein govern when exceeding CBC Material, CBC Std. 19-3.

B. Allowable Tolerances: Construct concrete conforming to the tolerances specified in ACI 117 "Recommended Tolerances for Concrete Construction and Materials", as applicable, unless exceeded by requirements of regulatory agencies or otherwise indicated or specified.

C. Source Quality Control: Refer to the following paragraphs for specific procedures. Concrete materials which, by previous tests or actual service, have shown conformance may be used without testing when so approved by the Architect. Testing Laboratory shall perform following conformance testing.

1. Portland Cement: Furnish mill certificates in accordance with the CBC and acceptable to Architect, showing conformance with requirements specified; otherwise, the Testing Laboratory shall perform one test for each 250 barrels of cement in accordance with CBC.

2. Cementitious Material Test. The concrete supplier shall furnish to the enforcement agency certification from the cement manufacturer that the cement proposed for use on the project has been manufactured and tested in compliance with the requirements of ASTM C 150 for Portland cement and ASTM C 595 or ASTM C 1157 for blended hydraulic cement, whichever is applicable. When a mineral admixture or ground granulated blast-furnace slag is proposed for use, the concrete supplier shall furnish to the enforcement agency certification from the manufacturer that they have been manufactured and tested in compliance with ASTM C 618 or ASTM C 989, whichever is applicable. An affidavit shall be provided by the concrete supplier, place

of storage, and date of use of the cementitious material. If such information is not available, one grab sample of cementitious material used on the project shall be taken for each day's pour and shall be tested as directed by the structural engineer, architect, or enforcement agency.

3. Aggregates for Normal Weight Concrete: Test the aggregate before and after concrete mix is designed and whenever character of aggregate varies or source of material is changed. Include a sieve analysis. Obtain samples of aggregates at the dry batching or ready-mix concrete plant in accordance with ASTM D75 and perform tests for the properties listed in the following table.

4.

| PHYSICAL PROPERTIES | | |
|---|---|---|
| Physical Properties, units | Test Method | Minimum values |
| Sieve analysis | ASTM C136 | |
| Organic impurities | ASTM C40 | Fine aggregate not darker than reference standard color |
| Soundness | ASTM C88 | Loss after 5 cycles not more than 8 percent of coarse aggregate, nor more than 10 percent of fine aggregate |
| Abrasion | ASTM C131 | Weight loss not more than 10.5 percent after 100 revolutions, 42 percent after 500 revolutions |
| Deleterious materials | ASTM C33 | |
| Materials finer than No. 200 sieve | ASTM C117 | Not over 1 percent for gravel, 1.5 percent for crushed aggregate |
| Reactivity potential | ASTM C227, C289, C342 | Ratio of silica released to reduction in alkalinity not to exceed 1.0. |
| Sand equivalent | ASTM D2419 | California sand equivalent values operating range not below 71 percent |

D. Compliance with Regulations: All materials shall comply with the current rules and regulations of the local air quality management district, with the rules regarding volatile organcic compounds, and with FDA rules and regulations for dangerous substances in construction products.

E. Comply with pertinent provisions of Section 01440.

1.4 CONCRETE MIX DESIGNS

A registered civil engineer with experience in concrete mix design shall select the relative amounts of ingredients to be used as basic proportions of the concrete mixes proposed for use under the provisions of ACI 301.

A. Stength Requirements: Design mixes for structural concrete for minimum 28-day compressive strengths required by Drawings and Specifications. The trial batch strength for each mix shall exceed indicated or specified strength by 750 psi or a lesser amount based on the standard deviations of strength test records according to ACI 318.

B. Normal Weight Concrete Mix Design: Design all mixes for workability and durability of concrete. Do not exceed water/cement ratio as noted on the plans.

C. Maximum Aggregate Sizes: Not exceeding 3/4 of minimum clear space between bars and between bars and forms, nor larger than 1/5 of least dimensions between the forms. Design the mixes with 1” maximum size, except maximum 1-1/2” size for foundations and maximum 3/8” size at congested reinforcing or thin sections, as submitted by the contractor and approved by the Architect and Structural Engineer of Record.

D. ACI 318 (Method B) with test records. Where a testing laboratory acceptable to the enforcement agency has records of compressive strength tests, a standard deviation shall be established. Tests records from which a standard deviation is calculated shall:

1. Represent materials, quality control procedures and conditions similar to those expected, and changes in materials and proportions within the test records shall not have been more restricted than those proposed work.
2. Represent concrete produced to meet a specified strength or strengths f’ c within 1,000 psi (6.89 Mpa) of that specified for proposed work.
3. Must consist of at least 30 consecutive tests or two groups of consecutive tests totaling at least 30 tests.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01655.

B. Deliver all materials in temely manner to ensure uninterrupted progress of the Work.

C. Store materials by methods that prevent damage and penn it ready access for inspection and identification.

1.6 PROJECT SITE CONDITIONS

A. Do not place concrete during rain or adverse weather conditions without measures to prevent damage. Conform to CBC and to ACI 305, Recommended Practice for Hot Weather Concreting and ACI 306, Recommended Practice for Cold Weather Concreting, and to CBC Sections as required except do not use calcium chloride or any type of accelerator.

PART 2 – PRODUCTS

2.1 MATERIALS

Furnished materials metting the test requirements of Paragraph “Source Quality Control” above, as applicable, and following requirements:

A. Portland cement: CBC Standard 19-1, Type II, low alkali. Do not change brand without prior approval.

B. White Portland cement: CBC Standard 19-1, Type 1, from one approved source.

C. Aggregates:

1. Standard weight aggregates: ASTM C33, from approved pits, free from vegetable matter and of opaline, feldspar, or sillceous magnesium substances; all washed, clean, hard, fine-grained sound crushed rock or gravel; not over 5 percent by weight of flat, thin, elongated, friable, or laminated pieces (pieces having major dimension over 5 times average dimension) or more than 2 percent by weight of shale or cherty material.

D. Admixture: Use Admixtures according to manufacturer's written instructions and as needed for placement and workability.

E. Pozzolan: ASTM C618, Class F or N Fly Ash, 100 pounds maximum per cubic yard, containing one percent or less carbon. Fly ash shall not be used in excess of 15 percent by weight of total cement quality.

F. Water: From potable domestic source.

G. Joint filler: ASTM D 1751 and D 1752, as specified.

H. Curing Materials:

1. Liquid Curling compound ASTM C309, ftigitive dye dissipating type, complying with Rule II 13 of the South Coast Air Quality Management District and Federal Air Quality Regulation 40 CFR 52.254.
2. Curing sheet: ASTM C 171, non-staining white types.
3. Evaporation retardant and finishing aid: Master Builders “Confilm,” or equal.

I. Vapor barrier: ASTM D2103, polyethylene sheeting, clear, 8 mil thickness, impact strength greater than 70 grams per mil, 10’ minimum width. Provide minimum 2” wide waterproof plastic self-adhering tape for sealing edges and ends of sheeting.

J. Non-shrink gout:

1. For concealed areas: Master Builders “Embeco 885,” or equal, non-gas-forming and free of oxidizing catalysts and inorganic accelerators, used as dry or damp pack, or mixed to a 20-second flow (CRC-C 611), without segregation or bleeding at any temperature between 45 degrees F and 100 degrees F. Working time 30 minutes or more.
2. For exposed areas: Master Builders “Masterflow 928,” with same characteristics as specified for concealed areas.

K. Drypack: Field mixture of I part Portland cement to 2 parts fine aggregate mixed to a damp consistency such that a ball molded in the hands will stick together and hold its shape. In lieu of field mixing, Contractor may use factory mixed drypack material, such as Master Builders, “Set Grout.”

L. Epoxy Grout: Master Builders “Cellcote 648,” or equal.

M. Expansion Joint Filler. Asphalt Impregnated fiber, conforming to ASTM D994 and DI 751, W.R. Meadows “Sealtight,” or equal.

N. Construction Joint Materials: “Key-Kold” or “Kwik-Joint,” of profiles indicated.

O. Bonding Agent: “Weld-Crete,” manufactured by Larsen Products Co., P.O. Box 2127, Rockville, MD 20852, Mater Builders “Concresive,” or equal.

2.2 CONCRETE MIXING

Furnish ready-mixed concrete from an approved commercial off-site plant. Conform to CBC Standard 19-3., except materials, testing, and mix designs as specified herein. Use transit mixer trucks equiped with automatic devices for recording number of revolutions of drum. Comply with CBC Section, 1905.

A. Admixtures: All approved admixtures shall be introduced into the concrete at the batch plant. Field additions are not acceptable.

B. Slump: Adjust quantity of water so concrete at point and time of placing does not exceed the following slumps when tested according to ASTM C143. Use the minimum water necessary for workability required by part of structure being cast. See plans for max allowable water to cement ratios and slump limitations.

PART 3 – EXECUTION

3.1 PREPARATION FOR CONCRETE PLACING

A. Remove all free water from forms before concrete is deposited. Remove hardened concrete, debris, and foreign materials from interior surfaces of forms, exposed reinforcing, and from surfaces of mixing and converying equipment.

B. Wetting: Wet wood forms sufficiently to tighten up cracks. Wet other materials sufficiently to reduce absorption and to help maintain concrete workability.

C. Earth Subgrade: Dampen 24 hours before placing concrete, but do not muddy. Re-roll where necessary for smoothness and remove loose material.

D. Gravel Fill: Recompact disturbed gravel and bring to correct elevation.

E. Sand Beds or Subslab Drainage Fill: Recompact disturbed material and bring to correct elevation.

F. Vapor Barrier: Install under interior floor slabs on grade. Lap joints 6” in the direction of concrete spreading and tape seal. Seal the joints at walls and around penetrations with tape.

G. Screeds: Set screeds at walls and maximum 8-foot centers between. Set to provide level floor. Check with and instrumental level, transit, or laser during placing operation to maintain level floor.

H. Screeds Over Vapor Barrier: Use weighted pad or cradle type screeds and do not drive stakes through the vapor barrier. Check with an instrument level, transit, or laser.

I. All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms.

3.2 CONCRETE PLACING

A. Conveying and Placing: Do not place concrete until reinforcing steel and forms have been approved by the Inspector and other authorities having jurisdiction. Do not allow concrete to free fall from release points at mixer, hopper, tremie, or other conveying equipment in excess of 5-feet for concealed concrete or over 3-feet for exposed concrete. Deposit concrete so that surface is kept level throughout, with minimum being allowed to flow from one portion of forms to another. Place concrete in horizontal layers not more than 18” thick within 90 minutes after water is first added to the batch. Place all concrete by methods that prevent segregation of materials.

1. Where new concrete is placed against or on old existing concrete, apply bonding agent to surface of old concrete prior to placement of new concrete.
2. Where conditions make consolidation difficult, or when reinforcement is congested, batches of concrete adjusted to use smaller size aggregates than specified in the mix design shall be used as approved by the Architect, Structural Engineer, and the Enforcement Agency.

B. Joints: Locate joints in concrete only where shown or approved and obtain prior approval for points of stoppage of any pour. Clean and roughen surface of construction joints by removing entire surface and exposing 1/4” of clean coarse aggregate solidly embedded in mortar matrix by sandblasting, chipping, use of an approved retarder agent, or equal. Water and keep hardened concrete wet for not less than 24 hours before placing the next lift or

abutting concrete. Cover the horizontal surfaces of existing or previously placed and hardened concrete with a 2” thick layer of fresh concrete of required mix less 50 percent of coarse aggregate just before balance of concrete is placed.

C. Vertical Elements: Stop placement of concrete in walls and columns 1-1/2” below botoom of beams or supported slabs. Stop placement at sills and heads of wall openings in the same manner. Allow concrete in vertical elements to be in place at least 2 hours and until vertical settlement has ceased before placing concrete for floor framing.

D. Compacting: Compact each layer of the concrete as placed with mechanical vibrators or equivalent equipment. Transmit vibration directly to concrete and in no case through the forms unless approved. Accomplidh through compaction. Supplement by rodding or spading by hand adjacent to forms. Compact concrete into corners and angles of forms and around reinforcement and embedded fixtures. Recompact deep sections with congestion due to reinforcing steel as required.

E. Operation of Vibrators: Do not horizontally transport concrete in forms with vibrators or equivalent equipment to contact forms or reinforcing. Push vibrators vertically into the preceding layers that are still plastic and slowly withdraw, producing maximum obtainable density in concrete without creating voids or segregation. In no case disturb concrete that has partially set. Vibrate at intervals not exceeding two-thirds the effective visible vibration diameter of the submerged vibrator. Avoid excessive vibration that causes segregation.

F. Correction of Segregation: Before placing next layer of concrete, and at the top of each placement for vertical elements, remove all concrete containing excess water or fine aggregate, or showing deficiency of coarse aggregate, and fill the space with compacted concrete of correct proportions.

G. Slabs:

1. Compact concrete, bring 1/8” to 3/16” of coarse mortar to surface. Screed to elevation. Bull float or darby. Remove all bleed water. Float with wood hand floats or wait until the weight of a machine with steel float shoes can travel on the slab without sinking or

disrupting the surface. Remainder of finishing operations shall be as specified in Section 03345 for each type of surface.

2. On-Grade Slabs: Place with maximum 40-foot edge dimension. Generally locate joints on column lines, exact locations as directed and approved.
3. On-Grade Slab Construction and Contraction Joints: Use standard types equal to “Key-Kold” construction joint at column lines. “Kwik-Joint” contraction joint at intermediate spacings. Machine saw cut 1/8” by 1/5” of the slab thickness at intermediate joints where indicated or approved. Conform to approved submittal.
4. Expansion Joints: Conform to details and approved submittal. Provide expansion joint filler finished flush with slab surface except for those joints shown to be sealed with sealant. Conform to Section 07900 where sealant joints are shown or specified, including the polymer joint filler, backing, and bond breaker.
5. Control Joints: Provide concrete slabs as indicated. Provide sawed control joints, not less than ¼ the slab thickness, except where other types of joints are indicated. Complete sawing of joints within 12 hours following paving unless otherwise approved. If early sawing causes undercutting or washing of the concrete, delay the sawing operation and repair the damaged areas. The saw cut shall not vary more than 1/2 inch from the true joint allignment. Discontinue sawing if a crack develops ahead of a saw cut. Immediately after each joint is sawed, thoroughly clean the saw cut and adjacent concrete surface. Respray surfaces treated with curing compound which are damaged during the sawing operations as soon as the water disappears. Protect joints in a manner to prevent the curing compound from entering the joints.

3.3 CURING FORMED CONCRETE

A. All curing shall be per ACI 318. Keep forms containing concrete in a wet condition until removed. Keep concrete continuously moist for not less than 7 days after placement. Keep concrete above 50 C and moist with a fine log water spray until protected by curing media.

B. During times of dry or excessive winds, high ambient temperature, low humidity, or other ambient conditions causing rapid drying, use specified evaporation retardant and finishing

aid material according to the manufacturers Instructions and cure concrete with a fine log spray of water, or equal, applied both during and after finishing and continued until final curing operations are started.

C. Use the water curing method, curing sheet material, or a clear liquid membrane-forming curing compound except as otherwise specified.

D. Do not use any type of finishing or curing materials or methods that interfere with the correct application or bonding of subsequent material; verify exact requirements with all applicable trades.

3.4 PATCHING FORMED CONCRETE

A. Remove fins, projections, and offsets. Cut out rock pockets, honeycomb, and all other defects to sound concrete with edges of cuts straight and back-beveled. Dampen cut-outs and edges, and scrub with neat portland cement slurry just before patching, or an apply approved epoxy concrete adhesive.

B. Saturate form tie holes with water and fill voids and patches with flush smooth-finished mortar of same mix as concrete (less coarse aggregate), cure, and dry.

3.5 GROUTING AND DRYPACKING

A. Install as indicated or required. Where grouting and drypacking is part of the work of other sections, it shall conform to the following requirements, as applicable.

B. Drypacking: Mix materials with minimum amount of water. Install drypack by forcing and rodding to fill voids and provide complete bearing under plates. Finish exposed surfaces smooth and cure with damp burlap or liquid curing compound.

C. Non-Shrink Grouting:

1. Mixing: Mix the approved non-shrink grout material with sufficient water per manufacturers recommendations.

2. Application: Surfaces to receive the non-shrink grout shall be clean, and shall be moistened thoroughly immediately before placing the mortar. Before grouting, surfaces to be in contact shall be roughened and cleaned thoroughly, all loose particles shall be removed and the surfaces flushed thoroughly with neat cement grout immediately

before the grouting mortar is placed. Place fluid grout from one side only and puddle, chain, or pump for complete filling of voids; do not remove the damsor forms until grout attains initial set. Finish exposed surfaces smooth, and cure as reccomended by grout manufacturer.

3.6 SITE CONCRETE WORK

A. Use bituminous type of joint filler. Cure all concrete for at least 10 days with liquid curing compound or sheet material except as otherwise specified. Construct all site concrete of 2,500 psi concrete unless otherwise indicated or specified. Provide reinforcing bars or mesh only where indicated. Conform to requirements specified herein before for slab finishing and curing as applicable.

B. Concrete Curbs: Provide 1/2" thick expansion joints at beginning and at end of curves, intersections, and 20-foot intervals between, set plumb, square, and to same profile as the curbs. Edge curb tops to 1/2" radius and vertical joints to 1/4" radius. Apply smooth finish followed by fine hair brush finish.

C. Concrete Gutters: Provide 1/2" thick expansion joints as above for curbs and apply a light broom finish with a 3" wide steel trowel finish at flow line.

D. Combination Curb and Gutter: As above for curbs and gutters, including expansion joints, 3" troweled flow line at base of curb.

E. Concrete Walks: Provide 1/2" expansion joints as specified for curbs and where walks abut rigid structures, alligned with joints in curbs where adjoining, and apply light broom finish perpendicular to traffic direction. Score walks as shown or directed.

F. Control Joints: Provide for concrete walks and exterior concrete pavement as indicated. Provide "Zip Strip" as distributed by S.C.A. Construction Supply, Santa Fe Springs, Calif., or equal. Install tops of the joints flush with the concrete surface and depth of joint a minimum of 1/4 the thickness of slab.

3.7 OFF-SITE CONCRETE WORK

A. Provide new concrete items where indicated, and replace existing items damaged by Contractor's operations. Secure and pay for required permits, inspections, engineering, and surveying.

3.8 MISCELLANEOUS CONCRETE WORK

A. Provide areaways, cast-in-place valve boxes, pits, splash blocks, bases, and other miscellaneous concrete as indicated and required to complete all Work. Conform to applicable requirements herein.

3.9 FIELD QUALITY CONTROL

A. Level of Floors: Continuously monitor concrete placing to maintain level floor by use of an instrument level, transit, or laser.

B. Continuous Inspection: Construct structural concrete under continuous inspection of Inspector. Obtain inspection and approval of forms and reinforcing by the Inspector before placing structural concrete.

C. Testing/Evaluation of Concrete: Conform to CBC Section, 1929.6. Testing Laboratory shall perform following tests. Samples for testing shall be obtained in accordance with ASTM C 172, and shall be taken from as close to point of placement as possible.

1. Compressive Strength Tests: Cast one set of three or more cylinders from each days placing and each 50 cubic yards, or fraction thereof, or not less than once for each 2,000 square feet of surface area for slabs and walls, of each strength of structural concrete. Date cylinders, assign record number, and tag showing the location from which sample was taken. Also record slump test result of sample. Do not make more than two series of tests from any one location or batch of concrete.

2. Test Cylinders: Samples will be made in accordance with ASTM C172. Cast cylinders according to ASTM C31; 24 hours later, store cylinders under moist curing conditions at about 70 F. Test according to ASTM C39 at 7 and 28 days ages. The remaining cylinder shall be kept in reserve in case tests are unsatisfactory.
3. Control Test Cylinders: Cast a set of two or more cylinders for each day's placing of concrete for slabs supported on shoring. Place test cylinders on slabs represented by cylinders and cure the same as slabs. Test cylinders to determine proper times for removal of shores and reshoring. A strength test shall be the average of the compressive strengths of 2 cylinders made from the same sample of concrete and tested at 28 days.
4. Core Tests: Compy with ACI 318. If tests show that compressive strength of any concrete falls below required minimum at 28 days age, additional curing and testing of concrete which unsatisfactory test reports represent may be directed. Testing Laboratory shall take and test drilled cores as directed in acordance with ASTM C42. Contractor shall refill core holes with drypack concrete of the same compressive strength required for cored concrete. If core tests results are unsatisfactory, Contractor shall furnish required labor, equipment, and weights, and the Testing Laboratory shall conduct load testing on involved parts of building or structure as directed. Contractor shall bear additional curing and test costs, including Testing Laboratory costs, for concrete not meeting required compressive strength at 28 day age even if testing demonstreates that concrete has eventually attained required minimum compressive strength, and all costs for requried corrections or removals and replacements as directed and required for approved construction.

END OF SECTION

# ORNAMENTAL FENCING AND GATES

PART 1 GENERAL INFORMATION

1.01 SUMMARY

A. Inclusions:

1. . Provisions set forth in Divisions 0 and 1;
2. Shop fabrication of ornamental metal panels and gates;
3. Primer paint finish;
4. Associated accessories and hardware;
5. Installation of ornamental metal panels, gates, hardware, and accessories;
6. Submittal preparation;
7. Clean up.

B. Related Sections:

1. Section 03300: Structural Concrete Work

1 .02 SUBMITTALS

A. Shop Drawings or Layout Drawings:

1. Submit copies of shop drawings to the Architect for review prior to beginning fabrication.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Posts, Frames, and Pickets:

1. . Steel shapes with a cross sectional area of sixteen (16) square inches or more shall be Hollow Structural Shape (HSS).
   a. HSS shall have a minimum wall thickness of 3/16", unless noted otherwise.
2. Steel shapes and pickets with a cross sectional area of less than sixteen (16) square inches may be Tube Steel (TS).
   a. TS shall be a minimum gauge of 11, unless noted otherwise. 1) Pickets smaller than 3/4" shall be solid steel.

B. Hinges shall be 5" x 6" no hole, non-swaged, double-weight, steel surface type:

1. Stanley #029468;
2. Or equal.

C. Gate Latch shall be 6-1/2" zinc-plated heavy duty padlockable spring bolt.

1. Stanley # 819045;
2. Or equal.

D. Shop primer shall meet Fed Spec TT-P-86, Type II:

1. Modified aluminum epoxy mastic, Carboline Carbomastic 15;
2. Or equal.

E. Electrodes shall be E-70 per AWS.

F. Lag bolts or machine bolts shall be zinc-plated.

G. Paint:

1 Refer to Paragraph 3.05 Finish

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all required backing and blocking prior to enclosing framing.

B. Coordinate sequencing of work with other affected trades.

C. Field verify dimensions prior to fabrication.

D. Start of work shall be considered as acceptance of existing conditions.

3.02 PREPARATION

A. Supply items to be cast-in-place, or to be embedded into concrete or masonry, along with setting templates to the appropriate contractors in a timely manner.

3.03 INSTALLATION OR APPLICATION

A. Install per the manufacturer's latest written recommendations.

B. Install plumb, true, and level.

1. Brace or share work as required to compensate for erection loads and/or to maintain alignment.

C. Accurately fit connections and trim.

D. Field weld in accordance with AWS DI .1 .

E. Touch up field welds, scratches, and damaged surfaces with primer, and paint to required mil thickness.

3.04 FABRICATION

A. Construction shall be of welded construction.

1. Tightly fit and continuous weld joints.
2. Use electric shielded arc process.
   a. Conform to AISC Specifications for the Design Fabrication and Erection of Structural Steel Buildings.
   b. Welds shall be continuous.
      1) No stitching will be permitted.
3. Grind exposed welds flush and smooth with adjacent finishes.
4. Grind exposed edges to uniform radius.

B. Holes shall be drilled or subpunched and reamed to the required size of 1/16" larger than the required bolt.

C. Countersink and flush exposed fasteners.

3.05 TOLERANCES

1

A. Vertical parallel members shall be not more than 1/16" out of plumb in 4 0".

B. Equally spaced members shall not vary more than 1/1 6" from required centerline spacing.

C. Shimming, where required, shall be equally distributed between mounts.

3.06 FINISH

A. Thoroughly clean surfaces of rust, grease, scale, or other foreign matter.
   1. Cleaning shall conform to the Steel Structures Painting Council Surface Preparation Specification as follows:
      a. For power tool cleaned surfaces: SSPC-SP 3
      b. For commercial blast cleaned surfaces: SSPC-SP 6
      c. For solvent cleaned surfaces: SSPC-SP 1
      d. For brush-off blast cleaned surfaces: SSPC-SP 7

B. Primer coat surfaces, unless noted otherwise.
   1. Do not prime coat surfaces to be field welded.
   2. Do not prime coat surfaces to be in direct contact bond with concrete.
   3. Apply prime coat per the manufacturer's recommendations.
   4. Apply one coat of primer to a dry thickness of 2.0 mils. Touch up welds.

C. Shop paint ornamental metal, except surfaces and edges to be field welded, unless otherwise specified.

D. Field apply aliphatic acrylic urethane enamel electrostatically to a dry film thickness of 2.0 to 3.0 mils.

E. Touch up field welds, scratches, and damaged surfaces with primer, and paint to required mil thickness.

F. Fences, Gates, and Hardware:
   1. Gates in path of travel must comply with exit door requirements. (CBC Section 1133B.1.1.1.4/ADAAG 4.13.3). Specify hardware that does not require pinching, grasping, or twisting motion to operate and provide solid kick plates 10" minimum high. Clear space below gate shall be 3' maximum above paving on both sides of the gate. The maximum effort to operate the gates shall not exceed 5 lbs. (22.2 N).

3.07 CONDITION OF FINISHED WORK

A. Completed assemblies shall be clean, with no visible imperfections, distortions, or defects.

END OF SECTION

**SECTION 09900**
**PAINTING**

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Paints and coatings as follows: Painting and finishing all interior and exterior exposed surfaces throughout the Project, except as excluded in Paragraphs B and C below.

2. Surface preparation, priming and coats of paint specified herein are in addition to shop priming and surface treatment specified in other Sections.

3. Paint all exposed surfaces whether or not colors are designated, except where the natural finish of the material is obviously intended or specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas. B. Painting specified elsewhere:

C. Painting not included: Do not paint the following surfaces.

1. Insulation and its facing.

2. Concrete.

3. Finish hardware, except those items noted USP.

4. Finished metal surfaces such as anodized aluminum, stainless steel, chromium-plating, copper, bronze, brass and similar finished materials will not require finish painting.

5. Painting is not required on walls or ceilings in concealed and inaccessible areas, such as furred areas, pipe spaces, duct shafts and elevator shafts.

6. Operating parts, labels and nameplates:

a. Do not paint moving parts of operating units, mechanical and electrical parts, such as valve and damper operator linkages, sinkages, sensing devices, motor and fan shafts.

b. Do not paint over any nameplates, Code required labels, such as UL and FM, or any equipment identification, performance rating, name, or nomenclature plates.

1.2 DEFINITIONS

A. Paint: The term, as used in this Section, means all coating system components, including primers, emulsions, enamels, varnishes, stains, lacquers, sealers, fillers, and other applied materials whether used as prime, intermediate or finish coat.

B. Definitions of painting terms: ASTM D 16, unless otherwise specified.

C. Dry film thickness (DFT): Thickness of a coat of paint in fully cured state measured in mils (1/1000 inch).

D. Sheen: The terms used in these Specifications refer to the following gloss ranges when tested in accordance with ASTM D 523 test method.

| Name | ASTM D 523 Test Method | Gloss Range |
|---|---|---|
| Flat | 60-degree meter | 0 to 7 |
| Low sheen | 60-degree meter | 10 to 15 |
| Eggshell | 60-degree meter | 25 to 30 |
| Semi-gloss | 60-degree meter | 55 to 60 |
| Gloss | 60-degree meter | 85 to 90 |

E. Coat: As used in this Section means a layer of paint, varnish, lacquer, or other material applied, then allowed to dry. To backroll or apply a wet-on-wet film still constitutes a single coat.

F. Finish: As used in this Section means the entire coating system including the texture, color, and sheen of a surface.

G. Refinish: As used in this Section implies a new finish will be applied to a surface that has been finished as defined above.

H. Touchup: As used in this Section means correction of deficiencies in the specified work to achieve a properly painted surface.

1.3 SUBMITTALS

A. Materials: Submit the following.

1. Copies of a complete materials list, identified by manufacturer name and product label or stock number.

2. Prepare list in the form of a repetition of the specified paint finishes, with the addition of the specific product intended for each coat.

B. Color samples: Submit the following.

1. 8-1/2- by 11-inch samples of each color for painted finishes.

2. Provide stepped samples, defining each separate coat, including block fillers and primers.

3. Use representative colors when preparing samples for review.

4. Provide a list of materials and applications for each coat of each sample. Label each sample for location and application.

5. Resubmit until required sheen, color, and texture are achieved.

C. Certification: Submit duplicate copies of manufacturer affidavit with each shipment of materials delivered to the job site certifying that each material furnished complies with specified requirements.

1.4 QUALITY ASSURANCE

A. Painter's qualifications: Firm and individuals experienced in applying paints and coatings similar in material, design, and extent to those specified for the Project, whose work has resulted in applications with a record of successful in-service performance.

B. Volatile organic compounds: Provide paint materials within the following limits. During the submittal process, notify the Architect, in writing, when these limits cannot be complied with.

1. Flat finishes: 50 g/liter.

2. Enamel finishes: 150 g/liter.

C. Mockups:

1. Apply sample paint finishes (approximately 10-foot square) of each color scheme to wall areas, as directed by the Architect. Refer to Section 09250 for painting gypsum board mockup.

2. Obtain Architect's approval of mockups before proceeding further. Approved mockups will be used as a standard for the Project, and if properly identified may remain a part of the Work.

3. Final acceptance of colors will be from job-applied samples.

1.5 HANDLING

A. Store materials and mix only in spaces suitable for such purposes. Maintain spaces clean and provide necessary precautions to prevent fire. Store paint containers so the manufacturer's labels are clearly displayed.

1.6 JOB CONDITIONS

A. Environmental requirements:

1. Comply with paint manufacturer's recommendations for environmental conditions and the following.

2. Provide adequate heating and ventilating to maintain environmental conditions recommended by paint manufacturer.

3. Do not apply finish in areas where dust is being generated.

4. Apply paint under the following prevailing conditions.

a. Air and surface temperatures are not below 40-degree F. or above 120-degree F.

b. Surface temperature is at least 5-degree F. above the dew point.

c.When there is not threat of impending rain. B. Protection:

1. Protect work of other trades, whether being painted or not, against damage from painting operation. Correct damage by cleaning, repairing, replacing, and repainting, as approved by Architect, and leave in an undamaged condition.

2. Provide "Wet Paint" signs to protect newly coated finishes. After completing coating operations, remove temporary protective wrappings provided by others to protect their work. Post signs immediately after painting.

3. Provide drop cloths, shields, barricades and other protection necessary to safeguard adjacent surfaces not to be painted.

4. Provide and maintain protection as required to protect finished work from damage until its acceptance.

C. Illuminate work area during painting to provide the same or greater level of illumination required to properly perform the work and will occur in the room or space after the building is in operation.

1.7 WARRANTY

A. Color of exterior surfaces painted, as part of the work of this Section shall, at the end of one year, have remained free from serious fading when compared to a control sample of the original paint.

B. Paint shall have its original adherence at the end of one year and there shall be no evidence of blisters, running, peeling, scaling, chalking, streaks, or stains at the end of this period.

C. Washing painted surfaces with alkali-free soap and water shall remove surface dirt from painted surfaces without producing deteriorating effects.

1.8 MAINTENANCE MATERIAL

A. With closeout submittals deliver one identified unopened gallon of each type and color of paint material used on the Project to the District for future paint touchup.

B. In addition to manufacturer label, identify with room number, floor or area, type of paint, color and sheen, as applicable, for future identification.

PART 2 - PRODUCTS

2.1 PAINT

A. Quality and manufacture: Insofar as practicable, each paint shall be factory-mixed to match approved samples and colors, and be of a consistency permitting immediate application. Use best quality grade regularly manufactured by one of the manufacturers listed in the schedule at the end of the Section.

1. Dunn-Edwards Corp.

2. Frazee Paint Co.

3. Sherwin Williams Co.

B. Galvanized etching product: One of the following:

1. Oakite CryCost 747.

2. Oakite 747 LTS.

3. Henkel Galvaprep 5.

C. Paint uniformity and compatibility:

1. Paint shall be boxed at the job site or factory-batched to ensure color uniformity and consistency. This includes the required maintenance materials.

2. Provide finish coats compatible with the prime coats used.

a. Review other Sections of these Specifications, in which prime coats are specified, and manufacturer data for shop-primed surfaces to be painted.

b. Be responsible for the compatibility of the total coating system.

3. Provide barrier coats over incompatible primer or remove and reprime.

4. Products of more than one approved manufacturer may be used, except that all products applied on a surface shall be by the same manufacturer.

2.2 COLOR SCHEDULE

A. The Architect will prepare a color schedule with samples for guidance in painting.

B. Number of colors to be used will be determined by the Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be painted for conditions that would adversely affect the permanence and quality of this work.

B. Correct unsuitable conditions before proceeding with painting.

3.2 SURFACE PREPARATION

A. General: Prepare surfaces to receive the specified finishes in compliance with the paint manufacturer's instructions and the following.

B. Galvanized steel: Comply with ASTM D 6386 and the following.

1. Clean with commercial phosphoric acid solution or one of the products named above for pretreatment, or by brush off blast cleaning with a fine abrasive to achieve a uniform anchor profile of 1.5 to 2 mils.

2. Recoat within the time limit recommended by the primer manufacturer.

C. Shop-primed metal: Remove oil, grease, dirt and foreign matter. Spot prime abraded surfaces with compatible primer.

D. Shop-painted metal: Sand to provide a mechanical bond with field applied finishes, or use a commercial preparation specifically formulated to improve paint bond.

E. Unprimed ferrous metal: Remove rust, mill scale, oil and other foreign matter.

F. Factory-primed equipment: Repair damaged primer; remove rust and clean to bright metal where appropriate. Sand or etch primer to permit bonding of finish coats. Clean surfaces thoroughly before applying additional coats.

G. CMU:

1. Clean surfaces of dirt, laitance, encrustations and foreign matter.

2. Do not apply sealer or paint when the moisture content of the surfaces to be painted exceeds 8 percent.

3. Touchup suction spots after priming with an additional prime coat until all surfaces show a uniform coating.

H. Gypsum board:

1. Remove dust, loose particles or other matter that would prevent proper paint adhesion.

2. Check to see that joints and screw heads are properly covered with joint compound and sanded smooth and flush with adjacent surfaces.

I. Other materials not covered above: Prepare to receive paint in compliance with the paint manufacturer instructions.

J. Hardware:

1. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures and similar items in place and not to be painted, or provide surface-applied protection prior to surface preparation and painting.

2. Following completion of painting each space or area, reinstall the removed item by workmen skilled in the trades involved.

K. Phasing: Program cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

3.3 PAINT PREPARATION

A. Open paint containers only as required for use. Mix paint in designated areas.

B. Thoroughly stir and agitate paint to uniformly smooth consistency suitable for proper application.

C. Do not reduce, change or use any materials except in compliance with manufacturer printed instructions.

D. In all cases, prepare and handle paint to prevent deterioration and inclusion of foreign matter.

3.4 APPLICATION A.

General:

1. Where the 2 faces of doors differ in color or finish, finish the edges to match the face visible when the door is open.

2. Apply paint only under conditions that will insure finishes free from blemishes and defects. Leave corners with no undue amount of paint buildup.

3. Use a slightly different shade for each coat of paint so that it may be readily identified.

4. Primer and intermediate coats shall be unscarred and completely integral when succeeding coats are applied. Sand and dust between each coat to remove defects visible from a distance of 5 feet.

5. Remove paint spillage and spatters on adjacent surfaces so as not to damage the surface being cleaned.

    a. Perform patching and repairs required because of painting operations.

    b. Refinish entire panel or assembly where portion of finish has been damaged or is not acceptable to the Architect.

6. Paint interior surfaces of ducts, where visible thru registers and grilles, with a flat nonspecular black paint.

7. Unless otherwise directed by the Architect, spray-paint exposed surfaces of ceiling diffusers, air return grilles, speakers and other electrical and mechanical items, except smoke detectors and sprinkler heads, in painted ceilings to match the ceilings, whether these items are primed or factory-finished.

8. Number of coats:

   a. The number of coats required is the same regardless of the application method. Do not apply succeeding coats until the previous coat has completely dried.

   b. The number of coats specified is the minimum required for complete coverage and uniformity of color.

   c. Apply additional coats when undercoats, stains, or other conditions show through the final finish until the finish is of uniform color and appearance.

9. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only.

10. Paint interior surfaces, which are a continuation of exterior surfaces, subject to exterior exposure (such as an out-swinging door), with the applicable exterior coating system.

11. Completely cover surfaces to be painted to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Painted surfaces with cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness and other imperfections will not be acceptable.

12. Completed work shall match approved samples, as determined by the Architect. Remove, refinish, or repaint work not complying with specified requirements.

B. Application method: Contractor's option provided applied coatings match approved samples.

The Architect reserves the right to require that paint be sprayed for smoothness and uniformity. C. Priming:

1. Prime bare metal scheduled to be painted, and not embedded in concrete and masonry, immediately upon delivery to the site.

2. Time lapse between priming and application of second coat shall be as short as possible. D. Shop-primed metal:

1. Apply 2 finish coats of paint to match adjoining surfaces, as directed by the Architect, to shop primed mechanical and electrical equipment. This work includes but is not limited to interior of fire hose cabinets, air grilles, ceiling diffusers, electrical and telephone panels, and access panels.

2. Paint conduits, outlets and pull boxes, and mechanical equipment exposed to view, such as covered and uncovered piping and ductwork, pumps, compressors, air conditioning equipment and tanks as specified in this Section.

3. Paint the back side of access panels, removable or hinged covers to match the exposed surfaces.

E. Miscellaneous painting: Surfaces to be painted and not specifically described herein, shall be painted with a product specifically manufactured or prepared for the material and surface to be painted with a prime and 2 finish coats.

3.5 TOUCHUP/CLEANING

A. At completion of construction activities of other trades, touchup and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.6 PAINT FINISH SCHEDULE

A. Finish all surfaces in compliance with the following schedule. Catalog names and numbers refer to products by the Frazee Paint Co., Dunn Edwards and Sherwin Williams, except as otherwise specified.

| SURFACE | NUMBER OF COATS | FRAZEE PRODUCTS, except as noted | DUNN-EDWARDS PRODUCTS | SHERWIN-WILLIAMS PRODUCTS |
|---|---|---|---|---|
| **EXTERIOR SURFACES** | | | | |
| Ferrous Metal: Refer to Section 09905 – High Performance Coatings. | | | | |
| Galvanized Steel: See Section 09905 – High-Performance Coatings. | | | | |
| CMU: Flat | | | | |
| | 1st Coat | 262 Acrylic Block Filler | W 305 Block-Fil | PrepRite Interior/Exterior Block Filler (B25W25) |
| | 2nd Coat | 203 Duratec | W 701 Evershield | A-100 Exterior Acrylic Flat (A6) |
| | 3rd Coat | 203 Duratec | W 701 Evershield | A-100 Exterior Acrylic Flat (A6) |
| **INTERIOR SURFACES** | | | | |
| CMU: Eggshell | | | | |
| | 1st Coat | 262 Acrylic Block Filler | W 305 Blockfil | PrepRite Interior/Exterior Block Filler (B25W25) |
| | 2nd & 3rd Coat | 022 Lo-Glo | W 940 Permashell | ProMar 200 Interior Latex Eggshell (B20W200) |

| | | | | |
|---|---|---|---|---|
| CMU: Semi-Gloss Acrylic | | | | |
| | 1st Coat | 262 Acrylic Block Filler | W 305 Blockfil | PrepRite Interior/Exterior Block Filler (B25W25) |
| | 2nd & 3rd Coat | 128 Satin-Glide | W 450 Decoglo | ProMar 200 Interior Semi-Gloss (B31W200) |
| Gypsum Board: Flat | | | | |
| | 1st Coat | 002 Majestic | W 101 Vinylastic | ProMar 200 Interior Latex Flat (B30W200) |
| | 2nd Coat | 002 Majestic | W 401 Decovel | ProMar 200 Interior Latex Flat (B30W200) |
| Gypsum Board: Eggshell | | | | |
| | 1st Coat | 061 Aqua Seal | W 101 Vinylastic | PrepRite Interior Latex Wall Primer (B28W200) |
| | 2nd & 3rd Coat | 022 Lo-Glo | W 940 Permashell | ProMar 200 Interior Latex Eggshell (B20W200) |
| Gypsum Board: Low Sheen Acrylic | | | | |

| **SURFACE** | **NUMBER OF COATS** | **FRAZEE PRODUCTS, except as noted** | **DUNN-EDWARDS PRODUCTS** | **SHERWIN-WILLIAMS PRODUCTS** |
|---|---|---|---|---|
| | 1st Coat | 061 Aqua Seal | W 101 Vinylastic | PrepRite Interior Latex Wall Primer (B28W200) |
| | 2nd & 3rd Coat | 126 Mirro-Glide Lo Sheen | W 940 Permashell | ProMar 200 Interior Latex Eggshell (B20W200) |
| Gypsum Board: Semi-Gloss Acrylic | | | | |
| | 1st Coat | 061 Aqua Seal | W 101 Vinylastic | PrepRite Interior Latex Wall Primer (B28W200) |
| | 2nd & 3rd Co | 128 Satin Glide II Semi-Gloss | W 450 Decoglo | ProMar 200 Interior Latex Semi-Gloss (B31W200) |

| | | | | |
|---|---|---|---|---|
| | at | | | |
| Gypsum Board: Gloss Acrylic | | | | |
| | 1st Coat | 061 Aqua Seal | W 101 Vinylastic | PrepRite Interior Latex Wall Primer (B28W200) |
| | 2nd & 3rd Coat | 143 Mirro-Glide Gloss | W 960 Permagloss | ProMar 200 Interior Latex Gloss (B21 Series) |
| Ferrous Metal: Semi-Gloss Acrylic | | | | |
| | 1st Coat | 661 F 774 Metal Prime or 561 Acrylic Primer | 43-5 Corrobar OR 43-4 Bloc-Rust | Kem Bond HS (B50Z) |
| | 2nd Coat | 124 Mirro-Glide | W 901 | Pro Classic Acrylic Semi-Gloss (B31 Series) |
| | 3rd Coat | 124 Mirro-Glide SemiGloss | W 901 Permasheen | Pro Classic Acrylic Semi-Gloss (B31 Series) |
| Ferrous Metal: Gloss Acrylic | | | | |
| | 1st Coat | 661 F 774 Metal Prime or 561 Acrylic Primer | 43-5 Corrobar or 43-4 | Kem Bond HS (B50Z) |
| | 2nd Coat | 143 Mirro-Glide | W 960 | ProClassic Acrylic Gloss (B31 Series) |
| | 3rd Coat | 143 Mirro-Glide Gloss | W 960 Permagloss | ProClassic Acrylic Gloss (B31 Series) |
| Structural Steel, Doors and Frames: Refer to Section 09905 – High Performance Coatings. | | | | |
| Wood: Low Sheen Acrylic | | | | |
| | 1st Coat | 367 Fraflo or 168 Acrylic Prime Plus | W 707 Unikote or E 22-1 | Wall & Wood Primer (B49WZ2) |
| | 2nd Coat | 126 Mirro-Glide Lo Sheen | W 940 Permashell or W 411 Suprema | ProMar 200 Interior Latex Eggshell (B20W200) |
| | 3rd Coat | 126 Mirro-Glide Lo Sheen | W 940 Permashell | ProMar 200 Interior Latex Eggshell (B20W200) |
| Wood: Semi-Gloss Acrylic | | | | |
| | 1st Coat | 367 Fraflo 168 Acrylic Prime Plus | E 22-1 Super U-365 or W 707 | Wall & Wood Primer (B49WZ2) |

| | | | | |
|---|---|---|---|---|
| | 2nd & 3rd Coat | 124 Mirro-Glide Semigloss | W 901 Permasheen | ProClassic Acrylic Semi-Gloss (B31 Series) |

**END OF SECTION 09900**