

- B. The Grading Code of the County of San Diego, City of Santee, and any special requirements of the permit.
- C. The Preliminary Geotechnical Investigation and Soils Reports prepared by Ninyo & Moore, at [www.santeesd.net/modernization](http://www.santeesd.net/modernization).
- D. Applicable General and Special Conditions of these specifications hereinafter set forth in full or by reference.

#### 1.04 QUALITY CONTROL

##### A. Testing and Inspections:

1. A Geotechnical Engineer, designated by the Owner, shall be engaged to perform continuous inspection of the placing and compacting of fills and backfills within the limits of grading of this project. Work shall be done in accordance with these specifications, the requirements of California Building Code, Chapters 18A and 33, and as recommended and approved by the Geotechnical Engineer. Costs for such inspection and tests shall be paid by the Owner. The Contractor shall be responsible for notifying the Geotechnical Engineer in advance so that he may be present to perform his services as needed.
2. The Geotechnical Engineer shall also make an investigation of the fill material to establish the ability of the soil to sustain the vertical loads to be imposed on the fill by the proposed structure, and to confirm the expansion and other specified characteristics of the fill material.
3. The Geotechnical Engineer shall submit compaction reports to the Architect, Structural Engineer and the Civil Engineer at the completion of the Work, including test results and plot plans indicating the locations from which the tested samples of fill were taken. The Geotechnical Engineer shall keep the Architect and Civil Engineer informed of the progress of the grading work.

#### 1.05 SITE CONDITIONS

##### A. Protection:

1. Protect adjacent property as required to prevent caving and sloughing of material onto adjacent property.
2. Utility lines and structures shown shall be protected and treated as indicated. Where utilities not shown are encountered, report it to the Architect before proceeding with excavation. Remove inactive lines as directed, and plug the remaining ends. The Contractor shall bear the cost for all repairs to damaged utilities.

##### B. Environmental Requirements: Contractor must comply with all requirements of the applicable County of San Diego and the City of Santee dust control ordinances. Comply with applicable sections of the Storm Water Pollution Prevention Plan, including but not limited to erosion control, material stockpiling, vehicle parking and maintenance areas.

1. Construction operations and maintenance of equipment shall be performed only during the time period(s) and days allowed by local ordinance or government

agency having jurisdiction.

2. Earthwork operations shall be scheduled to complete the Work as quickly as possible to reduce the noise, dust and air pollution impacts.

## **PART 2 - PRODUCTS**

### **2.01 FILL MATERIAL**

- A. Additional earth material required to complete the work shall be provided by the Contractor at his expense.
- B. All earth imported products to the site shall meet or exceed United States Environmental Protection Agency (US EPA), Department of Toxic Substances (if applicable), and State of California regulations for clean fill. Proof of compliance is the responsibility of the Contractor.
- C. All imported material shall be approved by the Geotechnical Engineer prior to hauling on site. Contractor shall deliver samples to testing lab, labeled with location, project name, and date.
- D. Imported earth shall be of granular nature with sufficient binder to form a firm, stable, unyielding subgrade. Adobe or clay soils will not be acceptable. Earth imported shall be relatively non-expansive with an expansion index per soils report, be clean and free from rubbish and debris and rock larger than 3 inches in maximum dimensions, not have sulfate content greater than 1,000 parts per million, and be subject to the approval of the Geotechnical Engineer. Imported fill material shall have an electrical resistivity exceeding 3,000 ohm cm. when saturated with distilled water, measured in accordance with the minimum resistivity procedure of California Test 643 or the soil resistivity box procedure shown in ASTM G57. Imported material to be used in areas to receive planting shall be approved by the Landscape Consultant of such quality as to support plant life.
- E. Backfill material for storm drain and utility lines shall be imported clean sand with a sand equivalent of at least 30 (California Test Method #217), and shall be placed in a minimum thickness of 6 inches for bedding and backfilled to 12 inches above the top of pipe.

### **2.02 SPECIAL REQUIREMENTS**

- A. If imported soils are used within the upper 12 inches of areas to be planted, these soils shall conform to the requirements for planting soils as specified herein. Otherwise the upper 12 inches of all areas to be planted in the future shall consist of material obtained from the upper 12 inches of existing on-site soils.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Protect adjacent property and existing improvements and structures as necessary to prevent undermining, caving of cuts, and miscellaneous damage.
- B. Provide cribbing, sheeting, and shoring necessary to safely retain the earth banks and

protect excavations and adjoining grades from caving and other damage resulting from excavating together with suitable forms of protection against bodily injury to personnel employed on the work and the general public. Be responsible for the design, installation, and maintenance of required cribbing and shoring and same shall meet the approval of the State Division of Industrial Safety and local governing agencies requirements.

- C. Utility lines and structures shown shall be protected and treated as indicated. Where work not shown is encountered, report it to the Architect before proceeding with excavation. Encase active lines in sleeves where they pass through concrete; remove inactive lines as directed, and plug the remaining ends. Bear the costs for repairs to damaged or broken utilities and any damages related thereto.
- D. Protect existing improvements and adjacent properties from storm damage and flood hazard originating on this project until final acceptance by the Owner. Prevent silt run-off from the limits of work in accordance with governmental requirements.

### 3.02 EXCAVATION

- A. Strip vegetation in accordance with Section 02110-Site Clearing and Demolition. This material shall be disposed off site in a legal manner. All non-hazardous materials shall be composted, if possible. Contractor shall provide certification of composting location.
- B. Excavate unsuitable materials including compressible alluvium, expansive clay, organic material, contaminated soils, or other unsuitable materials. Any remaining dry, loose or soft materials should also be removed until a stable, unyielding condition under equipment loads is achieved. After making the recommended removals and prior to fill placement, the exposed ground surface shall be scarified to a depth of approximately 8 inches, brought to slightly above optimum moisture content, and compacted to at least 90% of the maximum dry density obtainable by the ASTM D-1557-02 Method of Compaction. Surfaces on which fill is to be placed which are steeper than 5:1 (horizontal to vertical) should be benched so that the fill placement occurs on relatively level ground.

The observed on-site soils contain clay that appears to be potentially expansive. These soils are not considered suitable for foundation, floor slab or pavement support. If expansive clay soils are located within 3 feet of the bottom of foundations, floor slabs or other concrete walks or slabs, or within 18 inches of paving base course, they shall be removed and replaced with non-expansive compacted fill soils. The over-excavated area shall extend horizontally at least 10 feet beyond the building perimeter. The replacement fill material may consist of on-site or imported non-expansive soil with an Expansion Index of less than 20.

- C. Based on the proposed Grading Plans, a cut/fill transition will cross the building pad area. Over-excavation of the building pad area shall be performed to allow placement of at least 4 feet of non-expansive compacted fill beneath all foundations or slabs to 10 feet beyond the building area.

The building area is defined as outside face of any structure (i.e. wall, column, post) supporting or attached to overhead framing or roof structure, including masonry site walls over 5 feet high.

- D. Excavate to the depths, lines and grades indicated. Excavate sufficiently over-size to permit installation and removal of concrete forms and other required work.

Should soil of inadequate density and bearing capability be encountered at the elevations indicated on the drawings, or where new fill is to be placed upon existing loose fill material exposed by excavation, the excavation shall be carried to the depth required to attain soil of bearing quality as determined by the Geotechnical Engineer.

- E. Footing pads, if poured neatly, may be excavated to the net pad widths plus two-inches if approved by the Architect. Approval shall not be given until the completed excavation has been inspected.
- F. Should footing excavations exceed required dimensions or should sloughing occur, fill such extra space with concrete at no additional cost to the contract. If unsuitable material is found at the indicated depths, immediately notify the Architect.
- G. Notify the Inspector 48 hours before foundation excavations are ready for inspection.
- H. The bottoms of footings shall be free of loose material, debris, and water before concrete is placed.
- I. Cut banks shall be neatly trimmed to the required finish surface as the cut progresses, or the Contractor shall have the option of leaving the cuts full and finish grading by mechanical equipment which shall produce the finish surfaces as shown on the Drawings.
- J. Surplus earth not needed for filling and grading shall be disposed of in a legal manner off the site.

### 3.03 FILLING

- A. Fill material shall be placed in horizontal lifts not to exceed 6-inches in depth. Backfill placed in narrow restricted areas, such as along utility trenches, may be placed in 12-inch thick lifts. All fill material shall be free of rocks larger than 3 inches in maximum dimensions. Each layer shall be brought to slightly over optimum moisture content and, while still moist, shall be compacted by rolling and tamping. The rolling and/or tamping of each layer shall continue until the density thereof is not less than 95% of the maximum density obtainable using the ASTM D-1557-00.
- B. Where fills are placed on existing slopes exceeding a slope of five horizontal to one vertical, the slopes shall be benched in accordance with the Geotechnical Engineer's requirements and local governing public agencies' requirements and compacted as herein specified before placing fill material on same so that fills shall be placed in horizontal layers as specified. Widths of benches shall be as directed by the Geotechnical Engineer.
- C. Rock encountered in the excavation on this site may, at the option of the Contractor, be broken up into pieces not larger than 3 inches in maximum dimension and be incorporated in the fill material if spread as directed by the Geotechnical Engineer. Otherwise, rocks larger than 3 inches in maximum dimension shall be removed from the site. Rocks and stones larger than 1 inch in maximum dimension will not be permitted within the top 12 inches of finished grade in non-paved areas. Contractor is responsible for examining geotechnical report to determine if rock or hard digging will be encountered and make provisions in the bid for removal of such materials. No additional payment will be made for rock removal or hard digging.

D. Fill banks shall be graded full and compacted beyond the grade of the finish bank. After the banks have been filled, they shall be trimmed to the finish grades and limits shown on the Drawings. Slopes shall be inclined no steeper than 2:1 (horizontal to vertical).

E. Imported fill soils shall have an Expansion Index per soils report based on UBC Test Method 18-2 or ASTM D-4829, and an R-Value per soils report for pavement areas.

The top 12 inches of the pavement subgrade shall be compacted to at least 95% of maximum dry density as determined by ASTM D-1557-02.

F. Retaining walls shall be backfilled with soil having an Expansive Index of 20 or less. The backfill area shall include the zone defined by a 1:1 sloping plane, back from the base of the wall. Retaining wall backfill should be compacted to at least 90% relative compaction based on ASTM D-1557-02. Backfill should not be placed until walls have achieved adequate structural strength. Heavy compaction equipment which could cause distress to walls should not be used.

#### 3.04 GRADING

A. The entire area within the limits of grading as indicated on the Drawings shall be constructed to the lines, grades, elevations, slopes, and cross sections indicated on the Drawings. When the grading has been completed, the areas shall be rolled smooth with a steel tandem roller or equal. Should any low spots develop during the rolling operation, such spots shall be filled and rerolled smooth. Slopes, banks, and drainage depressions shall present a neat, uniform appearance on completion of the work. Provide temporary access roadways as needed during construction.

B. It shall be the Contractor's full responsibility to take all measures necessary during grading to protect slope areas, both cut and fill, and adjacent properties from storm damage and flood hazard originating on this project until final acceptance by the Owner. It shall be the Contractor's responsibility to maintain completed slopes until all slopes are in satisfactory compliance with the job specifications.

#### 3.05 COMPACTION

A. All fills shall be compacted to at least 90 percent of maximum density obtainable using the ASTM D-1557-02. Areas which are scarified shall be recompacted to these same requirements. The soil within the upper 12 inches of pavement subgrade should be compacted to at least 95% relative compaction based on ASTM D-1557-02.

B. Compaction by flooding is expressly prohibited.

#### 3.06 CRIBBING AND SHORING

A. Provide cribbing, sheeting, and shoring necessary to safely retain the earth banks and protect excavations and adjoining grades from caving and other damage resulting from excavating, together with suitable forms of protection against bodily injury to personnel employed on the work and the general public.

The responsibility for the design, installation, and maintenance of required cribbing and shoring shall be entirely that of the Contractor and shall be in accordance with the current requirements of CAL-OSHA, the Industrial Accident Commission of the State of California, and all other public agencies having jurisdiction.

3.07 DUST CONTROL

- A. During grading operations, water shall be applied to the surfaces in the working area at frequent intervals and in sufficient quantities to lay the dust and for proper compaction. No other method will be permitted.

3.08 GRADING TOLERANCES AND SUBGRADE PROVISIONS

- A. Rough grading shall consist of grading to the finish grade elevations indicated on the grading plans, including, but not limited to, excavation, scarification, filling, compacting, importing, exporting, preparation of sub-grades, building pads, slopes, berms, ramps, etc. Rough grading shall also include grading to and providing the finished subgrade surface for all asphalt and cement concrete areas, building, ramps, gutters, etc. Rough grading shall be performed within a tolerance of 1/10 of a foot of the elevations indicated on the Drawings (including subgrade elevations) however, this is not to be construed as being permissible to leave the entire area 1/10 of a foot consistently high or low by that amount.

3.09 CLEANING

- A. Upon completion of work in this Section, remove rubbish, trash, and debris resulting from operations. Remove unused equipment and implements of service, and leave entire area involved in a neat, clean, and acceptable condition.

**END OF SECTION**



**SECTION 02225**

**EXCAVATING, BACKFILLING AND COMPACTING FOR TRENCHES**

**PART I - GENERAL**

**1.01 SUMMARY**

This section includes requirements for excavating, dewatering, preparation of pipe-laying surface, pipe bedding, backfilling and compaction for the piping systems furnished and installed under 02660 "Exterior Water Distribution System", 02720 "Storm Drainage System" and 02730 "Exterior Sanitary Sewer System."

**1.02 REFERENCES**

The publications listed below form a part of this specification to the extent reference The publications are referred to in the text by the basic designation only.

**A. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)**

- ASTM D1556 (1990) Density and Unit Weight of Soil in Place by the Sand-Cone Method
- ASTM D1557 (1991) Laboratory Compaction Characteristics of Soil Using Modified
- ASTM D2487 (1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- ASTM D2922 (1991) Density of Soil and Soil- Aggregate in Place by Nuclear Methods (Shallow Depth)
- ASTM D3017 (1988; R 1993) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

**B. WATER AGENCIES' STANDARDS (2004)**

**1.03 DESCRIPTION**

The work includes excavation, preparation of pipe laying surface, pipe bedding, backfilling and compaction as specified herein, for the piping systems furnished and installed under Sections 02660 "Exterior Water Distribution System", 02720 "Storm Drainage System", 02730, "Exterior Sanitary Sewer System". The work also includes protection as specified herein, installation of buried warning and identification tape.

**1.04 DEFINITIONS**

- A. Backfill: Material used in refilling a trench or other excavation.
- B. Compaction: Any method of mechanically stabilizing a material by increasing its density at a controlled moisture condition. "Degree of Compaction" is expressed as a percentage of the maximum density obtained by the test procedure described in ASTM D1557 for general soil types, abbreviated in this specification as "(amount indicated) ASTM D1557 maximum density."
- C. Embankment: A "fill having a top that is higher than adjoining ground."
- D. Specified material placed alo specified degree of compaction to obtain an indicated grade or elevation.



- E. Granular Pipe Bedding: Sand, gravel or crushed aggregate as indicated in referenced Standard Drawing.
- F. Hard Material: Weathered rock, dense consolidated deposits, or conglomerate materials which are not included in the definition of "rock" but which usually require the use of heavy excavation equipment, ripper teeth, or jack hammers for removal.
- G. Lift: A layer or course of soil placed on top of prepared subgrade or a previously prepared or placed soil in a fill or backfill.
- H. Rock: Solid Homogenous interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which can be removed without systematic drilling and blasting, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders, buried masonry, or concrete other than pavement exceeding 1/2 cubic yard in volume.
- I. Unyielding Material: Rock or soil with cobbles in the trench bottom requiring a covering of finer grain material or special bedding to avoid bridging in the pipe or conduit.
- J. Unsatisfactory Material: Soil or other material identified as having insufficient strength or stability to carry intended loads on trench backfills without excessive consolidation or loss of stability, Also backfill material which contains refuse, large rocks, debris, and other Material which could damage the pipe or cause the backfill not to compact. Materials classified as PT, OH, or OI by ASTM D24-87 are unsatisfactory.
- K. Unstable Material: Material in the trench bottom which lacks firmness to maintain alignment and prevent joints from separating in the pipe, conduit or appurtenance structure during backfilling. This may be material otherwise identified as satisfactory which has been disturbed or saturated.

#### 1.05 SUBMITTALS

- A. Field Test Reports: Submit within 14 days of test date.
- B. Shoring Plan: If required by trench depth the Contractor shall submit a shoring plan prepared in accordance with CAL-OSHA requirements to the Owner's representative for review prior to commencing the work.

#### 1.06 SITE INSPECTION AND LOCATION OF EXISTING ON-SITE UTILITIES:

Prior to all work of this Section, carefully inspect the entire site and all existing items to be demolished and removed or to be left intact, and determine an orderly sequence for the performance of this work. Exact locations and alignment of existing buried utility lines are not known. Locate all existing utility lines and determine the requirements for disconnection and capping. Locate all active utilities traversing the area of work to be retained and determine the requirements for protection. Locate all points of connection and crossings by potholes and determine exact horizontal and vertical location prior to commencing the work.

#### 1.07 PROTECTION

- A. The existence and locations of existing underground facilities shown on the drawings were obtained from a search of available records. The Contractor shall take precautionary measures to protect any existing facility shown on the drawings, and any other which is not of record or not shown on the drawings.

- B. Shoring: The California Division Occupational Safety and Health Enforces the requirement that building and construction contractors obtain a permit prior to commencing certain types of hazardous activity, as specified in Section 65000 of the State Labor Code and Section 34-1 of Title 8 of the California Code of Regulations. These activities include construction of trenches or excavations which are 5' or deeper and into which a person is required to descend, the construction or demolition of any building, structure, falseworks or scaffolding more than three stories high or the equivalent height, and the underground use of diesel engines in work in mines and tunnels. Construction permits are issued by district offices of the division. The San Diego office is located at:
- State of California  
Department of Industrial Relations  
Division of Occupational Safety and Health 7575 Metropolitan Drive, Suite 207  
San Diego, CA 92108  
(619) 767-2280
1. This project may include trenching in excess of 5 feet in depth which will require a permit from the California Division of Occupational Safety and Health (CALOSHA), The Contractor shall be responsible for obtaining the appropriate permit and shall comply with the requirements of the permit, and with CAL-OSHA law. If required the Contractor shall submit a shoring plan prepared in accordance with CAL OSHA requirements, to the Owner's representative for review prior to commencing the work.
- D. Dewatering: Provide for the disposal of surface and subsurface water which may accumulate in open excavations, unfinished fills, or other low areas. Remove water by trenching where approved, pumping, or other methods to prevent softening of exposed surfaces. Surface dewatering plan shall include the rerouting of any storm water runoff or natural drainage, if necessary, and shall comply with requirements of the County of San Diego and the California State Water Resource Board.
- E. Utilities: Movement of construction machinery and equipment over pipes and utilities during construction shall be at the Contractor's risk. For work immediately adjacent to or for excavations exposing a utility or other buried obstruction, use hand or light equipment excavation, Start hand or light equipment excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Support uncovered lines or other existing work affected by the contract excavation until backfill is completed. Report damage to utility or subsurface construction immediately to the Owner's Representative.
- F. Structures and Surfaces: Protect newly backfilled areas and adjacent structures, slopes or grades from traffic, erosion settlement, or any other damage Repair and reestablish damaged or eroded grades and slopes and restore surface construction prior to acceptance. Provide erosion control to prevent water-borne soil from leaving the site, by means of straw bale dikes or sand bags. The Contractor shall be responsible to clean- P any soil deposited in the public right-of-way or on adjacent property.
- G. Protection and Restoration of Surface: Protect newly graded areas from traffic, erosion, and settlements. Repair and reestablish damaged or eroded slopes, elevations or grades and restore surface construction prior to acceptance. Provide erosion control to prevent water-borne soil from leaving the work area by means of straw bale dikes or sand bags. The Contractor shall be responsible to clean up any soil deposited in the public right-ofway or on adjacent property. The Contractor shall be responsible to protect storm drain catch basins with sand bags and to prevent sediment from entering the storm drain system during construction.

1.08 RELATED WORK IN OTHER SECTIONS

The following work specified in other sections applies to the work of this Section, including but not limited to:

- A. Section 02100, "Site Clearing".
- B. Section 02200, "Earthwork for Structures and Pavements".
- C. Section 02660, "Exterior Water Distribution System ". Section 02720, "Storm Drainage System
- E. Section 02730, "Exterior Sanitary Sewer System".
- F. Division 1

#### 1.09 SAFETY DURING CONSTRUCTION

The Contractor shall assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property. This requirement shall be made to apply continuously and not be limited to normal working hours. Refer to Part Three of this Section and Division I for additional requirements.

### PART 2 - PRODUCTS

#### 2.01 SOIL MATERIALS

Provide soil materials as described below free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, or other deleterious and objectionable materials.

- A. Backfill: Bring trenches to grade indicated on the drawings using material excavated on the site of this project; this material shall be approved by the Geotechnical Engineer prior to use as backfill. The maximum size of material used for backfill shall not exceed 3 inches.
- B. Bedding: Sand, gravel or crushed aggregate as indicated in the referenced Standard Drawing for the specific utility.

#### 2.02 BURIED WARNING AND IDENTIFICATION TAPE

Polyethylene plastic and metallic core or metallic-faced, acid- and alkali-resistant, Polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, 3" minimum width, color coded as stated below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Color and printing is to be permanent, unaffected by moisture or soil.

##### Warning Tape Color Codes

Green: Sewer Lines

- A. Warning Tape for Metallic Piping: Acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements indicated above. Minimum thickness of the tape shall be 0.003" Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise with a maximum 350% elongation.
- B. Detectable Warning Tape for Non-Metallic Piping: Polyethylene plastic tape conforming to the width, color, and printing requirements indicated above. Minimum thickness of the

tape shall be 0.004" Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise. The tape shall be manufactured with integral wires, foil backing, or other means of enabling detection by a Metal detector when the tape is buried up to 3' deep. Encase the metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

### **PART 3 - EXECUTION**

#### **3.01 GENERAL EXCAVATION**

- A. Keep excavations free from water while construction is in progress. Make trench sides as nearly vertical as practicable except where sloping of sides is allowed or required. Sides of trenches shall not be sloped from the bottom of the trench up to the elevation of the top of the utility. Excavate ledge rock boulders and other unyielding material to an overdepth at least 1 foot below the bottom of the utility unless otherwise indicated or specified on the drawings. Use sand placed in 6-inch maximum layers to refill overdepths to the proper grade.

Grade bottom of trenches accurately to provide uniform bearing and support for each section of utility on undisturbed soil, or bedding material as indicated or specified at every point along its entire length except for portions where it is necessary to excavate for bell holes and for making proper joints. Dig bell holes and depressions for joints after trench has been graded.

- B. Dimensions of bell holes shall be as required for properly making the particular type of joint to ensure that the bell does not bear on the bottom of the excavations. Trench dimensions shall be as indicated or specified.
- C. The Water agencies' Standards specifications for trenching and backfill shall be used for fire service main installations.

#### **3.02 GENERAL BEDDING**

- A. Shall be of the materials and depths as indicated for the utility and utility structures. Place bedding in 6-inch maximum loose lifts to 1 foot above utility unless otherwise specified. Ensure that initially placed material is tamped firmly under pipe haunches. Bring up evenly on each side and along the full length of the structure. Ensure that no damage is done to structures or their protective coatings. Provide uniform and continuous support for each section of structure except bell holes or depressions necessary for making proper joints.

#### **3.03 BURIED WARNING AND IDENTIFICATION TAPE**

- A. Install tape in accordance with manufacturer's recommendations except as modified herein. Bury tape 6 inches below finished grade; under pavements bury tape 6 inches below top of subgrade.

#### **3.04 GENERAL BACKFILLING**

- A. Place backfill on top of bedding material in 8-inch maximum loose lifts unless otherwise specified. Compact each loose lift as specified in paragraph "General Compaction" before placing the next lift. Do not backfill where the material in the trench is muddy, except as authorized. Where settlements greater than the tolerance allowed herein for

grading occur in trenches and pits due to improper compaction, excavate to the depth necessary to rectify the problem, then backfill and compact, the excavation as specified herein and restore the surface to the required elevation. Coordinate backfilling with testing of utilities: Complete all testing for utilities before backfilling.

### 3.05 GENERAL COMPACTION

- A. Use hand-operated, plate-type, vibratory, or other suitable hand tampers in areas not accessible to larger rollers or compactors. Avoid damaging pipes and protective pipe coatings. Compact material in accordance with the following unless otherwise specified. If necessary, alter, change, or modify selected equipment or compaction methods to meet specified compaction requirements.
- B. Compaction of Bedding and Backfill: Compact bedding and backfill material surrounding pipes to 90% of ASTM D1557 maximum density. Compact top 12-inches of bedding and backfill material to 95% under pavements.

### 3.06 SPECIAL EARTHWORK INSTALLATION REQUIREMENTS

- A. Grading: Finish to grades indicated within 0.05 foot. Grade areas to drain water away from structures. Grade existing grades that are to remain but have been disturbed by the Contractor's operations.
- B. Protection of Surfaces: Protect newly graded areas from traffic, erosion, and settlements that may occur due to construction activity. Repair or reestablish damaged grades, elevations, or slopes.
- C. Repair: Repair pavement, curbs, and gutters damaged during construction with new improvements. Do not repair pavement until trench or pit has been backfilled and compacted as herein specified. Provide a temporary road surface of gravel or crushed stone over the backfilled portion until permanent pavement is repaired. Remove and dispose of temporary road surface material when permanent pavement is placed.

### 3.08 SOIL TESTING

- A. Soil testing during pipeline construction shall be performed by a Geotechnical Testing Laboratory. Reference Section 01430, "Quality Control" for specific requirements. Materials and operations under this Section shall be monitored by qualified Geotechnical Laboratory personnel under the direction of a (Geotechnical! Engineer. In general, one field density test shall be made per lift for every 50 feet of trench backfill, unless directed otherwise by the Geotechnical Engineer.
- B. The Geotechnical Engineer shall make random field density tests of the compacted backfill to provide a basis for expressing an opinion as to whether the backfill material is compacted as specified. The basis for this opinion shall be that no tests in compacted or re-compacted backfill areas indicate a relative compaction of less than that specified. Density tests shall be made in the compacted materials below any disturbed surface. When these tests indicate that the density of any lift or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.
- C. The Contractor shall be responsible for any rework necessary to achieve the specified densities to the satisfaction of the Geotechnical Engineer.

END OF SECTION

**SECTION 02233**

**GRADED CRUSHED AGGREGATE BASE COURSE FOR PAVEMENTS**

**PART 1 GENERAL**

**1.01 SUMMARY**

The work includes placement of Class 2 aggregate base course for pavements as indicated.

**1.02 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

**A. Standard Specifications**

1. California Department of Transportation (CalTrans) Standard Specification, 2006 Edition.

**B. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)**

ASTM C136	(1993) Sieve Analysis of Fine and Course Aggregates
ASTM 01556	(1990) Density and Unit Weight of Soil in Place by the Sand Cone Method
ASTM 01557	(2002) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft <sup>2</sup> (2,700 kN - m/m <sup>2</sup> ))
ASTM 02172	(1993) Quantitative Extraction of Bitumen from Bituminous Paving Mixtures

**1.03 SUBMITTALS**

Certificates Of Compliance for Class 2 Aggregate Base Course.

**1.04 QUALITY ASSURANCE**

Materials and workmanship specified herein with the referenced CalTrans Standard Specifications shall be in accordance with the referenced articles, sections and paragraphs of the standard except that contractual and payment provisions do not apply.

**1.05 SITE INSPECTION AND LOCATION OF EXISTING ON-SITE UTILITIES:**

Prior to all work of this Section, carefully inspect the entire site and all existing items to be demolished and removed or to be left intact and determine an orderly sequence for the performance of this work. Exact locations and alignment of existing buried utility lines are not known. Locate all existing utility lines and determine the requirements for disconnection and capping. Locate all active utilities traversing the area of work to be retained and determine the requirements for protection. Locate all points of connection and crossings by potholes and determine exact horizontal and vertical location prior to commencing the work.

**1.06 PROTECTION**

- A. Protection and Restoration of Surface: Protect newly graded areas from traffic, erosion, and settlements. Repair and reestablish damaged or eroded slopes, elevations or grades and restore surface construction prior to acceptance. Provide erosion control to prevent water-borne soil from leaving the work area by means of sand bags or fiber rolls. The Contractor shall be responsible to clean up any soil deposited in the parking lot, public right-of-way or on adjacent property. The Contractor shall be responsible to protect storm drain catch basins with sand bags and to prevent sediment from entering the storm drain

system during construction.

#### 1.07 RELATED WORK IN OTHER SECTIONS

The following work specified in other sections applies to the work of this Section, including but not limited to:

- A. Section 02100, "Site Clearing".
- B. Section 02200, "Earthwork for Structures and Pavements".
- C. Section 02510, "Asphalt Concrete Paving."
- D. Division 1.

#### 1.08 SAFETY DURING CONSTRUCTION

The Contractor shall assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property. This requirement shall be made to apply continuously and not be limited to normal working hours. Refer to Part Three of this Section and Division 1 for additional requirements.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Aggregates Base Course
  - 1. Aggregate Base Course Materials shall comply with Section 26-1.02A of the CalTrans Standard Specifications for 3/4" maximum aggregate.

### PART 3 EXECUTION

#### 3.01 PREPARATION

Subgrade: Requirements for subgrade are specified in Section 02200, "Earthwork for Structures and Pavements". Prior to construction of base course, clean previously constructed subgrade of foreign substances.

#### 3.02 INSTALLATION

- A. Aggregate Base Course (Class 2) Installation: Place aggregate base in accordance with requirements of Section 26 of the CalTrans Standard Specifications. Grade and compact in layers to at least 95% of maximum density (ASTM 0-1557). Maintain base course in proper condition until Portland cement concrete is in place, including drainage, rolling, shaping, and watering. Maintain sufficient moisture at the surface to prevent a dusty condition by light sprinkling with water. Recondition, reshape, and recompact areas of completed base course damaged in accordance with the specified requirements.
- B. Aggregate Base Course thickness shall be as indicated.

#### 3.03 FIELD QUALITY CONTROL

Soil testing during construction shall be performed by a Geotechnical Testing Laboratory as

specified in Section *01300* "Testing and Inspection".

All material testing shall be performed by the Geotechnical Engineer. The following tests shall be performed:

- A. Base Course Finish Surface: Surface tolerance shall conform to Section 26 of the CalTrans Standard Specifications. When base course is constructed in more than one layer, specified smoothness requirements apply only to top surface.
- B. Gradation: Perform base course gradation test in accordance with ASTM C136. Make one test for each 500 tons of material.
- C. Base Course Density: Perform in place density tests in accordance with ASTM 01557. Make one maximum density test for each gradation. Make one set of two tests each for in place density for each 200 square yards of surface area. In place density of aggregate base course shall be at least 95% of the laboratory maximum density.

END OF SECTION



SANTEE SCHOOL DISTRICT  
ASPHALT REPAIRS AT PROSPECT AVENUE  
APRIL 16, 2021

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02233-4

GRADED CRUSHED AGGREGATE BASE COURSE FOR PAVEMENTS

**SECTION 02511**

**ASPHALT CONCRETE PAVING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes: Asphaltic concrete paving as indicated on the Drawings and specified herein.
- B. Principal items of Work:
  - 1. Preparation of subgrade
  - 2. Soil sterilization
  - 3. Aggregate base course
  - 4. Asphaltic surfacing materials
  - 5. Mixing asphaltic concrete material
  - 6. Placing asphaltic concrete pavement
  - 7. Flood test
  - 8. Seal coat
  - 9. Parking stall striping and markings.
  - 10. Redwood headers
  - 11. Carstops (when indicated on the Drawings only).
  - 12. Playcourt markings, painting.
- C. Related Sections:
  - 1. Storm Water Pollution Prevention Plan, Section 01355
  - 2. Earth subgrade preparation for asphaltic paving: Section 02200-Earthwork.
  - 3. Storm Drains and Drainage Structures, Section 02721
  - 4. Painting, Section 09900

**1.02 PERFORMANCE REQUIREMENTS**

- A. Establishment of Grades:
  - 1. The Contractor shall be responsible for finished elevation grade stakes and other surveying necessary for the layout of the Work.

2. Conduct operations in such a manner that the survey stakes shall be protected as long as their need exists. Be responsible for replacement of stakes.
3. Areas having drainage gradients of 2% or more shall have elevation stakes, set with instrument, at grid intervals of 25 feet. Intermediate stakes may be set by using a tightly-drawn string line over the tops of adjacent stakes. Grade stakes must be set at all grade breaks, grade changes, etc.
4. Areas having drainage gradients of less than 2 percent shall have elevation stakes, set with instrument, at 10 foot intervals. Grade stakes must be set at all grade breaks, grade changes, etc.

#### 1.03 SUBMITTALS:

- A. Provide the following:
  1. Material Compliance Data Specifications.
  2. Material Safety Data Specifications.
  3. Copy of Installer's license.
  4. Sterilization application data and purchase receipt.
  5. Sample of aggregate for testing, if requested by engineer.
  6. Data Sheets for seal coat and paint.

#### 1.04 QUALITY CONTROL SUBMITTALS

- A. Testing and Control of Materials:
  1. Material shall meet the requirements specified herein. Laboratory tests of all of the materials will be required. If such tests meet the specified requirements, the laboratory test fees shall be paid by the Owner. If cost of subsequent tests fail to meet specified requirements, the costs of such tests shall be paid by the Contractor, and the Contractor shall immediately rectify the deficiency. Refer to Section 01410.
  2. The Owner's inspector shall test the temperature of each batch of asphaltic concrete prior to placement. If asphaltic concrete temperature is not within tolerances as set forth in this Section of the Specifications the affected batch shall be rejected. Any and all costs due to the rejected asphaltic concrete shall be the responsibility of the paving contractor.

#### 1.05 PROJECT SITE CONDITIONS

- A. Protect existing installations: Such installations, which are shown on the plan or whose location could be reasonably inferred and which become damaged or broken by the operations, shall be repaired or replaced at no cost to Owner.

### **PART 2 - MATERIALS**

2.01 MATERIALS

A. Soil Sterilization: The soils sterilant shall be in accordance with current EPA acceptable standard and the California Department of Pesticide Regulations for soils sterilant. Sterilant shall be selected as appropriate for the environment in which is it to be placed. Contractor shall be licensed with the State of California to apply sterilant. Sterilant shall be commercial grade for commercial application. Contractor may obtain a list of acceptable sterilants from the District prior to bidding project.

B. Base and Aggregate Base:

1. Base and Aggregate base shall conform to the State of California, Department of Transportation (CALTRANS) Standard Specifications, Current Addition. All base, whether called out as aggregate base or base shall be in conformance with CALTRANS Section 26 for Class 2 Aggregate Base, 3/4-inch maximum, with the exception of the percentage of recycled material. The maximum percentage of recycled material allowable shall not exceed 50% of the total volume of aggregate used.

2. Base and Aggregate Base shall be provided by a licensed commercial materials supplier. Certifications shall be submitted with each submittal. Use of on-site asphalt materials in aggregate base or base is strictly prohibited. The use of Crushed Miscellaneous Base is strictly prohibited.

C. Asphalt Concrete: Shall be produced by a commercial asphalt paving plant. Mineral aggregate and asphalt concrete production shall conform to the locally prevailing State Standard Specifications.

1. Paving asphalt shall be according to page 64, and shall meet the requirements set forth in The Asphalt Institute publication PCD-7, Asphalts - Paving, Liquid and Emulsified.

2. The aggregate gradation shall be proportioned by weight within the following sieve size limits:

<u>Square Openings</u>	<u>Percentage Passing</u>
3/4"	100
1/2"	90-100
3/8"	75-90
No. 4	53-68
No. 8	40-50
No. 30	20-32
No. 200	3-8

D. Seal Coat shall be one of the following:

1. "Huntseal" by Industrial Asphalt
2. "Plush-Tex" by Koch Asphalt Company

- E. All stripes and markings shall be painted with two (2) coats of pavement parking paint by Dunn-Edwards, W-801 Traffic Paint. Paint curb red at fire lanes. Asphaltic concrete seal coat shall be in place a minimum of 10 days before applying paint.
1. ICI 160 Vinyl Traffic Paint
  2. Dunn-Edwards W-801 Traffic Paint
  3. Frazee 502 Vinyl Traffic Paint
  4. Morton Traffic Markings
  5. Painted lines and marking on pavements to be 3 inches minimum in width and playground white. Paint to be slip resistant and provide a minimum 0.6 static coefficient of friction.
- F. Redwood headers shall be 2 inch by 6 inches construction heart grade redwood except that the headers on curves shall be laminated 1 inch by 6 inches. Use 18 inch steel stakes to secure headers at 24 inches on center.

### **PART 3 - EXECUTION**

#### **3.01 FINAL PREPARATION OF SUBGRADE**

- A. Immediately prior to placing base or aggregate base, the subgrade shall be scarified to a depth of at least 12 inches, moistened, and the entire area thoroughly compacted by rolling to obtain a smooth, hard, even surface of 95 percent compaction at bus drop off and fire lane and 90 percent compaction elsewhere to receive the base or aggregate base. The subgrade shall be finished to the required grades with due allowance being made for the thickness of base course and finished surfacing to be placed thereon.
- B. Subgrade for the pavement structures shall not vary more than  $\pm 0.04$  feet from the specified grade and cross section.
- C. Areas inaccessible to power rolling or areas that cannot be compacted properly with power rollers shall be compacted with vibrating compactors or other suitable mechanical means which shall produce a firm foundation for the paving structure.

#### **3.02 SOIL STERILIZATION**

- A. The Contractor shall take whatever precautions are necessary to prevent contamination of adjacent soil areas with sterilant and for the protection of personnel. Sterilant shall not be applied within two feet of planting areas.
- B. Certification shall be furnished to the Architect, showing the purchase receipt and rate of application of the material. Payment for soil sterilization will include full compensation for application and all materials and incidental work required.

#### **3.03 AGGREGATE BASE OR BASE**

- A. The base material shall be placed upon the finished subgrade after the subgrade has been properly prepared as herein specified. The base shall be wetted and compacted. Compaction shall be obtained by use of an approved power roller weighing not less than 10 tons. The quantity of water applied shall be that amount

which shall assure optimum moisture under proper compaction, resulting in a relative compaction of not less than 95 percent, care being exercised in connection with the watering operations to avoid wetting the subgrade to a detrimental extent. The base material shall be of the thickness indicated on the plans upon final compaction. The finished surface shall be hard, uniform, and smooth and shall conform to the lines, grades, and cross section shown on the drawings.

### 3.04 DEFINITIONS

A. For the purpose of compacting procedures the following definitions are used:

1. Initial or Breakdown Rolling: The first coverage of a roller on asphalt concrete after the material has been placed to line and grade.
2. Intermediate Rolling: The rolling performed immediately after the initial rolling. When completed, the pavement should meet job density requirements.
3. Compaction Rolling: Including initial and intermediate rolling.
4. Finish Rolling: The final rolling necessary to obtain the desired surface texture and eliminate roller marks. No further densification is anticipated in this operation.
5. Coverage: The number of movements of a roller required to cover the entire width being paved at least once.
6. Steel-Wheel Roller: A 2-wheel steel tandem roller weighing 8 to 10 tons.
7. Pneumatic-tired Roller: A rubber-tired roller equipped with tires a minimum 7.50 x 15 in size, capable of being ballasted up to 12 tons.
8. Vibratory Roller: A vibratory roller capable of imparting a dynamic force of at least 21,000 pounds.
9. Maximum Laboratory Density: Density achieved on a sample of a material taken from a specific location at the job site under working conditions. This density can be obtained using the California Kneading Compactor per Test Method No. Cal. 304.

B. Prior to paving, furnish manufacturer's certificates or literature demonstrating that rollers meet requirements specified above. Prior to paving, state which procedure will be used and do not change that procedure without the Engineer's approval.

### 3.05 PRIMARY LIFT SPREADING AND COMPACTION

- A. Asphalt concrete in excess of 2 inches in thickness, shall be placed in two (2) lifts, a primary lift, and a surface course. Surface Course shall be a minimum of 1 inch thick.
- B. Asphalt concrete shall be delivered to the project site at a temperature of not less than 260 degrees F. nor more than 320 degrees F.

- C. The depositing, distributing, and spreading of asphalt concrete shall be accomplished in a single, continuous operation by means of a self-propelled paving machine, motor grader, spreader box, rock spreader, or similar equipment.
- D. Prior to spreading, a tack coat shall be applied to the vertical face of all curbs, gutters, and structures which will butt against the new pavement. A tack coat is required between courses if surface has been contaminated by dirt or oxidized by extended exposure. A diluted SS-type emulsion shall be used for tack coat and shall meet the requirements set forth in The Asphalt Institute publication PCD-7, Asphalts - Paving, Liquid and Emulsified.
- E. Certification: Provide certification that the asphalt aggregate mixture has at least 80 percent of compacted density values equal to or greater than 96 percent - and 100 percent equal to or greater than 95 percent - of a laboratory specimen prepared by the appropriate test method from a sample taken from a truck delivering mixture to the job site. Field density of compacted asphalt concrete shall be determined by:
  - 1. A properly calibrated nuclear asphalt testing device in the field, or
  - 2. ASTM D-1188 when slabs or cores are taken for laboratory testing. Zinc stearate may be substituted for paraffin.
  - 3. In case of dispute, the procedure described under Sub-Item E (2.) above shall be used. Combination of rollers shall be allowed under this procedure.
- F. Steel-Wheel and Pneumatic: Apply a breakdown (initial) coverage with a steel-wheel roller loaded to 10 tons. Follow by intermediate rolling consisting of a minimum of 6 coverages of a pneumatic-tired roller, the tires being inflated a minimum of 60 psi cold and a maximum of 90 psi when hot. Finish rolling may consist of one coverage of an 8-ton tandem steel-wheel roller.
- G. Steel Wheel: Apply a minimum of eight coverages with a steel-wheel roller loaded to 10 tons.
- H. Vibratory: Compaction shall consist of at least six coverages with a vibratory roller. Rolling from the center to the edge shall be permitted, and all compaction rolling shall be accomplished before the mix temperature falls below 185 degrees F. Rolling shall commence at least one foot from edge of the mat after which the roller shall be gradually advanced to the edges. Within one foot of edge, the roller on its initial coverage shall advance to the edge in 4-inch increments. The roller shall be advanced to a supported edge first, if applicable. Rolling within one foot of an unsupported edge should be delayed to minimize possible distortion but completed at such time that proper densities are obtained after the completion of rolling. No roller shall be permitted to stand motionless on portion of the work before it has been properly compacted.

### 3.06 SURFACE COURSE SPREADING AND COMPACTION

- A. Surface course shall be 1-inch thick.
- B. At the time of delivery to the site of work, the temperature of mixture shall not be lower than 260 degrees F., or higher than 320 degrees F. Asphalt concrete shall not be placed when the atmospheric temperature is below 40 degrees F. or during unsuitable weather.

- C. The asphalt concrete shall be evenly spread upon the subgrade or base to such a depth that after rolling, it shall be of the specified cross section and grade of the course being constructed.
- D. The depositing, distributing, and spreading of the asphalt concrete shall be accomplished in a single, continuous operation by means of a self-propelled mechanical spreading and finishing machine designed especially for that purpose and equipped with a screed or strike-off assembly capable of being accurately regulated and adjusted to distribute a layer of the material to a definite predetermined thickness.
- E. Spreading, once commenced, must be continued without interruption. No greater amount of the mixture shall be delivered in one day than can be properly distributed and rolled during that day.
- F. Compaction is the same as outlined in Paragraph 3.05, except as noted below:
  - 1. Steel-Wheel and Pneumatic: Apply a breakdown (initial) coverage with a steel-wheel roller loaded to 10 tons. Follow by intermediate rolling consisting of a minimum of four coverages of a pneumatic-tired roller, the tires being inflated a minimum of 60 psi cold and maximum of 90 psi when hot. Finish rolling may consist of one coverage of an 8-ton tandem steel-wheel roller.
  - 2. Steel-Wheel: Apply a minimum of six coverages with a steel-wheel roller loaded to 10 tons.
  - 3. Vibratory: Compaction shall consist of at least four coverages with a vibratory roller.
- G. As soon as the layer of asphalt concrete has been placed, it shall be thoroughly compacted by rolling. Rolling shall be commenced along the lower edge of the area to be rolled and shall be continued until the edge is thoroughly compacted, after which the roller shall be gradually advanced to the crown point, both sides being rolled in a like manner. Rolling shall be continued until the layer has become thoroughly compacted throughout and is true to grade and cross-section.
- H. Maintain rollers in good mechanical condition, and those that cannot be operated without jerking, or driven along a straight path, shall not be used. No leakage of petroleum products from roller shall be allowed to come in contact with the pavements being constructed, nor shall roller be permitted to stand motionless on portion of the work before it has been properly compacted.

Rolling surfaces shall be treated with water to prevent the adherence of the asphalt concrete, but the quantity used must not be such as to be detrimental to the surface being rolled.

### 3.07 REDWOOD HEADERS

- A. The headers shall be placed with the tops flush with the asphaltic concrete surface at all edges of the pavement except where it abuts against rigid structures, curbs, or gutters. The headers shall be backed by and nailed to 18 inch long stakes with 12 penny galvanized common nails. The redwood stakes shall be spaced not over 2



feet apart and shall be driven into the ground so that the tops are 1/2-inch below the tops of headers.

### 3.08 FLOOD TESTING

- A. Flood Test: Before seal coat is applied, a water flood test shall be done in the presence of the Inspector. The flooding shall be done by water tank truck. Depressions where the water ponds to a depth of more than 1/8-inch shall be filled, or the slope corrected to provide proper drainage. The edges of the fill shall be feathered and smoothed so that the joint between the fill and the original surface is invisible.
- B. Seal Coat: After completing the flood test and the pavement and pavement patches have **cured for 30 days**, all A.C. pavement per plans shall receive a slurry sealer applied in accordance with the manufacturer's specifications.
1. Areas to receive sealer shall be swept clean, and, before application, lightly sprayed with water, leaving it cool and damp but free of excess water.
  2. Make a minimum of two or three applications using a total of at least 60 gallons of sealer (before dilution) per 1,000 square feet of area.
  3. Each coat of sealer shall be thoroughly dry before the succeeding coat is applied.
  4. The finished surface seal, when dry and thoroughly set, shall be smooth, tough, waterproof, resilient, of uniform black color, and free from coarse textured areas, lap marks, ridges, and other surface irregularities. Should defect appear in the finished surface, apply as many additional coats of sealer as may be required to produce the specified finished surface at no additional cost. Protect from traffic during all operations and until the sealer is thoroughly set and cured and does not pick up under foot or wheeled traffic. When cured and set, thoroughly wash off with water to remove excess residue before applying painted markings.
  5. Repair any damage caused by construction traffic.

### 3.09 BASKETBALL COURTS

- A. Place asphalt paving over foundation of basketball standards. Hold top of foundation down, equal to thickness of asphalt and base course.

### 3.10 STRIPING

- A. Pavement Marking Paint: Vinyl acrylic type for use on asphaltic concrete and Portland cement concrete. Pavement Marking Paint: Vinyl acrylic type for use on asphaltic concrete and Portland cement concrete. Painted lines and markings on pavement shall be 3" minimum wide and playground white.
- B. Preparation:
1. Immediately before applying the paint, thoroughly clean the pavement surface of dust, dirt, sand, scale, water, oil, grease or other objectionable

matter. Do not use solvent materials that will damage pavements as cleaning agent. Immediately before paint, give pavement surface a final cleaning by means of a power broom. Following the power brooming, use power blower containing compressed air.

2. Provide warning devices required to protect the painting operations and the finished work.
- C. Application: Immediately following other preparation of the pavement surface, apply the striping at the rate of 100 to 110 square feet, per gallon of paint. Apply lines 3 inches wide unless otherwise indicated. Apply the stripe of the indicate or specified width with clean true edges and without sharp breaks. Repaint to the applicable specification portions of the stripe damaged by any type of traffic within 24 hours after the stripe has been applied.

### 3.11 CLEANUP

- A. Clean up the paved areas prior to acceptance of the work. Dirt, spoil, and debris of nature shall be removed, and the entire site shall present a clean, workmanlike appearance.
- B. Damage to paint work from paving or seal-coating operations shall be corrected.

**END OF SECTION**