

2. AMENDMENT/MODIFICATION NO. <b>0004</b>	3. EFFECTIVE DATE <b>26 AUG 2004</b>	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. <i>(If applicable)</i> <b>1405</b>
6. ISSUED BY  <b>USACE SACRAMENTO DISTRICT ATTN: CONTRACTING DIVISION 1325 J STREET SACRAMENTO, CALIFORNIA 95814-2922</b>		7. ADMINISTERED BY <i>(If other than Item 6)</i> <b>SEE ITEM 6</b>	

8. NAME AND ADDRESS OF CONTRACTOR <i>(No., street, county, State and ZIP Code)</i>		(√)	9A. AMENDMENT OF SOLICITATION NO. <b>W91238-04-B-0008</b>
		X	9B. DATED <i>(SEE ITEM 11)</i> <b>27 JUL 2004</b>
			10A. MODIFICATION OF CONTRACTS/ORDER NO. <b>N/A</b>
			10B. DATED <i>(SEE ITEM 13)</i> <b>N/A</b>

CODE	FACILITY CODE	11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS	
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The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers  is extended,  is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:  
 (a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA <i>(If required)</i>
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**13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

(√)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: <i>(Specify authority)</i> THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES <i>(such as changes in paying office, appropriation date, etc.)</i> SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER <i>(Specify type of modification and authority)</i>

**E. IMPORTANT:** Contractor  is not,  is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*  
**SACRAMENTO RIVER EROSION CONTROL SITE 56.7 LEFT RM 56.7 TO 57.1  
 SACRAMENTO RIVER, SACRAMENTO, CALIFORNIA**

1 ENCL 1) REVISIONS: PRICING SCHEDULE, 01355, 02378, 02722 AND 02745A .

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER <i>(Type or print)</i>		16A. NAME AND TITLE OF CONTRACTING OFFICER <i>(Type or print)</i>	
15B. CONTRACTOR/OFFEROR  <i>(Signature of person authorized to sign)</i>	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA  BY <i>(Signature of Contracting Officer)</i>	16C. DATE SIGNED

<b>0018</b>	<b>AGGRREG. BASE COURSE 160*</b>		<b>CY</b>	\$ _____	\$ _____
<b>0019</b>	<b>ASPHALT CONC. PAVE'MT. 30*</b>		<b>TN</b>	\$ _____	\$ _____
0020	SEEDING	1	AC	\$ _____	\$ _____
0021	AIR QUALITY	1	EA	\$ _____	\$ _____
TOTAL PRICE \$ _____					

\* QUANTITY IS AN ESTIMATED AMOUNT. SEE SECTION 00700, FAR 52.211-18, FOR VARIATION IN ESTIMATED QUANTITY CONTRACT CLAUSE.

1. Prices must be submitted on all individual items of this Pricing Schedule. Failure to do so may be cause for rejection of bids.
2. If a modification to a price based on unit price is submitted which provides for a lump sum adjustment to the total estimated price, the applications of the lump sum adjustment to each unit price in the Pricing Schedule must be stated. If it is not stated, the bidder/offeror agrees that the lump sum adjustment shall be applied on a pro rata basis to every unit price in the Pricing Schedule.
3. The bidder/offeror shall distribute his indirect costs (overhead, profit, bond, etc.) over all the items in the Pricing Schedule. The Government will review all submitted Pricing Schedules for any unbalancing of the items. Any submitted Pricing Schedule determined to be unbalanced may be considered nonresponsive and cause the bidder to be ineligible for award.
4. The lump sum, "LS", line items above are not "estimated quantity" line items and therefore are not subject to the Variation in Quantity contract clause.
5. EFARS 52.214-5000 ARITHMETIC DISCREPANCIES
  - (a) For the purpose of initial evaluation of bids, the following will be utilized in the resolving arithmetic discrepancies found on the face of Pricing Schedule as submitted by the bidder:
    - (1) Obviously misplaced decimal points will be corrected;
    - (2) Discrepancy between unit price and extended price, the unit price will govern;
    - (3) Apparent errors in extension of unit prices will be corrected;
    - (4) Apparent errors in addition of lump-sum and extended prices will be corrected.
  - (b) For the purpose of bid evaluation, the Government will proceed on the assumption that the bidder intends the bid to be evaluated on basis of the unit prices, the totals arrived at by resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the abstract of bids.
  - (c) These correction procedures shall not be used to resolve any ambiguity concerning which bid is low.

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SECTION 01355

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## SECTION 01355

## ENVIRONMENTAL PROTECTION

## PART 1 GENERAL

## 1.1 DEFINITIONS

The Contractor shall perform the work minimizing environmental pollution and damage as the result of construction operations. Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the utility of the environment for aesthetic, cultural and/or historical purposes. The control of environmental pollution and damage requires consideration of land, water, and air, and includes management of visual aesthetics, noise, solid waste, as well as other pollutants. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall ensure compliance with this section by all subcontractors.

## 1.2 REGULATIONS

In order to prevent, abate, and control any environmental pollution arising from the construction activities under this contract, the Contractor and his subcontractors in the performance thereof shall comply with all applicable Federal, State, and local laws, and regulations concerning threatened and endangered species, environmental resource protection, environmental pollution control and abatement, and all applicable provisions of the Corps of Engineers Manual, EM 385-1-1, entitled SAFETY AND HEALTH REQUIREMENTS MANUAL, in effect on the date of solicitation, as well as the specific requirements stated elsewhere in these specifications.

All Construction activity is subject to Federal Environmental laws including, but not limited to: The National Environmental Policy Act (NEPA); Endangered Species Act (ESA); National Historic Preservation Act (NHPA); Resource Conservation and Recovery Act (RCRA); Clean Water Act (C-WA-); Migratory Bird Treaty Act (MBTA); Safe Drinking Water Act (SDWA). ~~The Contractor shall obtain all needed permits or licenses. The Government will not obtain any permits for this project; see Contract Clause PERMITS AND RESPONSIBILITIES. The Contractor shall be responsible for implementing the terms and requirements of the appropriate permits as needed and for payment of all fees. The Contractor shall maintain at the construction site, copies of all permits and take statements.~~ The contractor shall obtain all needed permits except the Biological Opinions under section 7 of the endangered species act, Clean Water Act section 401 certification. National Historic Preservation Act section 106 clearances, the contractor shall comply with the requirements of these permits and are available upon request.

## 1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01330, SUBMITTAL

PROCEDURES: Additionally the contractor shall submit copies of the submittals to the Corps Environmental Resources Branch in electronic and paper format, the contact for this information, shall be:

Mike Dietl  
Fishery Biologist  
U.S. Army Corps of Engineers  
Sacramento District  
1325 J Street  
Sacramento, CA 95814

Tel: 1-916-557-6742  
E-mail: Michael.L.Dietl@usace.army.mil

#### SD-01 Preconstruction Submittals

Test Results of Imported Fill Materials; ~~FIO~~

Test Results of Heavy Metals, Pesticides, and Coliform Bacteria in Imported Fill Materials

#### Pre Construction Air Quality Plan G

#### Post Construction Air Quality Plan

Test Results of Turbidity and Settleable Solids; ~~FIO~~

Test Results of Turbidity and Settleable Solids monitoring shall be submitted to the Contracting Officer weekly

#### SD-09 Manufacturer's Field Reports

Environmental Protection Plan; ~~GA~~

A written environmental protection plan shall be submitted to the Contracting Officer

Pre-Construction Survey Report; ~~FIO~~

A report with photographs documenting the pre-construction site conditions shall be submitted to the Contracting Officer

Post-Construction Survey Report; ~~FIO~~

A report with photographs documenting the post-construction site conditions shall be submitted to the Contracting Officer

Turbidity and Settleable Solids Measurement Plan; ~~GA~~

A plan for measurement of water quality during turbidity generating activities shall be submitted to the Contracting Officer

Water Quality Reports; ~~FIO~~

Report documenting all activities affecting water quality including all test results shall be submitted to the Contracting Officer

Bird surveys in Pre-Construction Survey Report;

Large Woody Debris removal in report.;

The contractor shall photograph and measure dimensions of all large woody debris removed and encountered during construction. The contractor shall provide a map with GPS units and locations and sizes of woody debris removed, relocated and their final disposition.

SD-06 ~~Records~~ Test Reports

Turbidity and Settleable Solids Mitigation Actions Monitoring Logs; FIO

A written log describing mitigation actions pertaining to turbidity and settleable solids shall be submitted to the Contracting Officer after the end of construction activities

~~The contractor shall photograph and measure dimensions of all large woody debris removed and encountered during construction. The contractor shall provide a map with GPS units and locations and sizes of woody debris removed, relocated and their final disposition.~~

1.4 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with the Federal, State or local laws or regulations, permits, and other elements of the Contractor's Environmental Protection Plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of proposed corrective action and take such action when approved. If the Contractor fails to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or costs or damages allowed to the Contractor for any such suspensions.

If work is suspended, delayed, or interrupted due to a court order of competent jurisdiction, the Contracting Officer will determine whether the order is due in any part to the acts or omissions of the Contractor, or subcontractors at any tier, not required by the terms of the contract. If it is determined that the order is not due to Contractor's failing, such suspension, delay, or interruption shall be considered as ordered by the Contracting Officer in the administration of the contract.

The contractor shall submit with the bid an air quality plan based on the type, amount, model year, and hours of operation of equipment to be used, and that the air quality analysis has been approved or prepared by the Air Board". The Air Board can verify or conduct the analysis for them within 24-48 hours. The following contact information should also be in the specification.

Peter Christensen  
Associate Air Quality Planner/Analyst  
Sacramento Metropolitan Air Quality Management District  
Transportation and Land Use  
777 12th Street, 3rd Floor  
Sacramento, CA 95814-1908

Tel: 916-874-4886  
Fax: 916- 874-4899  
E-mail pchristensen@airquality.org

## 1.5 ENVIRONMENTAL PROTECTION PLAN

Prior to commencement of work, the Contractor shall submit for approval to the Contracting Officer an Environmental Protection Plan including proposals for implementing this section. The Plan shall be coordinated with the Contracting Officer. This Plan will be checked for completeness and compliance. If satisfactory, it will be approved and one copy will be returned to the Contractor. If unsatisfactory, it will be returned to the Contractor for resubmission. No work shall be started until this Plan has been approved or specific authorization is obtained from the Contracting Officer to start a phase of the work. As a minimum, the Plan shall include the sections specified below that are applicable to the work performed:

- a. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.
- b. Methods for protection of features to be preserved within authorized work areas like trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, archaeological, and cultural resources.
- c. Procedures to be implemented to provide the required environmental protection, to comply with the applicable laws and regulations, and to correct pollution due to accident, natural causes, or failure to follow the procedures of the environmental protection plan.
- d. A contamination prevention section listing all potentially hazardous petroleum products and toxic materials to be used on the job site and corresponding provisions to be taken to prevent accidental or intentional introduction of such materials into any waterway, the air, or the ground. This section shall include plans for preventing polluted runoff from plant, equipment parking, and maintenance areas from entering directly into local water bodies.
- e. A contaminant cleanup section including the procedures, instructions, and reports to be used. This section shall include as a minimum:
  - The name of the individual who will report any spills, be responsible for implementing and supervising containment and cleanup, and will follow-up with complete documentation.
  - The methods and procedures to be used for expeditious cleanup.
- f. Location of the solid waste disposal area. Indicate the location and type of solid waste disposal area. List wastes to be disposed.
- g. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials.
- h. Environmental monitoring plans for the job site, including land,

water, air, and noise monitoring.

- i. ~~Traffic control plan including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather, and the amount of mud transported onto paved public roads by vehicles or runoff.~~ The traffic control plan shall include all intended haul routes, location of signage, location of flaggers, approved permits, documentation of coordination with local and state agencies, location of potential traffic delays to vehicle and pedestrian traffic.
- j. Methods of protecting surface and ground water during construction activities.
- k. Plan showing the proposed activity in each portion of the work area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas. The plan shall also include details on where construction fencing will be placed.
- l. Drawing of borrow area location. Protection measures required at the work site shall apply to the borrow areas including final restoration for subsequent beneficial use of the land.
- m. A recycling and waste prevention plan with a list of measures to reduce consumption of energy and natural resources; for example: the possibility to shred fallen trees and use them as mulch shall be considered as an alternative to burning or burial.
- n. A wind and water erosion control section for any construction which will disturb the earth's surface and could introduce turbidity into water courses or dust into the air. This section shall include the Contractor's plan for controlling erosion and disposing of wastes including surface drainage from cuts, fills, borrow, and waste disposal areas. Temporary erosion and sediment control measures such as seeding, mulching, sprinkling, and installing temporary ditches, dikes, drains, or sedimentation basins shall be identified. Elements of this plan shall include provisions for responding to increases in river stage and local precipitation during construction.
- o. A time schedule specifying the approximate time of expected or possible turbidity generating activities.
- p. Training for Contractor's personnel during the construction period.

Prior to the work, the Contractor shall meet with the Contracting Officer to develop mutual understandings relative to the administration and implementation of the Environmental Protection Plan. During the work, the Contractor shall oversee all activities, including those of subcontractors, to assure compliance with the intent and details of the Plan. All equipment and materials for environmental protection shall be inspected periodically to assure that they are in proper order and have not deteriorated, including preservation fencing and noise and air-emission control devices on all motorized equipment. In addition to these requirements, the Government will provide an environmental monitor to inspect the construction site on a weekly basis. The environmental monitor will report directly to the Contracting Officer any violations or concerns affecting the environment such as; spills, sightings of listed endangered

species in or near the work area, conditions of the protective fencing, damage to terrestrial habitat, plus any other environmental issues discussed in these specifications.

The Contractor shall meet with representatives of the Contracting Officer to alter the environmental protection plan as needed for compliance with the environmental pollution control program.

## 1.6 LAND RESOURCES

### 1.6.1 General

The requirements described here are intended to supplement and clarify the requirements of the following Contract Clauses: PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS; OPERATIONS AND STORAGE AREAS; and CLEANING UP.

#### 1.6.1.1 Work Areas

The Contractor shall not work outside of the work areas. Work areas are defined as areas within the clearing and grubbing limits, the designated access roads, ~~and~~ the designated staging areas, and areas of the river that are delineated on the plans.

Access routes have been designated on the drawings. Some realignment within the existing right of way limits may be necessary to avoid elderberry shrubs. No access or clearing is allowed outside these designated routes.

#### 1.6.1.2 Pre-Construction Survey

Prior to starting any on-site construction activities, the Contractor and the Contracting Officer shall make a joint condition survey after which the Contractor shall prepare a brief report indicating on a layout plan the condition of trees, shrubs and grassed areas immediately adjacent to work sites and adjacent to the assigned storage areas and access routes as applicable. Photographs shall be included in this report. Photographs shall be from 35 mm film, producing color prints in 3 X 5 format to reflect pre-clearing conditions along the limits of construction. Photographs shall be keyed to a map showing the location where the photograph was taken. Additional photographs shall include ramps, preservation fencing, and elderberry plants adjacent to ramps showing evidence of high visibility marking (flagging), instream snags and debris within the specified limits of instream clearing and the stockpile areas. This report will be signed by both the Contracting Officer and the Contractor upon mutual agreement as to its accuracy and completeness. Two copies of the report including all required photographs shall be provided to the Contracting Officer at least 7 calendar days prior to the start of any construction operations. The contractor shall conduct preconstruction raptor surveys for Swainson's Hawk, Cooper's Hawk, and white tailed kite ½ mile up and downstream of the construction site. The raptor surveys shall be conducted by a qualified wildlife biologist with 3+ years of conducting surveys for the above species. The contractor shall provide the following information in the Preconstruction Survey Report: dates of surveys, survey methodology, location (GPS points and electronic GIS map) and time of observation of species, and recommended action should species be located.

### 1.6.2 Prevention Of Landscape Defacement

The Contractor shall confine all activities to Work Areas as defined herein. At no time shall existing vegetation be removed unless designated herein or shown on the drawings. Prior to the beginning of any construction, the Contractor shall clearly identify and mark, for approval by the Contracting Officer, the land resources (including trees, shrubs, vines, grasses, land forms, monuments and markers, and other landscape features indicated on the drawings or specified herein) to be preserved within and adjacent to the work areas. Upon approval by the Contracting Officer, the Contractor shall install preservation fencing in accordance with paragraph 1.9 of SECTION 01500, TEMPORARY CONSTRUCTION FACILITIES. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without permission. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Where such special emergency use is permitted, the Contractor shall first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use. Where vegetation may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or by his blasting, dumping, or other operations, the Contracting Officer may direct the Contractor to protect such vegetation by placing boards, planks, or poles around it. When earthwork operations are liable to cause rocks to roll or otherwise be displaced into uncleared areas, the Contractor shall construct barriers of heavy planking to protect the vegetation. Rocks that are displaced into uncleared areas shall be removed. Monuments, markers, and works of art shall be protected similarly before beginning operations near them.

### 1.6.3 Restoration Of Landscape Damage

Any native vegetation or other landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at the Contractor's expense. The Contracting Officer will decide what method of restoration shall be used and whether damaged trees shall be treated and healed or removed. If a damaged tree presents a safety hazard or has no riparian habitat value, the Contracting Officer will direct the Contractor to remove the damaged vegetation. All scars made on trees not designated on the plans to be removed, or by the removal of limbs larger than 1 inch in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming and pruning shall be performed in an approved manner ~~by experienced workmen with saws or pruning shears~~ using experienced tree trimmers or a tree trimming company. Tree trimming with axes will not be permitted. Where tree climbing is necessary, the use of climbing spurs will not be permitted. The use of climbing ropes will be required by the Contracting Officer where deemed necessary for safety. Trees and other vegetation not approved for removal by the Contracting Officer which are damaged by the Contractor, and are beyond saving in the opinion of the Contracting Officer, shall be immediately removed and monetary compensation shall be provided by the Contractor. Compensation for loss of vegetation will be as described in paragraph 1.6.4 of this section. Information regarding restoration of landscape damages applies to all pre-construction, construction, post-construction, access, survey, borrow, disposal, and

other activities of the Contractor.

#### 1.6.4 Damage to Vegetation

The Contractor shall notify the Contracting Officer immediately if any construction operations called for in the Contract Documents may cause damage to any existing trees or shrubs. Extra work resulting from failure to notify the Contracting Officer shall be completed by the Contractor at no additional cost to the Government. Additionally, if directed to do so by the Contracting Officer, the Contractor shall remove any damaged vegetation at the Contractor's own expense. If, in the opinion of the Contracting Officer, existing vegetation is damaged during construction, the Contractor, at no additional expense to the Government, shall replace such damaged plants with plants of the same species and size or with multiple plants of size and species determined by the Contracting Officer to be adequate for replacement. Determination of the extent of damage, value of damaged plants, and suitable replacement will rest solely with the Contracting Officer. If either the Contracting Officer or the Contractor disagrees with the charges resulting from these requirements for any vegetation damaged by the Contractor, the vegetation will be evaluated by a professional, certified arborist or horticulturist using the methods recommended by the International Society of Arboriculture. The charge will then be revised to the value indicated by this method.

#### 1.6.5 Post-Construction Cleanup

All restoration and cleanup shall be completed by the Contractor before this contract is complete. The Contractor shall obliterate all signs of temporary construction facilities, such as access roads, ramps, work areas, structures, foundations of temporary structures, or any other vestiges of construction as directed by the Contracting Officer. All reworked areas shall provide for positive drainage, unless otherwise directed by the Contracting Officer. Final payment will not be made until all environmental protection requirements have been met.

##### 1.6.5.1 Post-Construction Survey

After completion and acceptance of post-construction cleanup, the Contractor shall complete a post-construction survey including photographs of the same area where the Pre-Construction Survey Report photographs were taken and shall furnish two copies of the report of survey including the photographs to the Contracting Officer.

#### 1.7 PROTECTION OF WATER RESOURCES

##### 1.7 General

The Contractor shall not pollute the Sacramento River or the site soils with fuels, oils, bitumens, calcium chloride, acids, or other harmful materials. It is the responsibility of the Contractor to investigate and comply with all applicable Federal, State and local laws concerning pollution of rivers and streams.

##### 1.8 Spillages

At all times during and after construction, measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, waste washing, herbicides and insecticides, cement, and surface drainage from entering the Sacramento River.

## 1.9 Disposal

Disposal of any materials, wastes, effluents, trash, garbage, oil, grease or chemicals in areas on or adjacent to the construction site or in the Sacramento River is prohibited. If any waste material is dumped in unauthorized areas, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated and disposed of as directed by the Contracting Officer, and replaced with suitable fill material, compacted and finished with topsoil all at the expense of the Contractor.

### 1.7.4 Imported Fill Materials

All imported fill materials for project construction shall be free of excessive heavy metals, pesticides, and coliform bacteria according to Federal and State standards. All imported embankment material shall be tested for presence of these constituents, and two copies of the testing results shall be provided to the Contracting Officer.

## PART 2 PAYMENT

### 2.1 AIR QUALITY PLAN

Payment for the bid item Air Quality Plan shall be made at a lump sum price for the plan. The plan shall be approved by the Government and the Sacramento Metropolitan Air Quality Management District.

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## SECTION 02378

## GEOTEXTILES USED AS FILTERS

## PART 1 GENERAL

## 1.1 DEFINITIONS

## 1.1.1 Geotextile Fabric

For purposes of this specification, Geotextile Fabric is a flexible, porous material, which is made from synthetic fibers that are matted together in a random, or nonwoven manner and is utilized for all project applications.

## 1.2 REFERENCES

The current issues of the publications listed below, but referenced to hereafter by basic designation only, form a part of this specification to the extent indicated by the references thereto:

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 123	Standard Terminology of Terms Related to Textiles
ASTM D 3786	Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics (Diaphragm Bursting Strength Tester Method)
ASTM D 4354	Sampling of Geosynthetics for Testing
ASTM D 4355	Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
ASTM D 4491	Water Permeability of Geotextiles by Permittivity
ASTM D 4533	Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	Determining Apparent Opening Size of a Geotextile
ASTM D 4833	Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873	Identification, Storage, and Handling of Geotextiles
ASTM D 4884	Seam Strength of Sewn Geotextiles
ASTM D 4886	Abrasion Resistance of Geotextile (Sand Paper/Sliding Block Method)

### 1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01330 SUBMITTAL PROCEDURES:

#### SD-07 Certificates

Mill Certificate or Affidavit; FIO.

Mill certificate or affidavit attesting the geotextile meets specification requirements

#### SD-04 Samples

Geotextile Samples;

Geotextile samples for compliance testing if requested by the Contracting Officer.

#### SD-06 Test Reports

Written Log;

Written log documenting the inspection of each geotextile roll received from the manufacturer.

### 1.4 MEASUREMENT

Measurement of Geotextile Fabric will be made by the square yard.

### 1.5 PAYMENT

Payment for the bid item Geotextile Fabric shall be made per Square Yard.

## PART 2 PRODUCTS

### 2.1 MATERIALS

#### 2.1.1 General

The Geotextiles shall be a non-woven needle punched pervious sheet of plastic yarn as defined by ASTM D 123. Geotextiles shall meet the physical requirements listed in Table 1, Minimum Physical Requirements for Geotextile Fabrics.

#### 2.1.2 Geotextile Fiber

Fibers used in the manufacturing of the geotextile shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of polyolefins, polyesters, or polyamides. Stabilizers and/or inhibitors shall be added to the base polymer if necessary to make the filaments resistant to deterioration due to ultra-violet and heat exposure. Reclaimed or recycled fibers or polymer shall not be added to the formulation. Geotextile shall be formed into a network such that the filaments or yarns

retain dimensional stability relative to each other including the edges. The edges of the geotextile shall be finished to prevent the outer fiber from pulling away from the geotextile.

TABLE 1  
MINIMUM PHYSICAL REQUIREMENTS FOR GEOTEXTILE FABRICS

PROPERTY	ACCEPTABLE VALUES	TEST METHOD
GRAB STRENGTH (unaged geotextile)	127 kg (280 Lbs.) in any principal direction	ASTM D 4632
ABRASION RESISTANCE (unaged geotextile)	25 kg (55 Lbs.) minimum residual breaking load in any principal direction	ASTM D 4886
SEAM STRENGTH	90 kg (200 Lbs.) minimum in any principal direction	ASTM D 4884
PUNCTURE STRENGTH (unaged geotextile)	75 kg (165 Lbs.) minimum	ASTM D 4833
BURSTING STRENGTH	3860 Kpa (560 psi)	ASTM D 3786
TRAPEZOID TEAR	36 kg (80 Lbs.) minimum in any principal direction	ASTM D 4533
APPARENT OPENING SIZE	No coarser than U.S. standard sieve No. <del>70</del> 40	ASTM D 4751
PERMEABILITY	The permeability of the geotextile shall be greater than 0.05 cm/sec (0.02 in/sec)	ASTM D 4491
ULTRAVIOLET DEGRADATION	50 percent at 500 Hrs.	ASTM D 4355

### 2.1.3 Seams

The seams of the geotextile shall be sewn with thread of a material meeting the chemical requirements given above for geotextile yarn or shall be bonded by cementing or by heat. The sheets of geotextile shall be attached at the factory or another approved location, if necessary, to form sections not less than 3 meters (9.8 feet) wide. Seams shall be tested in accordance with method ASTM D 4884. The strength of the seam shall be not less than 90 percent of the required grab tensile strength of the unaged geotextile in any principal direction.

### 2.2 INSPECTION, VERIFICATIONS, AND TESTING

All brands of geotextile and all seams to be used shall be accepted on the following basis:

- 1) The Contractor shall furnish the Contracting Officer a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the geotextile. The mill certificate or affidavit shall attest that the geotextile meets the chemical,

physical, and manufacturing properties and requirements stated in this specification.

2) If requested by the Contracting Officer, the Contractor shall provide to the Government geotextile samples in accordance with ASTM D 4354 for testing to determine compliance with any or all of the requirements in this specification. All samples provided shall be from the same production lot as will be supplied for the contract, and shall be the full manufactured width of the geotextile by at least 3 meters (9.8 feet) long, except that samples for seam strength may be a full width sample folded over and the edges stitched for a length of at least 1.5 meters (4.9 feet). Samples submitted for testing shall be identified by manufacturers lot designation.

## 2.3 SHIPMENT, RECEIVING, HANDLING, AND STORAGE

### 2.3.1 Shipment

Only approved geotextiles rolls shall be delivered to the project site. All geotextile shall be labeled, shipped, stored and handled in accordance with ASTM D 4873 and as specified herein. Each roll shall be wrapped in an opaque and waterproof layer of plastic during shipment and storage. The plastic wrapping shall be placed around the geotextile roll in the manufacturing facility and shall not be removed until deployment. Each roll shall be labeled with the manufacturer name, geotextile type, lot number, roll number, and roll dimensions (length, width, and gross weight). Geotextile wrapping damaged as a result of delivery, storage or handling shall be repaired or replaced at no additional cost to the Government.

### 2.3.2 Receiving

The Contractor shall visually inspect the geotextile rolls as they are received from the manufacturer. The Contractor shall inspect each label to confirm the roll meets the requirements specified herein. In addition, the Contractor shall inspect the condition of the geotextile roll and the waterproof layer of plastic. If the Contractor identifies any feature that causes the roll of geotextile to not meet the requirements specified herein, the roll shall be removed from the project site and replaced with a roll that does meet these requirements, all at the expense of the Contractor. In addition, the Contractor shall keep a written log documenting the inspection of each roll received from the manufacturer. The Contractor shall provide a copy of this written log to the Contracting Officer.

### 2.3.3 Handling

No hooks, tongs or other sharp instruments shall be used for handling geotextiles. Geotextiles shall not be dragged along the ground. Any geotextiles determined to be damaged as a result of poor handling shall be removed from the site and replaced, at no additional cost to the Government, with additional geotextile meeting the requirements of this specification.

### 2.3.4 Storage

During all periods of shipment and storage, the geotextiles shall be protected from direct sunlight, ultra-violet rays, temperatures greater than 140°F, mud, dirt, dust, and debris. Geotextiles shall be stored in areas where water cannot accumulate, elevated off the ground, and protected

from conditions that will affect the properties or performance of the geotextiles.

### PART 3 EXECUTION

#### 3.1 SURFACE PREPARATION

The Stone Fill surface on which the geotextiles will be placed shall be prepared to a relatively smooth surface condition in accordance with SECTION 02380, STONE PROTECTION. Prior to installing the geotextile fabric, the contractor is to place a 2 foot layer of Select Soil Trench Backfill (Section 2340) material at the bottom of the trench. The contractor shall wash material into voids on top of the Stone Fill surface. to help provide a relatively smooth surface free of sharp protrusions.

#### 3.2 INSTALLATION OF THE GEOTEXTILE

The geotextile shall be placed at the locations shown on the drawings. At the time of installation, the geotextile shall be rejected if they have defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. The geotextile shall be placed with the long dimension perpendicular to the centerline of the channel and laid smooth and free of tension, stress, or folds. The strips shall be placed to provide a minimum width of 2 feet of overlap for each joint. The upstream strip shall overlay the downstream strip at each joint. Temporary pinning of the geotextiles to help hold it in place until the embankment is placed will be allowed. The temporary pins shall be removed as the embankment is placed to relieve high tensile stress which may occur during placement of material on the geotextiles. Other temporary appropriate means to prevent movement such as staples, sand bags and stone may also be used. The placement procedure requires that the length of the geotextiles be approximately 20 percent greater than the length of the surface to receive the geotextile, so the fabric can be placed in a loose condition. The Contractor shall adjust the actual length of the geotextiles used based on initial installation experience.

#### 3.3 PROTECTION

##### 3.3.1 General

The geotextiles shall be protected from damage at all times during construction. Any damaged geotextiles shall be removed and replaced with undamaged geotextile at no cost to the Government. Work shall be scheduled so that the covering of the geotextiles with a lift of the specified material is accomplished within five (5) calendar days after placement. Failure to comply shall be grounds to require the Contractor to replace the geotextile at no cost to the Government.

##### 3.3.2 Protection During Placement of Overlaying Material

The geotextiles shall be protected from damage during the placement of any material that overlays the fabric. This may be accomplished by limiting the height of drop to less than 0.3 meters (1 foot), by placing a cushioning layer of sand or gravel on top of the geotextiles before placing the material, or other methods deemed necessary. Before placement of materials on top of fabric, the Contractor shall demonstrate that the placement technique will prevent damage to the geotextiles. In no case shall any type of equipment be allowed on the unprotected geotextiles. Any geotextile damaged during placement of overlaying materials shall be

replaced by and at the expense of the Contractor.

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## SECTION 02722

## AGGREGATE BASE COURSE

## PART 1 GENERAL

## 1.1 SCOPE

The work specified herein consists of the construction of an aggregate base course for the Temporary Bike Trail and At Grade RR Crossing(detour) construction. The work shall be performed in accordance with this specification and shall conform to the lines, grades, notes and typical sections shown in the plans.

## 1.2 DEFINITIONS

## 1.2.1 Aggregate Base Course

Aggregate base Course is gravel material placed on top of the levee patrol road and at grade rr crossings to permit vehicular access during wet weather without causing detrimental effects tot he levee or presenting safety hazards to levee inspection and maintenance personnel. Aggregate base Course shall be used for both the temporary bike path and at grade rr crossings.

## 1.3 REFERENCES

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

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 117	(1995) Materials Finer Than 75 micrometer (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 127	Specific Gravity and Absorption of Coarse Aggregate
ASTM C 128	(1997) Specific Gravity and Absorption of Fine Aggregate
ASTM C 131	(2001) Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	(2001) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 75	(1997) Sampling Aggregates
ASTM D 422	(1963; R 1998) Particle-Size Analysis of Soils
ASTM D 1557	(1991; R 1998) Laboratory Compaction

Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))

ASTM E 11 (1995) Wire-Cloth Sieves for Testing Purposes

1.4 SUBMITTALS

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Source and Material

Copy of material source of representation

SD-06 Test Reports

Quality Compliance Sample and Test;

Quality compliance tests for source and material

Gradation Compliance Sample and Test;

Initial and interim samples and gradation testing of stone materials

1.5 MEASUREMENT

Measurement of Aggregate Base Course will be made cubic yard.

1.6 PAYMENT

Payment will be made for Aggregate Base Course per cubic yard. Compensation for Aggregate Base Course will be included in the payment for Bid Item AGGREGATE BASE COURSE.

PART 2 PRODUCTS

2.1 AGGREGATES

The aggregates shall consist of crushed stone and crushed gravel, angular sand or other approved materials, processed and blended or naturally combined. Aggregate shall have a minimum specific gravity of 2.5. Aggregates shall be free from lumps and balls of clay, organic matter, objectionable coatings, and other foreign material and shall be durable and sound. It shall be the responsibility of the Contractor to obtain material that will meet the requirements specified herein and that can be constructed to meet the grade and smoothness requirements specified herein after all compaction requirements have been completed.

2.1.1 GEOTEXTILE FABRIC

Geotextile Fabric shall conform to that in Section 2378 "Geotextiles Used as Filters"

2.2 DURABILITY AND SHAPE

The aggregates conforming to the requirements specified above shall have a percentage of wear not to exceed 60 percent after 500 revolutions. Aggregate retained on each sieve specified shall contain at least 50 percent by weight of crushed pieces having two or more freshly fractured faces. Aggregate shall consist of angular fragments reasonably uniform in density and quality. The amount of flat and elongated particles shall not exceed 30 percent. A flat particle is one having a ratio of width to thickness greater than 3, and an elongated particle is one having a ratio of length to width greater than 3.

2.3 GRADATION

The gradation requirements specified herein shall apply to the completed course, and it shall be the responsibility of the Contractor to obtain materials that will meet the gradation requirements after mixing, placing, and other operations. The aggregates shall have a maximum size of 25 mm (1 inch) and shall be continuously graded within the limits specified below:

Table 1. Gradation for Aggregate Base Course

<u>Opening Size in inches or Sieve Designation</u>	<u>Percentage by Weight Passing Square Mesh Sieve</u>
1.0	100
0.75	90 - 100
No. 4	35 - 55
No. 30	10 - 30
No. 200	2 - 9

The values are based on aggregates of uniform specific gravity, and the percentages passing the various sieves are subject to appropriate correction by the Contracting Officer when aggregates of varying specific gravities are used.

PART 3 EXECUTION

3.1 EQUIPMENT

All plant equipment, tools, and machines used in the performance of the work covered by this section shall be approved by the Contracting Officer prior to commencement of work. This equipment shall be maintained in satisfactory working condition at all times.

3.2 PLACEMENT

3.2.1 Foundation Preparation

The road foundation shall be graded to flatten out pits, cavities, and depression. After completion of grading operations, the foundation shall be compacted in accordance with the compaction paragraph noted herein. The prepared base will be inspected by the Contracting Officer and no aggregate

shall be placed thereon until that area has been approved by the Contracting Officer.

At-Grade Crossing. The aggregate base course shall be placed outside, and in-between the existing RR Tracks to provide 2, at-grade crossings as shown on the drawings. The aggregate shall cover the tracks a minimum of 2 inches.

A layer of Geotextile Fabric shall be placed between the existing Railroad ballast and the aggregate base, as shown on the drawings.

At-Grade Crossing material shall be placed in a minimum of 2 lifts, and compacted to 95% of optimum. The at-grade aggregate crossing base material shall be removed after construction of the bank protection project is completed. The Railroad ballast shall be left in the same condition as before construction.

### 3.2.2 Lift Thickness

The thickness of the finished aggregate course shall be 3 inches, as indicated on the drawings. The bike path material shall be placed in a single lift. The at-grade crossing material shall be placed in a minimum of 2 lifts as shown on the drawings. Aggregate base material in the at-grade crossing shall cover the railroad tracks by 2 inches.

### 3.2.3 Compaction

The Aggregate Base Course shall be compacted to at least 95 percent of maximum density as specified by ASTM D 1557. The moisture content shall be maintained between optimum and 3 percent above optimum. In places not accessible to rollers, the mixture shall be compacted with mechanical tampers. The Contractor shall make such adjustments in rolling or finishing procedures as necessary to obtain true grades and minimize segregation and degradation.

### 3.2.4 Smoothness Test

The Base shall not show any deviation in excess of 0.75 inches when tested with a 50 feet minimum straightedge applied both parallel with and at right angles to the centerline of the road. Any deviation in excess of this amount shall be corrected by the Contractor by reworking existing materials as directed. Straightedge testing shall be performed as a Contractor Quality Control requirement to demonstrate conformance with the smoothness requirements.

### 3.2.5 Thickness Control

The completed thickness of the course shall be within plus or minus 0.75 inches of the thickness indicated. The thickness of the Aggregate Base Course shall be measured as a Contractor Quality Control requirement at intervals in such manner that there shall be a thickness measurement for at least each 600 square yards of Aggregate Base Course. The thickness measurement shall be made by test holes at least 3 inches in diameter through the course. Where the measured thickness of the course is more than 0.75 inches deficient, the Contractor, shall correct such areas by adding mixture of proper gradation and regrading. Where the measured thickness of the course is more than 0.75 inches thicker than specified, it shall be considered as conforming with the specified thickness requirement plus 0.75 inches. Thickness testing and reporting shall be performed as a

Contractor Quality Control requirement.

### 3.3 SAMPLING AND TESTING

#### 3.3.1 General

Sampling and testing shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government. Sampling and testing shall be performed by an approved commercial testing laboratory or may be performed by the Contractor subject to approval. Tests shall be performed in accordance with the Construction Control Manual. Copies of the test results shall be furnished to the Contracting Officer.

#### 3.3.2 Samples

Samples shall be obtained at the source, from test pits, borings, trucks, stockpiles, or from other locations. Samples for material gradation shall be taken in conformance with ASTM D 75. Where deemed necessary, the sampling will be supervised by the Contracting Officer.

#### 3.3.3 Tests

##### 3.3.3.1 Aggregate Gradation and Specific Gravity:

Aggregate gradation shall be determined in accordance with ASTM C 117, ASTM C 136, and ASTM D 422. Sieves shall conform to ASTM E 11. Specific gravity shall be determined in accordance with ASTM C 127 and ASTM C 128.

##### 3.3.3.2 Wear Test

The wear test shall be made in conformance with ASTM C 131.

-- End of Section --

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SECTION 02745A

ASPHALT CONCRETE PAVEMENT

07/03

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## SECTION 02745A

## ASPHALT CONCRETE PAVEMENT

07/03

## PART 1 GENERAL

## 1.1 REFERENCES

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

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS  
(AASHTO)

AASHTO T 182 (1984; R 1998) Coating and Stripping of  
Bitumen-Aggregate Mixtures

ASTM INTERNATIONAL (ASTM)

ASTM C 29/C 29M (1997) Bulk Density ("Unit Weight") and  
Voids in Aggregates

ASTM C 88 (1999a) Soundness of Aggregates by Use of  
Sodium Sulfate or Magnesium Sulfate

ASTM C 131 (2001) Resistance to Degradation of  
Small-Size Coarse Aggregate by Abrasion  
and Impact in the Los Angeles Machine

ASTM C 136 (2001) Sieve Analysis of Fine and Coarse  
Aggregates

ASTM D 75 (1997) Sampling Aggregates

ASTM D 140 (2001) Sampling Bituminous Materials

ASTM D 633 (1997; R 2001) Volume Correction Table for  
Road Tar

ASTM D 946 (1982; R 1999) Penetration-Graded Asphalt  
Cement for Use in Pavement Construction

ASTM D 977 (1998) Emulsified Asphalt

ASTM D 1139 (2000) Aggregate for Single or Multiple  
Bituminous Surface Treatment

ASTM D 1250 (1980; R 1997e1) Petroleum Measurement  
Tables

ASTM D 2028 (1997) Cutback Asphalt (Rapid-Curing Type)

ASTM D 2397 (1998) Cationic Emulsified Asphalt

ASTM D 3381

(1992; R 1999) Viscosity-Graded Asphalt  
Cement for Use in Pavement Construction

1.2 MEASUREMENT FOR PAYMENT

The bituminous material and aggregate to be paid for will be the measured quantities used in the accepted work. AC Pavement shall be measured by the Ton.

Measurement shall include AC Pavement used for the Temporary Bike Trail, and the At-Grade RR Crossings.

1.2.1 Bituminous Material

The amount of bituminous material to be paid for will be measured in ~~{tons, (2000 pounds)}~~ ~~{the number of gallons of material used in the accepted work, corrected to gallons at 60 degrees F in accordance with [ASTM D 633] [ASTM D 1250, using a coefficient of expansion of 0.00025 per degree F for asphalt emulsion]}~~.

1.2.2 Aggregate

The amount of aggregate paid for will be the number of ~~{tons (2000 pounds)}~~ ~~{cubic yards}~~ of aggregate placed and accepted in the completed work or placed in authorized stockpiles.

1.2.3 Quantity Limits

The bituminous material and aggregate shall be spread within the quantity limits shown below; bids shall be based on the mean of the values in the tables. The individual quantities of bituminous material and aggregate may be varied to meet specific field conditions at all times during progress of the work, as directed, without adjustments to contract unit prices. Aggregate weights shown are for aggregates having a specific gravity of 2.65. If the specific gravity of the aggregate used is other than 2.65, appropriate adjustments shall be made in number of pounds required to ensure a constant volume of aggregate per square yard of treatment.

QUANTITIES (PER SQUARE YARD  
~~{FOR SINGLE SURFACE TREATMENT}~~\_\_

Gradation No.	Bituminous Material (Liter)	Aggregate (Kilograms)
1	0.30-0.45	35-50
2	0.15-0.30	20-35
3	0.10-0.20	15-25

~~QUANTITIES (PER SQUARE YARD)  
[FOR DOUBLE SURFACE TREATMENT]~~

Gradation No.	Bituminous Material (Liters)		Aggregate (Kilograms)		Bituminous Material (Liters)		Aggregate (Kilograms)	
	First Application	Second Application	First Spreading	Second Spreading	First Application	Second Application	First Spreading	Second Spreading
1	0.20	0.30	28	34				
2					0.20	0.30	20	25
3	0.15	0.20	20	25				
4					0.15	0.20	10	15

1.3 PAYMENT

The quantities of aggregates and bituminous material, determined as specified in paragraph MEASUREMENT FOR PAYMENT, will be paid for at the respective contract unit prices, which payment shall constitute full compensation for all operations necessary to complete the work as specified herein.

1.4 WAYBILLS AND DELIVERY TICKETS

Before the final statement is allowed, the Contractor shall file with the Contracting Officer certified waybills and delivery tickets for aggregate and bituminous material used in the bituminous surface treatment. The Contractor shall not remove bituminous material from the tank car or storage tank until initial outage and temperature measurements have been taken; nor shall the car or tank be released until final outage has been taken.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Waybills and Delivery Tickets

Copies of waybills and delivery tickets shall be submitted during progress of the work.

Cutback Asphalt  
Asphalt Cement

Temperature-viscosity relationship of cutback asphalt and asphalt cement.

SD-06 Test Reports

Tests

Copies of test results, within 24 hours after completion of each test.

#### 1.6 SAFETY PRECAUTIONS

~~{No smoking, or open flames shall be permitted within 25 feet of heating, distributing, or transferring operations of bituminous materials other than bituminous emulsions.} ~~{When tar is used, a full face, organic, vapor type respirator and protective creams shall be used by personnel exposed to fumes. Protective creams shall not substitute for cover clothing.}~~~~

#### 1.7 EQUIPMENT, TOOLS, AND MACHINES

Provide equipment dependable and adequate for the purpose intended and properly maintained in satisfactory and safe operating condition at all times. Discontinue the use of equipment which fails to produce satisfactory work and replace with satisfactory equipment. Calibrated equipment such as asphalt distributors, scales, batching equipment, spreaders and similar equipment, shall have been recalibrated by an approved calibration laboratory within ~~{12} {\_\_\_\_\_}~~ months prior to commencing work and every 6 months thereafter, by such laboratory from the date of recalibration, during the term of the contract~~{and every {\_\_\_\_\_} months thereafter, by such laboratory from the date of recalibration, during the term of the contract}~~.

##### 1.7.1 Bituminous Distributors

The distributors shall have pneumatic tires of such width and number that the load produced on the base surface does not exceed 650 pounds per inch of tire width. Distributors shall be designed and equipped to distribute bituminous material uniformly at even heat on various widths of surface at readily determined and controlled rates ranging from 0.05 to 2.00 gallons per square yard, with a pressure range of 25 to 75 psi. The allowable variation from any specified rate shall not exceed 5 percent. Distributor equipment shall include a separate power unit for the bitumen pump, full-circulation spray bars, tachometer, pressure gauges, volume-measuring devices, a thermometer for reading the temperature of tank contents, and a hose attachment suitable for applying bituminous material to areas not accessible with distributor spray bar. The distributor shall be equipped for circulation and agitation of bituminous material during the heating process.

##### 1.7.2 Single-Pass, Surface-Treatment Machines

The machines shall be capable of spraying bituminous material and spreading aggregate in one pass. Bituminous spraying equipment shall conform to the requirements given above for a bituminous distributor. The machine shall be capable of spreading aggregates at controlled amounts per square yard as specified. In addition, the single-pass, surface-treatment machine shall be capable of placing a surface treatment adjacent to an existing surface treatment, forming a joint of the same thickness and uniformity as other portions of the surface treatment. Ridges or blank spaces will not be permitted. Joints in the second application shall be formed at least 1 foot from those formed in the first application.

##### 1.7.3 Heating Equipment for Storage Tanks

The equipment shall consist of coils and equipment for producing steam or

hot oil and be designed to prevent the introduction of steam or hot oil into the material. An armored thermometer with a range of 100 to 400 degrees F shall be affixed to the tank so the temperature of the bituminous material may be determined at all times.

#### 1.7.4 Power Rollers

Power rollers shall be steel-wheeled or pneumatic-tired type, conforming to the following requirements:

- a. Steel-wheeled rollers shall have at least one steel drum and weigh a minimum of 5 tons. Steel wheels of the rollers shall be equipped with adjustable scrapers.
- b. Pneumatic-tired rollers shall be self-propelled and have wheels mounted on two axles in such manner that the rear tires will not follow in the tracks of the forward group. Tires shall be uniformly inflated to not less than 60 psi nor more than 80 psi pressure. The pneumatic-tired rollers shall be equipped with boxes or platforms for ballast loading and shall be loaded so that the tire print width of each wheel is not less than the clear distance between tire prints.

#### 1.7.5 Mechanical Spreaders

The spreaders shall be adjustable and capable of spreading aggregate at controlled amounts per square yard, as specified.

#### 1.7.6 Brooms and Blowers

The machines shall be of the power type, capable of cleaning surfaces to be treated.

#### 1.7.7 Scales

The scales shall be standard truck scales of the beam type equipped with a weight-recording device. The scales shall be sufficient in size and capacity to accommodate the trucks used in hauling aggregates. The scales shall be tested and approved by an inspector of the State Inspection Bureau charged with scale inspection within the state in which the project is located. If an official of the inspection bureau is not available, the scales shall be tested in accordance with state specifications by the Contractor in the presence of the Contracting Officer. The Contractor shall have the necessary number of standard weights on hand at all times for testing the scales.

#### 1.7.8 Weighhouse

The house shall be weatherproof and shall be constructed in a manner to afford adequate protection for the indicating and recording devices of the scales.

### 1.8 SAMPLING AND TESTING

The sampling and testing shall be the responsibility of the Contractor. Sampling and testing shall be performed by an approved commercial testing laboratory, or by the Contractor, subject to approval. Sampling shall be in accordance with ASTM D 75 for aggregates and ASTM D 140 for bituminous material, unless otherwise directed. Perform aggregate gradation tests on

each sample in accordance with ASTM C 136. Perform all other aggregate tests on the initial source samples and repeat tests when there is a change of source. Perform sieve analyses daily from material samples. The tests shall include an analysis of each gradation of material. Tests shall be performed in sufficient number to insure that materials meet specified requirements.

#### 1.8.1 Wear Test

The wear test shall be performed in accordance with ASTM C 131 to ensure that aggregates have a percentage of wear not exceeding 40 percent after 500 revolutions. One test shall be performed for every ~~500~~ ~~[ ]~~ ~~[tons]~~ ~~[~~ ~~cubic yards]~~ of aggregates in stockpiles or at the source.

#### 1.8.2 Soundness Test

The soundness test shall be performed as specified by ASTM C 88 to ensure that aggregates have a weight loss not greater than ~~[ ]~~ ~~[12]~~ percent when subjected to five cycles of the magnesium sulfate test. One test shall be performed for every ~~500 tons~~ ~~[ ]~~ ~~[tons]~~ ~~[~~ ~~cubic yards]~~ of aggregates in stockpiles or at the source.

#### 1.8.3 Stripping Test

Stripping tests shall meet the requirements of AASHTO T 182. Deleterious substances shall not exceed the requirements of ASTM D 1139.

### 1.9 WEATHER LIMITATIONS

Bituminous surface treatment shall be applied only when the existing surface or base course is dry or contains moisture not in excess of the amount that will permit uniform distribution and the desired adhesion. Bituminous surface treatment shall not be applied when either the atmospheric temperature, in the shade, is below ~~[50]~~ ~~[60]~~ degrees F or the pavement surface to be treated is below 70 degrees F unless otherwise directed.

### 1.10 DELIVERY AND STORAGE

Inspect the materials delivered to the site for contamination and damage. Unload and store the materials with a minimum of handling. Store aggregates preventing segregation and contamination.

## PART 2 PRODUCTS

### 2.1 MATERIALS

Mineral aggregate and bituminous material of the following types, gradations, grades, and consistencies that meet the requirements of stripping, wear, and soundness tests as specified in paragraph SAMPLING AND TESTING shall be used.

#### 2.1.1 Mineral Aggregate

The aggregate shall consist of crushed stone ~~or~~, ~~crushed gravel~~, ~~or~~ ~~crushed slag~~ and shall be of such nature that thorough coating of bituminous material used in the work will not strip off upon contact with water. Moisture content of the aggregate shall be such that the aggregate will be readily coated with the bituminous material. Drying may be required, as

directed. Aggregate shall conform to the gradation shown below. Gradation of the aggregates shall be determined by ASTM C 136.

AGGREGATE GRADATION  
SINGLE BITUMINOUS SURFACE TREATMENT  
(PERCENT BY WEIGHT PASSING)

Sieve Designation	No. 1	No. 2	No. 3
1 inch	100		
3/4 inch	90-100	100	
1/2 inch	20-55	90-100	100
3/8 inch	0-15	40-70	85-100
No. 4	0-5	0-15	10-30
No. 8		0-5	0-10
No. 16			0-5

AGGREGATE GRADATION  
DOUBLE BITUMINOUS SURFACE TREATMENT  
(PERCENT BY WEIGHT PASSING)

Sieve Designation	No. 1	No. 2	No. 3	No. 4
1 inch	100			
3/4 inch	90-100		100	
1/2 inch	20-55	100	90-100	
3/8 inch	0-15	85-100	40-70	100
No. 4	0-5	10-30	0-15	85-100
No. 8		0-10	0-5	10-40
No. 16		0-5		0-10
No. 50				0-5

#### 2.1.1.1 Crushed Stone

Crushed stone shall consist of clean, sound, durable particles, free of soft or disintegrated pieces, dust, or foreign matter.

#### 2.1.1.2 Crushed Gravel

Crushed gravel shall consist of clean, sound, durable particles, free of soft or disintegrated pieces or foreign matter. At least 90 percent by weight of the particles shall have at least two fractured faces.

#### ~~2.1.1.3 Crushed Slag~~

~~Crushed slag shall be an air cooled blast furnace product having a dry weight of not less than 70 pcf, and shall consist of angular particles uniform in density and quality and free of dust and foreign matter. The weight of a cubic foot of slag aggregate shall be determined by ASTM C 29/C-29M.~~

## 2.1.2 Bituminous Materials

### ~~2.1.2.1 Cutback Asphalt~~

~~Rapid curing cutback asphalt shall conform to ASTM D 2028, Designation [RC 250] [RC 800] [RC 3000].~~

### 2.1.2.1 Emulsified Asphalt

Rapid-setting emulsified asphalt shall conform to ASTM D 977, Grade RS-1 or RS-2 or ASTM D 2397, Grade CRS-1 or CRS-2.

### ~~2.1.2.3 Asphalt Cement~~

~~Asphalt cement shall conform to ASTM D 946, Penetration Grade [120 150] [200 300] or ASTM D 3381, Viscosity Grade [AC 2.5] [AC 5] [AC 10] [AC 20] [AR2000].~~

## PART 3 EXECUTION

### 3.1 SURFACE PREPARATION

Immediately before applying the first course of bituminous material, the surface shall be cleaned of loose material with power brooms or power blowers. Care shall be taken to remove all dirt, clay, and other loose or foreign matter. Flush the surface with water, when necessary to achieve a clean surface, only when directed by the Contracting Officer; allow the surface to dry after flushing.

### 3.2 APPLICATION OF FIRST COURSE

#### 3.2.1 Bituminous Material

Bituminous material shall be applied by means of a bituminous distributor at the temperature specified in paragraph APPLICATION TEMPERATURE OF MATERIALS, below or as directed. The bituminous material shall be applied within the limits specified in paragraph QUANTITY LIMITS in PART 1. Bituminous material shall be applied in such a manner that uniform distribution is obtained over all surfaces treated. Unless the distributor is equipped to obtain a satisfactory result at the junction of previous and subsequent applications, building paper shall be spread on the surface for a sufficient distance back from the ends of each application so that flow through the sprays may be started and stopped on the paper in order that all sprays will operate at full force on the surface treated. Immediately after application, the building paper shall be removed and destroyed. Areas inaccessible to the distributor shall be properly treated with bituminous material using the hose attachment. Protect adjacent buildings, structures, and trees to prevent their being spattered or marred.

#### 3.2.2 Spreading of Aggregate

Immediately following application of bituminous material, aggregate shall be spread uniformly over the surface within the limits of the quantities specified in paragraph QUANTITY LIMITS in PART 1. Spreading shall be done with mechanical spreaders. Aggregate shall be spread evenly by hand on all areas missed by the mechanical spreader. Equipment spreading aggregate shall be operated backwards, so that the bituminous material will be covered ahead of the truck wheels. When hand spreading is employed on inaccessible areas, aggregate shall be spread directly from trucks.

Additional aggregate shall be spread by hand over areas having insufficient cover, and spreading shall continue during these operations when necessary.

### 3.2.3 Brooming and Rolling

The surface shall be rolled with a pneumatic-tired and a steel-wheeled roller after sufficient aggregate is spread. Rolling shall continue until no more aggregate can be worked into the treated surface. The use of the steel-wheeled roller will be discontinued, or a lighter weight steel wheel roller substituted, as directed, if the roller being used causes excessive crushing and shattering of the aggregate. If the aggregate is not distributed properly, the surface shall be broomed as soon as possible after the first coverage by the roller, but not until the surface has set sufficiently to prevent excessive marking. Brooming, rolling, and supplemental spreading of aggregate shall continue until the surface is cured and rolled sufficiently to key and set the aggregate. In places not accessible to rollers, the aggregate shall be compacted with pneumatic tampers. Aggregate that becomes contaminated with foreign matter shall be removed, replaced with clean aggregate, and rerolled, as directed. The Contractor shall maintain and protect the treated areas by use of barricades for a period not to exceed 30 days.

## ~~3.3 APPLICATION OF SECOND COURSE~~

### ~~3.3.1 Bituminous Treatment~~

~~The bituminous material for the second course shall follow within 48 hours after construction of the first course, weather permitting. Excess aggregate shall be removed prior to the second application of bituminous material. If the treated surface is excessively moistened by rain, the surface shall be allowed to dry for such time as deemed necessary. The second application of bituminous material shall be applied in the manner specified in paragraph APPLICATION OF FIRST COURSE, including temperature and QUANTITY LIMITS.~~

### ~~3.3.2 Aggregate~~

~~Immediately following the second application of bitumen, aggregate conforming to the gradation and limits specified in paragraph QUANTITY LIMITS shall be spread uniformly over the bituminous material. Aggregate shall be spread and processed in the manner specified for the first course.~~

### ~~3.3.3 Brooming and Rolling Second Course~~

~~The surface shall be rolled and broomed in the manner specified for the first course until a thoroughly bonded, smooth, even textured surface is produced. Surplus aggregate shall be swept off the surface and removed prior to final acceptance.~~

## 3.3 APPLICATION TEMPERATURE OF MATERIALS

### ~~3.4.1 Cutback Asphalt~~

~~As necessary to provide an application viscosity between 40 and 120 centistokes, kinematic or 20 and 60 seconds, Saybolt Furol.~~

### 3.3.1 Emulsified Asphalt

Within the following ranges:

RS-1: 70-140 degrees F.

RS-2, CRS-1 and CSR-2: 125-185 degrees F.

~~3.4.3 Asphalt Cement~~

~~As necessary to provide an application viscosity between 40 and 120 centistokes, kinematic or 20 and 60 seconds, Saybolt Furol.~~

3.4 TRIAL APPLICATION

Preliminary to providing a complete surface treatment, treat ~~three~~ ~~three~~ lengths of at least 100 feet each for the full width of the distributor bar. Use the appropriate typical application rates specified herein for one surface treatment trial. Make other surface treatment trials using various amounts of materials as may be deemed necessary.

3.5 PROTECTION

Keep all traffic off surfaces freshly treated with bituminous material. Provide sufficient warning signs and barricades so that traffic will not travel over freshly treated surfaces. Protect the treated areas from traffic for at least 24 hours after final application of bituminous material and aggregate, or for such time as necessary to prevent picking up. Immediately prior to opening to traffic, roll the entire treated area with a self-propelled pneumatic-tired roller.

-- End of Section --