

June 16, 2020

# ADDENDUM NO. 1

#### TO THE CONTRACT DOCUMENTS

FOR

ARROYO VALLEY HIGH SCHOOL - ATHLETIC FIELD IMPROVEMENTS

#### FOR THE

SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT 777 North F Street San Bernardino, CA 92410

DSA No. 04-118542 File No. 36-H7 RCA Job No. 1-78-15

#### NOTICE TO BIDDERS

This Addendum forms a part of the Contract and modifies the original documents DSA Approved on May 5, 2020. It is intended that all work affected by the following modifications shall conform with related provisions and general conditions of the contract of the original drawings and specifications. Modify the following items wherever appearing in any drawing or sections of the specifications. Acknowledge receipt of Addendum No. 1 in the space provided on the Bid Form. Failure to do so may subject bidder to disqualification.

#### CHANGES TO THE SPECIFICATIONS

Item No. 1.1	Reference New Section 32 12 16 - Asphalt Paving:
1.1.1	Add attached new Section 32 12 16 in its entirety.
Item No. 1.2	Reference New Section 32 13 13 - Concrete Paving:
1.2.1	Add attached new Section 32 13 13 in its entirety.

#### **CHANGES TO THE DRAWINGS**

Item No. 1.3	Reference Sheet AS-1.0:
1.3.1	Detail 10, Detail 29 callout revised to be 25 per attached Sketch ASK-01.11.
1.3.2	Add new Detail 23 per attached Sketch ASK-01.05.
1.3.3	Detail 25 revised per attached Sketch ASK-01.06.
1.3.4	Add new Detail 26 per attached Sketch ASK-01.04.
1.3.5	Add new Detail 27 per attached Sketch ASK-01.03.
1.3.6	Add new Detail 28 per attached Sketch ASK-01.01.
1.3.7	Add new Detail 30 per attached Sketch ASK-01.02.
ltem No. 1.4	Reference Sheet AS-1.1:

1.4.1 New flagpole area clarified per attached Sketch ASK-01.07.

Item No. 1.5 Reference Sheet AS-1.2:

- 1.5.1 Detail 3 clarified per attached Sketch ASK-01.09.
- 1.5.2 Detail 10 schedule revised per attached Sketch ASK-01.08.
- 1.5.3 Detail 15 finish surface and reference details clarified per attached Sketch ASK-01.10.

#### ATTACHMENTS

 Specifications
 32 12 16, 32 13 13

 Sketches
 ASK-01.01 thru ASK-01.11

#### END OF ADDENDUM NO. 1

Roger Clarke, Principal #C-21340

# SECTION 32 12 16 ASPHALT PAVING

#### PART 1 GENERAL

#### **1.01 SECTION INCLUDES**

- A. Single course bituminous concrete paving.
- B. Double course bituminous concrete paving.
- C. Surface sealer.
- D. This section compliments and shall be coordinated with Drawing specifications / requirements. The most stringent requirements shall be utilized.
- E. Asphaltic concrete paving for vehicular traffic and curbs, including necessary patching and repair of damaged new and existing paving.
- F. Patching and repair of existing asphaltic concrete paving for previous damage, for underground utility work and where damaged by new construction.

#### **1.02 RELATED REQUIREMENTS**

A. Section 32 13 13 - Concrete Paving: Concrete curbs.

#### **1.03 REFERENCE STANDARDS**

- A. AI MS-2 Asphalt Mix Design Methods; 2015.
- B. AI MS-19 Basic Asphalt Emulsion Manual; 2008.
- C. ASTM D3763 Standard Test Method for Density of Plastics by the Density-Gradient Technique; 2010.
- D. ASTM D946 Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction; 2009a.
- E. SSPWC Greenbook: Standard Specifications for Public Works Construction; latest adopted edition.
  - 1. Standard Specifications shall be as amended and adopted by authorities having jurisdiction.
  - 2. Where reference is made to Standard Details, such reference shall be to the Standard Details accompanying the Standard Specifications, as amended and adopted by the authorities having jurisdiction.
  - 3. Wherever term "Agency" occurs in Standard Specifications, it shall be understood to mean District for purposes of the Contract.
  - 4. Wherever term "Engineer" occurs in Standard Specifications, it shall be understood to mean Architect for purposes of the Contract.

### 1.04 SUBMITTALS

- A. Materials List: List source and quality standard for all asphaltic concrete materials.
- B. Mix Design:

- 1. Formulate a job-mix formula using the Hveem method in accordance with ASTM D3763 Section 203-6.2 and submit for approval.
- 2. Submit designs for asphaltic concrete prepared by a materials laboratory under direct supervision of a Civil Engineer licensed in the State of California or a standard mix design proven in actual performance.
- 3. Resultant Mixture: Hveem properties conforming to ASTM D3763 Section 203-6.4.3.
- C. Certifications:
  - 1. Weighmaster's Certificates or certified delivery tickets for each truckload of bituminous material delivered to site.
  - 2. Certificates of Conformance: Asphalt, aggregate and sterilant materials.
    - a. 20 days prior to the delivery of aggregates, asphalt materials, and paving mixes to the project site, submit certificates and test results of compliance of such materials with these specifications.
    - b. Submit certificates of compliance from the supplier for bituminous materials for paint binder, asphaltic concrete, and seal coat.
    - c. Submit weigh master's certificates or certified delivery tickets for each truck load of asphaltic material delivered to the project site.
    - d. Upon completion of the weed control treatment, and as a condition for final acceptance, furnish a written certificate stating the brand name of the sterilant and the manufacturer, and that the sterilant used had at least the minimum required concentration, and that the rate and method of application complied in every respect with the conditions and standards contained herein.
- D. Samples:
  - 1. Prior to the delivery of specified aggregate to the site, submit samples of the material for the Inspector's acceptance in accordance with ASTM D3763 Section 4-1.4. Samples shall be typical of materials to be furnished from the proposed source and in conformance with the specified requirements.
  - 2. Provide aggregate base gradation and quality certifications, dated within 30 days of submittal.

# 1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with locally adopted SSPWC.
- B. Mixing Plant: Conform to Locally adopted SSPWC.
  - 1. Asphaltic Concrete Producers Qualifications: Use only materials furnished by a bulk asphaltic concrete producer regularly engaged in production of hot mix, hot laid bituminous concrete.
  - 2. Applicator Qualifications: Paving machine and roller operators shall be fully trained and experienced in the installation of asphaltic concrete paving on projects of similar size and complexity.
- C. Testing and analysis of granular base material and asphaltic concrete paving mix shall be performed under provisions of Division 1.

D. Obtain materials from same source throughout.

### **1.06 REGULATORY REQUIREMENTS**

- A. Where reference is made to ASTM D3763, the following shall apply.
  - 1. For conditions not indicated otherwise on Contract Drawings, conform to Standard Details adopted by authorities having jurisdiction, including Standard Details for Public Works Construction, as amended and adopted by those authorities.
  - 2. Perform on-site Work as indicated and referenced on Contract Drawings and as specified herein.
- B. The quantity of volatile organic compounds (VOC) used in weed killer, seal coat, tack coat, primer, and other materials shall not exceed limits permitted under current regulations of South Coast Air Quality Management District (AQMD).

### 1.07 FIELD CONDITIONS

- A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen; or when rain is imminent.
  - 1. Tack Coats: Minimum surface temperature of 60 deg F.
  - 2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
  - 3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.
- B. Place bitumen mixture when temperature is not more than 15 F degrees below bitumen supplier's bill of lading and not more than maximum specified temperature.

### PART 2 PRODUCTS

### 2.01 REGULATORY REQUIREMENTS

- A. Conform to applicable code for paving work on public property.
- B. Where reference is made to ASTM D3763, the following shall apply.
  - 1. Perform off-site Work in public rights-of-way in accordance with requirements of authorities having jurisdiction, including ASTM D3763, as amended and adopted by those authorities.
  - 2. For conditions not indicated otherwise on Contract Drawings, conform to Standard Details adopted by authorities having jurisdiction, including Standard Details for Public Works Construction, as amended and adopted by those authorities.
  - 3. Perform on-site Work as indicated and referenced on Contract Drawings and as specified herein.
- C. The quantity of volatile organic compounds (VOC) used in weed killer, seal coat, tack coat, primer, and other materials shall not exceed limits permitted under current regulations of South Coast Air Quality Management District (AQMD).

#### 2.02 MATERIALS

- A. General: Aggregate base, prime coat paint binder, bituminous surface course and other materials shall be as noted on the Contract Drawings and shall comply with requirements of authorities having jurisdiction.
- B. Asphalt Cement: ASTM D 946.
- C. Aggregate for Base Course: See Drawings.
- D. Asphalt Concrete Materials: ASTM D3763, Subsection 203-6.
- E. Aggregate for Binder Course : Angular crushed washed stone; free of shale, clay, friable material and debris.
- F. Mineral Filler: Finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter.
- G. Fiber Reinforcement: Synthetic fibers shown to have long-term resistance to deterioration when in contact with alkalis and moisture; 1/2 inch length.
- H. Crack Filler:
  - 1. Cracks less than 1/2 inch in width: GuardTop Crackfiller or equal.
  - 2. Cracks 1/2 inch or greater in width: #4 Sheet mix asphalt.
- I. Primer: In accordance with locally adopted SSPWC.
- J. Tack Coat: Homogeneous, medium curing, liquid asphalt.
- K. Seal Coat: AI MS-19, slurry type.
  - 1. Asphalt Emulsion, www.aema.ora., SS1-h, per ASTM D3763 Section 203-9.
  - 2. Acceptable Manufacturers:
    - a. Asphalt Coating Engineering; Sure Seal.
    - b. Diversified Asphalt Product; Over Kote: www.diversifiedasphalt.com.
    - c. SealMaster Pavement Products & Equipment; MasterSeal: sealmaster.net.
    - d. Vulcan Materials Company; GuardTop: www.vulcanmaterials.com.
    - e. Western Colloid Products; Park Top: www.westerncolloid.com.
    - f. Satin Seal by Blue Diamond Co., Long Beach, CA.
    - g. Substitutions: See Section 01 60 00 Product Requirements.

#### 2.03 ASPHALT PAVING MIXES AND MIX DESIGN

- A. Asphalt Surfacing Materials: Provide asphalt surfacing meeting the following requirement, furnished from a commercial asphalt central mixing plant.
- B. Asphalt Paving Mix:
  - 1. Standard Specifications, C2-PG 70-10.
- C. Use dry material to avoid foaming. Mix uniformly.
- D. Base Course: 4.5 to 5.8 percent of asphalt cement by weight in mixture in accordance with ASTM D3763 Section 203-6.4.3, Type B.
- E. Binder Course: 4.5 to 6 percent of asphalt cement by weight in mixture in accordance with AI MS-2.

- 1. CSS-1 h and conform to the requirements of ASTM D3763, Section 203-3 Emulsified Asphalt.
- F. Submit proposed mix design of each class of mix for review prior to beginning of work.

# 2.04 SOURCE QUALITY CONTROL

- A. Test mix design and samples in accordance with AI MS-2.
- B. Submit asphaltic concrete mix design proposed by the Contractor to the Engineer for review.
- C. Proposed mix to be tested for conformance with the specifications, including grading, asphalt content and stability.

### 2.05 ACCESSORIES

- A. Headers and Stakes:
  - 1. 2 x 6 inch nominal Redwood, Construction Heart Grade, or preservative treated douglas fir (PTDF), except at curves provide laminated 1 x 6 inch nominal PTD., unless indicated otherwise on Drawings
  - 2. Stakes: 2 x 4 x 18 inch long Redwood, or 2 x 3 x 18 inch long PTDF; at 48 inch on center maximum.
  - 3. Nails: Common, use hot dipped galvanized only, 12d minimum.
- B. Pavement Reinforcing Fabric: Non-woven polypropylene fabric conforming to ASTM D3763, Subsection 213-1.
  - 1. Basis of Design Product: Petromat as manufactured by Propex Fabrics inc.; www.geotextile.com, or approved equal.

# PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that compacted subgrade and granular base is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.
- C. Fine grading, checking, shaping, and compacting of subgrade shall be complete before start of asphaltic concrete Work.
- D. Soil Sterilant: Sterilize soil areas to receive asphaltic concrete paving. Apply soil sterilant in accordance with manufacturer's instructions and applicable environmental regulations. Take care to confine application to the areas to be paved.
- E. Curbs and Gutters: Gutters shall be in place and cured prior to start of asphaltic concrete Work. Provide lumber ramping at all locations where rolling equipment or vehicles cross new concrete paving, curbs and gutters.
- F. Headers: Place headers with tops flush with finish asphaltic concrete surfaces. Back headers with stakes.
  - 1. Install headers along edge of bituminous surfacing abutting turf, earth, or planting area, unless indicated otherwise.

- 2. Install headers so the bottom surface has continuous bearing on solid grade. Where excavation for headers is undercut, thoroughly tamp soil under the header. Compact backfill on both sides of header to the density of adjacent undisturbed earth.
- 3. Fasten headers in place with redwood or Douglas fir stakes of length necessary to extend into solid grade a minimum of 12 inches. Stakes shall be of sound material, neatly pointed, driven vertically, and securely nailed to headers. Space stakes, not to exceed 4 feet on centers with top of stakes set one inch below top of header. Provide a minimum of 2-12d galvanized common nails through each stake.
- 4. Remove existing headers where new surfacing is installed adjacent to existing surfacing.
- 5. Install temporary headers at transverse joints of paving where continuous paving operations are not maintained.
- 6. Provide additional stakes and anchorage as required to fasten headers in place
- G. Do not asphalt concrete on any surface, which contains ponded water or excessive moisture in the opinion of the Architect or consulting engineer.
  - 1. If paving operations are in progress and rain or fog forces a shut down, loaded trucks in transit shall return to the plant, and no compensation will be allowed therefore.
  - 2. Provide canvas tarpaulins to cover all loads of asphalt from the time that the mixture is loaded until it is discharged from the delivery vehicle, unless otherwise directed in writing.

### 3.02 BASE COURSE

- A. See Drawings.
- B. Inspector will examine the base before the paving has begun. Correct any deficiencies before the paving is started.
- C. Wherever asphaltic pavement does not terminate against a curb, gutter, or another pavement, provide and install a redwood or pressure treated Douglas fir header at the line of termination.

### 3.03 PREPARATION - PRIMER

- A. Apply primer in accordance with manufacturer's instructions.
- B. Apply primer on aggregate base or subbase at uniform rate of 0.25 gal/sq yd.
- C. Apply primer to contact surfaces of curbs, gutters.
- D. Use clean sand to blot excess primer.

### 3.04 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with ASTM D3763 Section 302-5.4.
- B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 0.10 gal/sq yd.
- C. Apply tack coat to contact surfaces of curbs, gutters and previously placed or existing paving.
- D. Joining Pavement: Expose, cut and clean edges of existing pavement to straight, vertical surfaces for full depth of existing pavement.

- 1. Paint edge with asphalt emulsion before placing new asphaltic concrete.
- 2. Joints in New Paving: In accordance with ASTM D3763.

### 3.05 PLACING ASPHALT PAVEMENT - SINGLE COURSE

- A. Install Work in accordance with ASTM D3763 Subsection 302-5.
- B. Asphalt concrete of the class indicated in Part 2 shall be laid in courses conforming to ASTM D3763 Table 302-5.5(A), unless otherwise stated herein.
- C. Place asphalt within 24 hours of applying primer or tack coat.
- D. Place thickness as indicated on Drawings to minimum 1 inch compacted thickness.
  - 1. Asphalt concrete work shall include full depth patching and variable thick asphalt concrete transition areas.
  - 2. Provide daily the Inspector, with copies of certificates of weight for all materials delivered to the job site and/or incorporated in the work.
  - 3. At no time shall the coarse aggregate that has segregated from the mix be scattered across the paved mat.
- E. Install gutter drainage grilles and frames and manhole frames in correct position and elevation.
- F. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position.
  - 1. Compact (roll) asphaltic concrete in accordance with ASTM D3763, Subsection 302-5.6, using machine rollers.
    - a. Compaction by vehicular traffic is prohibited.
    - b. Compact areas inaccessible to rolling equipment with machine-powered tamper.
- G. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

### 3.06 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

- A. Provide at least two courses of asphalt when Type D2 asphalt pavement is greater than 1-1/2 inches. The surface course shall be a minimum thickness of 1 inch and a maximum of 1-1/2 inches.
- B. Provide at least two courses of asphalt when Type C2 asphalt pavement is greater than 3 inches. The surface course shall be a minimum thickness of 1 inch and a maximum of 2 inches.
- C. Install Work in accordance with ASTM D3763 Subsection 302-5.
- D. Place asphalt binder course within 24 hours of applying primer or tack coat.
- E. Place binder course to thickness as indicated on Drawings, minimum 1 inch compacted thickness.
- F. Place wearing course within two hours of placing and compacting binder course.
- G. Place wearing course to thickness as indicated on Drawings, minimum 1 inch compacted thickness.

- H. Install gutter drainage grilles and frames and manhole frames in correct position and elevation.
- I. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position.
  - 1. Compact (roll) asphaltic concrete in accordance with ASTM D3763, Subsection 302-5.6, using machine rollers.
    - a. Compaction by vehicular traffic is prohibited.
    - b. Compact areas inaccessible to rolling equipment with machine-powered tamper.
- J. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

#### 3.07 SEAL COAT

- A. Apply seal coat after surface course application, in accordance with manufacturer's recommendations.
- B. Apply seal coat to surface course and asphalt curbs in accordance with SSPWC, Subsection 302-8.2.
- C. Add water to specified seal coat material. When air temperatures of 90 degrees F or more are encountered during application, consult manufacturer for recommendations.
- D. If pavement surface exhibits imperfections of roller marks, rock pockets, ridges or depressions as determined by the Architect, the addition of sand aggregate to seal coat, and amounts thereof, shall be as recommended by the manufacturer.
- E. A second application shall be made after first coat has dried to the touch. When sand is added to the first seal coat, two additional coats without extra sand shall be applied.
- F. Allow seal coat to dry before permitting traffic or striping.

#### 3.08 PAVEMENT REPAIR AND PAVING

- A. Preparation of existing pavement: Where indicated, remove loose asphaltic concrete, cleanout "pot holes" and cracks, remove dirt, oil and other foreign materials.
- B. Repair holes with full paving section as specified. Repair "alligatoring" with asphalt "skinpatch". Fill all cracks larger than 1/4 inch wide with asphalt emulsion slurry.
- C. Tack Coat: Apply asphalt oil AR-4000 or AR-8000, as required for jobsite condition, at metered application rate of no less than a range from .2 to .3 gallons per square yard of fabric or as directed by manufacturer and to provide 100 percent fabric saturation and ample bonding for paving section.
- D. Fabric Reinforcement: Place fabric smooth side up in tack coat with 2 to 4 inch overlap. Hand-broom to remove wrinkles. Apply addition tack coat to joints and between overlapped fabric layers.
- E. Overlay Asphalt: Place single course asphalt, 1-1/2 inch compacted thickness, in conformance with specified standards in this section.

#### 3.09 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

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- B. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.
- C. Variation from True Elevation: Within 1/2 inch.

### 3.10 FIELD QUALITY CONTROL

- A. See Section 01 43 00 Quality Assurance, for general requirements for quality control.
- B. Provide field inspection and testing. Take samples and perform tests in accordance with AI MS-2.
- C. Pavement at all longitudinal joints shall have a Field Density of 95%, as described in ASTM D3763 Section 302-5.6.2.
  - 1. When the test results of the field cores are less than 95% Relative Compaction, remove a 1 foot wide section on each side of the longitudinal joint.
  - 2. Replace the removed pavement with an asphalt mix that meets the job specification at no additional cost to the District.
- D. Test: Flood test all paving to demonstrate positive drainage.
  - 1. Before acceptance, water test all pavements to ensure proper drainage as directed by the Inspector.
  - 2. Flooding Method: By water tank truck.
  - 3. Fill depressions where the water ponds to a depth of more than 1/8 inch; or the slope corrected to provide proper drainage.
  - 4. The edges of the fill shall be feathered and smoothed so that the joint between the fill and the original surface is invisible.
  - 5. No standing water shall remain 1-hour after test.

# 3.11 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury for 2 days or until surface temperature is less than 140 degrees F.
  - 1. After final rolling, prohibit all traffic on asphaltic concrete until mix has fully cooled and set. Minimum time, in all cases shall be 6 hours.

# 3.12 CLEANING

- A. After completion of paving operations, clean all existing and new improvements that have been soiled, especially by oil tracking from asphalt tanks or placement in general.
- B. For Substantial Completion review, broom clean and wash paving with hoses. Clean residue from landscaping installation.

# END OF SECTION

# SECTION 32 13 13 CONCRETE PAVING

#### PART 1 GENERAL

#### **1.01 SECTION INCLUDES**

A. Concrete sidewalks, stair steps, and integral curbs.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 03 30 01 Cast-in-Place Concrete System.
- B. Section 32 12 16 Asphalt Paving: Asphalt wearing course.

#### **1.03 REFERENCE STANDARDS**

- A. ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- B. 28 CFR 35 Specifications for Structural Concrete; 2016.
- C. ACI 304R Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- D. ACI 305R Guide to Hot Weather Concreting; 2010.
- E. AIA A105 Guide to Cold Weather Concreting; 2016.
- F. ACI 318 Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2018).
- G. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- H. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018.
  - 1. Use 2012 as indicated in 2016 CBC Referenced Standards.
- I. ASTM C33/C33M Standard Specification for Concrete Aggregates; 2016, with Editorial Revision (2016).
  - 1. Use 2013 as indicated in 2016 CBC Referenced Standards.
- J. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine; 2011.
- K. ASTM C39/C39M Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.
- L. ASTM C920 Standard Specification for Elastomeric Joint Sealants; 2018.
- M. ASTM C94/C94M Standard Specification for Ready-Mixed Concrete; 2018.
  - 1. Use 2014a as indicated in 2016 CBC Referenced Standards.
- N. ASTM C150/C150M Standard Specification for Portland Cement; 2018.
  - 1. Use 2012 as indicated in 2016 CBC Referenced Standards.
- O. ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2011.

- P. ASTM C494/C494M Standard Specification for Chemical Admixtures for Concrete; 2017.
- Q. ASTM D1751 Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2018.
- R. ASTM D1752 Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2018.
- S. SSPWC Greenbook: Standard Specifications for Public Works Construction; latest adopted edition.

### 1.04 SUBMITTALS

- A. See Section 01 33 00 Supplemental Submittal Procedures, for submittal procedures.
- B. Mix Design: Design mixes for each concrete mix.
- C. Product Data: Provide data on joint filler, admixtures, and curing compound.
  - 1. Material Certificates signed by manufacturers for each of the following:
    - a. Cementitious materials and aggregates.
    - b. Steel reinforcement and reinforcement accessories.
    - c. Admixtures.
    - d. Curing compounds.
    - e. Joint fillers.
- D. Shop drawings: For pattern layout and verification.

# 1.05 QUALITY ASSURANCE

- A. Industry Standard: Perform concrete paving Work in accordance with 28 CFR 35.
- B. Regulatory Requirements: Where reference is made to Standard Specifications, the following shall apply.
  - 1. Where reference is made to Standard Specifications, the following shall apply:
    - a. Perform off-site Work in public rights-of-way as indicated on the Contract Drawings and in accordance with requirements of authorities having jurisdiction, including SSPWC.
      - For conditions not indicated otherwise on Contract Drawings, conform to Standard Details adopted by authorities having jurisdiction, including SSPWC.
    - b. Perform on-site Work as indicated and referenced on the Contract Drawings and as specified herein.
  - 2. Conform to California Code of Regulations (CCR), Volume 2, Part 2, Chapters 18 and 19.
  - 3. Conform to California Building Code (CBC), Chapter 11B and ADAAG for accessibility requirements.
    - a. Portland cement concrete paving shall be stable, firm, and slip resistant and shall comply with CBC Sections 11B-302 and 11B-403.
    - b. Concrete paving and concrete finishes along accessible routes of travel shall be at least as slip-resistant as that described as a medium salted finish for slopes of less than 6%, and slip resistant at slopes of 6% or greater; CBC 11B-403.2.
    - c. Continuous surfaces, including walks and sidewalks, shall have a continuous common surface, not interrupted by steps or by abrupt changes in level exceeding

1/4 inch vertical (CBC 11B-303.2), or beveled at 1:2 slope to a maximum height of 1/2 inch (CBC 11B-303.3) and shall have a minimum width of 48 inches; CBC 11B-403.5.1.

- 4. Comply with OSHA and Cal-OSHA requirements.
- 5. Surface cross slopes shall not exceed 2 percent on any accessible path of travel.
- C. Source Quality Control: Obtain like materials from one source throughout.
- D. Lines and Levels: Established by State of California licensed Surveyor or registered Civil Engineer. Costs of surveying services shall be included in the Contract Sum.
- E. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three years of documented experience.
  - 1. The Installer shall provide a qualified foreman or supervisor who has a minimum of three years experience with imprinted and textured concrete, and who has successfully completed at least five similar installations of high quality and similar in scope to that required.

# 1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery, Storage and Handling: Comply with requirements specified for regular concrete in Section 03 30 01 - Cast in Place Concrete System.

# PART 2 PRODUCTS

### 2.01 PAVING ASSEMBLIES

- A. Comply with applicable requirements of ACI 301.
- B. Concrete Sidewalks: 3,250 psi 28 day concrete, thickness as indicated on Drawings, minimum 4 inches, natural grey color Portland cement.
- C. Curbing, gutters, related drainage components: 2,500 psi, 28 day concrete.
- D. Parking Area Pavement: 3,000 psi 28 day concrete, thickness as indicated on Drawings thick, reinforcing as indicated on Drawings, finish as indicated on Drawings.

# 2.02 FORM MATERIALS

- A. Wood form material, profiled to suit conditions.
- B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).
  - 1. Thickness: 1/2 inch.

# 2.03 REINFORCEMENT

- A. General: As indicated on Drawings and specified following. Reinforcement for portland cement concrete paving in public rights-of-way shall comply with all applicable requirements in the Standard Specifications for Public Works Construction and Standard Details, as adopted by local authorities having jurisdiction.
- B. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) yield strength; deformed billet steel bars; unfinished.

- 1. Unless detailed otherwise on Drawings, provide number 4 reinforcing bars at 24 inches on center, each way.
- C. Tie Wires: 18 gage minimum, black annealed steel.
- D. Construction Joint Reinforcing:
  - 1. Dowels: ASTM A615/A615M, Grade 60 60,000 psi yield strength; deformed billet steel bars; unfinished finish.

### 2.04 PERFORMANCE REQUIREMENTS

A. Albedo reflectance of finish concrete shall be minimum 0.30.

### 2.05 CONCRETE MATERIALS

- A. Obtain cementitious materials from same source throughout.
- B. Cement: ASTM C150/C150M, Normal Type I Portland cement, gray color.
- C. Fine and Coarse Mix Aggregates: ASTM C33/C33M Table 3 Class 4M, Non-reactive.
  - 1. Class C per SSPWC Section 201-1.3.2 // Section 73 and 90.
- D. Water: Clean, and not detrimental to concrete.
- E. Chemical Admixtures: ASTM C494/C494M, Type A Water Reducing, Type B Retarding, Type D Water Reducing and Retarding, Type F Water Reducing, High Range, and Type G Water Reducing, High Range and Retarding.
  - 1. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

# 2.06 ACCESSORIES

- A. Curing Compound: ASTM C309, Type 1, Class A.
  - 1. Comply with all applicable air pollution requirements.
- B. Tactile Warning Surfaces: See Section 32 17 26.
- C. Concrete Paving Joint Sealant: Polyurethane, self-leveling; ASTM C920, Class 25, Uses T, I, M and A; single component.
  - 1. Color: Gray.
  - 2. Applications: Use for:
    - a. Joints in sidewalks and vehicular paving.
  - 3. Products:
    - a. Pecora Corporation; NR-201 Self-Leveling Traffic and Loop Sealant: www.pecora.com.
    - b. Sherwin-Williams Company; Stampede 1SL Polyurethane Sealant: www.sherwinwilliams.com.
    - c. Substitutions: See Section 01 60 00 Product Requirements.
- D. Soil Sterilant: As specified in Standard Specifications for Public Works Construction. Soil sterilant shall comply with all applicable environmental protection and hazardous materials laws and regulations.

- E. Headers and Stakes: Pressure preservative treated douglas fir, 2 x 6 inch nominal size except at curves provide laminated 1 x 6 inch. Use hot dipped galvanized nails only.
- F. Expansion Joint Filler: ASTM D1751, premolded, compressible 1/2 inch thick non-extruding bituminous type resilient filler, compatible with joint backing and sealing products.

### 2.07 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Mix for Pedestrian (Sidewalk) Pavements, Natural Color, unless indicated otherwise: ASTM D3763, Section 201-1.1.2 Class 520-B-3000, with minimum slump of 4 inches.
- C. Concrete Mix for Trash Enclosure and other Exterior Slabs on Grade: ASTM C94/C94M -Ready-Mixed Concrete, Alternative No. 2, minimum 28 day compressive strength as indicated on Drawings or, if not indicated; 3000 psi.
- D. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in 28 CFR 35.
  - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- E. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
  - 1. Use accelerating admixtures in cold weather or set retarding admixtures in hot weather only when approved by Architect. Do not use calcium chloride.
- F. Concrete Properties:
  - 1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; As indicated on drawings.
  - 2. Water-Cement Ratio: Maximum 50-60 percent at point of placement, or according to indicated concrete strength.
  - 3. Maximum Slump: 4 inches.

### 2.08 MIXING

A. Transit Mixers: Comply with ASTM C94/C94M.

### PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify compacted stabilized soil is acceptable and ready to support paving and imposed loads.
- B. Fine grading, checking, shaping, and compacting of subgrade shall be complete before start of concrete paving Work.
- C. Verify gradients and elevations of base are correct.

### 3.02 SUBBASE

- A. Prepare subbase in accordance with local community adopted version of SSPWC standards.
- B. For pavement subject to vehicular traffic, provide sub-base and aggregate base material indicated on the Drawings.

C. Aggregate base is not required under Portland cement concrete paving subject only to pedestrian traffic in normal use.

### 3.03 PREPARATION

- A. Project Conditions:
  - 1. Water and Dust Control: Maintain control of concrete dust and water at all times. Do not allow adjacent planting areas to be contaminated.
  - 2. Do not place pavement when base surface or ambient temperature is less than 40 degrees F or if base surface is wet or frozen.
  - 3. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Moisten base to minimize absorption of water from fresh concrete. Do not place concrete on standing water.
- C. Notify Architect minimum 24 hours prior to commencement of concreting operations.
- D. Curbs and Gutters: Schedule portland cement concrete curbs and gutters to be in place and cured prior to start of adjoining asphaltic concrete and portland cement concrete paving Work.

### 3.04 COORDINATION WITH EXISTING CONSTRUCTION

- A. Connection to Existing Construction: Where new concrete is doweled to existing construction, drill holes in existing concrete, insert steel dowels and pack with non-shrinking grout.
- B. Preparation of Existing Concrete: Prepare previously placed concrete by cleaning with steel brush and apply bonding agent in accordance with manufacturer's instructions.

### 3.05 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
  - 1. Surfaces and Edges: Except where special finishes and tooled edges are indicated, provide all exposed finish surfaces of dense concrete with sharp arises and outside corners.
  - 2. Recesses and Openings: As indicated on Drawings or as directed.
- B. See Section 03 30 01 Cast-In-Place Concrete System.
- C. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
  - 1. Remove side forms for sidewalks, gutter depressions, island paving and driveways, not less than 12 hours after the finishing has been completed.
- D. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

### 3.06 REINFORCEMENT

- A. Place reinforcement at midheight of slabs-on-grade.
- B. Reinforcement Placement, General: Locate reinforcement as indicated on Drawings or in Standard Specifications, whichever is more stringent.

- 1. Locate reinforcement to provide required cover by concrete. If not otherwise indicated on Drawings or in Standard Specifications, provide concrete cover in compliance with ACI 318, Article 20.6.1.3.
- 2. Place, support and secure reinforcement against displacement.
- C. Reinforcement Spacing: Space reinforcement as indicated on Drawings or in Standard Specifications, whichever is more stringent. If not indicated, maintain clear spacing of two times bar diameter but not less than 1-1/2 inch nor less than 1-1/3 times maximum size aggregate.
- D. Coordination: Locate reinforcement to accommodate embedded products and formed openings and recesses.
- E. Reinforcement Supports: Provide load bearing pads under supports or provide precast concrete block bar supports.
- F. Interrupt reinforcement at contraction and expansion joints.
- G. Place dowels to achieve pavement and curb alignment as detailed.
  - 1. Secure tie dowels in place before depositing concrete. Provide No. 3 bars, 18 inch long at 24 inches O.C. for securing dowels where no other reinforcement is provided.

# 3.07 COLD AND HOT WEATHER CONCRETING

- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of AIA A105 when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

# 3.08 PLACING CONCRETE

- A. Mixing: If batch plant is within travel time not exceeding maximum limits, transit mix concrete in accordance with ASTM C94/C94M. If travel time exceeds limits, provide alternative means for mixing and submit for review and approval.
- B. Place concrete in accordance with ACI 304R.
- C. Do not place concrete when base surface is wet.
- D. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.
- E. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.
- F. Use internal vibration to consolidate concrete around reinforcing per industry guidelines.

# 3.09 JOINTS

- A. Align curb, gutter, and sidewalk joints.
- B. Place 1/2 inch wide expansion joints as indicated on Drawings (if not indicated provide at 20 foot intervals) and to separate paving from vertical surfaces and other components and in pattern indicated.
  - 1. Place in all concrete walks, other exterior flatwork and concrete curbs and gutters.

- 2. If expansion joints are not indicated, comply with standard details and specifications of authorities having jurisdiction, including Standard Details for Public Works Construction and Standard Specification for Public Works Construction, as applicable.
- 3. Place expansion control filler to correct elevation and profile. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
- 4. Secure to resist movement by wet concrete.
- 5. Coordinate locations to align expansion joints in adjoining concrete walks, curbs, gutters and other exterior flatwork.
- 6. Provide expansion joints also at beginning and end of all curved segments.
- 7. Provide expansion joints also at intersections of concrete curbs and gutters and building footing.
- 8. Provide expansion joints also at intersections of concrete paving and building footing.
- 9. Lay out expansion joint locations to occur where possible at penetrations such as handrail posts and columns.
- 10. Place expansion control filler to correct elevation and profile.
- C. Provide scored joints:
  - 1. As indicated on Drawings. If not indicated, locate joints in compliance with Standard Details and as indicated below.
  - 2. Evenly spaced at maximum 5 feet intervals for vehicular paving and 5 feet for pedestrian paving.
  - 3. Between sidewalks and curbs.
  - 4. Between curbs and pavement.
  - 5. Lay out control joint locations to occur at penetrations such as handrail posts and columns and where shown on Drawings.
  - 6. Refer to Architectural, Landscape and Civil Drawings for additional information and joint locations.
- D. Provide keyed joints as indicated.
- E. Saw cut contraction joints 1/8 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

# 3.10 EXPOSED AGGREGATE

### 3.11 FINISHING

- A. Area Paving: Medium broom, texture perpendicular to pavement direction..
- B. Concrete Paving Finish: 28 CFR 35, two-step trowel finish, followed after surface has achieved initial set by flooding of surface and light rubbing with bristle brush so that concrete fines are exposed slightly.
  - 1. Finish surface less than 6 percent shall receive medium broom finish resembling medium grit sandpaper. CBC 11B-403 and 11B-302.1.
  - 2. Finish surface greater than 6 percent shall receive heavy broom finish. CBC 11B-403 and 11B-302.1.

- 3. Surfaces shall have static coefficients of friction of 1.3 to 1.6 (dry) and 1.2 to 1.4 (wet) when field tested in accordance with ASTM D2047.
- C. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.
  - 1. Broomed: Pull broom across freshly floated concrete to produce medium texture in straight lines perpendicular to main line of traffic. Do not dampen brooms.
  - 2. Tooled Joints: 1-inch deep by 3/16-inch wide tooled joints with 1/8-inch radius corners.
- D. Curbs and Gutters: Comply with Standard Specifications.
- E. Specific Finishes:
- F. Curing and Sealing:
  - 1. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.
  - 2. Integrally Colored Concrete: Apply curing compound for integrally colored concrete according to manufacturer's instructions using manufacturer's recommended application techniques. Apply curing and sealing compound at consistent time for each pour to maintain close color consistency.
    - a. Curing compound shall be same color as the colored concrete and supplied by same manufacturer of the colored admixture.
  - 3. Precautions shall be taken in hot weather to prevent plastic cracking resulting from excessively rapid drying at surface as described in CIP 5 Plastic Shrinkage Cracking published by the National Ready Mixed Concrete Association.
  - 4. Do not cover concrete with plastic sheeting.

### 3.12 JOINT SEALING

A. See Section 03 30 01 - Cast-In-Place Concrete System for joint sealer requirements.

### 3.13 TOLERANCES

- A. 28 CFR 35, Class B, except paving in public rights-of-way shall comply with the Standard Specifications.
- B. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.
- C. Maximum Variation From True Position: 1/4 inch.
- D. Control-joint grooves and other conspicuous lines:
  - 1. 1/4 inch maximum in any 20 feet.
  - 2. 1/2 inch maximum in any 40 feet.
- E. Variation in Cross-Sectional Thickness of Slabs:
  - 1. Minus 1/4 inch.
  - 2. Plus 1/2 inch.
- F. Variation in Radii
  - 1. In radii of less than 10 feet:
    - a. 1/8 inch in any 5 feet.

- b. 1/4 inch in any 10 feet.
- 2. In radii of 20 feet:
  - a. 1/4 inch in any 10 feet.
  - b. 3/8 inch in any 20 feet
- 3. 3. In radii of 30 feet or more:
  - a. 1/2 inch in any 20 feet.
  - b. 1 inch in any 30 feet.
- G. Coefficient of Friction for Finish Surface:
  - 1. Pedestrian Vehicular Finish Surface: Minimum 0.6 static coefficient of friction is required for all concrete paving finish surface. All concrete paving surfaces to be broom finish.
  - 2. Ramps: Minimum 0.8 static coefficient of friction is required for all concrete paving finish surfaces on ramps. All concrete paving surfaces on ramps to be broom finish.

# 3.14 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 43 00 - Quality Assurance.
  - 1. Provide free access to concrete operations at project site and cooperate with appointed firm.
  - 2. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
  - 3. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- B. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 75 cu yd or less of each class of concrete placed each day.
  - 1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
  - 2. Perform one slump test for each set of test cylinders taken.
- C. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

# 3.15 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian traffic over pavement until 75 percent design strength of concrete has been achieved.

# END OF SECTION



















CHAINLINK FENCE @ GATE/ REFER TO DETAIL 23/AS-1.0 1/2"=1'-0" ARROYO VALLEY HIGH SCHOOL 04-118542 CENSED ARCHIA OGER CLART 36-H7 ATHLETIC FIELD IMPROVEMENTS SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT 06-08-2020 No. C-21340 Exp. 10-31-21 STATE /2020 3:11 PM 1-78-15 OF CALIFOR RUHNAUCLARKE.COM 3775 TENTH STREET, RIVERSIDE CALIFORNIA 92501 (951) 684 4664 ASK-01.05 5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 92010 (760) 438 5899











FENCE POST FOOTING/ REFER TO DETAIL 10/AS-1.2 3/4"=1'-0" ARROYO VALLEY HIGH SCHOOL 04-118542 CENSED ARCHIAN OCER CLART 36-H7 ATHLETIC FIELD IMPROVEMENTS SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT 06-08-2020 No. C-21340 STATE 2020 3:09 PM Exp. 10-31-21 1-78-15 CALIFOR RUHNAUCLARKE.COM OF 3775 TENTH STREET, RIVERSIDE CALIFORNIA 92501 (951) 684 4664 ASK-01.08 5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 92010 (760) 438 5899











**OVERALL SITE PLAN/ REFER TO DETAIL 10/AS-1.0** 

1"=80'-0"

#### **ARROYO VALLEY HIGH SCHOOL** 04-118542 CENSED ARCHING OGER CLARA 36-H7 ATHLETIC FIELD IMPROVEMENTS SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT 06-08-2020 No. C-21340 Exp. 10-31-21 STATE 1-78-15 RUHNAUCLARKE.COM 0F 3775 TENTH STREET, RIVERSIDE CALIFORNIA 92501 (951) 684 4664 ASK-01.11 CAL 5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 92010 (760) 438 5899