

**CLOVIS UNIFIED SCHOOL DISTRICT**

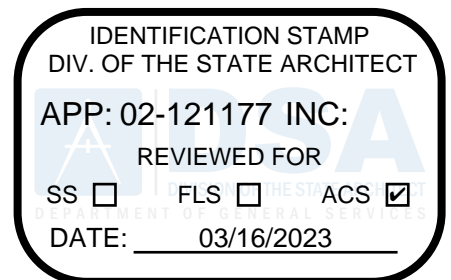
**SPECIFICATIONS  
FOR THE CONSTRUCTION OF**

**2023 ASPHALT PAVEMENT  
REHABILITATION  
AT**

**Buchanan High School  
Clovis West High School  
Granite Ridge Intermediate School  
Clovis Elementary School  
Copper Hills Elementary School  
Mickey Cox Elementary School  
Nelson Elementary School  
Sierra Vista Elementary School  
Clovis North High School  
David E. Cook Way**

Plans and Specifications Prepared by:

Blair, Church & Flynn  
Consulting Engineers  
A California Corporation  
451 Clovis Avenue, Suite 200  
Clovis, California 93612  
(559) 326-1400  
(559) 326-1500



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2023 PARKING LOT IMPROVEMENTS

PROJECT MANUAL

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## SUMMARY OF WORK

### SECTION 01 11 13 – SUMMARY OF WORK

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Provide all material, labor, equipment and services necessary to completely install all pavement materials, accessories and other related items as required by the Contract Documents.

##### 1.2 SCOPE OF WORK

- A. The work to be done consists, in general, of removal and replacement of asphalt concrete pavement, concrete curb and sidewalk, signs and wheelstops; and installation of crack fill, seal coat, pavement striping, and all other related items of work as shown on the construction plans and the specifications for the 2023 Parking Lot and Playcourt Improvements

##### 1.3 RELATED SECTIONS

- A. All Division 00 Specification Sections
- B. All Division 01 Specification Sections

##### 1.4 Definitions

- A. The words "OWNER" and "DISTRICT" are synonymous and are interchangeable when used throughout this Project Manual

##### 1.5 SUBMITTALS

- A. Submit in accordance with specification section SUBMITTAL PROCEDURES

##### 1.6 CONTRACTOR'S DUTIES

- A. Coordination and Interpretation of Plans and Specifications
  - 1. The work covered by this Project shall be done in accordance with these specifications and with the City of Clovis , and County of Fresno Standard Plans and Specifications; and Title 21 and Title 24 of the California Code of Regulations (CCR). Shall the referenced specifications conflict with one another, the more stringent requirement shall govern.
- B. Permits and Licenses
  - 1. The Contractor is responsible to pay all fees and to obtain said permits. An encroachment permit from the City of Clovis , or County of Clovis is required if work is done within the public right-of-way.
- C. Public Safety
  - 1. The Contractor shall provide safe pedestrian access through or around the work site at all times for the duration of the project.

## SUMMARY OF WORK

2. Temporary barricades, caution tape, snow fencing, or other means of preventing foot traffic within areas of work shall be installed by contractor.

### D. Public Convenience

1. Some, or all, of this work may, of necessity, be required to be done while onsite facilities are being used for other authorized purposes. The Contractor is advised that the construction of this project may be during school hours and therefore, there may be students, faculty, visitors, and District personnel in the vicinity of the work.

### E. Preservation of Property

1. Prior to excavating, the Contractor shall contact school officials to identify any known utility locations. The Contractor shall exercise extreme caution in excavating and compacting for this project in the area of suspected existing utilities and shall protect existing utilities from damage, in as much as their exact location or the exact number of utilities is uncertain.

### F. Cooperation

1. The Contractor shall cooperate with all Clovis Unified School District personnel during their pursuit of normal work activities at the site, whether or not related to this work. There may be other contractors at the site conducting construction or maintenance operations under separate contracts to the District. The Contractor shall cooperate with such other contractors to ensure that his or her activities do not delay or hinder their operations or the related activities of District Personnel. The District reserves the right to direct the order of the Contractor's work at the site as may be necessary to coordinate this work with other onsite operations and activities. The Contractor shall coordinate efforts with the District to ensure that campus irrigation practices and scheduling does not result in the saturation of soils in the work area
2. Full compensation for all costs involved in meeting and satisfying the details and requirements specified in this Section shall be included, as part of the contract lump sum bid for the entire project, and no additional payment will be made therefore.

### G. Utility Locating

1. The Contractor shall notify Underground Service Alert (USA), by calling 811, and the District at least 48 hours prior to the scheduled commencement of construction operations to request identification and marking of known utilities in the area of the work.
2. Prior to excavating, the Contractor shall contact school officials to identify any known utility locations. The Contractor shall exercise extreme caution in excavating and compacting for this project in the area of suspected existing utilities and shall protect existing utilities from damage, inasmuch as their exact location or the exact number of utilities is uncertain. The Contractor shall exercise extreme caution in excavation and compaction operations in the area of existing utilities and shall protect them from

## SUMMARY OF WORK

damage. Marking and identification of utilities shall in no way relieve the Contractor of responsibility to protect and preserve existing utilities and responsibility to repair or replace those damaged as a result of his or her operations. No separate measurement or payment will be made for the protection and preservation of existing utilities or for the repair or replacement of existing utilities damaged by the Contractor, the cost thereof being considered as included in the contract lump sum price for the entire project.

### H. Construction Staking

1. No construction staking will be provided to the Contractor. The Contractor shall retain, at his or her own expense, the services of State of California Licensed Land Surveyor or Civil Engineer to provide construction staking for all work involved in the project

## 1.7 SCHEDULING

### A. Beginning of Work

1. The Contractor shall begin onsite construction operations within ten (10) calendar days of the commencement date specified by the District in the Notice to Proceed.

### B. Progress Schedule

1. At least seven (7) calendar days prior to the commencement date, the Contractor shall submit a proposed progress schedule. The schedule shall indicate the dates proposed for beginning and completion of each part of the work. The schedule will be reviewed by the Engineer for practicability with respect to overall completion time and with respect to potential effects of the work on campus access and parking during construction. No onsite construction operations shall begin prior to the date of the Engineer's approval of the Contractor's proposed progress schedule.
2. The Contractor shall diligently prosecute this work to completion no later than nine (9) calendar days total after the commencement date specified by the District in the Notice to Proceed.

END OF SECTION

## CONSTRUCTION FORMS

### SECTION 01 32 26 – CONSTRUCTION FORMS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Contractor to provide all forms as requires by the Engineer for administrative procedures and other related items necessary to document the Project as required by the contract documents, including but not limited to those forms provided under this specification section.

##### 1.2 SUBMITTALS

- A. Submit in accordance with the specification section SUBMITTAL PROCEDURES

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION

##### 3.1 SCHEDULE OF FORMS

- A. Submittal Transmittal
- B. Request for Information (RFI)
- C. Change Order Request (COR)
- D. Contractor's Usage Agreement for Electronic Files

- 1. The language from this document shall be copied onto the Contractor's letterhead

END OF SECTION

(Attachments)



# SUBMITTAL TRANSMITTAL

---

**PROJECT:**

**SUBMITTAL #:**

**OWNER:**

**DATE:**

**ENGINEER:**

**BCF PROJECT #:**

**CONTRACTOR:**

**SPECIFICATION SECTION:**

**SUBMITTAL TITLE:**

**ATTACHMENTS:**

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**ENGINEER REVIEW**

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**Blair, Church & Flynn Consulting Engineers**

451 Clovis Avenue, Suite 200

Clovis, CA 93612

(559) 326-1400 FAX (559) 326-1500

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# REQUEST FOR INFORMATION

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<b>PROJECT:</b>	<b>RFI#</b>	
<b>ENGINEER:</b>	<b>DATE:</b>	
<b>CONTRACTOR:</b>	<b>BID NO:</b>	
<b>INITIATED BY:</b>	<b>BCF Project No:</b>	
<b>SUBJECT:</b>		
<b>SHEET #/ SPEC SECTION:</b>		
<b>RESPOND BY:</b>	<b>COST IMPACT:</b>	<b>TIME IMPACT:</b>

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**QUESTION:**

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**ENGINEER'S RESPONSE:**

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**NOTE:** This reply is not an authorization to proceed with work involving additional cost, time or both. If any reply requires a change to the Construction Documents, a Change Order or Construction Change Directive must be executed in accordance with the Contract Documents.

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**Blair, Church & Flynn Consulting Engineers**  
451 Clovis Avenue, Suite 200  
Clovis, CA 93612  
(559) 326-1400 FAX (559) 326-1500

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# CHANGE ORDER REQUEST

---

**PROJECT:**

**COR #:**

**OWNER:**

**DATE:**

**ENGINEER:** Blair, Church & Flynn Consulting Engineers

**BID #:**

**BCF Project #:**

**CONTRACTOR:**

---

Description of Proposed Change:

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Engineer's Response

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Does this proposed change involve a change in Contract Sum?

\$ \_\_\_\_\_

Does this proposed change involve a change in Contract Time?

\_\_\_\_\_ Days

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Attachments:

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**Blair, Church & Flynn Consulting Engineers**

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## **YOUR ORGANIZATION'S LETTERHEAD**

### ***INSERT DATE***

Blair, Church & Flynn Consulting Engineers  
451 Clovis Avenue, Suite 200  
Clovis, Ca 93612

SUBJECT:     ***INSERT PROJECT DESCRIPTION***

To Whom It May Concern:

We are requesting that your firm provide digital AutoCAD files of work you have done on the subject project, so that we may utilize the information therein in our work on the same project. We are making our request subject to the following conditions, which we hereby agree to abide by:

1. We agree to indemnify and hold harmless, to the fullest extent permitted by law, Blair, Church & Flynn Consulting Engineers, its officers, directors, employees or subconsultants, against any and all damages, liabilities or costs, including reasonable attorneys' fees that may arise from our using their digital files.
2. We acknowledge that Blair, Church & Flynn Consulting Engineers makes no representation as to the compatibility of these files with our hardware or software.
3. We agree that these electronic files are not construction documents and that differences may exist between these electronic files and corresponding hard copy construction documents. In the event a conflict arises, signed and sealed hard copy construction documents will govern.
4. We agree that by using these electronic files we are in no way relieved of our duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate work with that of other contractors on the project.
5. We agree to furnish to Blair, Church & Flynn Consulting Engineers a certificate of insurance evidencing professional errors and omissions insurance in the amount of no less than \$500,000 combined single limit, for all licensed professional firms (or licensed professional individuals, if not a firm) who will utilize the digital data provided.
6. We agree that because of the potential that the information presented on the electronic files can be modified, unintentionally or otherwise, Blair, Church & Flynn Consulting Engineers has the right to remove all indicia of ownership and or all involvement from electronic display.
7. We acknowledge that the information provided in the digital files is copyrighted and proprietary in nature, and agree that we will only utilize the information for the subject project. We also agree that we will not make the digital files, or copies thereof, available to any other person or entity, unless authorized in writing by a Principal of Blair, Church & Flynn Consulting Engineers.

8. We agree to reciprocate with Blair, Church & Flynn Consulting Engineers, upon request, relative to drawing files produced by us for the subject project, under the same conditions as we have received digital files from Blair, Church & Flynn Consulting Engineers.
9. We agree that the use of digital information provided by Blair, Church & Flynn Consulting Engineers for any purpose or activity that constitutes the practice of Land Surveying and/or Civil Engineering, as defined by the California Business and Professions Code, will be by or under the direct supervision of a Land Surveyor or Civil Engineer licensed to practice in the State of California.
10. We understand that Blair, Church & Flynn Consulting Engineers will incur certain costs in providing the requested digital files. We hereby agree to pay all such actual costs, which for this particular project are estimated to be approximately \$ \_\_\_\_ . The final compensation for the files may be more, or less, than this amount, and will be based on the actual time and materials costs incurred by Blair, Church & Flynn Consulting Engineers.

Very truly yours,

***INSERT NAME OF YOUR ORGANIZATION***

***SIGNATURE*** \_\_\_\_\_

***INSERT NAME***, Authorized Representative

## SUBMITTAL PROCEDURES

### SECTION 01 33 00 – SUBMITTAL PROCEDURES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Provide all material, labor, equipment and services necessary to completely install all pavement materials, accessories and other related items as required by the Contract Documents.

##### 1.2 RELATED SECTIONS

- A. All Division 00 Specification Sections
- B. All Division 01 Specification Sections

##### 1.3 SUBMITTALS

###### A. Request for Electronic Files

- 1. Complete and submit the Contractor's Usage Agreement for Electronic Files found in the CONSTRUCTION FORMS section of this project manual.

###### B. Submittal Requirements

- 1. All submittals shall be submitted with the submittal cover sheet provided in the CONSTRUCTION FORMS section of this project manual.
- 2. Brochures, product information and/or manufacturer's catalog sheets shall be submitted in sequential sets for each material within each category or work: One (1) electronic set shall be submitted.

###### C. Contractor's Responsibilities

- 1. Promptly after award of the Contract, the Contractor shall prepare and submit to the Engineer a Construction Schedule for the work and a Schedule of Values. The schedule shall be reviewed and revised as necessary for approval by the Engineer and Owner. The Construction Schedule shall show the complete sequence of construction by task. The schedule shall show the dependencies between tasks, show each task's duration and show dates for the beginning and end of each task.
- 2. The Contractor shall submit copies, checked and approved by him, of all shop drawings, materials and schedules required for the work of the various trades. Submittals shall be delivered promptly so delays in delivery of materials or execution of the work will be avoided. The Engineer will make desired corrections with reasonable promptness and return the submittal to the Contractor.
- 3. The Contractor shall make any corrections required by the Engineer during the Engineer's initial review, and re-submit the required corrected copies for final review and distribution.

## SUBMITTAL PROCEDURES

### D. Engineer's Responsibilities

1. The Engineer will make any desired corrections with reasonable promptness and return the submittal to the Contractor.
2. The Engineer's review of submittal drawings or schedules shall not relieve the Contractor of responsibility for deviations from the project drawings or specifications, unless he or she has, in writing, called the Engineer's attention to such deviations at the time of original submission and secured written approval from the Engineer.
3. The Engineer's review shall be as complete and thorough as possible but shall not be construed as an "approval" or to relieve the Contractor(s) and material suppliers of responsibility for errors or omissions in the submitted documents
4. Modifications or comments made on the submittals or shop drawings during this review do not relieve the Contractor from compliance with the requirements of the drawings and specifications.
5. Acceptance of a specific item does not include acceptance of the assembly of which the item is a component.

END OF SECTION

## SECTION 01 45 29 – TESTING AND INSPECTIONS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. The owner's testing laboratory shall be employed by the Owner
  - 1. Payment of the Owner's Testing Laboratory will be by the Owner
  - 2. The Owner shall pay for all initial testing indicated as paid for by Owner
    - a. Cost of re-testing (due to initial failures) will be back-charged to the Contractor, and those excess costs will be deducted from the Contract Price
- B. District employees or their representatives shall have full access to work in order to ensure adherence to contract documents.

#### 1.2 INSPECTIONS

- A. Inspections by District personnel are required at the following stages of work:
  - 1. After pavement is prepped and ready for crack fill or seal coat
  - 2. After first layer of sealer is applied
  - 3. After second coat of sealer is applied and prior to pavement markings
- B. Contractor shall not proceed to subsequent stage of work until obtaining written authorization by District project manager or representative

#### 1.3 TESTING

- A. Compaction Testing
  - 1. Compaction testing will be done by a firm secured by the Owner for all items of work for which compaction requirements are specified. The Contractor shall give notice to the Engineer a minimum of two working days in advance of the time compaction testing will be required.
  - 2. Compaction tests will be done at locations selected by the Engineer, and the initial tests will be performed at no cost to the Contractor. Further testing in areas requiring recompaction after having failed initial tests will be done at the Contractor's expense, and the cost thereof will be deducted from monies owed the Contractor under progress or final payments.
  - 3. Compaction testing will be done as prescribed for California Test Method 216 (Dry Method) for relative compaction determinations.
- B. Responsibility of the Testing Laboratory
  - 1. Taking all specimens

## TESTING AND INSPECTIONS

2. Performing Tests
  3. Writing test reports
  4. Review of continuous inspection reports by the Project Inspector
  5. Distribute test reports to the Owner and Engineer
- C. Responsibility of the Contractor
1. Contractor shall provide a testing schedule that is in accordance with the following:
    - a. Cooperates with the Testing Laboratory's schedule of required testing
    - b. Contractor shall coordinate Construction Schedule and Testing Schedule
  2. Cooperation with testing laboratory
    - a. Provide access to work being tested
    - b. Provide test samples as selected by the testing laboratory
    - c. Schedule work so that there shall be no excessive inspection time
      - 1) At times that an inspector is required, sufficient work shall be laid out and adequate personnel supplied so that the inspector's time shall be used to full advantage
      - 2) If inspection costs become excessive because of poor construction procedure, such excess costs will be paid for by the Owner, but deducted from the Contract Price.
    - d. Inspections and tests required by regulatory agencies shall be the responsibility of and shall be paid for by the Owner unless specified otherwise.
    - e. Inspections and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.
    - f. Test Reports
      - 1) Distribute test reports and related instruction to insure all required re-testing and/or replacement of materials.

END OF SECTION

## **SECTION 31 11 00 – SITE CLEARING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Provide all material, labor, equipment and services necessary to completely install all pavement materials, accessories and other related items as required by the Contract Documents.

#### **1.3 RELATED SECTIONS**

- A. All Division 01 Specification Sections
- B. Section 31 20 00 – EARTHWORK, EXCAVATION, FILLING, AND GRADING
- C. Section 31 22 22 – SOIL MATERIALS

#### **1.4 QUALITY ASSURANCE**

- A. In accordance with Specification Section GENERAL REQUIREMENTS, and the following:
  - 1. Materials and equipment used for this project shall comply with the current applicable regulations of the California Air Resources Board [CARB] and the Environmental Protection Agency [EPA].

#### **1.5 SITE CONDITIONS**

- A. Dust Control
  - 1. Contractor shall comply with all requirements of the San Joaquin Valley Air Pollution Control District (SJVAPCD) for construction activity related to this project.
  - 2. A Dust Control Plan, as required by the SJVAPCD, may be required for this project. Contractor shall be responsible for preparing said Dust Control Plan, submitting to the SJVAPCD for review and approval, and paying all SJVAPCD review and permitting fees related to the Dust Control Plan.
  - 3. No construction activity related to this project may begin until Contractor has secured an approved Dust Control Plan, if one is required.
  - 4. Contractor shall be solely responsible to implement all requirements of the Dust Control Plan throughout the life of this contract.
  - 5. Should fines or fees be levied against the Project for violations of the Dust Control Plan and/or related SJVAPCD regulations, Contractor shall be responsible to pay all said fines or fees and to implement all mitigation measures required by SJVAPCD in order to bring



## SITE CLEARING

the construction activity into compliance with SJVAPCD regulations. The costs for any such fines or fees shall be included in the lump sum price bid for work under this contract and no additional payment will be made therefor.

### B. Existing Conditions

1. Examine site and compare it with the drawings and specifications. Thoroughly investigate and verify conditions under which the work is to be performed. No allowance will be made for extra work resulting from negligence or failure to be acquainted with all available information concerning conditions necessary to estimate the difficulty or cost of the work.
2. Conduct work so as not to interfere unnecessarily with adjacent roads, streets, drives, walks or occupied facilities.
  - a. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and Authorities having jurisdiction.
  - b. Provide alternate routes around closed or obstructed traffic ways if required by Authorities having jurisdiction.
3. Locate and Identify Utilities
  - a. Call a Local Utility Locator Service (USA – “Underground Service Alert” – [800] 227-2600) for the task of locating any applicable utilities in the area where the Project is located.
4. Carefully remove items indicated to be salvaged and store on Owner’s premises at the Owner’s direction.

## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

### 3.1 PREPARATION

#### A. Coordination

1. Coordinate work under this specification section with work specified under other sections to ensure proper and adequate interface of work.

#### B. Protection

1. Protect and maintain all benchmarks and survey control points from disturbance during clearing and demolition operations.
2. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties.
3. Furnish and install temporary protection/barrier fencing surrounding the limits of demolition.

## SITE CLEARING

4. Protect trees, plant growth, and features not specifically designated for removal. Locate and clearly flag trees and vegetation to remain or to be relocated.
5. Protect existing improvements designated to remain from damage during construction.
  - a. Restore damaged improvements to their original condition, as acceptable to the Owner.

### C. Dust Palliatives

1. The District will not provide construction water for this project; the Contractor shall develop and pay for a water supply and furnish all water required for the work.
2. No separate payment will be made for construction water, the cost thereof being considered as included in the cost of those items for which it is required. The Contractor shall be responsible for the payment of any and all temporary meter and water use charges imposed by the authority or company from which construction water is obtained.

## 3.2 CONSTRUCTION

### A. Shrub and Weed Removal

1. Remove weeds and rooted topsoil to a minimum four (4) inch depth and temporarily stockpile as needed for re-use in finished grading of landscape areas. Remove excess material from the site.
2. Where existing vegetation is to be replaced by new materials, remove contaminated or excess soil from the site and legally dispose of off-site.

### B. Existing Site Improvements Removal

1. Remove existing above and below grade improvements as necessary to facilitate new construction.
2. Asphalt Concrete removal
  - a. Sawcut to a straight, clean edge. The limits of all items to be removed shall be verified and approved by the Inspector prior to demolition and removal.
3. Remove concrete slabs, sidewalk, curbs, mow strips, gutters, and fence post footings.
  - a. Neatly saw-cut length of existing pavement to remain before removing existing pavement unless existing full-depth joints coincide with line of demolition. Saw-cut faces vertically.
4. In existing turf areas where new paving or concrete facilities are proposed, the existing turf shall be removed to a minimum depth of 6" prior to placing any fill or grading.

### C. Existing Utilities to Remain or be Relocated

## SITE CLEARING

1. Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - a. Notify Architect and the Owner not less than seven (7) days in advance of proposed utility interruptions.
  - b. Arrange to shut off indicated utilities with utility companies and Owner.
- D. Disposal
  1. Legally dispose of all debris (surplus soil materials, unsuitable topsoil, obstructions, demolished materials, waste materials, trash, etc.) resulting from clearing, grubbing, demolition and from construction. Disposal of all materials shall be at a location secured by the Contractor off of the Owner's property.
  2. All materials removed by the Contractor in the course of this work and not designated to be salvaged or relocated onsite shall be legally disposed of by the Contractor at an offsite location secured by the Contractor. Payment of all fees related to disposal is to be paid by the Contractor and the fee shall be included in the lump sum price bid for the work of this contract.

END OF SECTION

## **SECTION 31 20 00 – EARTHWORK, EXCAVATION, FILLING AND GRADING**

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This section includes the following:
  - 1. Excavating soil and other material for surface improvements
  - 2. Placing Fill
  - 3. Compaction of existing ground and fill
  - 4. Preparation of subgrade for other improvements
  - 5. Grading of soil

#### B. RELATED SECTIONS

- 1. All Division 00 Specification Sections
- 2. Section 31 11 00 – Site Clearing
- 3. Section 31 22 22 – Soil Materials

#### 1.3 REFERENCES

- A. ANSI/ASTM D1557 Test Methods for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.

#### 1.4 DEFINITIONS

- A. Utility: Any buried or above ground pipe, conduit, cable, associate device or appurtenances, or substructure pertaining thereto.

#### 1.5 SUBMITTALS

- A. Product Data
  - 1. Information indicating the source of all import material, the fill material type and where it is to be used, and approval of the District's Inspector of Record for incorporation of import material into the Work.
- B. Material Test Reports
  - 1. Classification of Soils
  - 2. Compaction Characteristics of Soils

## EARTHWORK, EXCAVATION, FILLING AND GRADING

3. Density and Unit Weight of Soils
  4. Imported fill shall be tested and approved by the Owner's Geotechnical Engineer prior to import to the site, including testing for compliance with Department of Toxic Substances Control (DTSC) guidelines. Said testing and certification documents shall be paid for by the Owner.
- C. Project Closeout: In accordance with Specification Section PROJECT CLOSEOUT.
1. Drawings indicating the extent and depth of all engineered fill, and overexcavation and recompaction. This information shall be a part of the Project "As-Built" and Project "Record" Documents.

### 1.6 QUALITY ASSURANCE

#### A. Installer Qualifications

1. Engage an experienced Installer who has successfully completed three (3) projects of similar scope and size to that indicated for this project within the past 5 years.

#### B. Regulatory Requirements

1. In accordance with Specification Section REGULATORY REQUIREMENTS and the following:
  - a. CARB Materials and equipment used for this Project shall comply with the current applicable regulations of the California Air Resources Board [CARB].
  - b. CF City of Clovis Codes and Ordinances
  - c. EPA Environmental Protection Agency
  - d. CAL/OSHA Comply with all provisions of the Construction Safety Orders and the General Safety Orders of the California Division of Occupational Safety and Health, as well as all other applicable regulations as they pertain to the protection of workers from the hazard of caving ground excavations.
  - e. DTSC Comply with all recommendations of the California Department of Toxic Substance Control (DTSC) regarding soil testing for potential contaminants.

#### C. Certificates

1. Installer's certification that all Earthwork installation meets or exceeds the requirements of this specification
2. Contractor's certification (on Contractor's letterhead paper) that the Earthwork materials and installation meets or exceeds the requirements of this specification.

#### D. Meetings

## EARTHWORK, EXCAVATION, FILLING AND GRADING

1. Pre-Installation: Schedule prior to the start of work.
  - a. Coordinate the work with other work being performed.
  - b. Identify any potential problems, which may impede planned progress and proper installation of work regarding quality of installation and warranty requirements.
2. Progress: Scheduled by the Contractor during the performance of the work.
  - a. Review for proper installation of work progress.
  - b. Identify any installation problems and acceptable corrective measures.
  - c. Identify any measures to maintain or regain project schedule if necessary.
3. Completion: Scheduled by the Contractor upon proper completion of the work.
  - a. Inspect and identify any problems which may impede issuance of warranties or guaranties.
  - b. Maintain installed work until the Notice of Substantial Completion has been filed.

### 1.7 COORDINATION

- A. Coordinate work with Owner's personnel.
- B. Provide required notification to the Owner and Geotechnical Engineer or the Engineer of Record so that a representative from the Owner's Geotechnical Engineering consultant can be present for all excavation, filling and grading operations to test and observe earthwork construction.
- C. Verify that the location of existing utilities have been indicated at work site by utility authorities, by Owner, and as specified on the Plans.

### 1.8 EXISTING CONDITIONS

- A. Existing Conditions:
  1. Examine the site and verify conditions with the Drawings and Specifications. Contractor shall familiarize himself with existing site conditions and any changes that have occurred at the site since the preparation of the contract documents, and shall be responsible to account for any such changes in the price bid for this work.
  2. Thoroughly investigate and verify conditions under which the Work is to be performed.
  3. Locate and identify utilities
    - a. Call a Local Utility Locator Service (USA - "Underground Service Alert" – [800] 227-2600) for the task of locating any applicable off-site and on-site utilities in the area where the Project is located.
  4. No allowance for Extra Work will be granted resulting from negligence or failure to meet requirements of this Section.

## EARTHWORK, EXCAVATION, FILLING AND GRADING

- B. Where subsurface work involves more than the normal depth of excavation required for the removal and/or construction of surface improvements (surface improvements such as concrete flatwork, paving, landscaping, signs, etc.), the Engineer will have made a diligent attempt to indicate on the plans the location of all main and trunk line utility facilities which may affect the Work. In many cases, however, the only available information relative to the existing location of said facilities may have been small scale undimensioned plats. The locations of said facilities, therefore, shall be considered approximate only, until exposed by the Contractor.
- C. Under similar circumstance, service laterals and appurtenances will have also been shown where information was available as to their location. In many cases, however, the only available information relative to the existing location of said facilities may have been small scale undimensioned plats. The locations of said facilities, therefore, shall be considered approximate only, until exposed by the Contractor.
- D. Determine exact location of existing buried utilities by:
  - 1. Marking on ground or pavement surface the alignment and extent of the facilities and the probable location of existing utilities using construction plans and existing surface features.
  - 2. Requesting Underground Service Alert (USA) to indicate location of existing buried facilities (phone 1-800-227-2600). Provide USA a minimum of two (2) working days notice of request for locations, and notify Owner of said request concurrently.
  - 3. Confirm exact location of existing utilities by hand methods of excavation, or by use of vacuum equipment.
- E. At proposed work location, expose by hand methods (or vacuum equipment) all existing utilities along the route of the proposed work prior to using any mechanical equipment. If mechanical equipment is allowed at a particular location, it may only be used after the completion by the Contractor of a successful exhaustive search by hand (or vacuum equipment) methods to locate all existing facilities as indicated on the plans, and/or as indicated on the ground by USA or Owner's personnel.
- F. Provide Field Engineering to record the location of all utilities encountered. Where locational conflicts exist between existing utilities and the planned location of facilities to be constructed under this Contract, submit detailed information to the Engineer for review and direction.
- G. Maintain all existing utility mains and service lines in constant service during construction of the Work.
- H. Where service disruptions are allowed, minimize the length of such disruptions by proper scheduling and diligent pursuit of the work, and coordinate the timing of any such disruptions in advance with the District.

### 1.9 ENVIRONMENTAL REQUIREMENTS

## EARTHWORK, EXCAVATION, FILLING AND GRADING

- A. Dust control: Perform work in a manner as to minimize the spread of dust and flying particles. Thoroughly moisten all surfaces as required to prevent dust from being a nuisance to the public, neighbors and concurrent performance of other on-site work.
1. All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.
  2. All land clearing, demolition, grubbing, scraping, excavation, land leveling, grading, and cut and fill activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by pre-soaking.
  3. When materials are transported off-site, all material shall be covered, effectively wetted to limit visible dust emissions or at least six inches of freeboard space from the top of the container shall be maintained.
  4. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. The use of blower devices is expressly forbidden.
  5. Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/ suppressant.
    - a. Contractor shall comply with all requirements of the San Joaquin Valley Air Pollution Control District (SJVAPCD) for construction activity related to this project.
    - b. A Dust Control Plan, as required by the SJVAPCD, may be required for this project. If required, Contractor shall be responsible for preparing said Dust Control Plan, submitting to the SJVAPCD for review and approval, and paying all SJVAPCD review and permitting fees related to the Dust Control Plan.
    - c. If a dust control plan is required, no construction activity related to this project may begin until Contractor has secured an approved Dust Control Plan.
    - d. Contractor shall be solely responsible to implement all requirements of the Dust Control Plan throughout the life of this contract.
    - e. Should fines or fees be levied against the Project for violations of the Dust Control Plan and/or related SJVAPCD regulations, Contractor shall be responsible to pay all said fines or fees and to implement all mitigation measures required by SJVAPCD in order to bring the construction activity into compliance with SJVAPCD regulations. The costs for any such fines or fees shall be included in the lump sum price bid for work under this contract and no additional payment will be made therefore



## EARTHWORK, EXCAVATION, FILLING AND GRADING

- B. Burning: No burning will be allowed on-site
- C. Rain: Work under this section shall not be started or maintained under threat of rain, unless the work is not affected by the rain.
- D. Do not place fill during weather conditions which will alter moisture content of fill materials sufficiently to make compaction to the specified densities difficult or impossible.
- E. When reference is made to SWPPP (Storm Water Pollution Prevention Plan), if any within this Project Manual, then comply with all environmental protection requirements included therein.
- F. In accordance with EPA, CARB and CF
- G. Protection:
  - 1. Protect cut and fill areas to prevent water running into excavation. Maintain areas free of water. Remove seeping water immediately by pumps. Provide dewatering as necessary.
  - 2. Protect cut slopes from erosion due to precipitation and other sources of runoff.
  - 3. Protect utilities to remain within the construction area and special construction. If utility lines are uncovered (water, electric, sewer, etc.) not shown on the drawings during excavation of site, notify the Architect promptly for its review and action.
  - 4. Do not permit access to undeveloped portions of the site, nor to areas that are outside of the limits of grading.
- H. Before being brought onto the site, all import soil must be sampled, tested and approved by Owner's Geotechnical Engineer. All import material must comply with DTSC recommendations and guidelines for environmentally clean soil suitable for school construction. Import testing will be provided and paid for by the Owner.

### 1.10 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of GENERAL CONDITIONS and DIVISION 1, GENERAL REQUIREMENTS.
- B. Accurately record actual locations of utilities encountered including depth and horizontal location, as measured from permanent site features.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Fill in Turf or Other Planting Areas: Type S2 or S3 per Division 31 Specification Section SOIL MATERIALS.
- B. Fill in Non-planting Areas: Type S1, S2 or S4 per Division 31 Specification Section SOIL MATERIALS.
- C. Imported material: Type S3, S4 or S5 per Division 31 Specification Section SOIL MATERIALS.

## EARTHWORK, EXCAVATION, FILLING AND GRADING

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Verify Site Conditions

#### 3.2 PREPARATION

- A. Layout of Work:

1. Contractor shall be responsible for all lines and grades. Layout shall be provided by a California registered Land Surveyor or Civil Engineer, at Contractor's expense.
2. Check all bench marks, monuments and property lines and verify locations.
3. Locate and maintain all grade stakes.
4. Monuments moved or displaced during grading operation are to be replaced by a California Registered Civil Engineer or Surveyor, at Contractor's expense.

- B. Locate, identify, and protect existing above and below grade utilities from damage.
- C. Protect plant life, lawns, trees, shrubs, and other features not authorized for removal.
- D. Protect existing structures, fences, curbs, sidewalks, paving and other improvements to remain from damage from excavation equipment and vehicular traffic.
- E. Employ equipment and methods appropriate to the work site.
- F. Protect excavated areas from drainage inflow and provide for drainage of all excavated areas.
- G. Comply with all provisions of the Construction Safety Orders and General Safety Orders of the California Division of Industrial Safety, as well as all other applicable regulations as they pertain to the protection of workers from the hazard of caving ground in excavations

#### 3.3 SITE STRIPPING

- A. Reference is made to Division 31 Specification Section SITE CLEARING.
- B. Within the areas of planned surface improvements and structures, the near surface soils containing vegetation, roots, organics, or other objectionable material must be stripped and removed from the site. Upon approval of the Geotechnical Engineer, suitable materials stripped from the site may stockpiled and incorporated into the finish fill for planting areas.
- C. All areas to receive surface improvements shall be stripped to remove turf, shrubs, trees and other vegetation, along with associated root systems, concrete, wood, metal, rubbish and other unsuitable debris, and any loose, saturated or unconsolidated soil material. Minimum stripping depth is expected to be 4-inches below existing site grades. Stripping shall continue to the depth required to expose acceptable basement soils that are free from deleterious which are not suitable for Engineered Fill, as required by the Geotechnical Engineer.

## EARTHWORK, EXCAVATION, FILLING AND GRADING

### 3.4 EXCAVATION

- A. Following clearing and stripping operations, excavate planned construction areas as specified in this Section.
- B. Provide additional excavation as required to conform to the lines, grades and cross-sections shown on the plans.
- C. When excavating through tree roots, perform work by hand and cut roots, where authorized, with a saw. Remove all roots ¼" in diameter and greater.
- D. Remove excess soil not to be used as fill in the Work from the site. Unless requested by Owner to be deposited at a site designated by Owner on the property, obtain a disposal site and legally dispose of said excess material, all at no additional cost to the Owner.
- E. Areas disturbed by demolition must be excavated to expose undisturbed soils.
- F. Excavated soils free of deleterious substances (organic matter, demolition debris, tree roots, etc.) and with less than 3% organic content by weight, may be returned to the excavations as Engineered Fill.

### 3.5 FILLING AND COMPACTING

- A. Once clearing, stripping and over-excavation operations are complete, scarify the surface to receive fill material or improvements to a depth of 8-inches, moisture condition to at least 2% above optimum moisture content, and compact to a minimum of 92% of maximum dry density based on ASTM Test Method 1557.
- B. Place and compact soil to finish subgrade of improvements to be placed thereon, or to finished surface grade where no improvements are to be placed thereon.
- C. All fill required shall be placed as Engineered Fill.
- D. The Contractor shall be solely responsible for securing an acceptable source of import material as required to grade the site. Reference is made to 31 20 00 1.9.H.
- E. On-site soils are suitable for re-use as Engineered Fill, providing they are cleansed of excessive organics (less than 3 percent by weight, ASTM D2974), debris, and fragments larger than three (3) inches in maximum dimension and meet the requirements of soil Type S4, Division 31 Specification Section SOIL MATERIALS.
- F. Engineered Fill shall be moisture conditioned to within 2% of optimum moisture, placed in uncompacted layers not exceeding eight (8) inches in thickness, and compacted as specified, based on ASTM Test Method D1557.
  - 1. Non-vegetative surface improvement areas (structures, pavement and site concrete improvements) - To a minimum of 92% of maximum dry density.
  - 2. Vegetative surface improvement areas (turf and planters) - Below top twelve (12) inches - to a minimum of 90% of maximum dry density. Top twelve (12) inches - 85% of maximum dry density.

## EARTHWORK, EXCAVATION, FILLING AND GRADING

- G. Maintain optimum moisture content of fill materials to attain required compaction density.
- H. Additional lifts shall not be placed if the previous lift did not meet the required dry density, or if soil conditions are not stable.
- I. Conform fill to the lines, grades and cross-sections shown on the plans.
- J. Fill materials to conform to Division 31 Specification Section SOIL MATERIALS.
- K. Provide, at no additional cost to Owner, imported soil material conforming to the requirements of Division 31 Specification Section SOIL MATERIALS, as needed to attain finished grades of Work.
- L. Utilize equipment which will not disturb or damage existing utilities and other improvements.

### 3.6 PREPARATION OF SUBGRADE FOR SURFACE IMPROVEMENTS

- A. Where concrete, asphalt-concrete, aggregate base, or other non-vegetative surface improvements, or a layer of said surface improvements, are to be constructed on the soil surface, prepare the subgrade for said improvements in accordance with this section.
- B. Scarify the soil as specified and remove and dispose of (off the project site) all rocks, hardpan chunks or otherwise unsuitable material over 2.5 inches in size.
- C. Thoroughly moisture condition and compact as described above.
- D. Prior to commencing construction of surface improvements, pass a test roller of size and weight as approved by the Owner over the subgrade to establish the extent of soft or spongy areas requiring repairs.
- E. Conform finished subgrade surface to the lines, grades and cross-sections shown on the plans.

### 3.7 FINE GRADING

- A. Fine grade all finished surfaces to the lines, grades and cross-sections shown on the plans, and to blend to hard surface improvements.
- B. Rake and smooth all finished surfaces not to receive hard surface improvements.
- C. Use suitable stockpiled or imported topsoil for the top 12-inches of areas to receive landscape improvements.
- D. Import topsoil meeting the requirements of Division 31 Specification Section SOIL MATERIALS, as required to complete finish grading.
- E. Topsoil may not be used in areas requiring Engineered Fill.

### 3.8 TOLERANCES

- A. Top surface of Subgrade for Non-Vegetative Surface Improvements or Layers thereof: Plus or minus 0.02 foot from planned elevation.

## EARTHWORK, EXCAVATION, FILLING AND GRADING

- B. Top surface of Subgrade for Vegetative Surface Improvements or for Bare Ground Plus or minus 0.05 foot of planned elevation, or as required for finish surface to match adjacent improvements or ground.

### 3.9 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of GENERAL CONDITIONS and/or DIVISION 1, GENERAL REQUIREMENTS.
- B. Compaction testing will be performed in accordance with ANSI/ASTM D1557.
- C. If tests indicate work does not meet specified requirements, recompact, or remove and replace, and retest.
- D. All retesting required as a result of failure of initial test will be performed by Owner's testing agency, at the expense of the Contractor.

### 3.10 PROTECTION

- A. Protect graded areas from traffic, freezing, erosion, and all other sources of damage. Keep free of debris and trash.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed work becomes eroded, rutted, settled, or where it is damaged by subsequent construction operations or weather.
- C. Where settlement occurs prior to acceptance of the work, remove and replace surface improvements, excavate, replace, and re-compact in accordance with these specifications, and restore the surface improvements.

### 3.11 CLEANING

- A. Remove all surplus or unsatisfactory soil material, trash, and debris, and legally dispose of off of the Owner's property.

END OF SECTION

## SECTION 31 22 22 – SOIL MATERIALS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Excavated (and re-used) materials and imported materials.

#### 1.3 RELATED SECTIONS

- A. Section 31 20 00 - Earthwork: Excavation, Filling and Grading.

#### 1.4 SUBMITTALS

- A. Samples: Submit, in air-tight containers, 10 lb. sample of Type S3, S4 and S5 fill to inspector.
- B. Soil Analysis: Submit for Type S3, S4 and S5 soils to be imported.
- C. Materials Source: Submit location of imported materials source. Provide materials from same source throughout the work. Change of source requires approval.
- D. For imported soil, obtain Geotechnical Engineer and DTSC approval prior to importing.

### PART 2 - PRODUCTS

#### 2.1 SOIL MATERIALS

- A. Soil Type S1: Excavated and re-used material, graded; free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
- B. Soil Type S2: Excavated and reused material, graded; free of roots, lumps greater than one inch, rocks larger than 1/2 inch, debris, weeds and foreign matter.
- C. Soil Type S3: Imported topsoil, friable loam; reasonably free of roots, rocks larger than ½ inch, debris, weeds, and foreign matter.
- D. Soil Type S4: Imported borrow, suitable for purposes intended, meeting the following characteristics:
  - 1. Maximum Particle Size: 3"
  - 2. Plasticity Index: <12
  - 3. Percent Passing #4 Sieve: 65-100
  - 4. Percent Passing #200 Sieve: 20-45
  - 5. Expansion Index: <20

## SOIL MATERIALS

6. R-Value (in paved areas): >36
7. Low Corrosion Potential:
  - a. Soluble Sulfates: <1,500 mg/Kg
  - b. Soluble Chlorides: <300 mg/Kg
  - c. Soil Resistivity: >5,000 ohm-cm
- E. Soil Type S5: Imported sand. Natural river or bank sand (sand equivalent greater than 30), washed; free of silt, clay, loam, friable or soluble materials, and organic matter.

### 2.2 SOURCE QUALITY CONTROL

- A. Inspection of imported soil will be performed by the Geotechnical Engineer, at source of import and prior to being delivered to the site.

## PART 3 - EXECUTION

### 3.1 STOCKPILING

- A. Stockpile excavated or imported material onsite at location designated by project inspector.
- B. Stockpile excavated or imported material in sufficient quantities to meet project schedule and requirements.

### 3.2 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.
- B. Dispose of excess material off-site.

END OF SECTION

## **SECTION 32 11 26 – AGGREGATE BASE COURSE**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Provide all material, labor, equipment and services necessary to install aggregate base surfacing as indicated by the Contract Documents.

#### **1.3 RELATED SECTIONS**

- A. All Division 00 Specification Sections
- B. All Division 01 Specification Sections
- C. Section 31 20 00 – Earthwork: Excavation, Filling, and Grading.
- D. Section 32 12 16 – Soil Sterilization.
- E. Section 32 12 17 – Asphalt Paving

#### **1.4 REFERENCES**

- A. All Division 00 Specification Sections
- B. All Division 01 Specification Sections
- C. Section 31 11 00 - Site Clearing
- D. Section 31 20 00 – Earthwork: Excavation, Filling and Grading
- E. Section 31 22 22 – Soils Materials
- F. Section 31 23 33 - Trench Excavation and Backfill
- G. SSCDOT - Standard Specifications, Department of Transportation, State of California (Caltrans), latest edition, except for references to method of payment, and references to any state furnished materials.

#### **1.5 QUALITY ASSURANCE**

- A. Provide and install in accordance with SSCDOT.

#### **1.6 SUBMITTALS**

- A. Submit data sheets from supplier to document compliance with SSCDOT requirements.
- B. Certificates of compliance for material.
- C. Load tags for delivered material.



## AGGREGATE BASE COURSE

### 1.7 COORDINATION

- A. Coordinate with other work, including subgrade preparation and soil sterilization.
- B. Coordinate installation schedule with Owner's use of the premises and with other contractors working at the site.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Aggregate Base: Unless specified otherwise on Plans, Class 2, 3/4 Inch Maximum per Section 26 of SSCDOT.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Verify quantities required.
- B. Verify that subgrade has been placed and compacted per Contract Documents
- C. Verify gradients and elevations of subgrade are correct.

#### 3.2 INSTALLATION OF AGGREGATE BASE COURSE

- A. Install in conformance with SSCDOT Section 26, Aggregate Bases.
- B. Thickness - As shown on construction drawings.
- C. Spreading and Compacting - In accordance with Section 26, SSCDOT. The relative compaction of each layer of compacted base material shall be not less than 95 percent.
- D. The completed surface shall be thoroughly compacted, free from ruts, depressions, and irregularities, true to grade and cross-section.
- E. Lines and grades for the installation of aggregate base shall be set by a California licensed Land Surveyor or Civil Engineer, at Contractor's expense.

#### 3.3 TOLERANCES

- A. Compacted thickness of aggregate base: Not less than the thickness specified on the Plans.
- B. Finished Surface: Within 0.02 foot of planned grade per Section 26, SSCDOT. No more than 50% of the finish surface shall be above or below the specified grade for aggregate base.

#### 3.4 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed by the Owner's inspector, under provisions of Division 01.

## AGGREGATE BASE COURSE

### 3.5 PROTECTION

- A. Immediately after placement and compaction, protect surface from mechanical injury.
- B. Protect completed surface until surfacing layers are in place.

END OF SECTION

## SECTION 32 12 16 – SOIL STERILIZATION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Furnishing and installing soil sterilant under all new crushed stone surfacing (decomposed granite and rock dust).

#### 1.3 RELATED SECTIONS

- A. Section 31 20 00 - Earthwork: Excavation, Filling, and Grading
- B. Section 32 11 26 – Aggregate Base Course
- C. Section 32 12 17 – Asphalt Paving
- D. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications sections, apply to the work of this section.

#### 1.4 STANDARDS

- A. In accordance with the following:

CCR-T21 California Code of Regulations, Title 21 Public Works.

CBC California Building Code, California Code of Regulations,  
Title 24, Part 2, CCR-T24.

USDA United States Department of Agriculture.

EPA Environmental Protection Agency.

CC City of Clovis

All applicable Environmental Regulations and Standards.

#### 1.5 QUALITY ASSURANCE

- A. Provide licensed operator to apply soil sterilant.
- B. All products shall comply with the current EPA laws at time of application. Should the products listed become unavailable because of changes in the law, submit substitute products for review by the Owner.

## SOIL STERILIZATION

### 1.6 SUBMITTALS

- A. Submit in accordance with Specification Section SUBMITTAL PROCEDURES.
- B. Certificates of application.
- C. Certificates of compliance for material.

### 1.7 COORDINATION

- A. A. Coordinate with other work, including subgrade preparation.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Soil Sterilant: Treflan, weed and grass preventer, or approved equal.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that site is ready for application.

### 3.2 PREPARATION

- A. Identify installation locations.
- B. Employ equipment and methods appropriate to the work site.
- C. Provide vehicular and traffic controls per Specification Section TEMPORARY FACILITIES AND CONTROLS.

### 3.3 APPLICATION

- A. Thoroughly water soak surface to be treated. Avoid excessive water runoff.
- B. Apply sterilant solution over surface to receive pavement or surfacing prior to the start of pavement or surfacing installation.
- C. Apply in spray form, at rate as allowable by State of California.
- D. Take all precautions to limit soil sterilant solution to areas immediately under proposed pavement or surfacing. Use shields as necessary, and do not apply under windy conditions.

### 3.4 FIELD QUALITY CONTROL

- A. Field inspection will be performed under Specification Section QUALITY REQUIREMENTS.

END OF SECTION

## SOIL STERILIZATION

## **SECTION 32 12 17 – ASPHALT PAVING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Provide all material, labor, equipment and services necessary to completely install all pavement materials, accessories and other related items as required by the Contract Documents.

#### **1.3 RELATED SECTIONS**

- A. All Division 00 Specification Sections
- B. All Division 01 Specification Sections
- C. Section 31 22 00 – EARTHWORK
- D. Section 32 11 26 – AGGREGATE BASE COURSE
- E. Section 32 12 16 – Soil Sterilization

#### **1.4 REFERENCES**

- A. SSCDOT - Standard Specifications, Department of Transportation, State of California (Caltrans), latest edition, except for references to method of payment, and references to any state furnished materials.

#### **1.5 QUALITY ASSURANCE**

- A. Perform work in accordance with SSCDOT.
- B. Mixing Plant: Conform to SSCDOT.
- C. Installation Criteria: Asphalt concrete shall show no evidence of cracking, uneven settlement, improper drainage, or untoward junctions with adjoining or existing surfaces. Work displaying such conditions shall be corrected under the Contractor's guarantee of all work.

#### **1.6 SUBMITTALS**

- A. Submit under provisions of Division 01
- B. Mix Design
- C. Certificates of compliance for material.
- D. Load tags for delivered material

## ASPHALT PAVING

### 1.7 COORDINATION

- A. Coordinate with other work, including subgrade preparation, aggregate base placement and soil sterilization.

### 1.8 ENVIRONMENTAL REQUIREMENTS

- A. Do not place asphalt-concrete when atmosphere temperature is less than 50 degrees F, or surface is wet or frozen.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Paint Binder: In accordance with SSCDOT Section 94, Asphaltic Emulsions.
- B. Oil Spot Primer: "Poly Oil Sil" as manufactured by Allstates Coatings Co, or approved equivalent
- C. Seal Coat: Asphalt based seal coat shall be "ACE Seal" as manufactured by Asphalt Coatings Engineering, or approved equivalent.
- D. Crack Fill
  - 1. "Flex Crax" as manufactured by Asphalt Coatings Engineering, or approved equivalent
  - 2. "Vulcan Power Patch" as manufactured by Vulcan Materials Company

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify quantities required. New asphalt-concrete paving is required at all locations shown on the plans, and where existing asphalt-concrete paving to remain is removed or damaged by the Project excavation or related work.
- B. Verify that subgrade or base material has been compacted to required relative compaction and is dry.
- C. Verify gradients and elevations of base are correct.
- D. Verify that subgrade or base material has been sterilized per Section 31 31 00 SOIL STERILIZATION.

### 3.2 AGGREGATE BASE

- A. Where shown on the construction plans, place and compact aggregate base course per Section 32 11 26 AGGREGATE BASE COURSE.
- B. Where shown on the construction plans, place asphalt on compacted earth subgrade per Section 31 20 00 EARTHWORK: EXCAVATION, FILLING AND GRADING and Section 31 23 00 TRENCH EXCAVATION AND BACKFILL.

## ASPHALT PAVING

- C. A soil sterilant shall be applied over the entire area which is to be paved in accordance with Section 31 12 16 SOIL STERILIZATION

### 3.3 PREPARATION – PAINT BINDER

- A. Apply paint binder to existing asphalt-concrete or concrete surfaces which will be in contact with asphalt-concrete surfacing.
- B. Rate of application for all surfaces against which asphalt concrete is to be placed shall be no less than 0.02 and no more than 0.05 gallons per square yard. All vertical concrete surfaces which will be in contact with asphalt concrete surfacing and all areas now in place which will be covered with new surfacing materials and feathering operations shall be coated with a paint binder applied at the rate of 0.05 gallons per square yard.

### 3.4 INSTALLATION OF ASPHALTIC-CONCRETE

- A. Description - Asphalt concrete shall be Type A asphalt concrete produced with aggregate conforming to the grading requirements for  $\frac{3}{4}$ " maximum medium aggregate and  $\frac{1}{2}$ " maximum medium aggregate. Within parking lots and roadways the aggregate shall be  $\frac{3}{4}$ " maximum medium. Within the play courts unless otherwise specified on the plans, the aggregate shall be  $\frac{1}{2}$ " maximum medium. Contractor shall submit to the Engineer for approval prior to ordering any asphalt concrete, the proposed gradation of the asphalt concrete mix proposed for use. No "fine" mixes will be allowed, except for use in crack filling as per the details shown on the plans.
- B. Proportioning - Before producing asphalt concrete, the Contractor shall submit in writing to the Engineer the gradation of the aggregate and the bitumen ratio for the mix the Contractor proposes to furnish. No asphaltic concrete shall be produced prior to issuance of the Engineer's written approval of the Contractor's proposed aggregate gradation and bitumen ratio. The bitumen ratio shall be no less than 3 and no more than 7 pounds of asphalt per 100 pounds of dry aggregate
- C. Install in conformance with SSCDOT Section 39, Asphalt-Concrete.
- D. Thickness - As shown on construction plans. Where thickness exceeds 3 inches, place in no less than 2 layers with top layer no thicker than one inch. Asphaltic concrete shall be laid to the thickness designated on the Plans. The plan thickness is to be considered as a minimum thickness. The Contractor shall lay the asphaltic concrete to a depth required to insure that, after compaction, the in place compacted thickness is equal to or greater than the specified plan thickness.
- E. The Contractor shall provide to the Engineer the truck delivery weight tags for the asphaltic concrete material. The quantity delivered shall be equal to or greater than the calculated in place quantity based on the specified thickness and area to be paved as designated on the construction plans and based on a unit density of the asphaltic concrete of 141 pounds per cubic feet.
- F. Asphalt type: PG 64-10



## ASPHALT PAVING

- G. Compacting. - Compaction operations shall be commenced as soon after spreading as the mixture will support compaction equipment without excessive displacement or deformation. The relative compaction of compacted aggregate base material shall not be less than 95% as determined by ASTM Test Method 1557
- H. Compaction Equipment - In accordance with Section 39, SSCDOT. At small difficult areas, equipment may be altered as approved by Engineer.
- I. The Contractor shall taper or feather asphalt concrete to conform to existing surfacing or concrete improvements as directed by the Engineer. No surfacing will be allowed when the air temperature is below 50 degrees F.
- J. The completed surface shall be thoroughly compacted, free from ruts, depressions, and irregularities and to be true to grade and cross-section.
- K. TOLERANCES
  - 1. Finished Surface: within 0.02 foot of planned grade.
  - 2. Flatness: Maximum variation of 1/4 inch measured with 10-foot straight edge.
  - 3. Scheduled Compacted Thickness: Not less than specified.

### 3.5 INSTALLATION OF CRACK FILL

- A. Where cracks in pre-existing pavement exceed 1/2 inch in depth or 1/4 inch in width, or both, they shall be thoroughly cleaned and repaired with asphalt crack filler material before placing the sealer. All cracks between 1/8" and 1/4" in width shall be filled with "Flex Crax," as manufactured by Asphalt Coatings Engineering, or approved equivalent, in accordance with the manufacturer's recommendations.
- B. Where cracks in pre-existing pavement exceed ¼ inch in width, they shall be mechanically cleaned to a minimum depth of 2 inches and repaired with "Vulcan Power Patch" as manufactured by Vulcan Materials Company, or approved equivalent, in accordance with the manufacturer's recommendations. Crack fill material shall be flush with the adjacent asphalt surfaces.

### 3.6 INSTALLATION OF SEAL COAT

- A. Preparation
  - 1. Immediately prior to applying the sealer, the surface shall be cleaned of all loose material which might adversely affect bonding of the sealer. Any standard cleaning method such as power sweepers and blowers may be employed. In areas where gasoline, grease, oil spots, or chemical stains have been in contact with pavement, "Poly Oil Sil" or approved equal emulsion primer shall be applied to the pavement surface per manufacturer recommendations prior to placing seal coat. In locations where the pavement has been softened by contact with oils, fuels, or other substances, remove and replace pavement as directed by the Engineer

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2. Whether or not specifically indicated on the plans, all loose or raveling pavement, potholes and badly distorted or depressed areas, except those lying within areas designated for pavement removal and replacement, shall be properly cleaned and repaired by applying a binder coat and hot mix asphalt concrete patch conforming to the requirements of Section 39, SSCDOT, before placing the seal coat. Any vegetation such as soil sterilant approved by the Engineer shall be applied to the area and any required pavement patching shall then be completed.
3. A prime coat of SS-1 asphalt emulsion diluted with water, to 5 parts water to 1 part asphaltic emulsion, shall be applied to all existing (not new) pavement surfaces at a rate of application of 0.05 to 0.10 gallon of diluted primer per square yard.

### B. Seal Coat Application

1. Following the prime coat, three (3) coats of asphalt-based seal coat shall be applied
  - a. The first two coats shall be applied utilizing a squeegee method
  - b. The third coat shall be a spray application
2. The first coat shall have added to it a silica sand mineral filler which has passed a 50-mesh screen. Apply at a rate of 2 to 3 pounds per 1 gallon of concentrated sealer. When the first coat is dry enough to walk on without picking the material up, a second coat shall be applied without mineral filler. If the manufacturer indicates that the product may be diluted, it may be diluted with no more than 20 percent by volume clean fresh water with the prior approval of the Engineer. The total application rate shall be a minimum of 35 to 45 gallons of undiluted product per 1,000 square feet, as directed by the Engineer. The finished surface shall be smooth and uniform in appearance. If existing depressions are such that aggregate still protrudes after the last coat of asphalt based sealer has been applied, the Contractor shall apply another coat when so directed by the Engineer or the Inspector.
  - a. Seal Coat (for new pavement) - a minimum of 20 gallons of undiluted product per 1,000 square feet, as directed by the Engineer.
  - b. Seal Coat (for existing pavement) - 35 to 40 gallons of undiluted product per 1,000 square feet, as directed by the Engineer.
3. The new seal coat shall fully cover the appearance of old pavement marking and striping. Otherwise, additional coats of seal coat shall be applied to the surface until the old pavement marking and striping is no longer visible.
4. Allow asphalt-concrete to cure 21 days minimum prior to sealing, or as otherwise recommended by the manufacturer.
5. Broom clean asphalt-concrete prior to sealing.
6. Protect sealed surface until it is cured.

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### 3.7 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Division 01.
- B. Pavement shall comply with the following:
  - 1. Water shall not be able to accumulate at any point and the surface shall be free to drain to drainage inlets or gutters.
  - 2. The paving contractor shall water flood the surface with the use of a water truck. If, after 30 minutes on a 70 degree F day, "bird baths" are evident in a depth more than 0.01 foot, the paving contractor and the Owner's representative will determine the best method of correction.
  - 3. A 10 foot straightedge shall be used to check for high spots and ridges. High spots and ridges out of compliance shall be reduced by a remedy determined by the paving contractor and the Owner's representative.
- C. Should a section of the work be not acceptable on the basis of inadequate compaction and/or the mixture becomes loose and broken, mixed with dirt, out of tolerance, or in any other way defective, it shall be repaired or removed and replaced with fresh mixture and immediately compacted to conform to the surrounding area to the satisfaction of the Owner.

### 3.8 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury.
- B. Protect sealed surface until it is cured.

END OF SECTION

## **SECTION 32 13 13 – SITE CONCRETE IMPROVEMENTS**

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. All material, labor, equipment and services necessary to completely install exterior Portland cement flatwork, cast-in-place concrete, and architectural flatwork concrete, accessories and other related items, slabs, ramps and sidewalks and walkways, curb and gutter, mowstrips, and other miscellaneous concrete items of the form and dimensions shown on the plans and necessary to complete the project, and in accordance with the requirements of the Standard Specifications as modified and supplemented by these Special Provisions
- B. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications sections, apply to the work of this section.

#### 1.3 RELATED SECTIONS

- A. Section 31 20 00 - Earthwork: Excavation, Filling, and Grading
- B. Section 32 13 15 - Concrete Reinforcement

#### 1.4 REFERENCES

- A. SSCDOT - Standard Specifications, Department of Transportation, State of California (Caltrans), latest edition, except for references to method of payment, and references to any state furnished materials.
- B. ACI standards, including but not limited to #304, 305, 306, 308, 309 and 347.
- C. ASTM standards, including but not limited to #C-33, C-39, C-94, C-136, C-143, C-150, and C-309.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Specification Section SUBMITTALS.
  - 1. Certificates of compliance for materials and mix designs.
  - 2. Load tags for delivered material.
  - 3. Strength testing as required by the approving agency.
  - 4. Integral color sample, where applicable.
  - 5. Application instructions for the architectural finish materials.
  - 6. Accessories and manufacturer's installation specifications.

## SITE CONCRETE IMPROVEMENTS

### 1.6 QUALITY ASSURANCE

- A. Furnish concrete materials conforming with SSCDOT.
- B. Perform work in accordance with SSCDOT, unless noted otherwise herein.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

#### 2.2 MIXES

- A. Mix Design and Proportions in accordance with SSCDOT:
  - 1. Mix designs with Fly Ash content greater than 15 percent of the total weight of cementitious materials shall be proportioned by SSCDOT.
  - 2. Provide 3 percent air entrainment unless otherwise noted.
  - 3. Owners Testing laboratory shall review all mix design before submittal.
  - 4. All concrete shall have the following minimum compressive strengths in accordance with ACI 318 and SSCDOT at 28 days and shall be proportioned within the following limits:
    - a. Site Concrete: Use for exterior concrete slabs on grade including, but not limited to walks, concrete pavement, curb, gutter, utility appurtenances and miscellaneous site items.
      - 1) Strength: 3,000 psi at 28 days
      - 2) Maximum Aggregate Size: 1-inch
      - 3) Cement Content: 5.5 sacks/yd minimum
      - 4) Max Water/Cement Ratio: Per SSCDOT
      - 5) Admixture Per SSCDOT
    - b. Foundations: Use for unexposed foundation concrete except as otherwise noted.
      - 1) Strength: 4,000 psi at 28 days
      - 2) Maximum Aggregate Size: 1-inch
      - 3) Cement Content: 6.5 sacks/yd minimum
      - 4) Max Water/Cement Ratio: Per SSCDOT
      - 5) Admixture: Per SSCDOT
    - c. Slurry Backfill: Use for Back Fill of over-excavated trenches, encasement of all penetration, site utility piping.
      - 1) Maximum Aggregate Size: 3/8-inch

## SITE CONCRETE IMPROVEMENTS

2) Cement Content: 2.0 sacks/yd minimum

- B. Reinforcement shall comply with relevant portions of Division 32 Specification Section CONCRETE REINFORCEMENT.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Subgrade shall conform to the requirements of Division 31 Specification Section EARTHWORK: EXCAVATION, FILLING AND GRADING. The District may elect to verify compacted subgrade elevations by measurement made from adjacent existing improvements or by a template supported by forms.

#### 3.2 GENERAL CONCRETE

- A. Concrete placement shall conform to the applicable requirements of Standard Specification Sections 51 and 90. Concrete shall not be placed when the air temperature in the shade at the project site exceeds 95° F or is below 45° F, or when the temperature of the concrete exceeds 85° F.
- B. After the concrete has been placed, it shall be struck off to proper section and compacted with a grid of parallel metal bars until a layer of mortar not less than 3/8-inch-thick has been brought to the surface. All exposed concrete surfaces shall receive a medium broom finish applied transversely to the line of pedestrian traffic or to the longest dimension of the concrete, as applicable.
- C. General concrete surfaces shall be cured by the curing compound method and shall be protected in accordance with the provisions of Subsections 90-1 and 90-2 of the Standard Specifications.

#### 3.3 PROTECTION OF CONCRETE

- A. The Contractor shall be responsible for the condition of all concrete work until such time as all work has been completed and is accepted by the District. The Contractor shall limit vehicular travel across concrete until such time as the concrete has achieved strength sufficient that it can support traffic without damage. In no case, however, will vehicles be allowed to travel across new concrete improvements until seven calendar days have passed since the concrete was placed.

#### 3.4 CONCRETE JOINTS

- A. Expansion joints and weakened plane joints shall be constructed at the locations shown on the plans or as directed by the Engineer. Where joint locations are not specified on the plans, expansion joints shall be constructed at maximum intervals of 30 feet and weakened plane joints shall be constructed at maximum intervals of 10 feet.

## SITE CONCRETE IMPROVEMENTS

- B. Expansion joints shall be considered as weakened plane joints for the purpose of spacing weakened plane joints. Expansion joints shall be tooled with a ½ inch maximum radius edger, and shall be filled with ½ inch pre-formed expansion joint filler.

### 3.5 CONCRETE FINISHES

- A. Where concrete is being installed adjacent to or near existing concrete improvements, match the finish of similar concrete surfaces, i.e. new sidewalks shall match existing sidewalks, new curbs shall match existing curbs, etc.
- B. Sidewalks and Mowstrips: Medium sweat finish or medium broom finish as required to match existing finishes.
- C. Curbs: Trowel smooth and finish with a light brush.
- D. Gutters: Medium broom finish
- E. Drive approaches and wheelchair ramps: Broom Finish, perpendicular to the direction of travel

### 3.6 INSTALLATION OF ACCESSORIES

- A. Strictly comply with manufacturer's instructions and recommendations and approved details. Securely anchor work to substrate.

### 3.7 REPAIR AND CLEAN-UP

- A. Contractor shall legally remove all trash, debris, containers and excess materials from the site on a periodic basis and shall keep the work broom clean until Owner's acceptance.
- B. The Contractor shall be held responsible for the repair and/or replacement of new or existing improvements damaged as a result of this work to the satisfaction of the Owner.
- C. The Contractor shall provide roll-off bins for wash-out of ready mix concrete trucks and pumpers. Do not allow concrete debris or cement water onto soils scheduled for landscape planting.

END OF SECTION

## **SECTION 32 17 23 – PAVEMENT MARKINGS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Furnishing and installing paint parking stall, traffic marking and wording on asphalt concrete surfaces.
- B. Furnishing and installing accessible parking marking and hatching area on asphalt concrete pavement.

#### **1.2 RELATED SECTIONS**

- A. All Division 01 Specification Sections
- B. Section 32 12 17 – Asphalt Paving.
- C. Section 32 13 13 – Site Concrete Improvements.

#### **1.3 REFERENCES**

- A. SSCDOT Standard Specifications, California Department of Transportation (Caltrans), latest edition, except for references to methods of payment and to furnishing of materials by State.

#### **1.4 SUBMITTALS**

- A. Submit under provisions of Division 1.

#### **1.5 COORDINATION**

- A. Coordinate work with other work, including associated traffic signing.

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- A. Paint: Quick drying, high visibility water soluble acrylic striping paint; Stripe Master, Wikel Mfg. Company, or similar by Sherwin Williams, J.E. Bauer, or PPG, or approved equal.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify that site is ready for application
  - 1. Traffic stripes and pavement marking striping includes the painting of parking stall lines, cross hatching, lettering, disabled symbol and directional arrow and curb painting as shown on the construction plans. Paint on pavement shall not be applied until the asphalt-based seal coat has cured or until a minimum of four (4) days after placement of the seal coat. No paint shall be applied prior to issuance of the Engineer's written approval of the paint material. Paint on curbs, wheelstops, and hardscape shall be scraped clean of loose material prior to striping and painting



## PAVEMENT MARKINGS

### 3.2 PREPARATION

- A. Identify installation locations. Place parking stall striping, traffic marking, wording, international symbol of accessibility, and access striping at locations, as shown on construction plans.
  - 1. The design intent is to match existing striping at parking lots and playcourts. Notify the Engineer if striping on the plans differs from existing conditions.
- B. All existing curbs and existing paint shall be prepared to accept the specified paint
- C. Thoroughly clean all surfaces to be painted.

### 3.3 APPLICATION

- A. Paint shall be applied such as to result in a thick uniform appearance that is not translucent. Provide two (2) coats of paint. The international symbol of accessibility shall be painted in blue on the surface of each parking space indicated and shall be a minimum of 3-foot square with a white symbol painted on a blue background. The stall lines for the disabled stall shall also be blue.
- B. All parking lot painting shall be white unless otherwise indicated. All painted stall stripes shall be a minimum of four inches in width. Playcourt paint colors shall be as indicated on the plans, or if not indicated, as directed by the District.
- C. Traffic directional arrow and lettering locations are shown schematically on the construction plans. Arrows shall be centered, or double arrow centered within the traffic aisles and located at the approximate location shown on the plan. Arrow dimensions shown in the arrow detail are minimum dimensions. Arrow may be larger; however, it shall have the same proportions.

### 3.4 FIELD QUALITY CONTROL

- A. Field inspection will be performed under provisions of Division 01.

END OF SECTION

## SECTION 32 28 52 – PARKING LOT FURNITURE

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Furnish and install signs, posts and concrete wheelstops

#### 1.2 RELATED SECTIONS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications sections, apply to the work of this section.
- B. Section 32 12 17 – Asphalt Paving
- C. Section 32 13 13 – Site Concrete Improvements.

#### 1.3 REFERENCES

- A. SSCDOT Standard Specifications, California Department of Transportation (Caltrans), latest edition, except for references to methods of payment.
- B. CBC – California Building Code, latest edition.

#### 1.4 SUBMITTALS

- A. Submit under provisions of Specification Section - SUBMITTAL PROCEDURES.

#### 1.5 COORDINATION

- A. Coordinate work with Owner's personnel.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Signs: As per detail drawing.
- B. ADA Accessible Signs: As per detail drawing.
- C. Sign Posts: 2 inch diameter galvanized iron pipe, A 120, Schedule 40, unless otherwise shown on drawing.
- D. Concrete for Sign Footings: Specification Section - SITE CONCRETE IMPROVEMENTS
- E. Wheelstop: 3 or 4 feet long pre-cast concrete per detail drawing.

## PARKING LOT FURNITURE

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Verify existing and proposed site conditions.

#### 3.2 PREPARATION

- A. Identify installation locations.
- B. Locate, identify, and protect existing above and below grade utilities from damage.
- C. Employ equipment and methods appropriate to the work site.

#### 3.3 INSTALLATION

- A. Install all sign posts straight and plumb in concrete footings as shown on plans.
- B. Secure all signs to posts with vandal resistant galvanized hardware furnished by the Contractor.
- C. Orient direction of all signs as indicated on the plans.
- D. Install concrete wheelstops at locations shown on drawings. Anchor each wheelstop with two deformed reinforcing bars driven into the asphalt concrete pavement per detail drawing.

#### 3.4 FIELD QUALITY ASSURANCE

- A. Field inspection will be performed under Division 01.

END OF SECTION

## **SECTION 32 33 10 – TACTILE/DETECTABLE WARNING SURFACE TILE**

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Tactile/Detectable Warning Surface Tile where indicated.

#### 1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's literature describing products, installation procedures and routine maintenance.
- B. Samples for Verification Purposes: Submit two tile samples minimum, 6 inch by 8 inch of kind proposed for use.
- C. Shop drawings are required for products specified showing fabrication details; composite structural system; plans of tile placement including joints, and material to be used as well as outlining installation materials and procedure.
- D. Material Test Reports: Submit test reports from qualified independent testing laboratory indicating that materials proposed for use are in compliance with requirements and meet the properties indicated. All test reports shall be conducted on Surface Applied tactile tile system as certified by a qualified independent testing laboratory.
- E. Maintenance Instructions: Submit copies of manufacturer's specified maintenance practices for each type of tactile tile and accessory as required.

#### 1.4 QUALITY ASSURANCE

- A. Provide Surface Applied tactile tiles and accessories as produced by a single manufacturer.
- B. Installer's Qualifications: Engage an experienced Installer certified in writing by tactile manufacturer as qualified for installation, who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.
- C. Americans with Disabilities Act (ADA): Provide tactile warning surfaces that comply with detectable warnings on walking surfaces section of Americans with Disabilities Act (Title 49 CFR TRANSPORTATION, Part 37.9 STANDARDS FOR ACCESSIBLE TRANSPORTATION FACILITIES, Appendix A, Section 4.29.2 DETECTABLE WARNINGS ON WALKING SURFACES.
- D. California Code of Regulations (CCR): Provide only approved DSAAC detectable warning products as provided in the California Code of Regulations (CCR). Title 24, Part 1, Articles 2, 3 and 4 and Part 2, Section 205 definition of "Detectable Warning". Section 11B-406 for "Curb ramps, blended transitions and islands" and Section 11B-705 for "Detectable warnings and detectable directional texture".

## TACTILE/DETECTABLE WARNING SURFACE TILE

- E. Detectable Warning Texture: Division of the State Architect (DSA Access Compliance) approved products shall be used, compliance with CBC Section 11B-705.1, IRs 11B-2, 11B-3 and 11B-4 and the California Accessibility Reference Manual.
  - 1. Truncated Domes: provide raised Detectable Warnings with diameter of 0.9 inch at base tapering to 0.45 inch at top, height of 0.2 inch, with center-to-center spacing of 2.35 inches and corner domes spaced at 0.896 inch from the corner edges of tile. Provide raised truncated domes in a square grid (in-line) pattern.
    - a. Truncated Dome: shall contrast visually with adjoining surfaces, light-on- dark or dark-on-light. Material used to provide contrast shall be integral part of walking surface. Warning surface shall differ from adjoining surface in resiliency or sound to cane contact.

### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Tiles shall be suitably packaged or crated to prevent damage in shipment or handling. Finished surfaces shall be protected by sturdy wrappings and tile type shall be identified by part number.
- B. Tiles shall be delivered to location at building site for storage prior to installation.

### 1.6 SITE CONDITIONS

- A. Environmental Conditions and Protection: Maintain minimum temperature of 40°F in spaces to receive tactile tiles for at least 48 hours prior to installations, during installation, and for not less than 48 hours after installation. Store tactile tile material in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 40°F in areas where work is completed.
- B. The use of water for work, cleaning or dust control, etc. shall be contained and controlled and shall not be allowed to come into contact with the passengers or public. Provide barricades or screens to protect passengers or public.
- C. Disposal of any liquids or other materials of possible contamination shall be made in accordance with federal state and local laws and ordinances.
- D. Cleaning materials shall have code acceptable low VOC solvent content and low flammability if used on the site.

### 1.7 EXTRA STOCK

- A. Deliver extra stock to storage area designated by engineer. Furnish new materials from same manufactured lot as materials installed and enclose in protective packaging with appropriate identification for Surface Applied tactile tiles. Furnish not less than two (2) percent of the supplied materials for each type, color and pattern installed.

## TACTILE/DETECTABLE WARNING SURFACE TILE

### 1.8 WARRANTY (DETECTABLE WARNINGS AND DIRECTIONAL TEXTURE)

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of detectable warnings and directional surface products that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Shape, color fastness, confirmation, sound-on-cane acoustic quality, resilience, and attachment will not degrade significantly.
    - b. Degrade significantly means that product maintains at least 90 percent of its approved design characteristics, as determined by the authority having jurisdiction.
  - 2. Warranty Period: Five years from date of Final Completion.
  - 3. Authority: California Building Code Sections 11B, Division of the State Architect Interpretation of Regulations (IR) 11 B-2, 11B-3 11B-4.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
  - 1. Engineered Plastics Inc., Armor Tile.
  - 2. ADA Solutions, Inc., North Billerica, MA.
- B. Detectable Warning Texture: Division of the State Architect (DSA/Access Compliance) approved products shall be used, compliance with CBC Section 11B-705.1, IRs 11B-2, 11B-3 and 11B-4 and the California Accessibility Reference Manual.
  - 1. Truncated Domes: provide raised Detectable Warnings with diameter of 0.9 inch at base tapering to 0.45 inch at top, height of 0.2 inch, with center-to-center spacing of 2.35 inches and corner domes spaced at 0.896 inch from the corner edges of tile; Provide raised truncated domes in a square grid (in-line) pattern.
    - a. Truncated Dome: shall contrast visually with adjoining surfaces, light-on- dark or dark-on-light. Material used to provide contrast shall be integral part of walking surface. Warning surface shall differ from adjoining surface in resiliency or sound to cane contact.
  - 2. Detectable Warning Texture (Truncated Domes): Plastics/Composites: Armor Tile, ADA Tactile Systems by Engineered Plastics Inc., North Billerica, or equal.

## TACTILE/DETECTABLE WARNING SURFACE TILE

- C. The Vitrified Polymer Composite (VPC) Surface Applied Tactile Tile specified is based on Armor-Tile manufactured by Engineered Plastics Inc. Existing engineered and field tested products which are subject to compliance with requirements, may be incorporated in the work and shall meet or exceed the specified test criteria and characteristics.
- D. Color: Yellow conforming to Color No. 33538 of federal standard 595C. Color shall be homogeneous throughout the tile.

### 2.2 MATERIALS

- A. Fasteners: Color matched, corrosion resistant, flat head drive anchor: W diameter x 1 3/4" long, or manufacturer's recommended fasteners.
- B. Adhesive and Sealant: Manufacturer's standard.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Surface Applied: The following installation instructions shall be used for tactile warning tiles installed at existing concrete surfaces.
  - 1. During all surface preparation and tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
  - 2. The application of all tile, adhesives, mechanical fasteners, and caulking shall be in strict accordance with the guidelines set by their respective manufacturers.
  - 3. Ensure that surfaces being prepared and fabricated to receive the tiles are constructed correctly and adequately for tile installation. Review design drawings with the Contractor prior to the construction and refer any and all discrepancies to Engineer.
  - 4. Set the tile true and square to the curb ramp area as detailed in the design drawings, so that its location can be marked on the concrete surface. Use thin permanent marker. Remove tile when done marking its location.
  - 5. The surface to receive the detectable warning surface tile (not recommended for asphalt) is to be mechanically cleaned with diamond cup grinder or shot blaster to remove any dirt or foreign material. This cleaning and roughening of the concrete surface should include at least 4 inches around the perimeter of the area to receive the tile, and also along the cross pattern established by the corresponding areas on the backside of the tile. Those same areas should then be cleaned with a rag soaked in Acetone.
  - 6. Immediately prior to installing the detectable warning surface tile, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound and cured for minimum of 30 days.

## TACTILE/DETECTABLE WARNING SURFACE TILE

7. Using Acetone, wipe the backside of the tile around the perimeter and along the internal cross pattern, to remove any dirt or dust particles from the area to receive the adhesive.
8. Apply the adhesive on the backside of the tile, following the perimeter and internal cross pattern established by the tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2" width of the adhesive locator. A 3 x 4 foot tile will typically require an entire tube of adhesive.
9. Set the tile true and square to the curb ramp area as detailed in the design drawings.
10. Standing with both feet applying pressure around the molded recess provided in the tile, drill a hole true and straight to a depth of 3W using the recommended diameter bit. Drill through the tile without hammer option until the tile has been successfully penetrated, and then with hammer option to drill into the concrete.
11. Immediately after drilling each hole, and while still applying foot pressure, vacuum, brush or blow away dust and set the mechanical fastener as described below, before moving on to the next hole.
12. Mechanically fasten tiles to the concrete substrate using a hammer to set the fasteners. Ensure the fastener has been placed to full depth in the dome, straight, and flush to the top of dome. Drive the pin of the fastener with the hammer, taking care to avoid any inadvertent blows to the truncated dome or tile surface. A plastic deadblow or leather hammer is recommended.
13. Working in a sequence that will prevent buckles in the tile, proceed to drill and install all fasteners in the tile's molded recesses.
14. Following the installation of the tiles, the perimeter caulking sealant should be applied. Follow the perimeter caulking sealant manufacturer's recommendations when applying. Tape all perimeter edges of the tile and also tape the adjacent concrete back 1/2" from the tile's perimeter edge. Tool the perimeter caulking with a plastic applicator or spatula to create a straight edge in a cove profile between the tile and adjacent concrete. Remove tape immediately after tooling perimeter caulking sealant.
15. Do not allow foot traffic on installed tiles until the perimeter caulking sealant has cured sufficiently to avoid tracking.
16. If installing adjacent tiles, note the orientation of each tile. Careful attention will reveal that one of the long edges of the tile is different than the other, in regard to the tiny dotted texture. You may also note a larger perimeter margin before the tiny dotted texture pattern begins. Consistent orientation of each Tile is required in order that the truncated domes on adjacent tiles line up with each other.
17. In order to maintain proper spacing between truncated domes on adjacent tiles, the tapered edge should be trimmed off using a continuous rim diamond blade in a circular



## TACTILE/DETECTABLE WARNING SURFACE TILE

saw or mini-grinder. The use of a straightedge to guide the cut is advisable. All cuts should be made prior to installation of the tiles.

18. If installing adjacent tiles, care should be taken to leave a 1/8 inch gap between each. If tiles are custom cut to size, and if pre-molded recesses (to receive fasteners) are removed by the cut, then any truncated dome can be center-drilled with a 5 inch through hole, and countersunk with a suitable bit, to receive mechanical fasteners. New holes should be created no closer to the edge of the tile than any of the other perimeter fastener pre-molded recesses. Care should be taken to not countersink too deeply. Fasteners should be flush with the top of the truncated dome when countersunk properly.
19. Adhesive or caulking on the surface of the Tile can be removed with Acetone.

B. Wet Set: The following installation instructions shall be used for tactile warning tiles installed at new concrete surfaces.

1. During all surface preparation and tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
2. The application of all tile, adhesives, mechanical fasteners, and caulking shall be in strict accordance with the guidelines set by their respective manufacturers.
3. Ensure that surfaces being prepared and fabricated to receive the tiles are constructed correctly and adequately for tile installation. Review design drawings with the Contractor prior to the construction and refer any and all discrepancies to Engineer.
4. Set the tile true and square to the curb ramp area as detailed in the design drawings.
5. Immediately prior to installing the detectable warning surface tile, the wet concrete surfaces must be inspected to ensure that it is clean and free of debris.
6. Do not remove protective plastic covering on detectable warning tile product until tile is installed and concrete is fully cured.
7. Slowly press the detectable warning tile into the wet concrete until the base of the truncated domes is flush with the adjacent concrete. Do not stand on the tile during installation. Tap the detectable tile with a rubber mallet as required to ensure all edges are flush with concrete. Install anchors into wet concrete as specified per manufacturer's recommendation and ensure that the anchors are flushed with the detectable tile surface. Provide weight to the detectable tile surface if "floating" occurs after tile placement. All detectable tile edges shall be flush with adjacent concrete.
8. While the concrete is workable, a 1/8" deep troweled edge shall be installed around the tile perimeter. Finish the concrete as required per specifications. Ensure concrete edge do not have any low areas that collect water.
9. Set the tile true and square to the curb ramp area as detailed in the design drawings.

## TACTILE/DETECTABLE WARNING SURFACE TILE

10. If installing adjacent tiles, note the orientation of each tile. Careful attention will reveal that one of the long edges of the tile is different than the other, in regard to the tiny dotted texture. You may also note a larger perimeter margin before the tiny dotted texture pattern begins. Consistent orientation of each Tile is required in order that the truncated domes on adjacent tiles line up with each other.
11. In order to maintain proper spacing between truncated domes on adjacent tiles, the tapered edge should be trimmed off using a continuous rim diamond blade in a circular saw or mini-grinder. The use of a straightedge to guide the cut is advisable. All cuts should be made prior to installation of the tiles.
12. Remove protective plastic sheeting after all post-installation treatments are complete and the concrete has cured.

### 3.2 CLEANING AND PROTECTING

- A. Protect tiles against damage during construction period to comply with tactile tile manufacturer's specification.
- B. Protect tiles against damage from rolling loads following installation by covering with plywood or hardwood.
- C. Clean tactile tiles not more than four days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean tactile tile by methods recommended by manufacturer.

END OF SECTION