LIST OF SPECIFICATIONS

SECTION 01 56 39

TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Protection of trees and other plants that are scheduled to remain.
   1. Work necessary to ensure that trees, and landscaping in general, to remain receive all due protection, care, and maintenance necessary to ensure their survival.
   2. Replacement of existing trees, plantings, and landscape work that are damaged as a result of construction operations, and related care and maintenance necessary to ensure their survival.

B. Work specifically includes the following:
   1. Erection of barriers and other general protective measures.
   2. Placement of wood shavings.
   3. Care of roots during grading.
   4. Inspection and recommendations.
   5. Repair and/or replacement of trees and other plants damaged during the construction operations.
   6. Repair and/or replacement of any irrigation systems damaged or removed during construction operations.

C. Related Requirements:
   1. Earthwork: Section 31 00 00.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Contractor shall avoid injury or damage resulting from the Contractor's operations, including:
   1. Cutting, breaking, or skinning of roots, trunks, or branches.
   2. Smothering or soil compaction by stockpiled materials, excavated materials, foot or vehicular traffic within the drip line.
   3. Desiccation due to interruption of existing irrigation schedule.

1.3 INSPECTION

A. At the outset of construction the Contractor shall have all trees to remain inspected by a qualified and experienced arborist, and the recommendations of the arborist shall be submitted in writing to the County's Representative.

B. The Contractor shall be notified by the County's Representative of any changes or additions to the procedures specified.

1.4 PROTECTION

A. Every effort shall be made to protect all trees on the site, except such shrubs and grasses which would be removed for site grading.

B. Trees to be saved shall be clearly indicated and shall be protected by the Contractor, who shall erect temporary barricades placed no closer than the drip line of the tree.
   1. Barricades shall be placed before commencing other work and shall remain in place until completion of the entire construction or until removal is directed by the County's Representative.
   2. Where 100 percent control of vehicular traffic cannot be maintained, a 3-inch-thick layer of wood shavings shall be placed around any tree subject to such traffic prior to commencement of construction.

C. No tree roots greater than 1 inch in diameter may be cut during the performance of demolition work or installation of utilities.
   1. Tree roots shall be carefully uncovered and the material removed without root damage, after which the excavation shall be immediately backfilled.
   2. Where it is not possible to avoid cutting roots, the County's Representative shall be notified, and the work shall be done only by a qualified tree surgeon.

D. All existing trees to be saved shall be protected from the following:
   1. Stockpiling of any materials under the spread of the trees.
   2. Driving or parking vehicles on unpaved areas under the spread of the trees.
   3. Dumping of refuse or chemically injurious materials or liquids.
   4. Continual puddling or running of water.
   5. Gathering of workmen under the trees during breaks or lunch periods.

E. After completion of construction, Contractor shall dispose of fallen debris present around the existing trees. The Contractor shall restore the grounds around the trees to their existing natural condition.

1.5 GUARANTEE

A. If a tree to remain is destroyed, or damaged so that in the judgment of the County's Representative it should be replaced, it shall be removed at Contractor's expense.

B. Contractor shall care for and maintain replacement trees and other replacement plantings until they are well established, up to one year from Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 TREE PROTECTION MATERIALS

A. Barricade:
   1. Fabric: Chain link fencing, 6 feet high.

2. Posts: Metal, sufficient to hold fabric plumb and taut. Post installation shall be reviewed and approved by the County's Representative.
3. Materials and installation shall conform to the requirements of the Chain Link Fence Manufacturers Institute (CLFMI) "Product Manual."

B. Anti-desiccant: Manufactured for use on plants.
1. Provide evidence that material can be used on specified trees.
2. Do not use anti-desiccant without approval of County's Representative.

C. Herbicides: As selected by Contractor subject to the following.
1. Products used under paving shall be safe for use around trees and labeled for that use.
2. Pesticides used on site shall be safe for use around trees and not easily transported by water.

D. Additional Protection Materials:
1. Untreated burlap.
2. Black plastic sheets.
3. Wood chips.

PART 3 - EXECUTION

3.1 GENERAL PROTECTION REQUIREMENTS

A. Protect existing tree roots, trunks, and branches from damage or injury.

B. Maintain fire-safe areas around trees to remain. Permit no heat sources, flames, ignition sources, or smoking near mulch or trees.

C. Do not allow exposed roots to dry out before permanent backfill is placed. Protect exposed roots with 4 layers of wet untreated burlap and a top layer of black plastic anchored in place. Keep burlap moist until placement of backfill. Remove burlap and plastic at time of backfilling.

D. Exercise extreme care in removing concrete or asphalt within drip line. Paving pieces shall be lifted rather than dragged. Protect surface roots immediately with 4-inch layer of chipped mulch.

E. Where it is necessary for vehicles or equipment to operate or travel in unpaved landscape areas, Contractor shall place a minimum 10-inch layer of wood-chip mulch over the work area before starting work there.
1. This mulch layer shall be replenished as necessary to maintain a 10-inch depth until operations in the area are complete.
2. Contractor shall remove mulch upon completion of the work, unless directed otherwise.

3. Where it is necessary for heavy equipment to be positioned in unpaved landscape areas, Contractor shall provide additional protection against soil compaction and landscape damage.
    a. Means of providing such additional protection may include the placement of base rock and heavy timbers beneath heavy equipment.
    b. Contractor shall obtain approval of County's Representative for protective measures before placing or operating heavy equipment in unpaved landscape areas.

F. Pruning of existing trees and tying back of branches, if determined by County's Representative and County to be necessary, will be by County under separate contract.
1. Contractor shall identify access and clearance requirements for operation of equipment and shall inform County's Representative of these requirements at the pre-work site visit specified.
2. Contractor shall coordinate work schedule with tree work by County and shall not begin work until tree work by County is complete.
3. If additional requirements for pruning or tying of branches arise during the course of the work, Contractor shall inform County's Representative immediately.

G. Damage to trees due to Contractor's operations shall be reported to County's Representative within 6 hours so that remedial action can be taken. Timeliness is critical to tree health.

3.2 TREE DRIP LINE RESTRICTIONS

A. General:
1. Storage, disposal, or stockpiling within the drip line of trees is not permitted.
2. No traffic is permitted within drip line without prior approval by County's Representative.
3. No materials, equipment, spoil, waste or washout water shall be deposited, stored, or parked within drip line.
4. Prevent puddling or continuous running water within drip line.
5. If directed to do so, install silt fences, water diversion structures, or other erosion control devices to prevent siltation or erosion within drip line of trees to remain.

B. Work within drip line of trees to remain shall be approved by County's Representative.
1. Earth surface within drip line shall not be changed except as shown or specified or as approved by County's Representative.
2. Trenching, grading or excavation up to three-foot depth below existing grade within drip line shall be done by hand.
3. Excavation within drip line below three-foot depth may be done by means other than by hand if approved by County's Representative.
4. The perimeter of all trenches or excavations within drip line shall be cut cleanly with a rock saw or sharpened trencher to a depth of three feet or to the depth of the trench or excavation, whichever is less.

5. Roots encountered shall be cut cleanly with a sharp saw, vibrating knife, or other approved root pruning equipment. Roots shall not be pulled, jerked, or lifted. Roots damaged during the course of the work shall be exposed to sound tissue and cut cleanly with approved root-pruning equipment.

C. Where heavy equipment must be positioned in paved areas located within the drip line or over the root area of trees to remain, Contractor shall provide protection against soil compaction and paving damage.
   1. Means of providing such protection may include the placement of base rock and steel plates beneath heavy equipment.
   2. Contractor shall obtain approval of County's Representative for protective measures before placing or operating heavy equipment over the root area of trees to remain.

3.3 BARRICADES

A. Locate just outside of drip line of trees to remain.

B. Install barricades plumb, taut, and sturdy with posts spaced approximately 4 feet apart and securely attach fabric.

C. Locate roots before setting posts to prevent damage to roots.

D. Repair sagging or damaged barricades.

E. Remove barricades upon completion of work.

3.4 LANDSCAPE REPAIR

A. Contractor shall repair any damage to the existing irrigation system caused by the work and replace any portion of the existing irrigation system that is removed as a result of the work.

B. Contractor shall restore site to existing grade except where otherwise shown or specified.

C. Existing lawn area disturbed by the work shall be restored to existing grade and re-vegetated with sod of approved species.

D. Existing groundcover area disturbed by the work shall be restored to existing grade and replanted as directed with groundcover of species approved by the County's Representative.

E. Trees: If an existing tree is damaged and it is determined by the County's Representative that the tree needs to be replaced, replace it with a healthy tree of the same species.
   1. Large trees shall be replaced with a new tree of not less than 60-inch box rootball size.
   2. Smaller trees shall be replaced with a new tree of size equivalent to the existing tree.

END OF SECTION 01 56 39

SECTION 02 00 00

EXISTING CONDITIONS

PART 1 - GENERAL

1.1 SUBMITTALS

A. When conditions encountered differ from that shown, submit proposed remedial methods for approval.

B. Cross-reference to Contract Documents includes shop drawings, samples and product data as appropriate.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials, Manufacturers and Fabrication: Comply with the requirements established by the Contract Documents.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect existing conditions and surfaces that will become substrates for, or contiguous surfaces with, the work under this contract. Should deviations from tolerances established by the Contract Documents interfere with lines, levels or the tolerances established for the work under this contract, correct prior to commencement of adjacent new work.

B. Submit a written list of conflicts and remedial requirements within 10 days of the Notice to Proceed. Any conflicts not identified at that time will be remedied at the Contractor's expense.

C. Where photographic or video media is utilized to record condition prior to the start of construction, submit two (2) sets of media to the County for its records. See Division 01 for additional requirements.

3.2 WORKMANSHIP

A. Work shall be done in accordance with tolerances established by the Contract Documents.

END OF SECTION 02 00 00

SECTION 02 41 13

SELECTIVE SITE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Demolition and removal of existing site improvements within the "Areas of Work" as shown on the Drawing as required for modified and new improvements.

B. Full compensation for conforming to the requirements of this Section shall be considered as included in the Contract Lump Sum Price and no additional compensation will be allowed.

1.2 DEFINITIONS

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

B. Remove and Salvage: Detach items from existing construction and deliver them to County as directed.

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

1.3 MATERIALS OWNERSHIP

A. Items of interest or value to County that may be encountered during demolition shall be identified by the County and remain County's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to County as directed.

1.4 SUBMITTALS

A. Procedures: In accordance with Section 01 33 00 Submittal Procedures.

B. Pre-demolition Photographs: As specified in Section 01 33 00 Submittal Procedures.

C. Demolition Plan as specified below.

1.5 DEMOLITION PLAN

A. A Demolition Plan is required by the County.

B. The demolition plan shall include detailed sequence of demolition and removal work, with starting and ending dates for each activity, for each Area of Work on the site.

Sequencing of work shall be reflective of the County's desire to provide minimum disruption to existing Site and Plaza operations.

C. If required as a condition for governmental approval of the work, the Demolition Plan shall include those additional components necessary to secure approval. Review by the County's Representative of a Demolition Plan or field observations performed by the County's Representative will in no way relieve the Contractor of full responsibility for the procedures included in the Plan.

1.6 QUALITY ASSURANCE

A. Comply with governing EPA notification regulations before beginning demolition.

B. Comply with hauling and disposal regulations of authorities having jurisdiction as specified in Section 01 35 13.26 Construction Waste Management.

C. Comply with ANSI A10.6 and NFPA 241.

1.7 PROJECT CONDITIONS

A. Provide temporary barricades, fences, and other protection required to prevent injury to people and damage to adjacent facilities that are to remain.

B. Special care shall be exercised to protect the finishes of existing paving, concrete curbs, and other items to remain as noted on the Drawings. Contractor shall notify the County's Representative and request a clarification before proceeding if the Contractor has any question as to the extent of items to remain.

C. Promptly repair damage caused by demolition operations to existing structures and facilities to remain at no cost to the County.

D. If the finished surface of the asphalt concrete on existing County streets outside of the Work area is damaged, it shall be repaired to the satisfaction of the County. Corrective work shall be at the Contractor's expense.

1.8 TRAFFIC

A. Conduct demolition operations and the removal of debris to ensure minimum interference with existing building and site operations, surrounding streets, roads, and property. Do not close or obstruct walkways and building exits without prior written approval of County.

B. Surrounding public areas shall be kept open at all times.

1.9 UTILITY SERVICES

A. The Contractor shall verify the location of existing underground facilities in the vicinity of the "Areas of Work" shown on the Drawings. If present, promptly submit a

written report to County's Representative. Maintain existing utilities and protect against damage during demolition operations.

B. If existing underground utilities are present and are required to be relocated, Contractor shall:
   1. Disconnect and seal indicated utilities before starting demolition operations.
   2. Provide necessary special precautions to protect the health, safety, and welfare of workers and the public.
   3. Provide temporary services during interruptions to existing utilities, as acceptable to the County and governing authorities.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 POLLUTION CONTROLS

A. Use water sprinkling, temporary enclosures, and other suitable methods as necessary to limit the amount of dust and dirt rising and scattering in the air to the lowest level of air pollution practicable for the condition of Work to protect adjacent buildings, automobiles, and other property. Comply with the governing regulations.

B. Clean adjacent structures and improvements of all dust, dirt, and debris caused by demolition operations.

C. Return areas to condition existing prior to the start of the Work.

3.2 DEMOLITION

A. Demolish and remove existing slabs, curbs, earthwork, and below-grade construction as shown on Drawings and required for installation of new work.

B. Use methods required to complete the work within limitations of governing regulations.

C. Holes resulting from the concrete removal shall be backfilled to the finished grades indicated on the Drawings. Conform to requirements of Section 31 20 00 Earth Moving.

D. Where required by the Drawings or specified and when so directed to be salvaged and/or reused, remove item to be salvaged in the most careful manner possible to avoid damage.

E. Materials to be removed and not reused or salvaged shall become the property of the Contractor, who shall be responsible for their timely removal from the Project site and their legal disposal.

F. Plug or repair holes, penetrations, and other damages to existing construction which result directly from demolition work.

3.3 DISPOSAL AND RECYCLING DEMOLISHED MATERIALS

A. Remove and transport debris in a manner that will prevent spillage on adjacent building and site areas, and on public streets and roads.

B. Except for items or materials indicated to be reinstalled, salvaged, or otherwise indicated to remain County's property, demolished materials shall be removed from Project site and legally disposed.

C. See additional requirements specified in Section 01 35 13.26 Construction Waste Management.

END OF SECTION 02 41 13

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Portland cement concrete for footings, curbs, platforms, ramps, stairs, and walkways.
   2. Polymer-modified Portland cement mortar/concrete topping (indicated on the Drawings as "epoxy concrete") for existing landings and stairs; two inches minimum thickness typical as shown on the Drawings.
   3. Embedded items, including but not limited to:
      a. Cast-in nosings/warning strips for both new concrete and concrete topping.
      b. Cast-in deck trench drain with removable top.
      c. Fiberglass-reinforced plastic pipe sleeve embedded in concrete curb for draining water from ramp surface to adjacent grade.

B. Related Requirements:
   1. Metal Fabrications: Section 05 50 00; posts set in concrete.
   2. Modified Bituminous Sheet Waterproofing: Section 07 13 52.
   3. Earthwork: Section 31 00 00.
   4. Tactile Warning Surfaces: Section 32 17 26.

1.2 DEFINITION

A. Cast-in-Place Architectural Concrete: Formed concrete for new ramps, curbs, platforms, and stairs that are exposed to view on surfaces of the completed work.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Submit action submittals and informational submittals in accordance with Section 01 33 00 Submittal Procedures.

1.4 ACTION SUBMITTALS

A. Shop Drawings: Submit for reinforcing steel other than steel in flatwork, and to clarify proposed formed surfaces not shown by details on the Drawings.

B. Samples: 12-inch-length of warning strip, in specified color.

C. Statement describing type and percentage by weight of proposed fly ash or slag content in concrete.

D. Product data and installation instructions for all manufactured products.

1.5 INFORMATIONAL SUBMITTALS

A. Concrete mix design as specified. Include revised mix proportions when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

B. Certifications: Material certificates signed by manufacturer and Contractor, certifying that each material complies with or exceeds specified requirements.
   1. Certification for concrete aggregates shall indicate they are suitable for the intended use.
   2. Include certification for aggregate base material if not provided under other Sections.

C. Results of field tests for slip resistance, verifying that concrete surfaces meet specified requirements for slip resistance.

1.4 QUALITY ASSURANCE

A. Reference Standards:
   1. Conform site and soil work to the appropriate portion of State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications," hereinafter referred to as “Standard Specifications,” except that references to "measurement" and "payment" are not applicable.
   2. Conform all other construction work to the appropriate sections of the current California Building Code (CBC) or as specifically noted or detailed on the Project Drawings.
   3. The American Concrete Institute (ACI): "Manual of Concrete Practice," Parts 1, 2, and 3.

B. Mockups: First completed area or example of the following shall serve as mockups for review and approval by County’s Representative of workmanship, visual effect (where applicable), and interface with adjacent construction:
   1. Preparation of existing surfaces to receive polymer-modified concrete topping.
   2. Existing step covered with polymer-modified concrete topping, with cast-in warning strip.
   3. Concrete for which color pigment will be used, if applicable.
   4. Additional items as requested by County’s Representative.

C. Testing and Inspection:
   1. The Contractor shall engage an approved Testing Laboratory as specified in Division 01.
   2. The Contractor’s Testing Laboratory shall:
      a. Provide concrete mix design.
      b. Inspect reinforcing steel in place before concreting is started.
      c. Observe placement periodically and make slump tests and compression tests of concrete work.
   3. See Section 31 20 00 Earth Moving for subgrade inspections and testing.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

A. Stipulations:
   1. Finish Surface Tolerance: 1/4-inch maximum variation in 10 feet.
   2. At no point shall paving surface fail to drain.
   3. Concrete shall have high fly ash content; up to 25 percent by weight of cementitious material for regular weight concrete. Slag will be considered in lieu of fly ash upon request of Contractor.

B. Dry or Wet Slip Resistance:
   1. Completed walk surfaces shall be tested in accordance with ASTM E303, "Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester."
      a. Pendulum Test Value (PTV) shall be 45 or greater under dry and wet conditions.
      b. Individual tests shall be made for each contiguous area.
      c. Test results shall be reported in writing.
      d. Alternative test method, such as use of a BOT-3000E digital tribometer, if approved, shall provide results for both wet and dry conditions.
   2. New exterior surfaces with slope less than 6 percent shall have minimum static coefficient of friction of 0.60 under wet conditions; equivalent to slip resistance provided by medium broom finish.
   3. New exterior surfaces with slope equal to or greater than 6 percent shall have minimum static coefficient of friction of 0.80 under wet conditions; equivalent to slip resistance provided by heavy broom finish.

C. At new and existing concrete stairs, steps, and landings, comply with the requirements of the CBC and ADA for tread striping or warning strips.

D. Where indicated work is of superior quality or capacity to that required by County standards, the Drawings and Specifications shall take precedence.

2.2 FORMWORK MATERIALS

A. Forms shall be wood, except curbs may be formed with approved metal form systems.
   1. Plywood: APA B-B Plyform.
   2. Lumber: "Standard" grade or better (grade marks not required).

B. Form Coating: Knox-Crete, or equal.

C. Form Ties: Cone and rod type with 1-inch break-back; Burke "PentaTie" or equal. Wire ties and wood spreaders are not permitted.

D. Post Sleeve Form: "EZ Sleeve" Model No. EZ3006 with base and removable cover by Wagner/Braun, or equal which creates a tapered hole with extra space to plumb post up to 2-3/8 inch O.D.

2.3 REINFORCING MATERIALS

A. Bar Reinforcement: ASTM A615, Grade 60; except for reinforcement #3 or smaller which may be ASTM A615, Grade 40.

B. Welded Wire Fabric (WWF) Reinforcement:
   1. Plain and deformed wire reinforcement: ASTM A1064.
   2. Where placed in concrete exposed to weather, galvanize per ASTM A123.
   3. Furnish flat, not rolled.

2.4 CONCRETE MATERIALS

A. Concrete: Comply with applicable requirements of Section 90 of the Standard Specifications.
   1. As specified in Part 1, concrete shall have up to 25 percent (by weight of cementitious materials) fly ash or slag content.

B. Water: Clear and potable, free from deleterious impurities.

C. Color Pigment, if Required: ASTM C979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, non-fading, and resistant to lime and other alkalis.

D. Admixtures: Admixtures are optional, and shall be compatible with color pigments where required to match existing. Accelerating admixtures are not permitted.

E. Polymer-Modified Portland Cement Mortar/Concrete Topping (Indicated on the Drawings as "Epoxy Concrete"): "SikaTop 122 Plus" by Sika Corporation, or equal.
   1. Provide compatible scrub coat, crack filler, and other materials recommended by manufacturer for a complete installation.
   2. Color, texture, and general appearance shall be similar to that of cast-in-place concrete.
   3. Product shall be suitable for installation at thickness from 1/8 inch to 2 inches.
   4. Provide 3/8-inch coarse aggregate as recommended by manufacturer, to provide topping suitable for overall thickness of 2 inches as shown on the Drawings.
   5. Compressive Strength at 28 Days: 7000 psi minimum, ASTM C109 modified.
   6. Bond Strength at 28 Days: 2200 psi, ASTM C882 modified.

2.5 ANCILLARY MATERIALS

A. Aggregate Base: As specified in Section 31 20 00 Earth Moving.

B. Nonmetallic Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining shrinkage-compensating, conforming to ASTM C110; Five Star Products, Inc. “Five Star Grout,” W.R. Meadows "CG-86," or equal.

C. Curing Compound: Conform to Section 90.7.01B of the Standard Specifications, with fugitive white pigment.

D. Warning Strips; Cast-in Type, for New Concrete and for Concrete Topping: Extruded aluminum nosing with integral anchors and abrasive filler; Style 3511 by American Safety Tread, or equal.
   1. Width: 3 inches.
   2. Filler color: Black.

E. Deck Trench Drain: “Treadmaster Commercial” by Stegmeier Corporation, or equal.
   1. Provide with removable snap-in aluminum top; natural aluminum color.
   2. Base: Double wall; non-corroding material acceptable to County’s Representative.
   3. Provide couplings, end adapters, tees, bends, and other accessories as required for a complete installation in configuration shown.

F. Curb Drain (If Required): Kestrel Industries “Ultra Curb Guard” or equal.
   1. Provide style and size as appropriate for conditions, and acceptable to County’s Representative.

G. Pipe Sleeve for Concrete Curb: 2 inches x 3 inches minimum interior dimensions; fiberglass-reinforced plastic, with walls of sufficient thickness to support wet concrete. Provide with smooth flush ends. Color shall be acceptable to County’s Representative.

H. Railings, Columns, and Related Metal Work: As specified in Section 05 50 00 Metal Fabrications.

I. Cast-in Warning Surfacing: As specified in Section 32 17 26 Tactile Warning Surfacing.

J. Expansion Joint Filler: 1/2-inch premolded filler conforming to Section 51-1.2C of the Standard Specifications.

K. Sealants: Comply with requirements of Section 51 of the Standard Specifications.

L. Epoxy Adhesive: Simpson SET-XP or equal.

M. Provide miscellaneous materials or accessories, not listed above, as specified hereinafter under various items of work or as indicated on Drawings.

2.6 CONCRETE MIXES

A. Concrete mixes shall be approved and shall be in accordance with Section 90 of the Standard Specifications; and shall minimally adhere to the requirements of the "General Structural Notes" on the Drawings.

B. Typical Mix: Class "B," 1-inch maximum aggregate. Maximum aggregate shall be 3/4 inch for flatwork.
   1. Minimum 28-day Compressive Strength: As noted on the Drawings.

2.7 CONCRETE MIXING

A. Concrete shall be ready-mixed concrete.

B. Do not use concrete that has stood for over 30 minutes after leaving mixer. Do not use concrete that is not placed in less than 60 minutes after cement is introduced into mix.

C. Do not add water to concrete after the truck leaves the batch plant or at the site.

2.8 ADDITIONAL REQUIREMENTS FOR ARCHITECTURAL CONCRETE

A. Exposed surfaces of retaining walls shall comply with the following requirements.

B. Except as otherwise specified and indicated on the Drawings, comply with ACI 303.1, "Standard Specification for Cast-in-Place Architectural Concrete," ACI 303R, "Guide to Cast-in-Place Architectural Concrete."

C. Formwork Panels: New, minimum 3/4-inch thick, MDO plywood made specifically for forming of Architectural Concrete to achieve joint pattern shown on accepted shop drawings.

D. Formwork Surface Class: Class A.

E. Form Ties: Snap off metal tie of fixed length with plastic cone, designed to prevent spalling of concrete upon removal. Provide units that will leave no metal within one inch of concrete surface.

PART 3 - EXECUTION

3.1 EXISTING PAVEMENT

A. Demolish and remove existing concrete as shown on Drawings and as specified in Section 02 41 13 Selective Site Demolition.

B. Portions of existing concrete to be removed to permit construction of new installations shall be cut using a concrete saw to provide neat straight lines with vertical cuts.

C. Unless otherwise specifically noted or detailed on the Project Drawings, new concrete shall be doweled into existing with #4 rebar 12-inches long. Dowels shall be epoxied into the predrilled 6-inch deep holes.

D. Prepare existing concrete steps, landings, and other surfaces to receive polymer-modified concrete topping in accordance with recommendations of topping manufacturer.
   1. Mechanically remove loose or deteriorated concrete.
   2. Mechanically prepare concrete substrate to obtain a surface profile of plus or minus 1/16 inch, with a new exposed aggregate surface. Area to be patched shall be at least 1/8 inch deep.
   3. Where reinforcing steel with active corrosion is encountered, sandblast steel to a while metal finish to remove contaminants and rust.
   4. Where corrosion has occurred due to presence of chlorides, steel shall be high pressure washed after mechanical cleaning.
   5. Prime steel with 2 coats of epoxy cement as recommended by topping manufacturer.

3.2 PREPARATION

A. Take every precaution to obtain a subgrade of uniform bearing power by compaction to provide a firm base and in accordance with Section 31 20 00 Earth Moving.

B. If required to bring subgrade to optimum moisture, sprinkle entire area to be paved, and then compact to a smooth, hard, even surface of 95 percent compaction to receive aggregate base. Subgrade shall be kept moist and shall not be allowed to dry out before placement of concrete. Place no material on muddy subgrade.

C. Aggregate base, where indicated, shall be placed and compacted as specified in Section 31 20 00 Earth Moving.

3.3 FORMS

A. Forms shall be constructed in accordance with ACI 347 and shall be of sufficient strength and sufficiently tight to prevent visible distortion or leakage of mortar and fines.

B. Forms for exposed surfaces shall be designed to protect intended finish.

C. Curb and pavement edge forms shall extend full depth of concrete.

D. Set post sleeve forms flush with top of concrete. Install covers to keep sleeves clean.

E. Maintain forms within the following tolerances.
   1. Top of Form: Plus or minus 1/8-inch in 10-feet and no abrupt variations; at required elevation to plus 3/8-inch.

2. Face of Form:
   a. Plus or minus 1/4-inch in 10-feet longitudinal and no abrupt variations
   b. Perpendicular to Surface: Plus or minus 1/8-inch.

F. Forms may be reused upon cleaning and coating with parting compound to ensure separation from concrete without damage.

G. After concrete is placed, the following times shall elapse before removal of forms.
   1. Walls: 7 days for Architectural Concrete and other concrete surfaces exposed at building exterior
   2. Curbs: 1 hour.

3.4 EMBEDDED ITEMS

A. Fabricate and place reinforcement in accordance with reference standards or as shown and detailed.

B. Embed anchorage for steel posts as shown on the Drawings.
   1. Keep cover on post sleeve form until ready to install post.
   2. Remove cover from post sleeve form, place post into clean sleeve, and grout with fast-setting grout.

C. Embed cast-in warning strips/nosings to meet ADA requirements.

D. Embedded items shall be accurately positioned and secured in place.

E. Install deck trench drain so that top will be flush with or slightly below surface of concrete. Coordinate with other Sections for proper drainage.

F. Position embedded items in such a way as to discourage tripping hazards; typically flush with concrete surface.

3.5 PLACING CONCRETE

A. Conform to applicable requirements of Section 90 of the Standard Specifications.

3.6 JOINTS AND GROOVES

A. Plane of joints shall be perpendicular to surface. Unless otherwise indicated, transverse lines and joints shall be perpendicular to walk center line. Where new walks join existing, joints and score lines shall align.

B. Expansion and Isolation Joints: Provide premolded joint filler for expansion joints and isolation joints abutting concrete paving and curbs, structures, walks and other fixed objects.

C. Locate expansion joints where shown, but not more than 30 feet on center.

D. Extend joint filler full width and depth of the joint, and not less than 1/8-inch or more than 3/8-inch below the finished pavement surface. Furnish joint fillers in one-piece lengths for the full width being placed, wherever possible. Where more than one length is required, splice at approved locations and lace or clip joint filler sections together.

E. Protect the top edge of the joint filler during concrete placement with a metal cap or other temporary material. Remove protection after both sides of joint are placed.

F. Tool concrete edge both sides of joint.

G. Construction Joints: Place construction joints at the end of pours and at locations where placement operations are stopped for a period of more than one half hour, except where such pours terminate at expansion joints.

H. Joints shall be keyed with formed tongue and groove.

I. Tool concrete edge both sides of joint.

J. Pavement Score Line: Provide weakened plane joints sectioning the pavement into areas as indicated. Groove the fresh concrete as indicated and tool the concrete both sides of the line.

3.7 INSTALLATION OF POLYMER-MODIFIED CONCRETE TOPPING

A. Prepared areas of existing concrete to receive topping shall be at least 1/8 inch deep.

B. Saturate concrete with water to surface dry (SSD), with no standing water.

C. Apply scrub coat or epoxy cement, as recommended by topping manufacturer, to substrate, filling all pores and voids.

D. Mix polymer-modified cement and concrete in accordance with manufacturer's instructions.

E. While scrub coat is still wet, apply polymer-modified cement or concrete to match accepted mock-up, to thickness indicated.
   1. Where depth of topping is one inch or less, use polymer-modified Portland cement mortar.
   2. Where depth of topping is greater than one inch, use polymer-modified Portland cement concrete.

3.8 FINISHING

A. Flatwork and Formed Surface:
   1. Typical: To match existing, unless a more textured surface is required to meet specified requirements for slip resistance. Architectural Concrete shall be as-cast concrete with minimal dressing.

2. Ramps: Uniform directional texture by coarse stable broom at right angles to general flow of traffic, to meet specified requirements for slip resistance.

B. Edges and both sides of joints shall be tooled to 3/16-inch radius unless otherwise indicated.

C. Defects shall be repaired by removing and replacing entire unit between joints.

D. Apply surface-mounted warning strips and tactile warning surfacing in accordance with manufacturer's recommendations, to meet ADA requirements.

3.9 CURING

A. Cure exposed concrete in accordance with 90-7 of the Standard Specifications and manufacturer's recommendations.

B. Only water or curing compounds which impart no permanent color or gloss shall be used for curing concrete.

C. The compound shall be applied as soon as finishing work is complete.

END OF SECTION 03 30 00

SECTION 05 50 00

METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Shop-painted and field assembled steel railing assemblies, handrails, and guardrails as shown on the Drawings.
2. Galvanized, unpainted, tube steel columns and related miscellaneous steel, to support existing canopy to remain.
3. Prefabricated aluminum ramp, landing, and railing system.

B. Related Requirements:
1. Cast-in-Place Concrete: Section 03 30 00;
   a. Cast-in metal warning strips.
   b. Surface drains.
   c. Curb drains (if required).

1.2 ADMINISTRATIVE REQUIREMENTS

A. Submit action submittals and informational submittals in accordance with Section 01 33 00 Submittal Procedures.

B. Coordination:
1. Coordinate installation of anchorages. Furnish setting drawings, diagrams, templates, and directions for installing anchorages, including sleeves, inserts, anchor bolts, and items with integral anchors, to be embedded in concrete.
2. Field Measurements: Where metal assemblies are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on shop drawings.

1.3 ACTION SUBMITTALS

A. Shop Drawings: Large-scale drawings for fabrication and erection of each assembly.
1. Show required field measurements and interface with existing work.
2. Show proposed locations, types, and details of field joints.
3. Welds shall be indicated by AWS "Symbols for Welding, Brazing and Nondestructive Examination," A2.4.

B. Product Data:
1. Manufacturer's specifications for manufactured products to be used in the fabrication of work including paint products.

2. Product data, details, and installation instructions for prefabricated aluminum ramp, landing, and railing system. Indicate method of anchorage and interface with adjacent construction.

C. Samples:
1. Two adjacent 12-inch long sections of typical painted railing assembly, finished as specified, and illustrating proposed field connection.
2. Additional samples as requested by County's Representative.

1.4 INFORMATIONAL SUBMITTALS

A. Welding:
1. Statement of qualifications for fabricator, installer, and welders.
2. Completed "Procedure Qualification Record" (PQR) and "Welding Procedures Specification" (WPS) forms for the welds to be performed under this Section.

B. Certification: Shop drawings shall be signed by design engineer, or submit certification that structural portions are in compliance with specified and code required performance criteria.

1.5 QUALITY ASSURANCE

A. Fabricator/Installer Qualifications: Documented experience in producing ornamental metal railing assemblies similar to those indicated for this Project, and with a record of successful in-service performance.

B. Welding:
1. Qualifications: Certified and qualified in accordance with procedures specified in American Welding Society Standard in accordance with AWS D1.1, using procedures, materials, and equipment of the type required for the work.
2. Welding procedures and operations shall comply with AWS B2.1, "Standard for Welding Procedure and Performance Qualifications." Comply with AWS publication "Welding Zinc Coated Steel" for galvanized products.

C. Mockup: First installed example of shop-painted railing assembly with post set in concrete and with a field joint shall serve as a mockup for review and approval by County's Representative of workmanship, visual effect, and interface with adjacent construction,

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

A. Comply with recommended practices of the National Association of Architectural Metal Manufacturers (NAAMM), Section 10 of the AISC Code of Standard Practice, and the additional requirements of this Section.

B. Items shall be watertight and drain properly.

C. Railing Assemblies, Handrails, and Guardrails:
1. Handrails shall resist a point load of at least 250 pounds, applied in any direction at any point.
2. Railings shall resist a uniform vertical and horizontal load of 50 pounds per lineal foot, applied at the top rail.
3. Comply with "Metal Rail Manual" of National Ornamental and Miscellaneous Metals Association (NOMMA).
4. Comply with "Pipe Railing Manual" of National Association of Architectural Metal Manufacturers (NAAMM).
5. Comply with the Americans with Disabilities Act (ADA).
6. Provide for thermal expansion and contraction.

D. If modifications to designs indicated are proposed in order to meet code requirements or existing conditions, indicate them as such on shop drawing submittals. Work with County's Representative to arrive at an acceptable design that is sufficiently similar to the design indicated.

E. Design interface and connections to existing work in such a way as to minimize damage and defacement to existing construction.

2.2 METAL MATERIALS

A. General: Metal surfaces exposed to view shall not exhibit pitting, seam marks, roller marks, splice marks, mill identification markings, stains, discolorations, or other blemishes and imperfections.

B. Steel: Provide steel and iron, in forms indicated, to comply with the following requirements:
1. Plate, Shapes, and Bars: ASTM A36.
2. Steel Plates to Be Bent or Cold Formed: ASTM A283, Grade C.
3. Pipe: ASTM A53, Grade B, Schedule 40.
4. Steel Bars and Bar-Size Shapes: ASTM A663, Grade 65, or ASTM A36.
5. Cold-Drawn Steel Tubing: ASTM A500, Grade B.
6. Hot-Rolled Carbon-Steel Bars: ASTM A575, grade as selected by fabricator.
7. Steel Castings: ASTM A27, Grade 65-35, medium-strength carbon steel.

C. Aluminum: 6063-T5 extruded alloy, ASTM B221.

2.3 OTHER MATERIALS AND COMPONENTS

A. Pipe Fittings: Malleable iron ASTM A47, grade 32510.

B. Anchors:
1. General: As shown on the Drawings, unless otherwise required to meet specified requirements.

2. Anchor Bolts: ASTM A307, stainless steel.

C. Fasteners:
   1. Use stainless steel for fasteners up to 1/2 inch in diameter.
   2. Use hot-dip galvanized fasteners for fasteners over 1/2-inch in diameter.
   3. Provide concealed sleeves and fasteners for interconnecting metal components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method. Exposed fasteners shall be indicated on required submittals.

D. Welding Electrodes and Filler Metal: Type and alloy of filler metal and electrodes as recommended by producer of metal to be welded, complying with applicable AWS specifications, and as required for color match, strength, and compatibility in fabricated items.

E. Nonmetallic Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining shrinkage-compensating, and with at least 8,000-psi compressive strength at 28 days; MBT "Sonogrout 10K" by BASF Construction Chemicals, or equal conforming to ASTM C1107.

F. Handrail Brackets: Steel bracket arm No. R110 by Wagner Companies or equal, with fabricated steel rail saddle, as shown on the Drawings.

G. Prefabricated Modular Aluminum Ramp, Landing, and Railing System: "Universal Wheelchair Ramp System, ADA 34-Inch Two Line Rail Ramp" by REDD Team Manufacturing, Magnolia, Arkansas, or equal.
   1. Size and Configuration: As shown on the Drawings.
   2. Finish: Mill finish aluminum.
   3. Exposed surfaces shall be smooth and free of sharp or jagged edges.
   4. Railings, guardrails, and handrails shall meet requirements specified in Part 1 of this Section, including concentrated load of 250 pounds applied in any direction. Provide 34-inch tall, two line rail design.
   5. Ramps and landings shall be designed for a minimum uniform live load of 100 psf and a concentrated vertical load of 300 pounds distributed evenly over an area of one square foot.
   6. Walk surfaces shall be continuous, without gaps, and shall be 1-1/2 inch x 6 inch and/or 1-1/2 inch x 8 inch self mating aluminum deck with extruded slip resistant surface. Coefficient of friction shall be at least 0.60 for landings and 0.80 for ramps. Ramps shall have a 3-inch minimum curb or toe plate.
   7. Legs:
      a. Legs shall telescope to allow for height and slope adjustment.
      b. Legs shall be designed so that they will be perpendicular to the ground, and so that vertical loads are transmitted axially through them regardless of slope.
      c. Legs shall be through bolted using stainless steel bolts.
      d. All legs shall have 6-inch x 10-inch x 1/4 inch thick pads.

2.4 FABRICATION METHODS

A. Form metal to required shapes and sizes, with true lines and angles. Provide components in sizes and profiles indicated.

B. Existing Railings and Guardrails:
   1. Existing paint coatings shall be removed if necessary to provide proper substrate for application of specified coating.
   2. Existing components, if not galvanized, shall receive a suitable zinc primer compatible with topcoat.

C. Grind, wire-brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks.

D. Provide rebates, lugs, sleeves, and brackets as required to assemble units and to attach to other work. Drill and tap for required fasteners, unless otherwise indicated. Use concealed fasteners, unless otherwise indicated on reviewed shop drawings.

E. Joints and Connections:
   1. Field welding is not permitted. Where field connections are required, design them for assembly without welding.
   2. Provide slip joints where required for thermal expansion and contraction.
   3. Shop-assemble items to greatest extent possible so as to minimize field splicing and assembly. Disassemble only as necessary for shipping and handling limitations. Clearly mark items for reassembly and coordinated installation.
   4. Use connections that maintain structural value of joined pieces.
   5. Detail connections to facilitate fabrication and erection in accordance with the referenced AISC code.
   6. Mill joints to a tight, hairline fit. Cope or miter corner joints. Form joints exposed to exclude water penetration.
   7. Provide anchorage devices and fasteners for securing metal fabrications to in-place construction, including threaded fasteners for concretes, lag bolts, and other connectors as required.
   8. Fabricate and space anchoring devices as shown and required to provide adequate support for intended use.
   9. Coordinate with Section 03 30 00 Cast-in-Place Concrete for anchorage and installation at new and existing concrete as shown on the Drawings.

F. Welding and Brazing: Comply with AWS-recommended practices.
   1. Welds shall be continuous.
   2. Weld and braze behind finished surfaces without distorting or discoloring exposed side.
   3. Remove flux from exposed welded and brazed joints. Dress exposed and contact surfaces.

G. Finishing:
   1. Finish exposed surfaces to smooth, sharp, well-defined lines and arris.

2. Welds, burrs, roller marks, seams, and rough surfaces shall be ground neat and smooth.
3. Mill markings shall be completely removed.
4. Gouges, dents, and other surface abuse shall be filled and ground smooth.

2.5 GALVANIZING

A. Minimum Cleaning Requirements Prior to Galvanizing: In accordance with SSPC Specification SP-10, "Near White Blast Cleaning."

B. Provide zinc coating by galvanized using the hot-dip process after fabrication.
1. Comply with ASTM A153 for galvanizing of iron and steel hardware.
2. Comply with ASTM A123 for galvanizing of assembled steel products and rolled, pressed, and forged-steel shapes, plates, bars, and strips 1/8 inch thick and heavier.
3. Safeguarding against warping and distortion during hot-dip galvanizing of metal fabrications shall be in conformance with ASTM A384.

C. Newly galvanized items shall not be water quenched or chromate quenched after galvanizing if they are scheduled to receive a paint coating.

D. Exterior standard bolts, cast-in-place anchor bolts, turnbuckles, clevises, and nuts shall be galvanized.

2.6 PROTECTIVE PAINT COATINGS FOR FERROUS STEEL

A. General:
1. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
2. Finish exposed fasteners to match adjacent metal.

B. Paint Products:
1. Galvanizing-Repair Paint: Minimum 82 percent zinc-dust-content paint for regalvanizing welds in galvanized steel, complying with FS DOD-P-21035a; Z.R.C. Cold Galvanizing Compound by ZRC Worldwide, “Cold Galv Primer” by Valspar,, or equal. Where repaired galvanizing is to be left exposed, use repair paint that will closely match appearance of hot-dip galvanizing; “Galvilite” by ZRC Worldwide, or equal.
2. Primers and Finish Paints: As required for specified high-performance exterior powder coat system.

C. Preparation of Galvanized Surfaces:
1. Prepare and pretreat galvanized surfaces to comply with coating manufacturer's written instructions and in accordance with SSPC SP No. 1.
2. Surfaces shall cleaned and profiled prior to receiving applied coatings.
   a. Methods shall be selected based on age of galvanized coating, condition of surface and intended paint coating.

b. High spots and rough edges shall be smoothed out.
c. Care shall be taken not to damage the zinc coating.
d. Do not use phosphate treatment on galvanized surfaces scheduled to receive zinc-rich primers.

3. Repair galvanized coating damaged after fabrication during handling, installation, or welding. Use specified repair paint in accordance with ASTM A780, AGA publication, "Recommended Practice for Touch-up of Damaged Galvanized Coatings," and manufacturer's recommendations for application of repair paint.
4. Comply with the additional recommendations included in the AGA document "Duplex Systems: Painting over Hot Dip Galvanized Steel," and ASTM D6386.

D. High-Performance Exterior Primer and Powder Coat System: Epoxy-polyester by Tiger Drylac 49/51020, Valspar, Dupont, or equal as selected by fabricator.
1. Color: RAL 6016 smooth glossy polyester.
2. Apply entire finish in shop.
3. Apply thermosetting powder coating with cured-film thickness not less than 1.5 mils.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install metalwork as shown on the Drawings in accordance with reviewed submittals and referenced standards, to match accepted mockup. Field welding is not permitted.

B. Set work accurately in location, alignment, and elevation; plumb, level, and true; and free of rack; measured from established lines and levels.

C. Adjust items prior to securing in place so as to ensure proper matching of components and correct alignment.

D. Brackets for wall-mounted handrails (if required) shall be bolted to existing solid backing or framing; do not use toggle bolts.

E. Install aluminum ramp system and other manufactured or prefabricated products in accordance with manufacturer's instructions.

F. Erection Tolerances:
1. Variation from Level: Maximum 1/4 inch in any 20-foot run, noncumulative.
2. Offsets in End-to-End or Edge-to-Edge Alignment of Consecutive Members: 1/16 inch.

3.2 ADJUSTMENT AND TOUCH-UP

A. Inspect installed work, with particular attention to handrails. Correct deficiencies.

B. Immediately after erection, touch up abraded areas of shop paint, and paint all exposed areas with same material as used for shop painting.
   1. Apply by spray.
   2. Touch-up shall not be noticeable after application of topcoat.

C. Restore finishes damaged during installation and construction period so that no evidence of correction work remains.

D. Return items that cannot be refinished in the field to the shop. Make required alterations and refinish entire unit, or provide new units.

3.3 PROTECTION

A. Protect finishes of metal from damage during construction period as required.

END OF SECTION 05 50 00

SECTION 07 13 52

MODIFIED BITUMINOUS SHEET WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Sheet membrane waterproofing system for below-grade vertical surfaces at retaining walls, including drainage/protection board with filter fabric, perforated drain pipe, and other accessories as shown or as required for a complete installation.

B. Related Requirements:
1. Cast-in-Place Concrete: Section 03 30 00.
2. Joint Sealants: Section 07 92 00.
3. Earthwork: Section 31 00 00.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Submit action submittals and informational submittals in accordance with Section 01 33 00 Submittal Procedures.

B. Submit closeout submittals in accordance with Division 01.

1.3 ACTION SUBMITTALS

A. Shop Drawings: Key plan showing typical location(s) of each detail.

B. Product Data: Manufacturer's descriptive data for each proposed product, installation instructions for each product and system, use limitations of materials, including temperature limitations, and recommendations for proposed installation, including job-specific details of penetration conditions.

1.4 INFORMATIONAL SUBMITTALS

A. Statement of applicator qualifications.

B. Inspection report by representative of waterproofing system manufacturer.

C. Sample copy of specified warranty stating obligations, remedies, limitations, and exclusions of warranty.

1.5 CLOSEOUT SUBMITTALS

A. Closeout: Extended warranty.

1.6 QUALITY ASSURANCE

A. Applicator Qualifications: Applicator shall have specialized experience in installation of specified products and shall be acceptable to manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials away from sparks or flames, protected from rain and physical damage, and within temperature range recommended by manufacturer.

1.8 PROJECT CONDITIONS

A. Environmental Conditions:
   1. Temperature of air and surfaces to receive waterproofing shall be within the range recommended by system manufacturer for product type used.
   2. Specified waterproofing system performs best when applied at air temperature above 50 degrees F. Schedule installation at this temperature or above. Do not apply at a temperature lower than that permitted by manufacturer's printed instructions.

1.9 WARRANTY

A. Contractor: Furnish a 5-year written performance warranty, countersigned by the waterproofing installer, that the installed systems will not leak, deteriorate, or fail to perform as a result of defects in workmanship.

B. Manufacturer: Furnish a 5-year written warranty from the material manufacturer against defects in materials.
   1. The following problems shall be specifically covered under the warranty:
      a. Water leakage.
      b. Cohesive or adhesive failure of the system.
      c. Weathering deficiencies resulting in failure of system.
      d. Abrasion or tear failure of system resulting from normal use.

PART 2 - PRODUCTS

2.1 MANUFACTURER AND SYSTEM

A. Bituminous Membrane Waterproofing System: "Bituthene System 4000" by GCP Applied Technologies as specified, "Mel-Rol" waterproofing system by W.R. Meadows, or equal.

B. Materials used in conjunction with the membrane waterproofing system shall be manufactured by or acceptable to membrane waterproofing material manufacturer.

2.2 PRIMARY MEMBRANE MATERIALS

A. Sheet Membrane: Cold-applied, self-adhering, preformed membrane, minimum 0.056 inch (1.4 mm) thick with a 0.004-inch (0.1 mm) polyethylene film coated on one side with a layer of adhesive-consistency rubberized asphalt.
   1. Membrane Tensile Strength, ASTM D412: 325 psi.
   2. Elongation, ASTM D412: 300 percent minimum.
   3. Puncture Resistance of Membrane, ASTM E154: 50 pounds minimum.
   4. Resistance to Hydrostatic Head: 231 feet of water.
   5. Permeance, ASTM E96: 0.05 maximum.
   6. Low-Temperature Flexibility, ASTM D146: Unaffected at minus 45 degrees F.

2.3 ACCESSORY MATERIALS

A. Primer: Water-based primer formulated to provide good initial adhesion and excellent permanent adhesion of waterproofing membranes; "Bituthene System 4000 Surface Conditioner" or equal.

B. Mastic: Rubberized asphalt-based mastic; "Bituthene Elastomeric Mastic" or equal.

C. Liquid Membrane: Two-component, 100 percent solids modified urethane, cold-applied; "Bituthene Liquid Membrane" or equal.

D. Protection Board at Horizontal Surfaces: Premolded, semirigid, asphaltic type; "Bituthene Asphaltic Hardboard" or equal.
   1. Surfaces Exposed to Heavy Construction Traffic: 1/8 inch thick.
   2. Surfaces to Be Covered with Reinforced Structural Concrete Slabs: 1/4 inch thick.

E. Drainage/Protection Board at Vertical Surfaces: Prefabricated drainage composite with filter fabric; Grace "Hydroduct 220 Drainage Composite," "Miradrain 6200" by TC MiraDRI, or equal.

F. Adhesive for Drainage Protection Board: Fast-drying, rubber-based cement; "Bituthene" Protection Board Adhesive" or equal.

G. Tapes:
   1. Lap Tape: Reinforced, two-sided, pressure-sensitive adhesive tape for use at membrane overlaps and at detail treatments.
   2. Seam Tape: Non-reinforced, two-sided, adhesive tape for used within integrally taped seam of membrane.

H. Fasteners:
   1. Concrete Substrates: Powder shot steel pin with 3/4-inch minimum washer.
   2. Other Fasteners: As appropriate to substrate material.

I. Sealant at Termination Seals and Other Treatments Where Required: One or two part polyurethane conforming to ASTM C920, Type M, Class 25, Grade NS and Section 07 92 00 Joint Sealants.

J. Prefabricated Bentonite Waterstop: Flexible, reinforced bentonite-laminate strips, 3/8 inch thick by 3/4-inches wide, with pressure-sensitive backing.

K. Grout: Non-ferrous, non-shrink type conforming to ASTM C827.

L. Termination Bar (Securement Bar): Extruded aluminum, flat shape, mill finish.

M. Perforated Drain Pipe: GCP Applied Technologies "Hydroduct Coil 600" or equal.

N. Provide additional materials as required and recommended by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Check that surfaces to receive modified bituminous sheet membrane waterproofing are free of dirt and debris, voids, spalled areas, loose aggregate, and sharp protrusions, with no coarse aggregate visible.

B. Verify that concrete has cured as recommended by waterproofing system manufacturer. Concrete surfaces shall be dry at application.

3.2 PREPARATION OF SURFACES

A. Prepare substrate as specified and required by the waterproofing system manufacturer.

B. Prime concrete and metal surfaces with substrate primer prior to application of liquid elastomeric membrane, tapes and pressure-sensitive waterproofing accessories.

C. Repair defects in surfaces. Concrete shall be smooth, monolithic, and free of voids, spalled, areas, loose substrate and sharp protrusions, dirt and debris, and contain no visible coarse aggregate.
   1. Plug voids with concrete and finish flush with surrounding surfaces.
   2. Form Tie Rod Holes: Fill flush with surrounding surfaces.
   3. Fins: Grind smooth.
   4. Scaling: Remove to sound, unaffected concrete, and repair exposed area.
   5. Irregular Construction Joints: Correct by feathering repair material or by grinding.

D. At internal corners, form a 3/4-inch fillet using liquid membrane in accordance with manufacturer's instructions. Extend a 90-mil thickness of liquid membrane for 6 inches in each direction from corner.

E. Reinforce external corners in accordance with manufacturer's instructions.

F. Cold joints and structural joints shall be sealed and prestripped as required.

G. Mask off adjoining surfaces not to receive waterproofing.

3.3 APPLICATION - GENERAL

A. Apply materials in accordance with manufacturer's instructions and guide specifications.

B. Apply primer according to manufacturer's instructions. Only prime areas that can be covered with membrane on the same day. Reprime areas not covered with membrane in 24 hours.

3.4 MEMBRANE APPLICATION TO VERTICAL SURFACES

A. Apply sheet membrane over in vertical strips not to exceed 8 feet in length. If strips longer than 8 feet are required, use two or more sections with the upper sheet shall overlap the lower by at least 2-1/2 inches.
   1. Overlap all seams at least 2-1/2 inches.
   2. Press membrane into place using heavy hand pressure.
   3. Roll all membrane with a hand roller.
   4. Terminate the membrane just below grade level as shown, using a termination bar.
   5. Apply a trowel bead of elastomeric mastic to vertical and horizontal terminations.
   6. Patch tears and inadequately lapped seams in accordance with manufacturer's instructions and as specified.
   7. Seal daily terminations with a thin troweled bead of mastic or liquid.

B. Vertical Inside Corners:
   1. Install 3/4-inch liquid membrane fillet at interior corners.
   2. Treat with 9-inch wide strip of membrane centered over the corner.
   3. Press membrane tightly into the corner to assure full contact.
   4. Cover the treated corner with a full coverage of membrane.

C. Outside Corner Detail:
   1. Prepare by installing a 12-inch wide strip of membrane centered on the corner.
   2. Install full coverage of membrane over the treated corner.

D. Joints: Pre-strip slab and wall cracks over 1/16-inch width and construction and control joints with 9-inch wide membrane.

E. Vertical Wall Footing Detail: Terminate the membrane at the base of the footing with a securement bar and cover with 12-inch strip of membrane.

F. Vertical Wall Perimeter Edge Cuts:
   1. Seal laps within 12 inches of the corner with liquid membrane.
   2. Install securement bar over completed membrane fastened 8-inches on center.

3. Cover securement bar with 12-inch strip of membrane.

G. Protrusions:
1. Apply membrane to within 1 inch of the base of protrusion.
2. Apply 24 inch "target patch" of membrane flush to the base of the protrusion.
3. Apply liquid membrane 90 mils thick (3/32 inches) around penetration.
4. Liquid membrane shall extend over the membrane at least 2-1/2 inches and up the protrusion to just below the finished height of the overlay.

H. Terminations:
1. Seal terminations with mastic or liquid elastomeric membrane.
2. Secure the membrane with a termination bar and fasteners.
3. Place the top termination bar 2-inches below the top of the membrane.

I. Patch tears and inadequately lapped seams in accordance with manufacturer's instructions.

3.5 DRAINAGE COMPOSITE AND PERIMETER DRAINS

A. Adhere drainage composite to vertical waterproofing by methods recommended by manufacturer and compatible with waterproofing.

B. Where drainage pipe is indicated, install in accordance with manufacturer's details and instructions.

C. Install drainage composite to just below finished grade line as shown on the Drawings. Wrap filter fabric over top of drainage composite, and tuck it in and adhere to concrete in accordance with manufacturer’s instructions.

D. Promptly backfill as specified in Section 31 20 00 Earth Moving. Coordinate backfill with installation of waterproofing and drainage composite.

E. Do not leave drainage composite exposed to weather for more than 1 week.

3.6 FIELD QUALITY CONTROL

A. A representative of waterproofing system manufacturer shall inspect installation and completed work and certify acceptance, in writing, as part of specified warranty.

END OF SECTION 07 13 52

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: At work areas only; exterior sealants and calking work as shown on the Drawings or as required to weatherproof around new or rehabilitated construction.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Submit action submittals in accordance with Section 01 33 00 Submittal Procedures.

1.3 ACTION SUBMITTALS

A. Product Data: Manufacturer's specifications, recommendations, and installation instructions, including cleaning of joint surfaces, for each sealant material to be used.

B. Samples: Color selection for each product exposed to view; manufacturer's standard bead samples, consisting of strips of actual products showing full range of colors available.

1.4 QUALITY ASSURANCE

A. Material Compatibility: Sealant materials shall be compatible with one another and with other specified and existing materials, under conditions of service and application required.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Labels on delivered materials shall show manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

C. Comply with additional requirements specified in Division 01.

PART 2 - PRODUCTS

2.1 SEALANT MATERIALS

A. Colors:
   1. Concealed Material: Any of manufacturer's standard colors.

2. Exposed Material: Manufacturer's standard colors, as selected by the County's Representative.

B. Exterior Concrete and Other Porous Surfaces: One part, medium modulus, silicone polymer conforming to ASTM C920, Type S, Grade NS, Class 50 and formulated to reduce or eliminate dirt pickup, surface streaking, and substrate staining; "DOWSIL 756 SMS" by The Dow Chemical Company, "SCS9000 SilPruf NB" by Momentive Performance Materials, or equal.

C. Exterior Exposed Metal Joints: One-part polyurethane conforming to ASTM C920, Type S, Class 25, Grade NS; Sika "Sikaflex-15LM," Pecora "GC-9," Mameco "Vulkem 116," Euclid "Eucolastic I" or equal.

D. Exterior Exposed Wood Joints: One-part acrylic terpolymer, nonsag, conforming to FS TT-S-00230C.

E. Exterior Concealed Joints: One-part butyl-rubber calk conforming to FS TT-S-001657, Type I; Tremco, Pecora "BC-158," or equal.

F. Horizontal Joints Subject to Pedestrian Traffic: Single-component polyurethane conforming to ASTM C920, Class 25, Type S, Grade P, self-leveling; Pecora "Urexpan NR-201" or equal.

G. Additional Sealant Materials: As specified in the respective Specification Sections.

2.2 MISCELLANEOUS MATERIALS

A. Joint Primer/Sealer: As recommended by sealant manufacturer for joint surfaces to be primed or sealed.

B. Sealant Backer Rod: Compressible, rod-stock, polyethylene foam; nongassing, polyethylene-jacketed polyurethane foam; butyl-rubber foam; neoprene foam; or other flexible, permanent, durable, nonabsorptive, closed-cell material as recommended for compatibility with sealant by sealant manufacturer.

C. Fiber Expansion Joint Material: Preformed cellular fiber complying with ASTM D1751; "SealTight Fiber Expansion Joint Filler" by W.R. Meadows or equal.

D. Cleaner for Nonporous Surfaces: Nonstaining chemical cleaner acceptable to manufacturer of sealer and backing materials, harmless to substrates and adjacent nonporous materials.

E. Masking Tape: Nonstaining, nonabsorbent, compatible with joint sealants and adjacent surfaces.

F. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer. Provide self-adhesive tape where applicable.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that joint dimensions are not less than or greater than recommended by joint sealer manufacturer for application indicated.

B. Clean joint surfaces immediately before installation of sealant.

3.2 INSTALLATION

A. General: Comply with manufacturer's printed instructions and ASTM C1193 except where more stringent requirements are shown or specified.

B. Prime or seal joint surfaces as recommended by sealant manufacturer.
   1. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
   2. Prime anodized aluminum and painted surfaces using primer recommended by sealant manufacturer, unless sealant manufacturer certifies, in writing, that primer is not required.

C. Install sealant backer rod for elastomeric sealants, except where recommended to be omitted by sealant manufacturer for application shown.

D. Install bond-breaker tape wherever backer rod is not used and wherever required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.

E. Employ only proven installation techniques that will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides.
   1. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces.
   2. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

3.3 CLEAN AND CURE

A. Clean adjoining surfaces to eliminate evidence of spillage.

B. Cure sealants in compliance with manufacturer's instructions and recommendations to obtain high early-bond strength, internal cohesive strength, and surface durability.

END OF SECTION 07 92 00

SECTION 10 14 26

POST-MOUNTED SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. New post-mounted metal signs and supports.
   2. Removal, adjusting, and re-installation of existing post-mounted signs.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Submit action submittals in accordance with Section 01 33 00 Submittal Procedures.

1.3 ACTION SUBMITTALS

A. Shop Drawings: Full-scale drawings for each sign, indicating materials, lettering layout, and colors.

B. Product Data: Manufacturer's specifications, recommendations, and installation instructions.

C. Samples: One complete sample unit of each sign type if requested by County's Representative. Acceptable units may be installed as part of the Work.

1.4 QUALITY ASSURANCE

A. Signage shall comply with applicable requirements of ANSI A-117.1, the Americans with Disabilities Act (ADA), and with CCR, Title 24, Part II.

B. Conform all work to the appropriate portion of State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications," referred to as "the Standard Specifications," except that references to "measurement" and "payment" are not applicable.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver signs to site at time of installation. Do not store signs on site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with the applicable requirements of 56-2, "Roadside Signs," of the Standard Specifications.

B. Sign Panels: Conform type (regulatory or warning), size, shape and pattern to the State of California, Department of Transportation, Traffic Manual, edition. Sign faces shall be of reflectorized porcelain enamel.

C. Posts: Two-inch inside diameter steel pipe. Conform to 56-2.02A of the Standard Specifications, unless otherwise specified.

D. Mounting Hardware: Conform to 56-2.02D of the Standard Specifications, unless otherwise specified.

E. Post Foundations: Portland cement concrete conforming to Section 03 30 00 Cast-in-Place Concrete.

2.2 FABRICATION

A. Shop drawings and samples shall be submitted and approved by the County's Representative prior to commencing fabrication.

B. Fabricate signage to remain flat under installed conditions.

C. Fabricate with smooth, mechanically finished edges. Ease corners slightly.

D. Graphic Elements: All text and symbols shall be sharply distinct and clear.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Prior to installation the vendor shall inspect the site to confirm that all sign locations are ready for installation.

B. Install signs level and plumb at the height indicated, with sign surfaces free from distortion or other defects in appearance in conformance with the following:
1. 56-2.03 and 56-2.04 of the Standard Specifications.
2. Caltrans Standard Plans RS1, "Roadside Sign, Typical Installation Details No. 1," except for horizontal locations which shall conform to locations shown on the Drawings.
3. Applicable requirements of the State of California Department of Transportation Maintenance Manual.
4. Details shown on the Drawings.

C. After erection, damaged signs shall be replaced. Abrasions to galvanized surfaces shall be repaired with galvanizing-repair paint specified in Section 05 50 00 Metal Fabrications.

D. Galvanized posts are not required to be painted.

3.2 RESTORATION OF EXISTING IMPROVEMENTS

A. Existing signs removed or damaged due to the installation of new facilities shall be replaced to match new signs.

B. Existing landscaping or planting removed, damaged or disturbed due to the installation of signs shall be replaced and restored to original condition at no expense to the County.

END OF SECTION 10 14 26

SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Excavation and grading for installation of site improvements.
2. Fill and compaction.
3. Site drainage and accessories, including but not limited to dry well lined with filter fabric, with gravel fill.
4. Removal and legal disposal off site of all debris, rubbish, and other materials resulting from earthwork operations.

B. Related Requirements:
1. Cast-in-Place Concrete: Section 03 30 00; deck trench drain; curb drain.
2. Modified Bituminous Sheet Waterproofing: Section 07 13 52; subdrainage in connection with subgrade waterproofing.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Submit action submittals and informational submittals in accordance with Section 01 33 00 Submittal Procedures.

B. Coordination: Coordinate with other Sections to facilitate proper site drainage.

1.3 ACTION SUBMITTALS

A. Shop drawings showing location, type, elevation, and drainage of site drainage and subdrainage installations and accessories, including those provided by other Sections.

B. Product data and installation instructions for all manufactured products.

1.4 INFORMATIONAL SUBMITTALS

A. Material Test Reports: Provide, from a qualified testing agency, the following test results showing compliance with the project requirements:
1. Classification according to ASTM D2487 of each onsite or borrow soil material proposed for fill and backfill.
2. Laboratory compaction curve in conformance with ASTM D1557 for each onsite or borrow soil material proposed for fill and backfill.

1.5 QUALITY CONTROL

A. Conform all work to the appropriate portion of State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard

Specifications," referred to as “the Standard Specifications,” except that references to "measurement" and "payment" are not applicable.

B. Design Requirements:
   1. Grades and elevations are established with reference to benchmarks referenced on the Drawings.
   2. Maintain engineering markers. Replace if disturbed or destroyed.

C. Grading Tolerance: In accordance with 19-1.03 of the Standard Specifications.

1.6 PROJECT CONDITIONS

A. Environmental Requirements:
   1. When precipitation necessitates interrupting filling and grading operations, prepare areas by compaction of surface and grading to avoid collection of water.
   2. Provide adequate temporary drainage and other acceptable measures to prevent erosion.
   3. After interruption, reestablish compaction specified in last layer before resuming work.
   4. Control dust as required by local agencies.

B. Locate active utilities traversing site. See additional requirements in Section 02 41 13 Selective Site Demolition.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fill Material: Soil or soil-rock mixture which is free from organic matter or other deleterious substances.
   1. Fill materials shall not contain rocks or lumps over 6-inches in greatest dimension and not more than 15 percent passing #200 (75-µm) sieve.
   2. In addition to the above requirements, import material shall have a Plasticity Index (PI) of 12 or less and shall be predominantly granular.

B. Granular Base or Aggregate Base: Class 2 Aggregate Base as defined in 26-1.02A of the Standard Specifications. Absorption of water in saturated surface dry condition shall not exceed 3 percent of oven-dry weight of sample.

C. Drainage Fill (Indicated on the Drawings as “Free Draining Gravel”): Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D448, coarse aggregate.

D. Sand (If Required): ASTM C33, uniformly graded, clean sand, free from excessive fines, organic materials, and other deleterious substances.

E. Water: Clean and free from deleterious amounts of acids, alkalis, salts, and organic matter.

F. Drainpipe: Polyvinyl chloride, ASTM D2729, ASTM D3034 SDR 35, ASTM D1785 Schedule 40, or ASTM F758, Type PS46, plain end, 4-inch inside diameter except as otherwise shown, with required fittings.
   1. Use perforated pipe at subdrainage system; unperforated through sleeved walls and other locations.
   2. Open End Protection for Pipe (If Required): "DrainGuard" by Advanced Drainage Systems, or equal.

G. Drainage Fabric: Non-woven filter fabric; Mirafi Inc. "140N," or equal.

H. Pressure Treated Wood Landscape Edging for Dry Well: Douglas Fir, S4S, preservative pressure treated in accordance with AWPA U1 and T1 Standards. Fasteners, if required, shall be hot-dip galvanized or stainless steel.

PART 3 - EXECUTION

3.1 GENERAL

A. Field Tests: As specified in Part 3. Results of tests and compliance with these Specifications shall be basis for determining satisfactory completion of work.

B. Compacting: In accordance 19-5 of the Standard Specifications and as follows.
   1. Where impractical to use rollers in close proximity to adjacent construction, compact by mechanical tamping.
   2. Scarify, moisture condition, and recompact any layer not attaining compaction until required density is obtained.
   3. Do not compact by flooding, ponding or jetting.

3.2 SITE PREPARATION

A. Clearing, Stripping, and Site Demolition:
   1. Remove from the designated "Areas of Work" all surface improvements, obstructions, asphaltic concrete, concrete organic material, and other matter as required for installation of the new work.
   2. Comply with the requirements of Section 02 41 13 Selective Site Demolition.
   3. Backfill holes resulting from removal of underground obstructions that extend below required excavation depth using specified fill, or lean or structural concrete.

B. Stripping:
   1. Where vegetation exists, stockpile stripped topsoil clear of construction area for use in landscaped areas.
   2. Locate stockpile as directed by the County.
   3. Take reasonable care to prevent topsoil from being mixed with subsoil.

3.3 EXCAVATION FOR WALKS AND PAVEMENTS

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

B. Excavations and stripped surfaces to be backfilled or paved shall have exposed soil scarified to depth of 6 inches, brought to proper water content, and compacted as specified for filling.

3.4 BACKFILL

A. Do not place fill or backfill until rubbish and deleterious materials have been removed.

B. After subgrade compaction, spread engineered fill in layers 8 inches or less in uncompacted thickness as required.

C. Water or aerate fill material, as necessary, and thoroughly mix to obtain moisture content slightly above optimum.

D. Install and compact engineered fill to 95 percent relative compaction unless otherwise specified.

E. Repeat compaction procedure until proper grade is attained.

3.5 DEWATERING

A. Provide and maintain ample means and devices to remove promptly and dispose properly of water entering excavations or other parts of the Work.

B. Do not place, spread, or roll fill material during precipitation. Do not resume operations until moisture content and fill density are satisfactory.

C. Where soil has been softened or eroded by flooding or by placement during unfavorable weather, remove damaged areas and recompact as described for fill and compaction.

D. Keep excavations free of water at all times until backfilling and concrete work are complete.

3.6 AGGREGATE BASE

A. Install rock base below concrete pavements, asphalt pavements, and at other locations requiring aggregate base.

B. Place, spread, and compact to percent relative compaction specified in accordance with Section 26 of the Standard Specifications.

C. Finish surface of aggregate base shall be plus or minus 0.05-feet.

3.7 SITE DRAINAGE AND DRY WELL

A. Install as shown on the Drawings and reviewed submittals.

3.8 FIELD QUALITY CONTROL

A. Soil-Compaction Tests:
   1. Maximum dry-density determination shall comply with ASTM D1557.
   2. Field density testing shall comply with ASTM D1556 (sand-cone method).

3.9 MAINTENANCE

A. Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and reestablish settled and eroded grades and rutted areas to specified tolerances.

B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, moisture condition and scarify surface, reshape, and compact to required density prior to further construction.

C. Where settling is measurable or observable at excavated areas during general project warranty period, remove paving and backfill material, compact, and replace surface treatment. Restore appearance and quality, and eliminate evidence of restoration to greatest extent possible.

END OF SECTION 31 00 00

SECTION 32 12 16

ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Plant-mixed asphalt concrete pavement and other asphaltic concrete items.

B. Related Requirements:
1. Earthwork: Section 31 00 00.
2. Pavement Markings: Section 32 17 23.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Submit informational submittals in accordance with Section 01 33 00 Submittal Procedures.

B. Submit closeout submittals in accordance with Division 01.

1.3 INFORMATIONAL SUBMITTALS

A. Certificates, signed by asphaltic concrete producer and Contractor, stating that materials comply with specified requirements. Minimum information submitted shall include a manufacturer's certification for asphalt products and an asphalt concrete mix design by an independent, qualified laboratory.

B. Sample copy of specified warranty stating obligations, remedies, limitations, and exclusions of warranty.

1.4 CLOSEOUT SUBMITTALS

A. Extended warranty.

1.5 QUALITY ASSURANCE

A. Reference Standards: Conform all work to the appropriate portion of State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications," referred to as “the Standard Specifications,” except that references to "measurement" and "payment" are not applicable.

B. Finished Surface Tolerances: In accordance with 26-1.05 of the Standard Specifications.

1.6 PROJECT CONDITIONS

A. Weather Limitations:
   1. Apply bituminous prime and tack coats only when ambient temperature in shade is at least 50 degrees F and when temperature has not been below 35 degrees F for 12 hours immediately prior to application.
   2. Do not apply when base surface is wet or contains an excess of moisture.
   3. Construct asphaltic concrete surface course only when atmospheric temperature is above 40 degrees F and underlying base is thoroughly dry.
   4. Base course may be placed when air temperature is above 30 degrees F and rising.

1.7 WARRANTY

A. Contractor: Provide an extended 2-year warranty for asphalt concrete paving.
   1. Warranty shall be limited to ordinary wear and tear by weather or defects due to faulty materials and workmanship.
   2. Make repairs at no expense to County.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

A. Grade Control: Establish and maintain required lines and grades, including crown and cross slope.

B. Stipulation: At no point shall surface fail to drain.

2.2 MATERIALS

A. Aggregate Base: As specified in Section 31 20 00 Earth Moving.

B. Aggregates for Asphaltic Concrete: Conform to Section 39 of the Standard Specifications, Type B, maximum 1/2-inch size, medium grading.

C. Base Primer: Liquid asphalt, Type SC-70 in accordance with Section 93 of the Standard Specifications.

D. Paint Binder: Asphaltic emulsion, type SS1 or SS1h in accordance with Section 94 of the Standard Specifications.

E. Asphalt Concrete: Steam refined paving asphalt AR4000, conforming to 39-2.02 for Type B of the Standard Specifications using 1/2-inch maximum aggregate.

F. Seal Coat: Asphaltic emulsion, type SS1h, conforming to Section 94 of the Standard Specifications, with up to one part water added.

PART 3 - EXECUTION

3.1 PREPARATION

A. Concrete walks, curbs and other improvements adjacent to paving shall be protected. Surfaces shall be covered with paper or other protection, where required.

B. Cut edges of existing paving shall be straight, sharp, vertical, and sound.

C. Take every precaution to obtain a subgrade of uniform bearing power by compaction to provide a firm base and in accordance with Section 31 20 00 Earth Moving.

D. Check for proper installation, correct elevation, and position of utility and drainage structures located in areas to be paved. Make or have made any necessary adjustments.

E. Moisten subgrade before paving operation. Place no material on muddy subgrade. Place no material during rain.

3.2 INSTALLATION

A. Paving:
1. Spread aggregate for the base in layers in accordance with 26-1.04 of the Standard Specifications. Compact each layer to 95 percent relative compaction in conformance with 26-1.05 of the Standard Specifications.
2. Apply base primer at rate of 1/4 gallon minimum per square yard over aggregate base and paint binder at rate of 1/10 gallon per square yard on vertical surfaces against which asphalt concrete is to be placed, in conformance with 39-4.02 of the Standard Specifications.
3. Spread and compact asphalt concrete in accordance with 39-5 and 39-6 of the Standard Specifications.

B. Finish Adjustment:
1. Flood pavement with water and allow to run off.
2. Any areas of ponding shall be filled with asphalt and fine aggregate, feathered out to conform to unfilled surface without visible edge.

C. Seal Coat:
1. Manhole covers, grates, and other surface structures with the paving area shall be clean and oiled. Prepare surface in accordance with 37-1.04 of the Standard Specifications.
2. Apply fog seal coat on all new asphalt concrete paving at rate of 1/12 to 1/10 gallon of undiluted emulsion per square yard, in accordance with 37-1.05 of the Standard Specifications. Clean surface structures.

D. Joining Pavement:
   1. Carefully make joints between old and new pavements in such manner as to ensure a continuous bond between old and new sections.
   2. Cut existing pavement edges to straight and vertical surface, clean and coat all paint joints with asphaltic emulsion before fresh mixture is placed.
   3. Prepare joints in accordance with Section 39 of the Standard Specifications.

3.3 PROTECTION

A. Protect from traffic during all operations. Do not open to use until seal coat is fully cured and will not pick up under traffic, but not less than 72 hours after finished surface has dried completely.

END OF SECTION 32 12 16

SECTION 32 17 13

PARKING BUMPERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Precast concrete parking bumpers (wheel stops).

B. Related Requirements:
   1. Asphalt Paving: Section 32 1216.
   2. Pavement Markings: Section 32 17 23.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Submit action submittals and informational submittals in accordance with Section 01 33 00 Submittal Procedures.

1.3 ACTION SUBMITTALS

A. Product Data: Manufacturer's literature describing parking bumpers including concrete specifications and profiles.

1.4 INFORMATIONAL SUBMITTALS

A. Statement of manufacturer qualifications.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm specializing in fabrication of precast concrete bumpers.

B. Reference Standard: State of California, Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications," referred to as “the Standard Specifications.”

1.6 DELIVERY, STORAGE, AND HANDLING

A. Chips, cracks, or mishandling of precast concrete bumpers shall be the responsibility of the manufacturer.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Concrete Parking Bumpers: Minimum 3,500-psi concrete, fully reinforced with minimum two No. 4 deformed steel reinforcing bars and designed to withstand constant use and rough service; Jensen Precast, or equal.
   1. Fabricate each bumper with 2 holes to accommodate the installation rebar. Holes shall be positioned 6 inches in from each end.
   2. Design: Half-octagonal to manufacturer's standard dimensions.
   3. Finish: Smooth.
   4. Lengths: As shown on the Drawings.

B. Adhesive: Nontoxic, VOC compliant epoxy similar and equal to the adhesives specified in 95-2.04 or 95-2.05 of the Standard Specifications. Adhesive shall be acceptable to bumper manufacturer, compatible with paving, and capable of withstanding loads from automobile wheels.

C. Anchor Stakes: Epoxy-coated rebar, No. 5 rebar x 18 inches long, minimum two per stop.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install parking bumpers with adhesive and dowels in accordance with manufacturer's instructions.

B. Locations: As shown on the Drawings.

C. Carefully coordinate placement of parking bumpers with the layout of parking stalls, providing proper angle to engage wheels, and proper locations to prevent overtravel of vehicles.

D. Install bumpers with adhesive in accordance with manufacturer's instructions. After setting, additionally anchor by driving rebar through bumper.

E. After installation, visually inspect to verify that each installed bumper is in undamaged condition and properly set.

END OF SECTION 32 17 13

SECTION 32 17 23

PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Pavement striping and markings.
   2. Dimensional pavement markers.

B. Related Requirements:
   1. Asphalt Paving: Section 32 12 16.
   2. Tactile Warning Surfacing: Section 32 17 26.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Submit action submittals and informational submittals in accordance with Section 01 33 00 Submittal Procedures.

1.3 ACTION SUBMITTALS

A. Shop Drawings:
   1. Layout, drawn to scale, showing sizes, locations, and colors of pavement markings.
   2. Plans, sections, and details showing size and installation of cast-in-place detectable warning surfaces. Show seam locations.

B. Product Data: Manufacturer's literature for each paint product and applications instructions.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Paint shall comply with the regulations of the BAAQMD of the California Air Resources Board.

1.5 PROJECT CONDITIONS

A. Markings shall not be applied at temperatures below 50 degrees F. or if pavement surfaces are wet.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Coatings:
   1. Traffic Paint: Water-base, vinyl acrylic copolymer emulsion conforming to 84-3.02 of the Standard Specifications.
   2. Thermoplastic Marking Material: In accordance with 84-2.02 of the Standard Specifications.
   3. Colors: Provide white, red (if required), blue, and yellow (if required) at locations indicated and directed by the County's Representative.

B. Pavement Markers and Adhesive:
   1. Markers: Conform to requirements of Section 85 "Pavement Markers, 85-1.04, or 85-1.05 as indicated on the Drawings, of the Standard Specifications.
   2. Adhesive: Epoxy conforming to requirements of Section 95-2.05 "Standard Set Epoxy Adhesive for Pavement Markers" of the Standard Specifications.

PART 3 - EXECUTION

3.1 PREPARATION

A. New pavement surfaces shall be allowed to cure for a period of not less than 30 days before application of marking materials.

B. Thoroughly clean surfaces before application of paint.

3.2 INSTALLATION

A. General:
   1. Pavement markings shall be applied only on dry surfaces during periods of favorable weather. Temperature shall be above 35 degrees F and rising, humidity less than 80 percent and falling, and no precipitation predicted for 24 hours.
   2. Pavement marking in traffic ways, including lane striping and direction symbols, shall be thermoplastic.
   3. Pavement marking in parking places, except for driveways, shall be paint.

B. Paints shall be applied in two or more coats in accordance with 84-3.03 through 84-3.05 of the Standard Specifications.

C. Thermoplastic markings shall be applied in accordance with 84-2.04 of the Standard Specifications.

D. Pavement markers shall be placed in accordance with 85-1.06 of the Standard Specifications.

E. Alignment of striping shall be accurately laid out. Lines which do not conform to the alignment as set forth on the Drawings or which have a wavy appearance shall be removed and replaced by the Contractor at no additional cost to the County.
   1. Provide guidelines and templates as necessary to control paint application.
   2. Edges of marking shall be sharply outlined.

F. Follow paint manufacturer's recommendations regarding drying time required to prevent undue softening of bitumen and to prevent pickup, displacement, or discoloration by tires of traffic. Excess adhesives or paint overspray or tracking onto unmarked areas shall be removed.

G. If there is a deficiency in drying of markings, discontinue operation until cause can be determined and corrected.

H. If discoloration of paint occurs owing to bleeding of bituminous materials, apply paint in two coats.
   1. Apply first coat at 35 to 40 percent recommended coverage.
   2. Apply second coat after drying to complete manufacturer's recommended coverage rate.

I. Provide white, red, blue, and yellow as required at locations indicated and in accordance with the signing and striping information on the Drawings.

J. Provide international symbol of accessibility on pavement, as shown on the Drawings, in each accessible parking space. Include additional items as required to meet ADA requirements.

3.3 REMOVAL OF STRIPES

A. All stripes and pavement markings noted on the Drawings as existing to be removed shall be painted out with black paint in color and gray scale to match appearance of existing pavement as closely as possible.

B. Prepare a sample test area for review and acceptance of the County’s Representative.

END OF SECTION 32 17 23

SECTION 32 17 26

TACTILE WARNING SURFACING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Cast-in-place detectable/tactile warning surfacing for:
   1. New concrete paving.
   2. Polymer-modified Portland cement concrete topping (indicated on the Drawings as “epoxy concrete”).

B. Related Requirements:
   1. Cast-in-Place Concrete: Section 03 30 00.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Submit action submittals and informational submittals in accordance with Section 01 33 00 Submittal Procedures.

1.3 ACTION SUBMITTALS

A. Procedures: In accordance with Section 01 33 00 Submittal Procedures.

B. Shop Drawings: Show surface profile, pattern repeat, joint layout, and interface with adjacent construction.

C. Product Data: Manufacturer's specifications, installation instructions, and maintenance instructions.

D. Samples: 12 inches square of specified product, in specified color.

1.4 INFORMATIONAL SUBMITTALS

A. Statement of installer qualifications.

B. Sample copy of specified warranty stating obligations, remedies, limitations, and exclusions of warranty.

1.5 CLOSEOUT SUBMITTALS

A. Specified warranty.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Installer shall be acceptable to manufacturer and shall have successfully completed cast-in detectable/warning surface tile installation similar in material, design, and extent to that required for this Project.

B. Detectable/tactile warning surfaces shall comply with ADA and CCR, Title 24, Part 2 requirements for pattern, color, and sound on cane contact.

1.7 PROJECT CONDITIONS

A. Store surfacing at project site for a minimum of 48 hours prior to installation.

B. Do not install surfacing if temperature of area to receive surfacing prior to, during, and after installation as required by manufacturer cannot be maintained.

1.8 WARRANTY

A. Cast-in-place detectable/tactile warning surfaces shall be guaranteed in writing for 5 years against defective work, breakage, deformation, fading and loosening.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cast-in-Place Detectable/Tactile Warning Surfaces: Vitrified polymer composite; "Armor-Tile Tactile Systems" by Engineered Plastics Inc. or equal.
   1. Raised Truncated Domes: Nominal 0.9 inch diameter x 0.2 inch high, spaced at 2.35 inches on center.
   2. Color: Federal Yellow.

B. Provide surfacing in large size to minimize seaming.

C. Cleaners, Patching Materials, and Primers for Substrate: As provided or recommended my manufacturer of warning surfaces.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify that location and layout is in accordance with reviewed shop drawings and accepted by Architect including pattern repeat, surfacing cuts, and control joints.

B. Coordinate with Section 03 30 00 Cast-in-Place Concrete for installation of cast-in-place surfacing.

3.2 INSTALLATION

A. Install tactile/detectable warning surfacing in accordance with manufacturer's installation instructions, as shown on reviewed submittals.

3.3 CLEANING AND PROTECTION

A. Use plywood or hardboard covering, if heavy items are to be moved across surface.

B. Clean surfacing just before final acceptance in accordance with manufacturer's instructions.

END OF SECTION 32 17 26