

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>	1. CONTRACT ID CODE	PAGE OF PAGES
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2. AMENDMENT/MODIFICATION NO. 0002	3. EFFECTIVE DATE 20 August 2003	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
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6. ISSUED BY  Department of the Army Corps of Engineers, Los Angeles District P. O. Box 532711 Los Angeles, CA 90053-2325	7. ADMINISTERED BY (If other than Item 6)
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8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	(✓)	9A. AMENDMENT OF SOLICITATION NO. DACW09-03-B-0006
	X	9B. DATED (SEE ITEM 11) 15 July 2003
		10A. MODIFICATION OF CONTRACTS/ORDER NO.
		10B. DATED (SEE ITEM 13)

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

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 0 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 (If required)

**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: (Specify authority) 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 (such as changes in paying office, appropriation date, etc.) 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 (Specify type of modification and authority)

**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.)  
**Murrieta Creek Phase 1, Santa Margarita River Watershed, Riverside County, CA**

Date for receipt of bids is 11 September 2003 at 1:00 p.m.

**REVISE SF1442 -Solicitation, Offer, and Award  
 REVISED PLANS AND SPECIFICATION AS INDICATED ON THE NEXT SHEET**

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 (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
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

## SF-30 CONTINUATION

Murrieta Creek Phase 1, Santa Margarita River Watershed, Riverside County, CA

**BLOCK 14 CONTINUED**

The following specification sections have been revised:

00010	Bid Schedule
01200	General Requirements
01270	Measurement and Payment
01330b	Submittal Register
01355	Environmental Protection
01420	Sources for Reference Publications
02230	Clear Site and Remove Obstructions
02811	Irrigation System
02910	Native Plant Extraction, Salvage and Storage
02921	Hydroseeding
02930	Exterior Planting

The following drawings have been revised:

Sht01	INDEX SHEET
Sht09	PLAN AND PROFILE, STATION 61+00 TO STATION 50+00
Sht10	PLAN AND PROFILE, STATION 50+00 TO STATION 32+50
Sht11	CHANNEL TYPICAL SECTIONS
Sht12	GROUTED STONE INVERT STABILIZER
Sht13	EAST DRAINAGE DITCH SURVEY CONTROL DATA
Sht14	EAST DITCH SECTION AND DETAILS
Sht15	WEST DITCH SECTION AND DETAILS
Sht16	CROSS SECTIONS STA 59+00 TO 49+00
Sht17	CROSS SECTIONS STA 48+00 TO 40+50
Sht18	CROSS SECTIONS STA 40+00 TO 35+50
Sht19	CROSS SECTIONS STA 35+00 TO 32+50
Sht20	LANDSCAPE PLAN STA. 70+00 TO 50+00
Sht21	LANDSCAPE PLAN STA. 50+00 TO 31+00
Sht22	LANDSCAPE DETAILS
Sht24	IRRIGATION PLAN 50+00 TO 31+00

**AMENDMENT 02**

<p align="center"><b>SOLICITATION, OFFER, AND AWARD</b> <i>(Construction, Alteration, or Repair)</i></p>	1. SOLICITATION NO. AMENDMENT DACW09-03-B-0006	2. TYPE OF SOLICITATION <input checked="" type="checkbox"/> SEALED BID (IFB) <input type="checkbox"/> NEGOTIATED (RFP)	3. DATE ISSUED 15 July 2003	PAGE OF PAGES 1      2
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**IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.**

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO.	6. PROJECT NO.
7. ISSUED BY CODE Los Angeles District, COE CESPL-CT-West Region Branch P.O. Box 532711 Los Angeles, CA 90053-2325		8. ADDRESS OFFER TO Los Angeles District, COE CESPL-CT-West Region Branch P.O. Box 532711 Los Angeles, CA 90053-2325

9. FOR INFORMATION CALL:	A. NAME Mary Ann Powers	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) (213) 452-3254
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**SOLICITATION**

**NOTE:** In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS (Title, identifying no., date):  
**MURRIETA CREEK REACH 1, RIVERSIDE COUNTY, CALIFORNIA**

This project consists of the construction of the Flood Control Channel with Environmental Restoration. Work includes earthwork, channel and levee construction, and environment restroation consisting of landscaping with new vegetation.

The estimated cost of this acquisition is between \$1,000,000.00 - \$5,000,000.00

Please be advised that this procurement may be delayed, cancelled or revised at any time during the solicitation, and/or final award process.

This project is being advertised before a Project Cooperation Agreement ("PCA") has been executed. Bid opening and award of the contract will not occur until after execution of the PCA.

Any contract awarded as a result of this solicitation is made pursuant to the Small Business Competitiveness Demonstration Program.

11. The Contractor shall begin performance within 10 calendar days and complete it within 365 calendar days after receiving  award,  notice to proceed. This performance period is  mandatory,  negotiable. (See \_\_\_\_\_.)

12A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? <i>(If "YES," indicate within how may calendar days after award in Item 12B.)</i>	12B. CALENDAR DAYS
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 0 copies to perform the work required are due at the place specified in Item 8 by 1:00 p.m. (hour) local time 11 Sept. 2003 (date). If this is a sealed bid solicitation, offers will be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee  is,  is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 60 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.



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00cover	COVER
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SF30_1	SF 30 AMENDMENT 1
SF1442_2	SOLICITATION, OFFER AND AWARD (Standard Form 1442 Front and Back)
00toc_2	TABLE OF CONTENTS

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00010bn	BIDDER'S NOTES
00100	INSTRUCTIONS TO BIDDERS
00600	REPRESENTATIONS AND CERTIFICATIONS
00700	CONTRACT CLAUSES
00800	SPECIAL CONTRACT REQUIREMENTS
00800b	CONTRACT DRAWINGS - Continuation
00850	WAGE RATES

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01200_2	GENERAL REQUIREMENTS
01200b	GENERAL REQUIREMENTS - FIGURES
01270_2	MEASUREMENT AND PAYMENT
01312	RESIDENT MANAGEMENT SYSTEM (RMS)
01330	SUBMITTAL PROCEDURES
01330b_2	SUBMITTAL REGISTER
01330c	ENG FORM 4025 (Front and Back)
01355_2	ENVIRONMENTAL PROTECTION
01420_2	SOURCES FOR REFERENCE PUBLICATIONS
01451	CONTRACTOR QUALITY CONTROL
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02300	EARTHWORK
02316	EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS
02378	GEOTEXTILES USED AS FILTERS
02551	BITUMINOUS PAVING FOR ROADS, STREETS, AND OPEN STORAGE AREAS
02558	BITUMINOUS TACK COAT
02600_2	STONE PROTECTION
02650	GROUTING STONE PROTECTION
02722	AGGREGATE BASE COURSE
02723	DECOMPOSED GRANITE
02811_2	IRRIGATION SYSTEM
02910_2	NATIVE PLANT EXTRACTION, SALVAGE AND STORAGE
02921_2	HYDROSEEDING
02930_2	EXTERIOR PLANTING

## DIVISION 03 - CONCRETE

03307	CONCRETE FOR MINOR STRUCTURES
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## DIVISION 05 - METALS

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DIVISION 00 - DOCUMENTS

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BID SCHEDULE

PART 1 GENERAL

1.1 Bid Items

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

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## SECTION 00010

## BID SCHEDULE

## PART 1 GENERAL

## 1.1 Bid Items

Item	Description	Quantity	Unit	
			Unit Price	Amount
0001	DIVERSION AND CONTROL OF WATER	1	Job LS	_____.
0002	CLEAR SITE AND REMOVE OBSTRUCTIONS	1	Job LS	_____.
0003	EXCAVATION, CHANNEL, STA. 32+50 TO STA. 39+00	<b>29,000</b>	<b>CY</b>	_____.
0004	EXCAVATION, CHANNEL, STA. 39+00 TO STA. 60+00	<b>270,000</b>	<b>CY</b>	_____.
0005	COMPACTED FILL	<b>16,000</b>	<b>CY</b>	_____.
0006	GEOTEXTILE	<b>3,422</b>	<b>SY</b>	_____.
0007	GROUTED STONE INVERT STABILIZER	<b>307</b>	<b>CY</b>	_____.
0008	GROUTED STONE ACCESS RAMP	<b>1</b>	<b>Job LS</b>	_____.
0009	RIPRAP	<b>2,222</b>	<b>t</b>	_____.
0010	EAST DITCH	1	Job LS	_____.
0011	WEST DITCH	1	Job LS	_____.
0012	DECOMPOSED GRANITE SURFACING	<b>269</b>	<b>t</b>	_____.
0013	AGGREGATE BASE COURSE	<b>400</b>	<b>t</b>	_____.
0014	ASPHALT CONCRETE PAVEMENT	<b>196</b>	<b>t</b>	_____.

Item	Description	Quantity	Unit	Price	Amount
0015	LANDSCAPING	1	Job	LS	_____.
0016	MITIGATION PLANTINGS	1	Job	LS	_____.
0017	HYDROSEEDING	1	Job	LS	_____.
0018	BROADCAST SEEDING	1	Job	LS	_____.
0019	IRRIGATION	1	Job	LS	_____.
0020	PIPE ACCESS GATE	1	Job	LS	_____.
<b>0021</b>	<b>SALVAGE AND STORE TREES</b>	<b>7</b>	<b>EA</b>	_____.	_____.
<b>0022</b>	<b>INSTALL SALVAGE TREES</b>	<b>7</b>	<b>EA</b>	_____.	_____.

**TOTAL ESTIMATED AMOUNT** \$ \_\_\_\_\_.

Abbreviations:

- LF = Linear Foot
- CY = Cubic Yard
- t = Ton (2000 pounds)
- EA = each
- LS = lump sum
- SY = Square Yard

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## SECTION 01200

## GENERAL REQUIREMENTS

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## SECTION 01200

## GENERAL REQUIREMENTS

## PART 1 GENERAL

Definition - Unless otherwise stated, the term "Contractor" is meant to be the Murrieta Creek Phase 1 Channel Contractor.

## 1.1 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.

## ASME INTERNATIONAL (ASME)

ASME B18.2.1 (1996) Square and Hex Bolts and Screws  
(Inch Series)

ASME B18.2.2 (1987; R 1999) Square and Hex Nuts

## DEPARTMENT OF COMMERCE (DOC)

PS-1 (1995) Construction and Industrial Plywood

PS-20 (1999) American Softwood Lumber Standard

## U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (1996) U.S. Army Corps of Engineers Safety  
and Health Requirements Manual

EM 1110-1-1003 (1996) NAVSTAR Global Positioning System  
Surveying

EM 1110-1-1005 (1994) Topographic Surveying

## MASTER PAINTERS INSTITUTE (MPI)

MPI 5 (2001) Exterior Alkyd Wood Primer

MPI 10 (2001) Exterior Latex, Flat

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The "RE" designates that the Resident Office will review the submittal for the Government.

Submit the following in accordance with Section 01330, SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Topographic Surveyor; G, RE.

The Topographic Surveyor firm selected by the Contractor must be approved by the Contracting Officer prior to performing surveys for this contract.

Site Plan; G, RE.

The Contractor shall submit the site plan to the Contracting Officer prior to installing project facilities for this contract.

Site-specific Safety and Health Plan; G, RE.

The Contractor shall submit the site-specific safety and health plan for approval by the Contracting Officer prior to start of construction activities.

Activity Hazards Safety Analysis.

The Contractor shall submit each activity hazards safety analysis as required by this section to the Contracting Officer.

Traffic Control Plan.

The Contractor shall obtain approval of the Traffic Control Plan from the City of Temecula and submit to the Government prior to start of construction.

Access and Haul Roads

The Contractor shall submit the layout of the access and haul roads necessary for proper prosecution of the work within the Murrieta Creek Phase 1 Right Of Way's and Temporary Construction Easement's under this contract.

Practicable Schedule; G, RE.

The Contractor shall submit the practicable schedule for Contracting Officer approval.

Annotated Schedule

The Contractor shall submit the annotated schedule as required.

Haul route plan; G, RE.

The Contractor shall submit a haul route plan for removal of required excavated materials and for hauling of required fill materials.

Encroachment Permit

The Contractor shall submit encroachment permits if obtained.

Pre-construction topographic survey of the entire project site, except optional disposal site.

The contractor shall submit to the Contracting Officer pre-construction surveys of the entire project site shown on the drawings.

Pre-construction topographic survey of the optional disposal site.

The contractor shall submit to the Contracting Officer pre-construction surveys of the optional disposal site if it is to be used by the Contractor.

#### **SD-11 Closeout Submittals**

Post-construction topographic survey of the entire project site, except optional disposal site.

The contractor shall submit to the Contracting Officer post-construction surveys of the entire project site for the fill work shown on the drawings.

Post-construction topographic survey of the optional disposal site.

The contractor shall submit to the Contracting Officer post-construction surveys of the optional disposal site if it is used by the Contractor.

### 1.3 PROJECT FACILITIES

#### 1.3.1 Site Plan

The Contractor shall prepare a site plan, for the Contracting Officer's approval, indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Any areas which may have to be graveled to prevent the tracking of mud shall also be identified. The Contractor shall also indicate if the use of a supplemental or other staging area is desired.

#### 1.3.2 Construction Signs

The signs shall be erected as soon as possible and within 15 days after commencement of work under this contract.

- a. Five Project Signs at locations designated by the Contracting Officer.
- b. Warning Signs facing approaching traffic on all roads crossing under overhead power transmission lines and at the bases of the power transmission line towers.
- c. Six hard hat signs at locations designated by the Contracting Officer.

#### 1.3.3 Bulletin Board at the Contractor's Office

A weatherproof bulletin board, approximately 36 inches and 30 inches with

hinged glass door shall be provided adjacent to or mounted on the Contractor's project office.

#### 1.3.4 Sanitary Facilities

The Contractor shall provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer.

#### 1.3.5 Employee Parking

Contractor employees shall park privately owned vehicles in an area approved by the Contracting Officer. This area will be within reasonable walking distance of the construction site.

#### 1.3.6 CONTRACTING OFFICER'S FACILITY

The Contractor shall provide a facility for the Contracting Officer's Representative in accordance with the following description. The Contractor shall submit the floor plan for Contracting Officer's approval prior to supplying the facility.

##### 1.3.6.1 Trailer

The Contractor shall provide a 12 ft. x 60 ft. trailer within the Contractor's staging area as directed by the Contracting Officer. All utilities (including electrical, water, sewage and telephone) shall be connected, installed and maintained for the trailer. Water and sanitary facilities shall be located within the trailer. The trailer is to be provided with two(2) unisex restrooms. Septic tank may be substituted should connection to local sewer line not be available. An adequate supply of cooled bottled drinking water shall be furnished and maintained. Janitorial service for the trailer shall be provided three (3) times per week (Monday, Wednesday and Friday). The trailer is to be provided with a 24 hour monitored security system, including exterior door sensors, motion detectors and a control key pad. All windows are to be provided with security bars or grates.

##### 1.3.6.2 Furniture and Equipment

The following furniture and equipment shall be provided and maintained:

- |    |      |  |
|----|------|--|
| a. | 3 ea | Telephone lines and service                      |
| b. | 3 ea | Telephone  |
| c. | 3 ea | Desk, 3 feet by 5 feet                           |
| d. | 3 ea | Wheeled desk chairs, with arm rests              |
| e. | 3 ea | File cabinets, minimum 4 drawer, legal, lockable |
| f. | 3 ea | Book case, minimum 3 shelves                     |
| g. | 2 ea | Wheeled secretarial chairs                       |
| h. | 1 ea | Standard bulletin board for interior of office   |
| i. | 1 ea | Liquid chalkboard                                |
| j. | 1 ea | Standard copy machine                            |
| k. | 1 ea | FAX machine                                      |
| l. | 1 ea | Under counter refrigerator                       |
| m. | 1 ea | Microwave oven                                   |

#### 1.3.6.3 Parking

Open parking space for 6 vehicles shall be located conveniently to the office. The combined parking and building area shall be enclosed with a woven wire fence approximately 10 feet high, with a 10 feet wide lockable gate accessible from a road or street, and barbed or razor wire be placed on top of the fence and gate. The fenced area shall be sufficient size to permit ease in the parking of vehicles. Automatic Security lighting is to be provided around the office trailer and parking area. The security lighting shall come on just before dusk and shut off at first morning light. Materials for the facilities need not be new, provided they are adequate for the intended use. The cost for sewer, water, power, and telephone usage will be the responsibility of the Contractor except that the Contractor will be reimbursed for any long distance telephone charges not related to the project.

#### 1.3.6.4 Occupancy

The Project Engineer's Office shall be available for occupancy within 10 days of the Notice to Proceed and not be removed prior to the completion date of the contract.

### PART 2 PRODUCTS

#### 2.1 CONSTRUCTION SIGNS

##### 2.1.1 Materials

##### 2.1.1.1 Lumber

Shall be in accordance with PS-20, and shall be seasoned Douglas Fir, S4S, Grade D or better except that posts, braces and spacers shall be construction Grade (WCLB).

##### 2.1.1.2 Plywood

Shall be in accordance with PS-1, grade A-C, Group 1, exterior type.

##### 2.1.1.3 Bolts, Nuts and Nails

Bolts shall conform to ASME B18.2.1, nuts shall conform to ASME B18.2.2, and nails shall conform to commercially available supplies.

##### 2.1.1.4 Paints and Oils

Paints shall conform to MPI 5 for primer and MPI 10 for finish paint and lettering.

### PART 3 EXECUTION

#### 3.1 CONSTRUCTION OF SIGNS

##### 3.1.1 Project and Hard Hat Signs

Constructed as detailed in Figures 1,2,3 and Safety Signs. Decals for signs will be furnished by the Contracting Officer.

### 3.1.2 Warning Signs

Constructed of plywood not less than 1/2 inch thick and shall be securely bolted to the supports with the bottom of the sign face 39 inches above the ground. The sign face shall be 2 feet x 4 feet, all letters shall be 4 inches in height, and the wording shall be: "WARNING: OVERHEAD TRANSMISSION LINES."

### 3.2 PAINTING SIGNS

All exposed surfaces and edges of plywood shall be given one coat of linseed oil and be wiped prior to applying primer. All exposed surfaces of signs and supports shall be given one coat of primer and 2 finish coats of white paint. Except as otherwise indicated, lettering on all signs shall be black and sized as indicated.

### 3.3 Additional Project Engineer's Equipment

Contractor shall provide computer software (3.5" floppy disc size) to the Contracting Officer for the type of scheduling system to be used and quantity/fill programs for tracking or estimating bid quantities during construction. Scheduling software must be capable of downloading completely to the COE Standard Data Exchange Format.

### 3.4 Bulletin Board at the Contractor's Project Office

Install weatherproof bulletin board adjacent to or mounted on the Contractor's project office. If adjacent to the Contractor's project office, the bulletin board shall be securely mounted on no less than 2 posts. Bulletin board and posts shall be painted or have other approved factory finish. The bulletin board shall be easily accessible at all times and shall contain wage rates, equal opportunity notice, and such other items required to be posted.

### 3.5 MAINTENANCE AND DISPOSAL OF PROJECT FACILITIES

The Contractor shall maintain the project facilities in good condition throughout the life of the project. Upon completion of work under this contract, the facilities covered under this section will remain the property of the Contractor and shall be removed from the site at his expense.

### 3.6 SCRAP MATERIAL

Materials indicated to be removed and not indicated to be salvaged, stored or reinstalled are designated as scrap and shall become the property of the Contractor and be removed from the site of work. The Contractor by signing this contract hereby acknowledges that he made due allowance for value, if any, of such scrap in the contract price.

### 3.7 ARCHAEOLOGICAL FINDINGS DURING CONSTRUCTION

Should the Contractor or any of his employees in the performance of this contract find or uncover any archaeological remains, he shall notify the Project Engineer immediately. Such notifications will be a brief statement in writing giving the location and nature of the findings. Should the discovery site require archaeological studies resulting in delays and/or additional work, the Contractor will be compensated by an equitable adjustment under the CONTRACT CLAUSES of the contract. See also Section 01355 paragraph HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES for additional information.

### 3.8 PROTECTION OF EXISTING WORK

Before beginning any cutting or removal work, the Contractor shall carefully survey the existing work and examine the drawings and specifications to determine the extent of the work. The Contractor shall take all necessary precautions to insure against damage to such work to remain in place, to be reused, or to remain the property of the Government, and any damage to such work shall be repaired or replaced as approved by the Contracting Officer at no additional cost to the Government. The Contractor shall carefully coordinate the work of this section with all other work and construct and maintain shoring, bracing and supports, as required. The Contractor shall insure that structural elements are not overloaded and be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under any part of this contract.

### 3.9 PUBLIC UTILITIES, NOTICES, AND RESTRICTIONS

#### 3.9.1 General

The approximate location of all railroads, pipelines, power and communication lines, and other utilities known to exist within the limits of the work are indicated on the drawings. The sizes, locations, and names of owners of such utilities are given from available information, but their accuracy is not guaranteed. Except as otherwise indicated on the drawings, all existing utilities will be left in place and the Contractor shall conduct his operations in such a manner that the utilities will be protected from damage at all times, or arrangements shall be made by the Contractor for their relocation at the Contractor's own expense. The Contractor shall be responsible for any damage to utilities known to exist and shall reimburse the owners for such damage caused by his operations.

#### 3.9.1.1 Existing Sewer, Water, Irrigation Facilities, Electrical, Telecommunications, and Gas Utilities

Contractor shall coordinate with utility owners prior to excavation in the vicinity of utility lines. Contractor shall protect in place existing sewer, water, irrigation facilities, electrical, telecommunications, and gas utilities within Channels permanent Rights-of-Ways (ROW) and Temporary Construction Easements (TCEs), including such utilities which cross beneath the channel. Contractor shall repair any damaged existing sewer, water, irrigation facilities, electrical, telecommunications, and gas utilities

within Channels permanent ROW and TCE including such facilities which cross beneath the channels, if the damaged utility was damaged by the Channel Contractor operations.

### 3.9.2 Relocation or Removal

Utilities to be relocated or removed not as part of this contract are designated "To be Relocated by Others" or "To be Removed by Others", respectively. Utilities shown on the plans and not so designated will be left in place and be subject to the provisions of the CONTRACT CLAUSE: PROTECTION OF EXISTING VEGETATION, STRUCTURES, UTILITIES, AND IMPROVEMENTS.

The Contractor may make arrangements with the owner for the temporary relocation and restoration of utilities not designated to be relocated, or for additional work in excess of the work needed to relocate utilities designated for relocation at no additional cost to the Government.

### 3.9.3 Utilities Not Shown

If the Contractor encounters, within the construction limits of the entire project, utilities not shown on the plans and not visible as of the date of this contract and if such utilities will interfere with construction operations, he shall immediately notify the Contracting Officer in writing to enable a determination by the Contracting Officer as to the necessity for removal or relocation. If such utilities are left in place, removed or relocated, as directed by the Contracting Officer, the Contractor shall be entitled to an equitable adjustment for any additional work or delay.

### 3.9.4 Coordination

The Contractor shall consult and cooperate with the owner of utilities that are to be relocated or removed by others to establish a mutual performance schedule and to enable coordination of such work with the construction work. The Contractor shall consult and cooperate with the owner of utilities that are to be relocated or removed by others to establish a mutual performance schedule and to enable coordination of such work with the construction work. These consultations shall be held as soon as possible after award of the contract or sufficiently in advance of anticipated interference with construction operations to provide required time for the removal or relocation of affected utilities.

### 3.9.5 Notices

#### 3.9.5.1 Utilities To be Relocated or Protected

Unless otherwise specified, the Contractor shall notify the Contracting Officer, in writing, 14 calendar days prior to starting work on any utility to be relocated or protected. On each relocation, notification shall include dates on which the Contractor plans excavation, by-pass work, removal work and/or installation work, as applicable. The Contractor shall also notify the following representatives of utility owners not less than 7 days prior to the start of work in the vicinity of their respective utilities.

**Metropolitan Water District (MWD)**

**Emergency Phone Numbers****Telephone: (626)792-7783****Telephone: (323)681-4041**

Mr. Kiernan Callahan  
Metropolitan Water District (MWD)  
700 North Alameda  
Los Angeles, California 90012  
Telephone: (213)217-7474

Mr. John Martinez  
Water System Operations Group  
Metropolitan Water District (MWD)  
Telephone: (909)776-2616

Mr. Paul Mc Donnell  
Southern California Edison Company  
26100 Menifee Road  
Perris, CA 92585  
(909)928-8334

Mr. Andrew Webster  
Planning and Capital Improvements Manager  
Rancho California Water District  
42135 Winchester Road  
Temecula, California 92590  
PO Box 9017  
Temecula, California 92589-9017  
(909)296-6900

Mr. Jeff Wall  
Eastern Municipal Water District  
2270 Trumble Road  
Perris, California 92572  
(909)928-3777

Ms. Nancy Beltran  
Adelphia Cable  
4077 West Stetson Avenue  
Hemet, California 94545  
(909)766-4270

Mr. Dan Orr  
Southern California Gas Company  
Post Office Box 3003  
Redlands, California 92373-0306  
(909)335-7828

## a) Staking of Utilities

In addition to notification of representatives of utility owners, the Contractor shall notify the City of Temecula Public Works at (909) 694-6411 and Underground Service Alert (USA) at 1-800-422-4133, between the hours of 7:00 a.m. and 4:30 p.m. at least four full working days

prior to any excavation within any street right-of-way or any work in the vicinity of known underground utilities, to have underground utilities field located and staked.

b) MWD Water Lines

During construction, Metropolitan Water District's field personnel will make periodic inspections. The Contractor shall notify Mr. John Martinez of the Water System Operations Group, Metropolitan Water District, by telephone (909)776-2616, at least two working days (Monday through Thursday) prior to starting any work in the vicinity of MWD facilities and MWD right-of-way.

3.9.5.2 Bench Marks and R/W Markers

The Contractor shall notify the Contracting Officer, in writing, 7 days in advance of the time he proposes to remove any existing bench mark or right-of-way marker.

3.9.5.3 ENVIRONMENTAL ASSESSMENT REQUIREMENT

In order to satisfy the Environmental Assessment for this project, the Contractor shall notify the Contracting Officer 14 calendar days prior to the start of any construction activity, so that the Corps conducts a final biological survey for the potential presence of endangered/threatened species. The Corps is required to have a biologist present during all clearing and grubbing operations. Any coordination between the biologist and the Contractor shall be conducted through the Contracting Officer.

3.9.5.4 Spill Reporting

The Contractor shall notify the Contracting Officer immediately after any spill, regardless of quantity, including all personnel exposures. The Contractor shall submit a written notification not later than 7 calendar days after the initial notification. The written notification shall include the following:

- a. Item spilled, leaked or releases in an unauthorized manner (Identification, Quantity and Manifest Numbers).
- b. Whether the amount spilled, leaked or released in an unauthorized manner is EPA reportable and, if reported, a copy of the report.
- c. Exact location of the spill, leak or unauthorized release.
- d. Nature of exposure to personnel.
- e. Containment procedures initiated.
- f. Anticipated cleanup and disposal procedure.
- g. Disposal location of spill, leak or unauthorized release residue.

3.9.6 Restrictions

## 3.9.6.1 Other Agency Representatives

Personnel representing owners and other agencies may be present for various portions of the work. However, the Contractor will be responsible only to the Contracting Officer.

## POINTS OF CONTACT

## a) List of Contractor Contacts

Prior to the start of work, the Contractor shall provide the Contracting Officer with names, addresses and 24-hour phone numbers of the Contractor's project engineer, superintendent and foreman.

## b) List of Government Agency Contacts

The following is a partial list of Government Agency points of contact:

Agency	Contact	Telephone
EMERGENCY		911
U.S.Army Corps of Engineers		
Resident Engineer	Dan Moore	(909)655-2101
Project Engineer	Kevin Thomas	(858)674-6767
Ecosystem Planning Section	Joy Jaiswal	(213)452-3851
Senior Archeologist	Stephen Dibble	(213)452-3849
Geotechnical Section	Douglas Chitwood	(213)452-3587
Rancho California Water District Engineering Services Division	Andrew Webster	(909)296-6900)
South Coast Air Quality Management District		(909)396-2000
State Water Resources Control Board		(916)341-5536
San Diego Regional Water Quality Control Board	Megan Fisher	(858)268-6363
City of Temecula		
Police Department		(909)696-3000
Fire Department		(909)694-6405
Director of Public Works	William Hughes	(909)694-6411
Deputy Director of Public Works	Ron Parks	(909)694-6411
Post Office Box 9033 Temecula, California 92589-9033		
Underground Service Alert (USA)		(800)422-4133

## CALTRANS

Transportation Permits, Oversize Loads		(909)383-4637
P.O. Box 231		
247 W. Third Street		
San Bernardino, California		
California Highway Patrol		
Temecula Office		(909)506-2000
Riverside County		
Sheriff	Non-emergency	(909)955-2444
Animal Control		(909)358-7387
Riverside County Flood	Steve Thomas	(909)955-1299
Control and Water	Zully Smith	(909)955-1233
Conservation District	Randy Sheppeard	(909)955-1306

#### 3.9.6.2 Traffic Control Plan

The Contractor shall develop a Traffic Control Plan and obtain an approval from the City of Temecula prior to construction. The plan shall include details of truck haul routes. See paragraph HAUL ROUTE in this section for additional information.

#### 3.9.6.3 Existing Roads

The construction schedule shall be prepared giving full consideration to maintaining traffic on existing roads. Additional work on the existing roads may be performed by others during the life of this contract.

#### 3.9.6.4 Access and Haul Roads

Access and haul roads shall be proposed so that use of existing residential streets are minimized.

#### 3.9.6.5 Public and Private Roads

When it is necessary to operate on existing roads outside the construction area, all necessary permits shall be obtained from the appropriate private or public authority. Work shall be conducted in such manner so as to obstruct and inconvenience traffic on existing roads outside the construction limits as little as possible. Spillage of earth, dusty materials, boulders, and mud on project roads or other road will not be permitted. If spillage cannot be prevented, the spillage shall be immediately removed and such areas shall be kept clear throughout the workday. At the conclusion of each workday, such traveled areas shall be cleared of spillage, boulders, and mud.

#### 3.9.6.6 MAINTENANCE AND REPAIR OF STREETS, ACCESS ROADS, AND WORK AREAS

The Contractor shall restore streets and access roads (used for haul routes and mobilizing equipment) and work areas to original condition upon completion of the work, at no additional cost to the Government. Contractor shall restore streets and roads used in the haul route to local city standards at no additional cost to the Government. All haul and

access roads, within the construction area, including the borrow areas, utilized by the construction equipment, shall be maintained to provide vehicular access for the Government's vehicles and the Contractor's vehicles and equipment. Road maintenance shall include rock/mud slides, washouts, and any incident which would restrict vehicular/equipment access.

Prior to any alterations of any road alignment, the Contractor shall receive an approval from the Contracting Officer. Road maintenance and alterations shall be performed by the Contractor at no additional cost to the Government. See paragraph HAUL ROUTE in this section for exceptions and additional information.

#### 3.9.6.7 HAUL ROUTES

The Contractor shall submit the haul route plan prior to start of hauling material. **NO HAUL ROUTE OR HAUL ROAD IS ALLOWED THROUGH THE CREEK BED UPSTREAM OF THIS PROJECTS LIMITS.**

- 1) The Contractor shall utilize the Haul Route with the repair and maintenance requirements described below. The Contractor will be responsible for obtaining all permits and licenses necessary to haul material to the optional disposal site.
  - a) Entry and Egress - The Contractor shall enter and exit the Murrieta Creek Phase 1 project from the Contractors Staging Area on the east side of the channel shown on the drawings.
  - b) Optional Disposal Site Haul Route - For disposal of excess satisfactory excavated materials from the Murrieta Creek Phase 1 project to the optional disposal site, the haul route shall begin from the Contractors Staging Area on the east side of the channel shown on the drawings, then travel south on Front Street, then east onto Highway 79 South, pass under the I-15 Freeway, then onto the on ramp for the north bound I-15 freeway, travel on the north bound I-15 freeway to the Winchester off ramp, turn left onto Winchester, turn right onto Jefferson, and enter the optional disposal site between Santa Gertrudis Creek and Cherry Street as shown on the drawing sheets.
  - c) Return Route - For return route from the optional disposal site, the Contractor shall utilize a reverse direction of the streets listed in the above optional disposal site haul route.
  - d) For the improved streets described in the above optional disposal site haul route, the Contractor shall bear all expenses necessary to repair and maintain the improved streets, including streets, roads, on ramps, off ramps, freeways, structures and appurtenances to local city standards for the continual use by the general public.
- 2) Use of other haul routes than above: the Contractor shall be responsible for obtaining all permits and licenses, and be responsible for all expenses, including repair and maintenance of streets, related to the disposition of material that has become the property of the Contractor and is hauled off-site.

#### 3.9.6.8 Traffic Safety

In accordance with CONTRACT CLAUSE: ACCIDENT PREVENTION, signs, barricades, and warning devices shall be provided, installed, and maintained as are required for protection of vehicular traffic at any location where operations interfere with public roads. Signs, barricades, lights, and signals, shall be in conformance with Part VI of the U.S. Department of Transportation Manual on Uniform Traffic Control Devices for Streets and Highways.

#### 3.9.6.9 Rock and Gravel

Rock and gravel for use on haul roads and other facilities may be obtained from any source within the excavation limits, borrow area, or stockpiles, that are within the project boundaries and are not designated for other use. The Contractor at no expense to the Government may also obtain rock and gravel for use on haul roads and other facilities from outside sources provided that the material is not contaminated. The use of any source shall be subject to any additional requirements within these specifications and to approval by the Contracting Officer.

#### 3.9.6.10 Cooperation with Others

The Contractor shall coordinate his activities and cooperate with other contractors as to not delay or interfere with their work.

#### 3.9.7 Working Hours

The Contractor shall restrict all construction activities to the following schedule:

Monday thru Friday	6:30 a.m. to 7 p.m.
Saturday	8 a.m. to 7 p.m.

No work will be permitted on Sundays or Federal Holidays without the prior written approval from the Contracting Officer.

Employee access to the job site will be allowed 30 minutes prior to starting time unless otherwise approved by the Contracting Officer.

Disposal area(s) and haul route(s) utilized by the Contractor may require restricted hauling hours. The Contractor is notified that hauling or disposal activities may be restricted to normal business hours (7 a.m. to 4 p.m. in the event that such operations are considered to be disruptive to existing neighborhood safety and noise conditions. In the event that such a situation develops, the Contracting Officer shall notify the Contractor of restrictive hauling and/or disposal times. The Contractor shall develop their schedule for construction so that restrictive hauling times can be absorbed without extending the overall contract completion period.

#### 3.9.8 Construction Water

The Contractor shall be responsible for obtaining water for construction

purposes at no additional cost to the Government. Construction water shall be fresh, clean, potable, and free from any injurious amounts of oil, acid, salt, or alkali. The Contractor shall be responsible for contacting the Rancho California Water District Engineering Services Division (909-296-6900) to make arrangements for a water meter and water source. The Contractor is responsible for all costs associated with providing water for construction. The Contractor shall be responsible for obtaining approvals from the Riverside County Flood Control and Water Conservation District (RCFC&WCDD) and for coordination with other projects in the area.

#### 3.9.9 Identification of Vehicles

All the Contractor's vehicles shall display suitable permanent identification.

#### 3.9.10 Construction Method Observation

Any construction method, plant, or piece of equipment used on this contract shall not be considered proprietary, and can be inspected or photographed at any time by the Government, regulatory agencies, or any group approved by the Government.

#### 3.9.11 Contractor's Equipment

The planned method of transportation and operation of cranes and other heavy equipment to be used in the performance of this contract shall be submitted for approval by the Contracting Officer. The plan shall include the type, size, loadings of equipment, the proposed transportation routes, and work areas to be used on the project.

#### 3.10 PUBLIC SAFETY

Attention is directed to the CONTRACT CLAUSE: PERMITS AND RESPONSIBILITIES.

The Contractor shall provide temporary fencing, barricades, and/or guards, as required, to provide protection in the interest of public safety. Whenever the Contractor's operations create a condition hazardous to the public, he shall furnish at his own expense and without cost to the Government, such watchmen, flagmen and guards as are necessary to give adequate warning to the public of any dangerous conditions to be encountered and he shall furnish, erect, or maintain such fences, barricades, lights, signs and other devices as are necessary to prevent accidents and avoid damage or injury to the public. Flagmen, watchmen, and guards, while on duty and assigned to give warning and safety devices shall conform to applicable city, county, and state requirements. Should the Contractor appear to be neglectful or negligent in furnishing adequate warning and protection measures, the Contracting Officer may direct attention to the existence of a hazard and the necessary warning and protective measures shall be furnished and installed by the Contractor without additional cost to the Government. Should the Contracting Officer point out the inadequacy of warning and protective measures, such action of the Contracting Officer shall not relieve the Contractor from any responsibility for public safety or abrogate his obligation to furnish and pay for those devices. The installation of any general illumination shall not relieve the Contractor of his responsibility for furnishing and

maintaining any protective facility.

### 3.10.1 Traffic Maintenance

During construction the Contractor shall provide access to roads as necessary to maintain traffic. The Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the State and local authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations at no additional cost to the Government.

#### 3.10.1.1 Traffic Routing

The Contractor shall notify the Contracting Officer, the City of Temecula Public Works Department, and the Riverside County Flood Control and Water Conservation District at least 7 days in advance of the time that work will be started in areas requiring the rerouting of traffic, and removal of street signs. The foregoing shall apply to progressive modifications of traffic routings within an area in which work is in progress. A permit is required. The City of Temecula shall be notified by contacting the Public Works Department telephone number (909)694-6411.

#### 3.10.1.2 Street Closure

City of Temecula Public Works Department, Riverside County Sheriff, Highway Patrol, Fire Department, Riverside County Flood Control and water Conservation District, and all affected property owners, shall be notified by the Contractor whenever a street is to be closed to traffic. Approval is required prior to closing. If closing is to be of a long duration, a single notification to each department 7 days in advance of closing will be sufficient. A single notification shall then be made at the time the street is again opened to traffic. If the closing is to be of short duration or if different sections of the street are to be closed at different times, notification shall be made on a day-to-day basis.

Should temporary road closures be necessary, the Contractor shall clearly mark and identify alternative routes and detours. Proper signage, flagman, and strict adherence to driving safety procedures shall be implemented and utilized by the Contractor, with special attention being given in multi-use zones.

### 3.10.2 Access and Haul Roads

The Contractor shall, at its own expense, construct access and haul roads

necessary for proper prosecution of the work within the Murrieta Creek Phase 1 Right Of Way's and Temporary Construction Easement's under this contract. Access and haul roads shall be constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control (reference section 01355 ENVIRONMENTAL PROTECTION, paragraph PROTECTION OF AIR RESOURCES) shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of access and haul roads shall be subject to approval by the Contracting Officer. Lighting shall be adequate to assure full and clear visibility for full width of access and haul roads and work areas during any early morning/early evening work operations. Access and haul roads shall not damage permanent structures. Upon completion of the work, access and haul roads designated by the Contracting Officer shall be removed.

Plans shall be submitted to the Contracting Officer for approval for all proposed access and haul roads, whether within or outside the limits of the construction area, at least 14 calendar days prior to use of and construction of such roads. The plans shall indicate width of road, direction of traffic, road markings, type of guardrail if necessary, curves, grades, runouts, and other information in sufficient detail for studying safety of the proposed roads. Haul roads shall be proposed so that use of existing residential streets and roads are minimized.

#### 3.10.3 Public and Private Access Roads

When it is necessary for heavy equipment to operate on or to cross project roads or arterial roads, flaggers, signs, lights and/or other necessary safeguards shall be furnished to safely control and direct the flow of traffic. When it is necessary to operate on existing roads outside the construction area, all necessary permits shall be obtained from the appropriate private or public authority. Work shall be conducted in such manner so as to obstruct and inconvenience traffic on existing roads outside the construction limits as little as possible. Spillage of earth, dusty materials, and mud on project roads or other roads will not be permitted. If spillage cannot be prevented, the spillage shall be immediately removed and such areas shall be kept clear throughout the workday. At the conclusion of each workday, such traveled areas shall be cleared of spillage, dusty materials, and mud.

#### 3.10.4 Maintenance of Roads

All access and haul roads, within the construction area, including the borrow areas, shall be maintained to provide vehicular access for the Government's vehicles and the contractor's vehicles and equipment. Road maintenance shall include rock/mud slides, washouts, and any incident which would restrict vehicular/equipment access. Prior to any alterations of any road alignment, the contractor shall receive an approval from the Contracting Officer. Road maintenance and alterations shall be performed by the contractor at no additional cost to the Government.

#### 3.10.5 Barricades

The Contractor shall erect and maintain temporary barricades to limit public access to hazardous areas. Such barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

### 3.11 OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) STANDARDS

#### 3.11.1 General

The Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, (see SECTION 00700, CONTRACT CLAUSES: ACCIDENT PREVENTION) and the Occupational Safety and Health Act (OSHA) Standards for Construction (Title 29, Code of Federal Regulations Parts 1910 and 1926 as revised from time to time) and Cal/OSHA Title 8 Regulations are all applicable to this contract.

In case of conflict, the most stringent requirement of the standards is applicable. Pursuant to EM 385-1-1, the Contractor shall submit a Site-specific Safety and Health Plan for approval by the Contracting Officer prior to start of construction work.

#### 3.11.2 Activity Hazard Analysis

Based on the construction schedule, the Contractor shall submit an Activity Hazards Safety Analysis of each major phase or work prior to entering that phase of activity. The analysis shall include major or high risk hazards, as well as commonly recurring deficiencies that might possibly be encountered for that operation, and shall identify proposed methods and techniques of accomplishing each phase in a safe manner. The Prime Contractor's superintendent shall take active participation in the Activity Hazard Analysis, including the subcontractor's work. Prior to start of actual work a meeting shall be held with the Prime Contractor, Government, and affected subcontractor to review the Activity Hazard Analysis. In addition, job site meetings shall be held to train exhaustively foreman and workers on details of this analysis.

#### 3.11.3 Accident Reporting

In accordance with EM 385-1-1, the Contractor shall submit a written summary of worker's compensation claims which have been filled by worker's in connection with work on the project. The summary shall be submitted at the time when the work is approximately 50 percent complete and at project completion. The summary shall include all subcontractors. The Contractor's and subcontractor's compensation insurance carrier shall certify that the summaries are "correct and true".

### 3.12 PERMITS

#### 3.12.1 General

Reference is made to the clause of the contract entitled "Permits and Responsibilities", which obligates the Contractor to obtain all required licenses and permits.

### 3.12.2 Air Pollution Permit (APP)

The Contractor shall obtain an APP from the Southern California Air Quality Management District (SCAQMD). Three copies of the permit shall be submitted to the Contracting Officer. For further information, contact a SCAQMD Permit Services representative at telephone number (909) 396-3385.

#### 3.12.2.1 Air Quality

Contractor shall have a current, valid Air Quality permit for all equipment that require an Air Quality permit.

### 3.12.3 National Pollutant Discharge Elimination System (NPDES) Permit

The Contractor shall obtain coverage under the Statewide General Permit in accordance with Section 01355, ENVIRONMENTAL PROTECTION, paragraph NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES), SWPPP AND NOI. Copies of the NPDES, the Storm Water Pollution Prevention Plan (SWPPP), the Notice of Intent (NOI) and all associated documents including receipt acknowledgements shall be maintained on-site throughout the construction period. A copy of the plan shall be submitted to the Contracting Officer. For further information, contacts are available in Section 01355, ENVIRONMENTAL PROTECTION, paragraph NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES), SWPPP AND NOI.

### 3.12.4 Oversize Loads

Oversize loads, over 8'6" wide, may require a Caltrans permit for hauling on State highways. P.O.C. Caltrans, Transportation Permits, P.O. Box 231, 247 W. Third Street, San Bernardino, CA, (909) 383-4637.

### 3.12.5 Encroachment Permit

The Contractor will be responsible for obtaining all permits and licenses necessary to haul material to the optional disposal site and to haul material off-site. The Contractor must apply for a no cost Encroachment Permit from the Riverside County Flood Control and Water Conservation District for disposition of excess satisfactory excavated materials and excess rock excavated materials in the optional disposal site. A copy of any encroachment permit shall be submitted to the COE.

### 3.13 FAR 52.236-15 Schedules for Construction Contracts.

#### SCHEDULES FOR CONSTRUCTION CONTRACTS (APR 1984)

- (a) The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Contracting Officer, prepare and submit to the Contracting Officer for approval three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including acquiring materials, plant, and

equipment). The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion by any given date during the period. If the Contractor fails to submit a schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments until the Contractor submits the required schedule.

- (b) The Contractor shall enter the actual progress on the chart as directed by the Contracting Officer, and upon doing so shall immediately deliver three copies of the annotated schedule to the Contracting Officer. If, in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress, including those that may be required by the Contracting Officer, without additional cost to the Government. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules in chart form as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained.
- (c) Failure of the Contractor to comply with the requirements of the Contracting Officer under this clause shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the default terms of this contract.

(End of clause)

### 3.14 NOTICE OF PARTNERSHIP

The Government intends to encourage the foundation of a cohesive partnership with the Contractor and its subcontractors. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives are effective and efficient contract performance and intended to achieve completion within budget, on schedule, and in accordance with plans and specifications; and to develop a single cooperative management team focused on the success of the project. This partnership would be bilateral in makeup, and participation will be totally voluntary. An integral aspect of partnering is the resolution of disputes in a timely, professional, and non-adversarial manner through the use of issue clarification and problem solving. Alternate Dispute Resolution (ADR) methodologies will be encouraged in place of more formal dispute resolution procedures. ADR will assist in promoting and maintaining an amicable working relationship to preserve the partnership. ADR is a voluntary, non-binding procedure available for use by the parties to this contract to resolve any dispute that may arise during performance. Any cost associated with effectuating

this partnership will be agreed to by both parties and will be shared equally with a change in contract price. To implement this partnership initiative it is anticipated that within 60 days of Notice to Proceed the Contractor's on-site project manager and the Government's Resident Engineer would attend a two day partnership development seminar/team building workshop together with the Contractor's key on-site staff and key Government personnel. Follow-up workshop of 1 to 2 days duration would be held periodically throughout the duration of the contract as agreed to by the Contractor and Government.

3.15 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER (ER 415-1-15, 31 OCT 89)

- a. This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with the CONTRACT CLAUSE: DEFAULT (FIXED PRICE CONSTRUCTION). In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:
  - (1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.
  - (2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.
- b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DAYS  
Work Days Based on five (5) Day Work Week

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
6	4	4	3	1	1	1	1	1	1	2	5

- c. Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in subparagraph b, the Contracting Officer will convert any qualifying delays to calendar

days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the CONTRACT CLAUSE: DEFAULT (FIXED PRICE CONSTRUCTION).

### 3.16 REQUIRED INSURANCE

The Contractor shall procure and obtain during the entire period of his performance under this contract the following minimum insurance:

- a. General Public Liability insurance for bodily injury and property damage with minimum limits of \$1,000,000 combined single limit per occurrence and \$1,000,000 annual aggregate for bodily injury to or death, personal injury and property damage.
- b. Automobile Liability insurance for bodily injury and property damage with minimum limits of \$1,000,000 combined single limit for each occurrence and \$1,000,000 annual aggregate.
- c. Either Workman's Compensation or Employer's Liability insurance with a minimum limit of \$1,000,000.

In every case the insurance coverage shall amount to at least the limits stated above. However, where the Financial Responsibility Compulsory Insurance Law of the State in which the installation is located requires higher limits, the Automobile Liability Insurance Policy should provide coverage of at least those limits. County of Riverside, California, a political subdivision of the State of California, and Riverside County Flood Control & Water Conservation District and City of Temecula, California, shall be named as additional insured parties and all policies issued in performance of work under this contract.

The Contractor does hereby agree to indemnify, defend, and save harmless County of Riverside, California, a political subdivision of the State of California, and Riverside County Flood Control & Water Conservation District and City of Temecula, California, from loss, damage, liability, costs, or expense to the proportionate extent caused by the Contractor, his employees, agents, or consultants and/or consultants arising out of its performance of this contract, including, but not limited to the negligent acts, errors, omissions, or intentional misconduct of the Contractor, its employees, agents or consultants and/or subconsultants in connection with this contract.

Contractor further does hereby agree, as a precaution to the performance of any work under this contract and as a precaution to any obligation of County of Riverside, California, a political subdivision of the State of California, and Riverside County Flood Control & Water Conservation District and City of Temecula, California, to make any payment under this contract, to provide County of Riverside, California, a political subdivision of the State of California, and Riverside County Flood Control & Water Conservation District and City of Temecula, California, with a certificate and/or a certificate issued by the State Industrial Insurance System (SIIS) in accordance with applicable California Statutes.

Contractor agrees to maintain required workers compensation throughout the

entire term of the contract. If Contractor does not maintain coverage throughout the entire term of the contract, Contractor agrees that Owner may, at any time the coverage is not maintained by Contractor, order the Contractor to stop work, assess liquidated damages as defined herein, suspend the contract, or terminate the contract. For each six month period this contract is in effect, Contractor agrees, prior to the expiration of the six month period, make another written request to SIIS for the provisions of a certificate and notice of lapse in or nonpayment of coverage. If Contractor does not make the request or does not provide the certificate before the expiration of the six month period, Contractor agrees that owner may order the Contractor to stop work, suspend the contract or terminate the contract.

### 3.17 SPECIAL CONSTRUCTION REQUIREMENTS

The Contractor shall restrict his operation and adapt his construction schedule to accommodate the following:

#### 3.17.1 Murrieta Creek Phase 1 Construction Schedule

With exception to the Biological Trappings per Section 01355 ENVIRONMENTAL PROTECTION, the Contractor shall not begin construction activities on Murrieta Creek Phase 1 property for the construction of the Murrieta Creek Phase 1 until after September 1, 2003.

#### 3.17.2 Project Limits

The Contractor's work, employee parking, operations, staging, equipment assembly and maintenance, and other on-site activities shall be restricted to actual areas of construction within the Project Limits. The Project Limits of the Murrieta Creek Phase 1 are indicated on the drawings, and constitute the maximum limits of the construction area available for Contractor's operations. The Project Limits are generally defined by the Right-of-Way (R/W , ROW) and adjoining Temporary Construction Easements (TCE) as shown on the plans, unless designated otherwise (either in the plans, in these Specifications or by the Contracting Officer).

The Contractor shall be solely responsible for obtaining agreements with and acquisition from adjacent land owners, when additional land or access points are required to supplement the Contractor's operations or staging needs. No appurtenances or other public access facilities (either temporary or permanent) shall be constructed beyond the Project Limits.

#### 3.17.3 Existing Roads

##### 3.17.3.1 Front Street, First Street, Pujol Street

The Contractor shall maintain public access along Front Street, First Street, and Pujol Street at all times during this contract. Signs and reflective barriers are to be used as required to allow safe passage.

#### 3.17.4 Coordination with Other Contractors

##### 3.17.4.1 Developing Communities surrounding Murrieta Creek Phase 1

The Contractor is advised that communities surrounding Murrieta Creek Phase 1, are currently under construction. Work to be performed under those community contracts consists of construction of commercial, subdivision, related utilities and connector roads.

#### 3.17.5 Runoff Murrieta Creek Phase 1

The work areas for Murrieta Creek Phase 1 will occur in areas that are subject to flowing waters as a result of rainfall. In addition, the Murrieta Creek Phase 1 work area is subject to flowing waters as a result of irrigation runoff and other construction related activities (new communities development). The Contractor is advised that it is their responsibility to protect their work from these probable events. In addition to these and other coordination issues discussed herein, see also specification Section 02100 DIVERSION AND CONTROL OF WATER. See also paragraph National Pollution Discharge Elimination System (NPDES) Permit.

##### 3.17.5.1 Runoff Side Drains

The Contractor shall anticipate storm (and nuisance) runoff coordination from side drains and at side drain locations along the Murrieta Creek Phase 1 project. Some side drains and laterals are active while others will become active during the life of the Murrieta Creek Phase 1 project. The Contractor shall conduct construction activities with full coordination of these runoff waters and shall safely allow them to pass without inundating other areas of adjacent development. Drainage from side drains, laterals and all future side drain locations shall not be interrupted.

#### 3.17.6 Front Street, First Street, and Pujol Street Construction Access for Others

The Front Street, First Street, and Pujol Way Streets and crossings are required to have continuous construction access for others across the Murrieta Creek Phase 1 alignment. The Contractor shall be required to schedule Murrieta Creek Phase 1 traffic activities and detours as necessary to ensure that traffic activities other than the Murrieta Creek Phase 1 project are not interrupted. Any detours utilized by the Contractor shall provide means of passage through the Channel work area that include equivalent road surface requirements (for instance asphalt paving if applicable).

#### 3.17.7 Excess Excavated Material, Disposition of

Excess excavated material, both satisfactory and unsatisfactory, originating from the construction of the Murrieta Creek Phase 1, shall become the property and responsibility of the Contractor. The Contractor is allowed to dispose of the excess satisfactory excavated material and excess rock excavated material from Murrieta Creek Phase 1 as follows: off site at no additional cost to the Government; and/or at optional disposal site at no additional cost to the Government.

The Contractor at his discretion may dispose of excess satisfactory excavated material and/or excess rock excavated material originating from

the construction of the Murrieta Creek Phase 1 in the optional disposal site located between Cherry Street, Jefferson Avenue, and Santa Gertrudis Creek, by placing and grading the excess satisfactory excavated material as shown on the drawings and by manageably stockpiling the excess rock excavated material, at no additional cost to the Government and/or to dispose the excess satisfactory and rock excavated material off site at no additional cost to the Government. The optional disposal site has capacity for 300,000 cubic yards of excess satisfactory excavated material. The use of the optional disposal site will require that the Contractor apply for a no cost Encroachment Permit through the Riverside County Flood Control and Water Conservation District, and that further guidelines may be set forth in the Encroachment Permit.

The optional disposal site is available to the Contractor to utilize for excess satisfactory excavated material and excess rock excavated material provided that the Contractor adheres to earthwork requirements that are included in the drawings. The Contractor is to anticipate that this optional disposal site shall be available for the Contractors use throughout the contract duration of this contract up to construction acceptance of the Murrieta Creek Phase 1, however, not including the 1 year maintenance and irrigation requirements required elsewhere in the contract.

The Contractor shall dispose of only excess satisfactory excavated material and excess rock excavated material originating on Murrieta Creek Phase 1 construction activities as stated above in the optional disposal site, and any other material, satisfactory or unsatisfactory, from off project sites is not allowed into the optional disposal site. The Contractor is advised that Front Street, First Street, and Pujol Way, and the street and roads adjacent to the project such as State Highway 79 and Interstate 15, are all currently active and open streets to the Public. The haul route shall be in accordance with paragraph HAUL ROUTE of this section, and shall be coordinated through the development of traffic control plans submitted to and approved by the City of Temecula.

#### 3.17.7.1 General

At the option of the Contractor, excess satisfactory excavated material from the Murrieta Creek Phase 1 channel excavation shall be disposed off within the optional disposal site shown on the drawing and as follows:

- a) Prior to hauling excess excavated material to the optional disposal site, the Contractor shall submit a pre-construction topographic survey of the optional disposal site with 1 foot contour intervals in accordance with paragraph CONTRACTOR'S SURVEYS of this section;
- b) The Contractor shall prepare the optional disposal site in accordance with paragraph PREPARATION FOR PLACING IN OPTIONAL DISPOSAL SITE of this section;
- c) The Contractor shall segregate into manageable stockpiles the excess rock excavated materials from the excess satisfactory excavated materials within the optional disposal site, and the stockpiled rock shall be placed to prevent ponding of water within the optional disposal site and site and within the stockpiles;

- d) The Contractor will evenly spread and grade the excess satisfactory material, beginning in the area of the optional disposal site adjacent to Jefferson Avenue, such that it drains by gravity westward towards Murrieta Creek;
- e) The approximate dimensions of the optional disposal site foundation or footprint for placing excess satisfactory excavated materials and/or excess rock excavated material stockpiles is 1200 feet along Jefferson Avenue x 900 feet along Cherry Street. The height of the placed material may not exceed 8 feet along the Jefferson Avenue axis, with the placed material sloping towards Murrieta Creek to allow drainage to occur.
- f) Upon completion of spreading and grading the excess satisfactory excavated material and the manageable stockpiling of excess rock excavated material work within the optional disposal site, the Contractor shall submit a post-construction topographic survey of the optional disposal site with 1 foot contour intervals in accordance with Section 01200 GENERAL REQUIREMENTS paragraph CONTRACTOR'S SURVEYS of this section;
- g) Upon completion of the Murrieta Creek Phase 1 work, the Contractor shall relinquish all rights to ownership of the excess satisfactory excavated material and the excess rock excavated material that are within the boundary of the optional disposal site.

#### 3.17.7.2 PREPARATION FOR PLACING IN OPTIONAL DISPOSAL SITE

The foundation for the material to be placed shall be cleared of all existing obstructions, trash, building materials, construction materials, vegetation and debris. The approximate dimensions of the optional disposal site foundation or footprint for placing excess satisfactory excavated materials and/or excess rock excavated material stockpiles is 1200 feet along Jefferson Avenue x 900 feet along Cherry Street. Any existing obstructions, trash, building materials, construction materials, vegetation and debris shall be removed in accordance with Section 02230 CLEAR SITE AND REMOVE OBSTRUCTIONS. Unsatisfactory or unstable (too wet) material and soils not meeting the requirements for fill material shall be removed where directed.

#### 3.17.8 Coordination for Utilities

During the life of the Murrieta Creek Phase 1 contract, the Contractor shall anticipate numerous coordination issues with utility owners at various locations along the Murrieta Creek Phase 1 alignment. New utilities are required to support this rapidly developing area. As a minimum, the Metropolitan Water District, the Southern California Edison Company, the Rancho California Water District, the Eastern Municipal Water District, Adelphia Cable Company, and the Southern California Gas Company have utility interests within the project boundaries and the Contractor shall coordinate and accommodate these utility concerns as necessary. The Contractor shall coordinate all Murrieta Creek Phase 1 work with utility companies desiring access to the Murrieta Creek Phase 1 ROW or TCE limits identified on the contract drawings. The Contractor shall permit any

utility or its delegated representative to enter into and use Murrieta Creek Phase 1 ROW or TCE areas to complete utility work. The Murrieta Creek Phase 1 ROW and TCE areas are not intended to be restricted for the sole use of the Contractor.

### 3.17.9 CONSTRUCTION TIMING CONSTRAINTS

#### 3.17.9.1 WATER RESOURCES

**Channel construction and maintenance activities will not be conducted if bank to bank flows exist and during rain events to reduce the potential for significant impacts to water quality. The construction Contractor will monitor and record weather reports for any indication of potential rain events. The Contractor shall divert the low flow channel consistent with the SWPPP and regulatory permits to minimize working within the live channel.**

#### 3.17.9.2 BIOLOGICAL RESOURCES

- A) **CLEARING AND GRUBBING - Riparian vegetation exists within the channel that cannot be removed during the nesting season from March 15, 2004 through July 30, 2004, inclusive. Therefore, all clearing and grubbing shall be completed prior to March 15, 2004.**
- B) **SOUTHWESTERN POND TURTLES - A southwestern pond turtle habitat area exists within the southern portion of the project limits. Turtles within this habitat will be captured and relocated by a USACE biologist prior to the start of any clearing and grubbing. The relocation process will take approximately 21 calendar days. Therefore, the Contractor shall notify the Contracting Officer and the Corps biologist, Sarah Laughlin, a minimum of 21 Calendar days prior to contractor's scheduled clearing and grubbing operations. Once the turtle relocation process is complete, the contractor must start the clearing and grubbing within 30 days from the completion of the turtle relocation, otherwise additional trappings will be necessary and the Contractor shall be responsible for any incurred delays and expenses.**
- C) **NOISE - Construction within 1000 ft of residences or other noise sensitive uses will be restricted to daytime hours. No construction or maintenance activities within 1000 feet of noise sensitive uses on Sunday, on legal holidays or between 7 p.m. and 6:30 a.m. from Monday night through Friday morning and between 7 p.m. and 8 a.m. from Friday night through Saturday morning.**

### 3.18 CONTRACTOR'S SURVEYS

#### 3.18.1 Survey Data

Reference is made to SECTION 00800: SPECIAL CONTRACT REQUIREMENTS, QUANTITY SURVEYS, ALTERNATE I, FAR 52.236-16 which requires payments based on surveys. Progress payments will be based upon Contractor's surveys. The Contractor's survey shall provide full coverage of the entire area for which progress payment is being submitted.

It is further emphasized that survey data which does not meet all applicable requirements and quality assurance verifications will not constitute a valid request for payment.

Contractor's surveys shall be performed electronically (automated) and the data shall be provided and submitted to the Government on an electronic media (IBM compatible, ASCII format) in delimited files of easting, northing, and depth (x,y,z), where the depth is indicated as positive if recorded above mean sea level. The first lines of the data file will list the information as follows (Note this is an example):

- \* Project Name: Murrieta Creek Phase 1; ENTIRE PROJECT SITE, FY2003
- \* Surveyor's Name and Company Name
- \* Area Surveyed
- \* Type of Survey and Date of Survey (i.e. Pre-construction, MM/DD/YR)
- \* Vertical Datum
- \* Horizontal Datum

These first 6 lines will be preceded by an asterisk (\*), which indicates a comment line.

For all of the pre-construction and post construction surveys, three (3) copies of the survey plotted on paper will accompany the x,y,z data (electronic file) and all data shall be collected and plotted in english units (feet).

### 3.18.2 Survey Data Standards

The Contractor's surveys for progress payment shall meet or exceed the survey standards listed in EM 1110-1-1005, Topographic Surveying for topographic surveys. Surveys shall be in the State Plane Coordinate System as follows:

- a) Horizontal Control shall be tied to the California HARN, 2000-35 Epoch based on NAD83, in the California Lambert Zone 6, U.S. survey feet.
- b) Vertical Control shall be of third order accuracy or better based on bench marks provided by the Corps of Engineers or the National Geodetic Survey, NAVD88.

Surveys shall be performed by an independent survey contractor with at least three (3) years of experience in topographic surveying of land features and have either a current Land Surveyor's or a Professional Engineer's license, authorized to certify surveys in the State of California. The Topographic Surveyor firm selected by the Contractor must be approved by the Contracting Officer prior to performing surveys for this contract.

#### 3.18.2.1 Additional Requirements for Survey Data

Unless otherwise noted, all topographic surveys shall be at 1 foot contour intervals and shall have cross sections at 20 foot intervals.

### 3.18.3 Positioning System

It is required that surveys shall be conducted using an RTK or similar modern electronic surveying equipment using Differential Global Positioning System (DGPS) with positional accuracy equal to or exceeding the survey standards listed in EM 1110-1-1003 and EM 1110-1-1005.

#### 3.18.4 Survey Firm Acceptance

For the Contracting Officer to approve the selected survey firm, the Contractor must provide documentation indicating that modern electronic surveying equipment will be used for the surveys to be performed as well as documentation verifying the experience of the operators using the equipment. Typical information that will be required, as a minimum, includes the name, model, and year of manufacture of the electronic equipment, and the manufacturer's stated accuracies, and capability of the equipment proposed for usage. The Contractor shall submit credentials/qualifications as evidence that qualified, experienced staff are available and will be used for the operation of the electronic positioning and surveying equipment.

#### 3.18.5 Data Processing

The Contractor shall use a Data Processing System to map the survey data and calculate quantities. Reduced survey data shall then be imported into the Data Processing System where cross-sections are compared to fill templates and volume quantities are calculated. The software shall be capable of digital terrain modeling and shall produce, as a minimum, topographic survey sheets, cross section profiles, 3-dimensional area profiles, and quantity volume calculations using the Triangulated Irregular Network (TIN) method.

#### 3.19 INSPECTION

Reference is made to the clause of the contract entitled: INSPECTION OF CONSTRUCTION. In addition, the Contractor will be required:

- a. To furnish, on the request of the Contracting Officer or any inspector, the use of such laborers and material forming a part of the ordinary and usual equipment and crew of the plant as may be reasonably necessary in inspecting and supervising the work.
- b. To furnish, on the request of the Contracting Officer or any inspector, suitable transportation from all points designated by the Contracting Officer to and from the various pieces of plant, and to and from the work areas. Should the Contractor refuse, neglect, or delay compliance with these requirements, the specific facilities may be furnished and maintained by the Contracting Officer, and the cost thereof will be deducted from any amounts due or to become due the Contractor.
- c. To allow authorized representatives of the California Regional Water Quality Control Board and the South Coast Air Quality Management District to:

enter upon the Contractor's premises where a regulated facility or

activity is located or conducted, or where records are kept;

have access to and copy, at reasonable times, any records that must be kept per agency requirements; inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated by these agencies;

and sample or monitor at reasonable times any substances or parameters at any location for the purpose of assuring compliance with agency regulations.

### 3.20 Pre-Construction and Post-Construction Surveys, except Optional Disposal Site

Prior to the start of construction work (including clear site and remove obstructions, the Contractor shall conduct a pre-construction topographic survey of the entire project site, except optional disposal site in accordance with paragraph CONTRACTOR'S SURVEYS in this section.

At the end of all work associated with this section, the Contractor shall conduct a post-construction topographic survey of the entire project site, except optional disposal site in accordance with paragraph CONTRACTOR'S SURVEYS in this section.

-- End of Section --

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## SECTION 01270

## MEASUREMENT AND PAYMENT

## PART 1 GENERAL

## 1.1 LUMP SUM PAYMENT ITEMS

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular lump sum or unit price payment item, shall be included in the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

## 1.1.1 Diversion and Control of Water (Bid Item 0001)

Payment for Diversion and Control of Water will be made at the applicable contract price, which payment shall constitute full compensation for control of storm water, irrigation, and miscellaneous runoffs to prevent adverse impacts to the project or downstream properties.

## 1.1.2 Clear Site and Remove Obstructions (Bid Item 0002)

Payment for Clear Site and Remove Obstructions will be made at the applicable contract price, which payment shall constitute full compensation for clearing debris and vegetation and grubbing areas of excavation, areas to be graded, areas to receive fill, or other approved areas necessary for the Contractor's operations within the limits of the designated temporary construction easement; disposal off-site of all vegetation and existing debris such as old pavement, tree trimmings, trash, furniture and appliances, car bodies and car parts, etc; removing and plugging abandoned waterline; and the protection of existing facilities to remain in place, and scheduling and coordination of the work to comply with Section 01200 GENERAL REQUIREMENTS, paragraph ENVIRONMENTAL ASSESSMENT REQUIREMENT. Payment will also include demolition, clearing & removal of buildings or other structures, fences, and embankments within the limits of the rights of way including but not limited to the VFW Hall, Skating rink, BMX track and including foundations, subgrade structures, utilities and all features associated with the removed structure. **Payment will also include removal of portion of existing reinforced concrete gutter associated with east ditch.**

## 1.1.3 East Ditch (Bid Item 0010)

**Payment for East Ditch will be made at the applicable contract price, which**

payment shall constitute full compensation for constructing the east graded ditch, complete, including earthwork including miscellaneous fill; protect in place remaining portions of existing concrete gutter; new reinforced concrete gutters including furnishing and placing reinforcing steel, furnishing, placing, finishing and curing concrete, and connection to existing concrete gutters; grouted stone slope; and all incidentals, complete, as shown on the drawings. The earthwork included in this item shall be only that earthwork which is located outside the limits of earthwork for which other payment is provided.

1.1.4 West Ditch (Bid Item 0011)

Payment for West Ditch will be made at the applicable contract price, which payment shall constitute full compensation for constructing the west concrete ditch, complete, including earthwork; furnishing and placing reinforcing steel; furnishing, placing, finishing and curing concrete; grouted stone **side drains at station 55+10 and station 51+12, including grouted stone cutoff walls; including modifications to existing 30" CMP,** and all incidentals, **complete, as shown on the drawings.** The earthwork included in this item shall be only that earthwork which is located outside the limits of earthwork for which other payment is provided.

1.1.5 Landscaping (Bid Item 0015)

Payment for Landscaping will be made at the applicable contract price, which payment shall constitute full compensation for labor, materials, and equipment for the trees and shrubs planted in the landscaping area, complete. Payment will include obtaining the plant material, topsoil, soil amendments, erosion control material, wood staking material, mychorrhizal fungi inoculum, water, decomposed wood derivatives, and pesticide. Payment will also **include all earthwork related to construction of this item,** soil preparation, plant establishment, weed abatement, watering, and maintenance.

1.1.6 Mitigation Plantings (Bid Item 0016)

Payment for Mitigation Plantings will be made at the applicable contract price, which payment shall constitute full compensation for labor, materials, and equipment for the trees, shrubs and cuttings planted in the mitigation area, complete. Payment will include obtaining the plant material, topsoil, soil amendments, erosion control material, wood staking material, mychorrhizal fungi inoculum, water, decomposed wood derivatives, and pesticide. Payment will also **include all earthwork related to construction of this item,** soil preparation, plant establishment, weed abatement, watering, and maintenance.

1.1.7 Hydroseeding (Bid Item 0017)

Payment for Hydroseeding will be made at the applicable contract price, which payment shall constitute full compensation for providing all labor, materials, and equipment for the hydroseeding complete. Payment will include obtaining seed mixtures, topsoil, amendments, mulch, fertilizers, tackifier, water, and pesticide; application of the hydroseeding mixture, mulch and tackifier in two separate applications; site preparation; and watering, weed control, and maintenance, as specified in Section 02921

HYDROSEEDING. Payment will not include seeding or reseeding of areas, or reworking of landscape areas required as a result of Contractor's negligence or damages caused by Contractor.

1.1.8 Broadcast Seeding (Bid Item 0018)

Payment for Broadcast Seeding will be made at the applicable contract price, which payment shall constitute full compensation for providing all labor, materials, and equipment for the broadcast seeding complete. Payment will include obtaining seed mixtures, topsoil, amendments, water, fertilizers and pesticide; site preparation; and watering, weed control, and maintenance, as specified in Section 02921 HYDROSEEDING. Payment will not include seeding or reseeding of areas, or reworking of landscape areas required as a result of Contractor's negligence or damages caused by Contractor.

1.1.9 Irrigation (Bid Item 0019)

Payment for Irrigation will be made at the applicable contract price, which payment shall constitute full compensation for providing all labor, materials, equipment, and installation of the irrigation system beginning at the POC, including main and lateral piping with associated valves, components and fittings, bubblers, sprinkler heads, impact heads, pop-up heads, water meters, backflow preventors, automatic controllers (24 station and enclosure), master control valves, valve markers, flow sensors, remote control valves, quick couplers, air relief valves, flush valves and electrical wiring from POC to controller and from controllers to remote control valves, complete in place. Payment will also include all necessary excavation, backfilling, and compaction of pipe trenches. All costs associated with permit fees, monthly electric and water bills shall also be included in this item throughout the entire maintenance period until final acceptance of the irrigation system, landscaping, and plantings.

1.1.10 Pipe Access Gate (Bid Item 0020)

Payment for Pipe Access Gate and Appurtenances and Bollards will be made at the applicable contract price, which payment shall constitute full compensation for fabricating and installing the pipe access gate and appurtenances and bollards, complete, including earthwork; pipe structures, including furnishing, placing, finishing and curing concrete; and all incidentals, except padlock which will be provided by Riverside County Flood Control District. The earthwork included in this item shall be only that earthwork which is located outside the limits of earthwork for which other payment is provided.

1.1.11 Grouted Stone Access Ramp (Bid Item 0008)

1.1.11.1 Payment

Payment for Grouted Stone Access Ramp will be made at the applicable contract lump sum price, which payment shall constitute full compensation for obtaining and placing the stone and grout, including all earthwork related to construction of this item; including pipe access gate installed at top of access ramp and all appurtenances; complete, as indicated on the

**drawings.**

## 1.2 UNIT PRICE PAYMENT ITEMS

Payment items for the work of this contract on which the contract unit price payments will be made are listed in the BIDDING SCHEDULE and described below. The unit price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items.

## 1.2.1 Excavation

## 1.2.1.1 Measurement

Unless specified or approved otherwise, excavation items will be measured for payment by computing the volume in cubic yards, using plotted surveyed cross sections and the average end area method **or the triangulated irregular network (TIN) method**. Excavated materials will be measured for payment from its original position. Paylines for excavation will be as shown on the plans. No measurement for payment will be made for over excavation, nor for construction, removal of haul roads, dressing, drainage and road surfacing materials, or for the disposal of the excavated materials from over excavation and construction and maintenance of access haul roads.

## 1.2.1.2 Payment for Excavation, Channel, Sta. 32+50 to Sta. 39+00 (Bid Item 0003)

Payment for Excavation, Sta. 32+50 to Sta. 39+00 will be made at the applicable contract price, which payment constitutes full compensation **for excavating all material including but not limited to silt, sand, gravel, cobbles and boulders, granitic bedrock, asphalt, vegetation, trash, and other debris**, hauling, stockpiling, processing, and disposition of all excavated material.

## 1.2.1.3 Payment for Excavation, Channel, Sta. 39+00 to Sta. 60+00 (Bid Item 0004)

Payment for Excavation, Sta. 39+00 to Sta. 60+00 will be made at the applicable contract price, which payment constitutes full compensation **for excavating all material including but not limited to silt, sand, gravel, cobbles and boulders, granitic bedrock, asphalt**, vegetation, trash, and other debris, hauling, stockpiling, processing, and disposition of all excavated material.

1.2.2 **Compacted Fill (Bid Item 0005)**

## 1.2.2.1 Measurement

Measurement for Payment for Compacted Fill will be made between the required excavation and the fill limit lines, or between the ground lines

and fill lines, as indicated or staked in the field. Quantities will be computed in cubic yards by the average end area method and the planimeter will be considered a precise instrument for measuring plotted cross sections, **or the Contractor may utilize the triangulated irregular network (TIN) method for calculating quantities.** No measurement for payment will be made for backfill of any over excavation for temporary access and haul roads for the Contractor's convenience.

#### 1.2.2.2 Payment

Payment for Compacted Fill will be made at the applicable contract price, which payment shall constitute full compensation for obtaining any necessary material, foundation preparation, placing, slope benching, spreading, discing and compacting the fill, complete.

#### 1.2.3 Geotextile (Bid Item 0006)

##### 1.2.3.1 Measurement

Installed geotextiles will be measured for payment in place to the nearest square yard of protected area as delineated in the drawings.

##### 1.2.3.2 Payment

Payment for Geotextile will be made at the contract unit price, which price shall constitute full compensation for providing all plant, labor, material, and equipment and performing all operations necessary for the complete and satisfactory installation of the geotextile. The following items are included in the contract unit price for geotextile and shall not be counted a second time in the process of determining the extent of geotextile placed: Material and associated equipment and operation used in laps, seams, or extra length; securing pins and associated material, equipment, and operations; and material and associated equipment and operations used to provide cushioning layer of sand or gravel or both to permit increase in allowable drop height of stone. No payment will be made for geotextiles replaced because of waste, contamination, damage, repair, or due to contractor fault or negligence.

#### 1.2.4 Grouted Stone Invert Stabilizer (Bid Item 0007)

##### 1.2.4.1 Measurement

Measurement of invert stabilizer will be made on the basis of the actual volume, in cubic yards, of grouted stone within the pay lines of the stabilizer structure as indicated on the drawings. Measurement of grouted stone placed against the sides of any excavation without the use of intervening forms will be made only within the pay lines of the grouted stone structure. No deductions will be made for rounded or beveled edges or space occupied by metalwork, nor voids or embedded items which are either less than 0.15 cubic yard in volume or one-tenth of square yard in cross section. Grouted stone placed in items of work other than those specifically mentioned above, and grouted stone and grout and stone wasted or used for the convenience of the Contractor will not be included in measurement for payment.

## 1.2.4.2 Payment

Payment for Grouted Stone Stabilizer will be made at the applicable contract unit price, which payment shall constitute full compensation for obtaining and placing the grouted stone and grout, complete. **Payment for the grouted stone invert stabilizer will include all earthwork related to construction of this item.**

## 1.2.5 THIS PARAGRAPH CHANGED TO 1.1.11 IN AMENDMENT 2

## 1.2.6 Riprap (Bid Item 0009)

## 1.2.6.1 Measurement

Measurement of riprap will be by the **ton(2000 pounds)** of riprap placed within the lines and grades indicated on the drawings for riprap. The earth cover shall be placed to the lines and grades shown on the drawings.

## 1.2.6.2 Payment

Payment for Riprap will be made at the applicable contract unit price per **ton(2000 pounds)**, which payment shall constitute full compensation for work required for furnishing, placing and installation of riprap, **including all earthwork related to construction of this item including 6" miscellaneous fill over the geotextile and 12" miscellaneous fill over the riprap,, including grouted stone cut-off walls, complete, as shown on the drawings.**

## 1.2.7 Decomposed Granite Surfacing (Bid Item 0012)

## 1.2.7.1 Measurement

Measurement of decomposed granite surfacing will be by the ton (2,000 pounds) of the surfacing course placed within the lines and grades indicated on the drawings for road.

## 1.2.7.2 Payment

Payment for Decomposed Granite Surfacing will be made at the applicable contract unit price per ton, which payment shall constitute full compensation for work required for installation of decomposed granite base course, furnishing, placing, and compacting the decomposed granite base course, complete, including subgrade preparation.

## 1.2.8 Aggregate Base Course (Bid Item 0013)

## 1.2.8.1 Measurement

Measurement of aggregate base course will be by the ton (2,000 pounds) of aggregate base course placed within the lines and grades indicated on the drawings for road base.

## 1.2.8.2 Payment

Payment for Aggregate Base Course will be made at the applicable contract unit price per ton, which payment shall constitute full compensation for work required for installation of aggregate base course, furnishing, placing, and compacting the aggregate base course, complete, including subgrade preparation.

1.2.9 Asphalt Concrete Pavement (Bid Item 0014)

1.2.9.1 Measurement

Measurement for asphalt concrete pavement will be by the ton (2,000 pounds) of asphalt concrete pavement placed within the lines and grades as indicated on the drawings.

1.2.9.2 Payment

Payment for Asphalt Concrete Pavement will be made at the applicable contract price which payment shall constitute full compensation for asphalt concrete pavement in place, complete including tack coat, and appurtenant work except for aggregate base course. No payment will be made for excessive thickness.

1.2.10 Salvage and Store Trees (Bid Item 0021)

1.2.10.1 Measurement

Measurement for salvage and store trees will be the number of trees of each type specified, actually salvaged, stored and maintained in a healthy condition.

1.2.10.2 Payment

The accepted quantities of trees measured for salvage and store, will be paid at the applicable contract unit price per the type of tree, for trees actually salvaged, stored and maintained in a healthy condition. Such payment shall be full compensation for all the labor, materials, and incidentals necessary to complete the work, including irrigation water to maintain the trees, except permanently installing trees will be paid separately.

1.2.11 Install Salvage Trees (Bid Item 0022)

1.2.11.1 Measurement

Measurement for install salvage trees will be the number of trees of each type specified, actually installed on the project.

1.2.11.2 Payment

The accepted quantities of trees measured for install salvage trees will be paid at the applicable contract unit price per the type of tree, identified in each bid item and actually installed on the project. Such payment shall be full compensation for all the labor, materials, and incidentals necessary to complete the work, including irrigation water to keep the

**trees alive during the one year warranty period.**

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

**SUBMITTAL REGISTER**

CONTRACT NO.

TITLE AND LOCATION  
MURRIETA CREEK PHASE 1

CONTRACTOR

A C T I V I T Y  N O	T R A N S M I T T A L  N O	S P E C I F I C  S E C T	D E S C R I P T I O N	P A R A M E T E R S	G O V E R N M E N T  C L A S S I F I C A T I O N	C O N T R A C T O R : S C H E D U L E D A T E S			C O N T R A C T O R : A C T I O N		A P P R O V I N G A U T H O R I T Y				M A I L E D  T O  C O N T R A C T O R /  A U T H	R E M A R K S		
						S U B M I T	B Y	B Y	A C T I O N	D A T E O F	D A T E F R O M	D A T E F R O M	D A T E F R O M	D A T E F R O M			D A T E O F	D A T E O F
	01200		SD-01 Preconstruction Submittals															
			Topographic Surveyor	3.18.2	G RE													
			Site Plan	1.3.1	G RE													
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			Activity Hazards Safety Analysis	3.11.2														
			Traffic Control Plan	3.9.6.2														
			Access and Haul Roads	3.10.2														
			Practicable Schedule	3.13	G RE													
			Annotated Schedule	3.13														
			Haul route plan	3.9.6.7	G RE													
			Encroachment Permit	3.12.5														
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			Pre-construction topographic survey of the optional disposal site	3.17.7.1														
			SD-11 Closeout Submittals															
			Post-construction topographic survey of the entire project site, except optional disposal site	3.20														
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	01355		SD-01 Preconstruction Submittals															

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TITLE AND LOCATION  
MURRIETA CREEK PHASE 1

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION	PARAGRAPH	G O V T C L A S S I F I C A T I O N	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				REMARKS			
						SUBMIT	BY	BY	A C T I O N C O D E	DATE OF ACTION	DATE RCD FROM CONTR	DATE FWD TO APPR AUTH/	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER		A C T I O N C O D E	DATE OF ACTION	DATE RCD FRM APPR AUTH
(a)	(b)	(c)	(d)	(e)	(f)												(r)	
		01355	Environmental Protection Plan	1.7	G RE													
			Species that require specific attention	3.9.2														
			SD-07 Certificates															
			Mill Certificate or Affidavit	2.1.3														
		01451	SD-01 Preconstruction Submittals															
			Quality Control Plan	3.2	G RE													
		01702	SD-11 Closeout Submittals															
			As-built Drawings	3.1.1														
		02100	SD-01 Preconstruction Submittals															
			Control of Water Plan	1.1.1	G RE													
		02300	SD-01 Preconstruction Submittals															
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			SD-05 Design Data															
			Blast Data Report	3.6.2														
			Blast Data Report	3.6.7														
			SD-06 Test Reports															
			Testing	3.12														
			SD-07 Certificates															
			Testing	3.12														
		02316	SD-06 Test Reports															
			Field Density Tests	3.3.3														
			Testing of Backfill Materials	3.3.2														

**SUBMITTAL REGISTER**

CONTRACT NO.

TITLE AND LOCATION  
MURRIETA CREEK PHASE 1

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION	PARAGRAPH	GLASSIFICE VIEW	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				REMARKS		
						SUBMIT	BY	BY	ACTION	DATE OF ACTION	DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION		DATE OF ACTION	DATE RCD FRM APPR AUTH
	02378		SD-04 Samples														
			Geotextile Sample	2.1.1.1													
			SD-07 Certificates														
			Geotextile Material	2.1.1													
	02551		SD-03 Product Data														
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			Bituminous Pavement Mix Design	2.2.1													
	02558		SD-06 Test Reports														
			Testing	3.6													
			SD-07 Certificates														
			Waybills and Delivery Tickets	3.6.5													
	02600		SD-03 Product Data														
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			SD-05 Design Data														
			Method of placement	3.2.1	G												
			SD-06 Test Reports														
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			Gradation Sampling and Testing	2.1.5.2													
			SD-07 Certificates														
			Waybills and Delivery Tickets	3.3.2													
	02650		SD-05 Design Data														
			Grout Mix Design	3.1													
			SD-06 Test Reports														
			Aggregates	2.1													
			SD-07 Certificates														

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MURRIETA CREEK PHASE 1

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION	PARAGRAPH	G O V T C L A S S I F I C A T I O N	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				REMARKS		
						SUBMIT	BY	MATERIAL NEEDED BY	ACTION	DATE OF ACTION	DATE FWD TO APPR AUTH/ FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION		DATE OF ACTION	DATE RCD FRM APPR AUTH
(a)	(b)	(c)	(d)	(e)	(f)												(r)
		02650	Portland Cement	2.2													
			Curing Materials	2.4													
			Waybills and Delivery Tickets	3.6													
		02722	SD-03 Product Data														
			Plant, Equipment, and Tools	1.6													
			Waybills and Delivery Tickets	3.3													
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			Sampling and testing	1.4													
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		02723	SD-06 Test Reports														
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			Sample	2.2.2													
		02910	SD-01 Preconstruction Submittals														
			Equipment	Part 3	G RE												
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		02921	SD-03 Product Data														
			Equipment	3.3.1.1													
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			Topsoil	2.2													
			Quantity Check	3.4													
			Seed Establishment Period	3.10													
			Maintenance Record	3.10.7													
			Maintenance Plan		G RE												
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			Wood cellulose fiber mulch and tackifier	3.3.2													

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MURRIETA CREEK PHASE 1

CONTRACTOR

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						SUBMIT	BY	BY	ACTION	DATE OF ACTION	DATE FWD TO APPR AUTH/ FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION		DATE OF ACTION	DATE RCD FRM APPR AUTH
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
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			Soil Amendments	2.3													
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			Topsoil	2.2													
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			Fertilizer	2.3.2													
			Soil Conditioner	2.3													
			Mulch	3.10.6													
			Pesticide	2.5													
	02930		SD-03 Product Data														
			Erosion Control Material	2.4													
			Delivery	1.4.1													
			Plant Establishment Period	3.9													
			Maintenance Record	3.9.2.6													
			Application of Pesticide	3.7													
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			Soil Test	3.1.3.2													
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CONTRACT NO.

TITLE AND LOCATION  
MURRIETA CREEK PHASE 1

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION	PARAGRAPH	GLASS/FIELD VIEW	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				REMARKS		
						SUBMIT	BY	MATERIAL NEEDED BY	ACTION	DATE OF ACTION	DATE FWD TO APPR AUTH/	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION		DATE OF ACTION	DATE RCD FRM APPR AUTH
(a)	(b)	(c)	(d)	(e)	(f)												(r)
		02930	Topsoil	2.2													
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## SECTION 01355

## ENVIRONMENTAL PROTECTION

## PART 1 GENERAL

Contractor shall coordinate all environmental concerns to the Contracting Officer.

## 1.1 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.

## ASTM INTERNATIONAL (ASTM)

ASTM D 4439	(2001) Geosynthetics
ASTM D 4491	(1999a) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1996) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1999a) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(2001) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

## U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

33 CFR 328	Definitions of Waters of the United States
40 CFR 68	Chemical Accident Prevention Provisions
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171 - 178	Hazardous Materials Regulations

## U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

WETLAND MANUAL Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1

## 1.2 DEFINITIONS

## 1.2.1 Environmental Pollution and Damage

For the purpose of this specification, environmental pollution and damage is defined as 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 man; or degrade the utility of the environment for but not limited to aesthetic, cultural and/or historical purposes.

## 1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

## 1.2.2.1 ENVIRONMENTAL PROTECTION REQUIREMENTS

These requirements are to provide and maintain, during the life of the contract, environmental protection. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project; and comply with Federal, State, and local regulations pertaining to the environment, including but not limited to water, air, and noise pollution; biological resources, transportation, recreation, public services and utilities; geology, seismicity and soils; hazardous materials and waste management. The Contractor will comply with all the requirements of the Environmental Protection Plan as described in this section. This plan will be applicable prior to and during the construction of Phase 1 of the Murrieta Creek Flood Control and Environmental Restoration Project.

## 1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint

thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

#### 1.2.4 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

#### 1.2.5 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

#### 1.2.6 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

#### 1.2.7 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND MANUAL.

### 1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. 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 comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

### 1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors. Assurance of compliance with this section by subcontractors will be the responsibility of the Contractor and subject to disciplinary action and/or shut down until compliance is met.

### 1.5 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

### 1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The "RE" designates that the Resident Office will review the submittal for the Government. Submit the following in accordance with Section 01330, SUBMITTAL PROCEDURES:

#### SD-01 Preconstruction Submittals

Environmental Protection Plan; G, RE.

The environmental protection plan.

Species that require specific attention.

Species that require specific attention along with measures for their protection will be listed for all workers by the Contractor prior to beginning of construction operations.

#### SD-07 Certificates

Mill Certificate or Affidavit.

Certificate attesting that the Contractor has met all specified requirements.

### 1.7 Environmental Protection Plan

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan covering all mitigation measures contained herein for the protection of the environment as identified and discussed further in this section for review and approval by the Contracting Officer. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Contractor will meet with representatives of the Contracting Officer to develop a mutual understanding relative to compliance with this provision and administration of the environmental protection program. Construction and/or associated activities thereof will not commence until the

environmental protection plan is approved by the Government. Approval of the Contractor's plan will not relieve the Contractor of his responsibility for adequate and continuous control of pollutants and other environmental protection measures. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. The Environmental Protection Plan shall be current and maintained onsite by the Contractor. The Government reserves the right to make changes in the Contractor's environmental protection plan and operations as necessary to maintain satisfactory environmental protection performance. The Government reserves the right to halt construction operations at the expense of the Contractor should the Contractor be found in non-compliance with the environmental protection plan approved by the Contracting Officer. Construction operations would resume when compliance is met. The environmental protection plan will include but not be limited to the following:

#### 1.7.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

#### 1.7.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

- a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.
- b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.
- c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
- d. Description of the Contractor's environmental protection personnel training program.
- e. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure

that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. The Contractor's Storm Water Pollution Prevention Plan (SWPPP) may be substituted for the erosion and sediment control plan.

- f. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.
- g. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.
- h. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.
- i. Drawing showing the location of borrow areas, **if utilized**.
- j. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:
  1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.
  2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.
  3. Training requirements for Contractor's personnel and methods of accomplishing the training.
  4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.
  5. The names and locations of suppliers of containment materials

and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.
  
- k. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted. The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor in addition to periodic monitoring by the U.S. Army Corps of Engineers Los Angeles District. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally-issued Clean Water Act permits.
  
- l. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.
  
- m. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.
  
- n. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given

time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

- o. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. Waste waters directly derived from construction activities will not be allowed to enter water areas. These waste waters will be collected and placed in retention ponds where the suspended materials can be settled out or the water evaporated in order to separate the pollutants from the water. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.
- p. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

### 1.7.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

### 1.8 Protection of Features

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of

the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

#### 1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

#### 1.10 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental 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 the proposed corrective action and take such action when approved by the Contracting Officer. 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 equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

#### 1.11 EROSION AND SEDIMENT CONTROLS

The controls and measures required by the Contractor are described below.

##### 1.11.1 Stabilization Practices

The stabilization practices to be implemented shall include silt fences, straw bales, soil stabilizer, geotextiles, erosion control mats, etc. On his daily CQC Report, the Contractor shall record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, embankment, and grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs UNSUITABLE CONDITIONS and NO ACTIVITY FOR LESS THAN 21 DAYS, stabilization practices shall be initiated as soon as practicable, but no more than 14 days, in any portion of the site where construction activities have temporarily or permanently ceased.

#### 1.11.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity temporarily or permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable.

#### 1.11.1.2 No Activity for Less Than 21 Days

Where construction activity will resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then stabilization practices do not have to be initiated on that portion of the site by the fourteenth day after construction activity temporarily ceased.

#### 1.11.2 Structural Practices

Structural practices shall be implemented to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Structural practices shall include the following devices as necessary.

##### 1.11.2.1 Silt Fences

The Contractor shall provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Silt fences shall be installed in the locations indicated on the drawings. Final removal of silt fence barriers shall be upon approval by the Contracting Officer.

##### 1.11.2.2 Straw Bales

The Contractor shall provide bales of straw as a temporary structural practice to minimize erosion and sediment runoff. Bales shall be properly placed to effectively retain sediment immediately after completing each phase of work (e.g., clearing and grubbing, excavation, embankment, and grading) in each independent runoff area (e.g., after clearing and grubbing in a area between a ridge and drain, bales shall be placed as work progresses, bales shall be removed/replaced/relocated as needed for work to progress in the drainage area). Areas where straw bales are to be used shall be shown in the SWPPP. Final removal of straw bale barriers shall be upon approval by the Contracting Officer. Rows of bales of straw shall be provided as follows:

- a. Along the downhill perimeter edge of all areas disturbed.
- b. Along the top of the slope or top bank of drainage ditches, channels, swales, etc. that traverse disturbed areas.

- c. Along the toe of all cut slopes and fill slopes of the construction areas.
- d. Perpendicular to the flow in the bottom of existing drainage ditches, channels, swales, etc. that traverse disturbed areas or carry runoff from disturbed areas. Rows shall be spaced as shown in the SWPPP.
- e. Perpendicular to the flow in the bottom of new drainage ditches, channels, and swales. Rows shall be spaced as shown in the SWPPP.
- f. At the entrance to culverts that receive runoff from disturbed areas.

1.11.2.3 Diversion Dikes

Diversion dikes shall have a maximum channel slope of 2 percent and shall be adequately compacted to prevent failure. The minimum height measured from the top of the dike to the bottom of the channel shall be 20 inches. The minimum base width shall be 6 feet and the minimum top width shall be 2 feet. The Contractor shall ensure that the diversion dikes are not damaged by construction operations or traffic. Diversion dikes shall be located as shown in the SWPPP.

PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

The geotextile shall comply with the requirements of ASTM D 4439, and shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	100 lbs. min.
Elongation (%)		30 % max.
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

### 2.1.2 Silt Fence Stakes and Posts

The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 inches by 2 inches when oak is used and 4 inches by 4 inches when pine is used, and shall have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 feet.

### 2.1.3 Mill Certificate or Affidavit

A mill certificate or affidavit shall be provided attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. The mill certificate or affidavit shall specify the actual Minimum Average Roll Values and shall identify the fabric supplied by roll identification numbers. The Contractor shall submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

### 2.1.4 Identification Storage and Handling

Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873.

## 2.2 COMPONENTS FOR STRAW BALES

The straw in the bales shall be stalks from oats, wheat, rye, barley, rice, or from grasses such as byhalia, bermuda, etc., furnished in air dry condition. The bales shall have a standard cross section of 14 inches by 18 inches. All bales shall be either wire-bound or string-tied. The Contractor may use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose, shall have a minimum dimensions of 2 inches x 2 inches in cross section and shall have a minimum length of 3 feet. Steel posts (standard "U" or "T" section) utilized for securing straw bales, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 3 feet.

## PART 3 EXECUTION

### 3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

This paragraph supplements the Contractor's responsibility under the contract clause "PERMITS AND RESPONSIBILITIES" to the extent that the Government has obtained environmental permits. The Contractor shall comply with the terms and conditions of the attached list of environmental commitments at the end of this section.

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, Regional, and local environmental laws and regulations.

#### 3.1.1 NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES), SWPPP AND NOI

A) In accordance with the United States National Pollution Discharge Elimination System (NPDES) Program / Statewide General Permit, the Contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) in accordance with this Section and at least four weeks prior to the start of construction activities consisting of soil disturbing activities, the Contractor shall file a Notice of Intent with the site/vicinity map and appropriate fee to obtain coverage under the Statewide General Permit. The completed NOI form, site/vicinity map and appropriate fee must be mailed to the State Water Resources Control Board (SWRCB) at the following address:

State Water Resources Control Board  
Division of Water Quality  
ATTN: Storm Water Permit Unit  
P.O. Box 1977  
Sacramento, California 95812-1977  
ph (916) 341-5536/5537  
fax (916) 341-5543  
internet address: <http://www.swrcb.ca.gov/>

Overnight Mailing Address:

State Water Resources Control Board  
Division of Water Quality  
ATTN: Storm Water, 15th Floor  
1001 I Street  
Sacramento, California 95814

B) The NPDES / General Permit requires that a Storm Water Pollution Prevention Plan (SWPPP) shall be prepared and maintained on-site throughout the construction period. The processing of the NOI for the NPDES permit will require a minimum of 30 days. Construction work consisting of soil disturbing activities shall not begin without the SWRCB's receipt notification of the NOI.

C) Copies of the NOI forms, the site/vicinity map, and the SWRCB's receipt notification shall be provided to the U.S. Army Corps of Engineers Resident Office and the Environmental Resources Branch Ecosystems Planning Section, and the Contractor shall maintain a copy at the jobsite throughout the contract duration.

#### 3.1.1.1 Storm Water Pollution Prevention Plan (SWPPP)

The Contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP), including Best Management Practices (BMPs) and a detailed sediment erosion control, in accordance with this Section and provide a copy of the SWPPP, and any modifications to the SWPPP, to the State Water Resources Control Board, the San Diego Regional Water Quality Control Board, the Santa Ana Regional Water Control Board and the U.S. Army Corps of Engineers Environmental Resources Branch Ecosystems Planning Section as well as concerned resources agencies, such as U. S. Fish and Wildlife Service, California Department of Fish and Game. A copy of the SWPPP, and any modifications to the SWPPP, shall be maintained at the jobsite throughout the contract duration. A copy of the NOI shall be provided to the San

Diego RWQCB. The Contractor shall follow conditions identified in the NPDES permit/SWPPP to eliminate discharge of pollutants within the waters of the United States.

The San Diego Regional Water Quality Control Board address is:

San Diego Regional Water Quality Control Board  
9174 Sky Park Court  
Suite 100  
San Diego, California 92123-4340  
ph) (858) 467-2952  
fax (858) 571-6972

### 3.1.1.2 Modifications to SWPPP

If the SWRCB or RWQCB requires modifications prior to or during the construction phase, the plan(s) shall include the use of settling basins, hay bales, and silt fences (or other appropriate measures) for any surface water diversion and groundwater (subsurface water) dewatering activities within the project site or work within any flowing streams. This plan shall also include stormwater pollution prevention measures specific to this project, such as protection of exposed slopes/banks, access routes, and temporary onsite stockpiles of excavated materials. A final water diversion plan, including structure configuration, location, construction materials, equipment, operation procedures, erosion and sediment control measures shall be included.

### 3.1.2 Section 401 Water Quality Certification

Riverside County, California has obtained a Section 401 Water Quality Certification (WQC) permit from the California Regional Water Quality Control Board. Conditions identified in the Section 401 WQC permit shall be followed by the construction Contractor. The contractor shall obtain a copy of the Section 401 WQC permit. The Contractor shall coordinate with the **Contracting Officer, who will then contact the** Environmental Coordinator of the COE's Environmental Resources Branch, Ronald F. Lockmann at 213-452-3847 or Sarah Laughlin at 213-452-3848 or with Riverside County's Environmental Coordinator Zully C. Smith at 909-955-1233 or Randy Sheppard at 909-955-1306, for the clarification or application of the conditions identified in the Section 401 WQC permit.

### 3.1.3 1601 Streambed Alteration Agreement

The Riverside County Flood Control and Water Conservation District (RCFCWCD) has submitted an application to the California Department of Fish and Game (CDFG) to obtain a 1601 Streambed Alteration Agreement. The Contractor shall follow measures/conditions identified in the 1601 Streambed Alteration for project construction of this reach. A copy of the 1601 Streambed Alteration Agreement will be provided to the Contractor.

## 3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction,

the Contractor shall identify any land resources to be preserved within the work area. 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 approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

#### 3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. **Trees**, shrubs, grasses, land forms and other landscape features outside the construction area shall be preserved. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

#### 3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

#### 3.2.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs) as specified in Paragraph EROSION AND SEDIMENT CONTROL FACILITIES. BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. The Contractor's best management practices shall also be in accordance with the National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention Plan (SWPPP) which may be reviewed at the Environmental Office. Any temporary measures shall be removed after the area has been stabilized.

#### 3.2.4 Unprotected Erodible Soils

Earthwork brought to final grade shall be finished as indicated. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earthwork shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in cases where the constructed feature obscures borrow areas (**if utilized**), quarries, and waste material areas, these areas shall not initially be totally cleared. Clearing of such areas shall progress in reasonably sized increments as needed to use the developed areas as approved by the Contracting Officer.

#### 3.2.5 Disturbed Areas

The Contractor shall effectively prevent erosion and control sedimentation through approved methods including, but not limited to, the following:

- a. Retardation and control of runoff. Runoff from the construction site or from storms shall be controlled, retarded, and diverted to protected drainage courses by means of diversion ditches, benches, berms, and by any measures required by area wide plans under the Clean Water Act.

#### 3.2.6 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

### 3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

- a. The contractor shall employ conditions identified in the Best Management Practices(BMPs) manual during and after construction to minimize erosion and runoff from construction activities. The BMPs are expected to include:
  1. Use of controlled construction staging and entrance areas to minimize ground disturbance and contaminated runoff;
  2. Installation of silt fences where appropriate at the toe of slopes to prevent sloughing of materials into the channel.

- b. Measures to reduce turbidity during project construction and periodic future maintenance would include the installation of pipe, as needed, as well as creation of low-flow channels around construction and debris removal of operations to divert water flow and avoid mixing of loose dust particles into creek flow:
  - 1. Pipe culverts will be placed in the low flow stream where the Creek must be crossed on a regular basis. No work will be allowed in the flowing water;
  - 2. Silt fencing, hay bales, sand bags and/or the construction of silt catchment basins will be placed downstream of any operation which may create turbidity. Such devices will reduce turbidity to that level existing upstream of the clean out activities.
- c. Strict construction site rules for handling hazardous materials will be implemented to prevent spills and provide controlled storage away from the Creek. Petroleum products, concrete, asphalt or other coating materials, and other hazardous materials will be prevented from contaminating soil or entering surface waters.
- d. Preparations will be made so that runoff from steep, erodible surfaces will be directed into stable areas with minimal erosion potential.
- e. Water containing mud, silt, or other pollutants from aggregate washing or other activities will not enter the Creek.
- f. Stationary equipment such as motors located within or adjacent to the Creek will be positioned over drip pans.
- g. Any equipment or vehicles driven and/or operated within or adjacent to the Creek will be properly maintained to minimize leaks.
- h. Corps' Environmental Resources Branch personnel will monitor construction records and activities to ensure compliance with water quality requirements.
- i. The contractor shall implement erosion and sediment control measures in the project area and upstream of the project limits to prevent sloughing of materials into the flood control channel during construction.
- j. Project plans and specifications will incorporate standards from current seismic codes.

### 3.3.1 Cofferdams, Diversions, and Dewatering Operations

Construction operations for dewatering, removal of cofferdams, tailrace excavation, and tunnel closure shall be controlled at all times to maintain compliance with existing State water quality standards and designated uses

of the surface water body. The Contractor shall comply with the State of California water quality standards and anti-degradation provisions. The Contractor will plan his operations and perform all work necessary to minimize adverse impact or violation of the water quality standard for the State of California.

The Contractor will submit to the Contracting Officer for review and approval a map identifying the location of proposed dewatering operations, and the proposed method of dewatering operations.

### 3.3.2 Stream Crossings

Stream crossings will be controlled during construction. Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and local governments.

### 3.3.3 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

### 3.3.4 Street Sweeping

At the close of each working day, any materials as a result of construction activities, such as dirt, tracked into the adjacent streets (streets for construction access and hauling of materials) or laying uncontained in the construction areas are to be swept up. **A log of street sweeping activities will be maintained and submitted monthly for compliance. See Monthly Logs.**

## 3.4 AIR RESOURCES

Equipment operation and activities or processes performed by the Contractor in accomplishing the specified construction shall be in accordance with the State's rules and all Federal emission and performance laws and standards. The Contractor shall obtain and comply with Air Quality Permits. Ambient Air Quality Standards set by the Environmental Protection Agency shall be maintained. Monitoring of air quality shall be monitored by Environmental Resources Branch and contracted to implement all pertinent environmental regulations and measures including, if applicable, Section 176 (c) of the Clean Air Act conformity determination. All air areas affected by the construction activities shall be monitored by the Contractor. Monitoring results will be periodically reviewed by the Government to ensure compliance.

Special management techniques as set out below shall be implemented to control air pollution by the construction activities. These techniques supplement the requirements of Federal, State, and local laws and regulations; and the safety requirements under this Contract. If any of the following techniques conflict with the requirements of Federal, State, or local laws or regulations, or safety requirements under this contract, then those requirements shall be followed in lieu of the following.

- a. To reduce fugitive dust, the stockpile material and unpaved roads will be watered as necessary to prevent wind-generated pollution.

- b. When wind speeds exceed 20 miles per hour, excavation and gradient operations will be suspended.
- c. Truck speeds on unpaved roads will not exceed 15 miles per hour.
- d. Where feasible, the construction Contractor will use electric power from poles.
- e. Idling time of trucks and other construction equipment will be minimized.
- f. Contractors will perform excavation, grading, materials handling, and hauling of materials in compliance with SCAQMD Rule 403, Fugitive Dust. Specific measures to be included in the specifications will address the maintenance of adequate moisture content in soils to be excavated and transported; the stabilization of exposed graded areas; the cleaning of paved roads to be used as haul roads; paving or alternate treatment of unpaved roads considered for haul roads; and prevention of soil track-out from construction areas onto paved roads. The construction Contractor will be responsible for obtaining applicable air quality permits.
- g. All trucks hauling materials subject to wind dispersal will be watered and covered.
- h. All disturbed soil areas not subject to revegetation will be stabilized with approved nontoxic soil binders, jute netting, or other methods, as appropriate.

#### 3.4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas (**if utilized**), and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

##### 3.4.1.1 Other Air Pollutants

All construction equipment and trucks shall have their engines kept in a

state of tune that will minimize all exhaust pollutants, and shall use fuel of a quality that does not produce excessive amounts of exhaust plumes. Methods to reduce No levels may include the following measures:

- a. Require injection timing retard of 2 degrees on all diesel vehicles where applicable.
- b. Install high-pressure injectors on all vehicles, where feasible.
- c. Use Caterpillar pre-chamber diesel engines or equivalent, and perform proper maintenance and operation.
- d. Electrify equipment, where feasible.
- e. Maintain equipment in tune with manufacturers' specifications, except as otherwise stated above.
- f. Restrict the drilling of construction equipment to 10 minutes.
- g. Install catalytic converters on gasoline-powered equipment.
- h. Substitute gasoline-powered for diesel-powered equipment, where feasible.

#### 3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

#### 3.4.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environmental damage by noise.

#### 3.4.4 Burning

Burning shall be prohibited on the Government premises.

### 3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

#### 3.5.1 Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off site and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor

shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. The Contractor shall comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

#### 3.5.1.1 El Sobrante Landfill

At the Contractors option, vegetation, demolition materials from VFW and other buildings, large concrete pieces, rubbish, and trash may be disposed of at the El Sobrante Landfill, 10910 Dawson Road, Corona. The Contractor shall be responsible for all necessary fees and permits that the El Sobrante Landfill requires.

#### 3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

#### 3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations.

The Contractor shall transport Contractor generated hazardous waste off Government property within 60 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

- a. Emergency provisions to contain and clean up unintentional spills will be in place prior to the construction.
- b. Measures will be followed to avoid accidental spills of oil and grease during construction and debris removal operations. If such spills occur, the Contractor will be required clean up the affected area immediately and remove materials from the site.

- c. If a contaminated area is encountered during construction, construction will cease in the vicinity of the contaminated area. The Contractor will perform an assessment to determine the extent and type of contamination. If necessary, the contaminated site will be remediated to minimize the potential for exposure of the public and to allow the project to be constructed safely. All appropriate authorities (including EPA and the Corps) will be notified.
- d. The Contractor will comply with existing regulatory requirements regarding worker safety.

#### 3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. Storage of fuel on the project site shall be accordance with all Federal, State, and local laws and regulations.

#### 3.5.5 Waste Water

Disposal of waste water shall be as specified below.

- a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water in accordance with all Federal, State, Regional and Local laws and regulations.
- b. For discharge of ground water, the Contractor shall surface discharge in accordance with the requirements of the NPDES or State STORM WATER DISCHARGES FROM CONSTRUCTION SITES permit.
- c. Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing shall be discharged into the sanitary sewer with prior approval and/or notification to the Waste Water Treatment Plant's Operator.

#### 3.6 RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project.

#### 3.7 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste diversion and disposal of construction and demolition debris. The Contractor shall submit a report to the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that non-hazardous solid waste has been generated. The following shall be included in the report:

- a. Construction and Demolition (C&D) Debris Disposed = \_\_\_\_\_ in cubic yards or tons, as appropriate.
- b. Construction and Demolition (C&D) Debris Recycled = \_\_\_\_\_ in cubic yards or tons, as appropriate.
- c. Total C&D Debris Generated = \_\_\_\_\_ in cubic yards or tons, as appropriate.
- d. Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount) = \_\_\_\_\_ in cubic yards or tons, as appropriate.

### 3.8 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

- a. A qualified archeologist monitor will be on site during heavy equipment activity adjacent to historic structures to ensure avoidance of identified historic resources. The Contractor shall contact Stephen Dibble, senior archeologist, (213) 452-3849 to coordinate monitoring activities.
- b. In the event that previously unknown historic or archeological features or deposits are observed by the contractor during the course of operations, work shall cease in that area, and the construction representative shall be immediately informed.

### 3.9 BIOLOGICAL RESOURCES

#### 3.9.1 Threatened and Endangered Species Protection

Although no threatened or endangered species were located within the

project site, if during construction activities any threatened or endangered species are observed in or near the construction area, such observations shall be reported immediately to the biologist on site, or Contracting Officer if a biologist is not available, so that the appropriate authorities may be notified and determination made as to what special disposition should be made. In no circumstances shall any employee directly handle any endangered species unless it is in imminent danger. The Contractor shall cease all activities that may result in an impact to or the destruction of these resources. The Contractor shall prevent his employees from trespassing on private property, removing, or otherwise disturbing any threatened or endangered species.

Based on the Environmental Impact Statement/Environmental Impact Report (EIS/EIR), September 2000, for the Murrieta Creek Flood Control, Environmental Restoration, and Recreation Project, the Corps has agreed to incorporate protocols to protect the southwestern pond turtle. The southwestern pond turtle is not federally listed as threatened or endangered, but is on the California State Sensitive Species list. To ensure protection, trapping for southwestern pond turtles within all suitable pools within the construction area in the southern portion of the project area shall occur prior to the onset of construction. At least three trapping events will occur to ensure that few or no turtles remain within the impact areas. Turtles captured shall be released downstream of the project area at a location where it would be unlikely for them to return to the project area. The details and methods of turtle relocation shall be determined in consultation with the USFWS. Either the ERB/Ecosystem Planning Section biologist or a contractor biologist supplied by the ERB/Ecosystem Planning Section staff, will conduct the surveys and trapping in coordination with the ERB/Ecosystem Planning System biologist and USFWS staff. See Section 01200, GENERAL REQUIREMENTS, paragraph BIOLOGICAL RESOURCES for additional information.

3.9.2 Protection of Biological Resources adopted as part of the EIS/EIR (SCH 2000071051, SEPTEMBER 2000)

The Contractor shall keep construction activities under surveillance, management, and control to minimize interference with, disturbance to, and damage of, native vegetation, fish, and wildlife. Species that require specific attention along with measures for their protection will be listed for all workers by the Contractor prior to beginning of construction operations. The Contractor may contact the Ecosystems Planning Section representative from the U.S. Army Corps of Engineers, Ron Lockmann at (213) 452-3847 and/or from the Riverside County Flood Control and Water Conservation District, Zully Smith at (909) 955-1233, for assistance in preparing this list. This list shall be reviewed and approved by the Contracting Officer. The Contractor shall minimize interference with, disturbance to, and damage of wildlife and plants including their habitat. In addition, the Contractor shall adhere to the following guidelines:

- a. The Construction Contractor shall mark the limits of construction prior to ground disturbing activities. These marks will be clearly visible to personnel and heavy equipment operators.
- b. The construction activities will be monitored by the Corps of

Engineers.

- c. The Contractor shall prepare and submit a copy of the comprehensive best management practices plan to the Contracting Officer.
- d. The removal of riparian vegetation deemed suitable for nesting will be prohibited during the period of March 15 through July 30. In making this determination, the quality, composition, and patch size will be taken into consideration.
- e. Salvaging plants will be allowed and must meet the requirements of the mitigation plantings as shown on the drawings.
- f. Trapping for turtles within all suitable pools within the construction area in the southern portion of the project area shall occur prior to the onset of construction. See Paragraph THREATENED AND ENDANGERED SPECIES PROTECTION.
- g. For temporary impacts to all other jurisdictional waters and wetlands, the designated "unmaintained corridor" will be planted with native species, including tree transplants, as feasible, to enhance the canopy cover.
- h. In-kind compensatory mitigation would be required for all significant direct and permanent losses of wetlands, riparian, and Riversidian sage scrub. This habitat creation would occur within or adjacent to the Murrieta Creek system in areas not affected by the proposed flood control project.
- i. Wetland and riparian habitat creation would occur in areas with suitable hydrology and soils to support the respective habitats. Habitat creation would include vegetating the mitigation site with select container plantings, use of pole plantings, application of a native hydroseed mix, and a 3 to 5-year maintenance and monitoring program to ensure that a native plant cover is achieved and aggressive nonnative species do not out-compete the native species.
- j. To mitigate for the direct impact to Riversidian sage scrub, the upper sideslopes would be revegetated using select container plantings, application of a native hydroseed mix, and a 3 to 5-year maintenance and monitoring program to ensure that a native plant cover is achieved and nonnative species do not out-compete the native upland species.
- k. Temporary impacts would be mitigated through the implementation of a revegetation plan designed to minimize the duration of temporary impacts by accelerating the natural recruitment process within the affected areas. For temporary impacts to all other jurisdictional waters and wetlands, the designated "unmaintained corridor" will be planted with native species, including tree transplants, as feasible, to enhance the canopy cover.

1. The USACOE has proposed to re-vegetate the remainder of the invert and sideslopes to fully compensate for impacts to wildlife movement and connectivity impacted by construction. Accordingly, revegetation would occur in the unmaintained portion of the channel immediately following the disturbance/removal of sensitive habitat.

m. No pets shall be allowed within the construction area.

### 3.10 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

### 3.11 Maintenance of Pollution Control Facilities

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

### 3.12 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

### 3.13 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

### 3.14 EROSION AND SEDIMENT CONTROL FACILITIES

#### 3.14.1 INSTALLATION OF SILT FENCES

Silt fences shall extend a minimum of 16 inches above the ground surface and shall not exceed 34 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post, with a minimum 6 inch overlap, and securely sealed. A trench shall be excavated approximately 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The 4-inch by 4-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed upon approval by the Contracting Officer.

#### 3.14.2 INSTALLATION OF STRAW BALES

Straw bales shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. Straw bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked and chinked (gaps filled by wedging with straw), the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier. Loose straw shall be scattered over the area immediately uphill from a straw bale barrier to increase barrier efficiency. Each bale shall be securely anchored by at least two stakes driven through the bale. The first stake or steel post in each bale shall be driven toward the previously laid bale to force the bales together. Stakes or steel pickets shall be driven a minimum 18 inches deep into the ground to securely anchor the bales.

#### 3.14.3 MAINTENANCE

The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures.

##### 3.14.3.1 Silt Fence Maintenance

Silt fences shall be inspected in accordance with paragraph INSPECTIONS. Any required repairs shall be made promptly. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade.

##### 3.14.3.2 Straw Bale Maintenance

Straw bale barriers shall be inspected in accordance with paragraph INSPECTIONS. Close attention shall be paid to the repair of damaged bales, end runs and undercutting beneath bales. Necessary repairs to barriers or replacement of bales shall be accomplished promptly. Sediment deposits shall be removed when deposits reach one-half of the height of the barrier. Bale rows used to retain sediment shall be turned uphill at each end of each row. When a straw bale barrier is no longer required, it shall be removed. The immediate area occupied by the bales and any sediment deposits shall be shaped to an acceptable grade.

#### 3.14.3.3 Diversion Dike Maintenance

Diversion dikes shall be inspected in accordance with paragraph INSPECTIONS. Close attention shall be paid to the repair of damaged diversion dikes and necessary repairs shall be accomplished promptly. When diversion dikes are no longer required, they shall be shaped to an acceptable grade.

#### 3.14.4 INSPECTIONS

##### 3.14.4.1 General

The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every seven (7) calendar days and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Where sites have been finally stabilized, such inspection shall be conducted at least once every month.

##### 3.14.4.2 Inspections Details

Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site shall be inspected for evidence of offsite sediment tracking.

##### 3.14.4.3 Inspection Reports

For each inspection conducted, the Contractor shall prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. The report shall be furnished to the Contracting Officer within 24 hours of the inspection as a part of the Contractor's daily CQC REPORT. A copy of the inspection report shall be maintained on the job site.

-- End of Section --

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SECTION 01420

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## SECTION 01420

## SOURCES FOR REFERENCE PUBLICATIONS

## PART 1 GENERAL

## 1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization, (e.g. ASTM B 564 Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

## 1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

## ACI INTERNATIONAL (ACI)

P.O. Box 9094  
Farmington Hills, MI 48333-9094  
Ph: 248-848-3700  
Fax: 248-848-3701  
Internet: <http://www.aci-int.org>  
AOK 6/00  
LOK 6/00

## AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (ANLA)

1250 I St., NW, Suite 500  
Washington, DC 20005-3922  
Ph: 202-789-2900  
FAX: 202-789-1893  
AOK 6/00  
LOK 6/00

## ASTM INTERNATIONAL (ASTM)

100 Barr Harbor Drive  
West Conshohocken, PA 19428-2959  
Ph: 610-832-9585  
Fax: 610-832-9555

Internet: [www.astm.org](http://www.astm.org)  
AOK 6/00  
LOK 6/00

NOTE: The annual ASTM Book of Standards (66 Vol) is available for \$3500.00. Prices of individual standards vary.

AMERICAN WATER WORKS ASSOCIATION(AWWA)

6666 West Quincy  
Denver, CO 80235  
Ph: 800-926-7337 - 303-794-7711  
Fax: 303-347-0804  
Internet: [www.awwa.org](http://www.awwa.org)  
AOK 6/00  
LOK 6/00

AMERICAN WELDING SOCIETY (AWS)

550 N.W. LeJeune Road  
Miami, FL 33126  
Ph: 800-443-9353 - 305-443-9353  
Fax: 305-443-7559  
Internet: <http://www.amweld.org>  
AOK 6/00  
LOK 6/00

ASME INTERNATIONAL (ASME)

Three Park Avenue  
New York, NY 10016-5990  
Ph: 212-591-7722  
Fax: 212-591-7674  
Internet: [www.asme.org](http://www.asme.org)

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

700 Pennsylvania Avenue, N.W.  
Washington, D.C. 20408  
Phone: 866-325-7208  
Internet: <http://www.archives.gov>  
Order documents from:  
Superintendent of Documents  
U.S. Government Printing Office  
732 North Capitol Street, NW  
Washington, DC 20401  
Mailstop: SDE  
Ph: 866-512-1800 or 202-512-1800  
Fax: 202-512-2250  
Internet: <http://www.gpo.gov>  
E-mail: [gpoaccess@gpo.gov](mailto:gpoaccess@gpo.gov)  
AOK 4/02  
LOK 8/02

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

General Services Administration  
1800 F Street, NW  
Washington, DC 20405  
PH: 202-501-0705

Order from:  
General Services Administration  
Federal Supply Service Bureau  
1941 Jefferson Davis Highway  
Arlington, VA 22202  
PH: 703-605-5400  
Internet: <http://www.fss.gsa.gov/pub/fed-specs.cfm>  
AOK 4/02  
LOK 5/02

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## SECTION 02230

## CLEAR SITE AND REMOVE OBSTRUCTIONS

## PART 1 GENERAL

## 1.1 DEFINITIONS

## 1.1.1 Clearing

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including down timber, snags, brush, manmade trash, manmade debris, and rubbish occurring in the areas to be cleared.

## 1.1.2 Grubbing

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas. Grubbing shall include chasing roots larger than 3 inches in diameter a minimum of 3.0 feet below finished design grade of channel invert and slopes.

## 1.2 SUBMITTALS (NOT APPLICABLE)

## 1.3 ENVIRONMENTAL PROTECTION

All work and Contractor operations shall comply with the requirements of Section 01355 ENVIRONMENTAL PROTECTION and Section 02300 EARTHWORK.

## 1.4 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

## PART 2 PRODUCTS (Not Applicable)

## PART 3 EXECUTION

## 3.1 REQUIREMENTS

## 3.1.1 General

Except as otherwise specified, and/or indicated, areas to be cleared will be limited to actual excavation areas, and areas on which fills and/or structures are to be placed. The removal of trees, shrubs, turf, and other vegetation outside of these areas shall be held to a minimum and care shall be exercised not to damage any trees, shrubs, turf, or vegetation which can be left in place.

### 3.1.2 Existing Structures and Obstructions

The Contractor shall clear and grub areas of fill and excavation, and remove and dispose of existing structures (including foundations and substructures) and obstructions necessary for project construction, except for those structures which are identified to be protected in place as shown on the drawings. **See also paragraph CLEARING of this section concerning structures.**

### 3.2 CLEARING

All manmade trash, manmade debris, rubbish, waste dumps, and debris areas shall be cleared. Vegetation including grasses, shrubs and weeds shall be removed by grading the existing ground surface to a depth of 6 inches, except such vegetation as may be indicated or directed to be left standing.

Vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require. Clearing shall also include the removal and disposal of buildings or other structures that protude upon or obstruct the proposed work. Such removal shall include but not be limited to the VFW Hall, Skating rink, BMX track and all associated features such as footings, benches, light posts, electrical wiring, etc. Structures that are **partially** obstructing proposed work shall be removed entirely.

### 3.3 GRUBBING

Grubbing shall consist of removing non-salvaged roots larger than 3 inches in diameter, matted roots, and other objectionable vegetable matter in the required fill areas, foundation areas, and all excavation areas. In grubbing roots, 2 foot diameter roots shall be removed to below the depth of the required excavation or existing ground level, whichever is lower. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

### 3.4 Trash and Construction Debris

Surface trash and construction debris may be present at the project site. Surface trash may consist of manmade trash, manmade debris, rubbish, car parts, car bodies, furniture, appliances whole or in parts. Surface trash and construction debris shall be removed from within the limits of the right-of-way and temporary construction easements for all areas downstream of the First Street bridge.

### 3.5 Environmental Assessment Requirement

The Contractor shall notify the Contracting Officer 14 calendar days prior to the start of clearing and grubbing activities in accordance with Section 01200 GENERAL REQUIREMENTS, Paragraph ENVIRONMENTAL ASSESSMENT REQUIREMENT.

### 3.6 DISPOSAL OF GRUBBED AND REMOVED MATERIAL

Trash, construction debris, and material from grubbing, that is designated

as scrap, shall become the property of the Contractor, and shall be removed from the site. Scrap and unsatisfactory soils and materials and unstable soils and materials as described in Section 02300 EARTHWORK and in Section 01200 GENERAL REQUIREMENTS shall become the property of the Contractor, and shall be removed from the site at no additional cost to the Government. Disposal shall be in accordance with the requirements of Section 01355 ENVIRONMENTAL PROTECTION.

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## SECTION 02600

## STONE PROTECTION

## 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 in the text by basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM C 33	(2002a) Concrete Aggregates
ASTM C 88	(1999a) Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C 127	(2001) Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
ASTM C 295	(1998) Petrographic Examination of Aggregates for Concrete
ASTM C 535	(2001) Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM D 1141	(1975; R 1980) Substitute Ocean Water
ASTM D 5519	(1994; R 2001) Particle Size Analysis of Natural and Man-Made Riprap Materials
ASTM E 548	(1994e1) General Criteria Used for Evaluating Laboratory Competence

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. 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

Stone Sources; G

Name and location of quarry.

SD-05 Design Data

Method of placement; G

The following shall be submitted in accordance with Section 01330 if the source of riprap is not from the listed sources.

SD-06 Test Reports

Stone Quality Testing  
Gradation Sampling and Testing

Quality compliance and gradation test results performed in accordance with 2.1.4 and 2.1.5.

SD-07 Certificates

Waybills and Delivery Tickets

Copies of waybills and delivery tickets shall be submitted as stated in paragraph: Waybills and Delivery Tickets.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Definitions

2.1.1.1 Rounded Stone

Stone which is obtained from alluvial deposits and is nearly spherical and well rounded.

2.1.1.2 Angular Stone

Stone which is obtained from bedrock deposits and is angular in shape.

2.1.2 General

The Contractor shall make all arrangements, pay all royalties, and secure all permits for the procurement, furnishing, and transporting of stone. The Contractor shall vary the quarrying, processing, loading, and placing operations, to produce the sizes and quality of stone specified. If the stone being furnished by the Contractor does not fully meet all the requirements of these specifications, the Contractor shall furnish, at no additional cost to the Government, other stone meeting the requirements of these specifications.

2.1.3 Stone Sources

2.1.3.1 Stone from Project Excavation

Stone conforming to these specifications may be available from the required excavation(s). As the quantity of stone from excavations may be insufficient, additional required stone in conformance with this specification may need to be obtained from offsite sources.

#### 2.1.3.2 Source Authorization

Before any stone is produced from a source for completion of the work under this contract, the source of stone must be authorized by the Contracting Officer's Representative. Authorization of a stone source shall not be construed as a waiver of the right of the Government to require the Contractor to furnish stone which complies with these specifications. Materials produced from localized areas, intervals, or strata will be rejected, when such materials do not comply with the specifications.

#### 2.1.3.3 Quarry Inspection

The proposed quarry source shall be inspected prior to source authorization. The quarry inspection shall be performed by the Contracting Officer's Representative, a representative of the Contractor, a representative of the quarry, and an engineering geologist from the Geotechnical Branch of the Los Angeles District.

#### 2.1.3.4 Source Development

Before a proposed source or sources of stone will be considered for inspection sampling and testing, the Contractor must demonstrate that the source has sufficient stone to fulfill the contract requirements. If sufficient amounts of stone conforming to these specifications are not available from a source or sources used in the work, the Contractor shall submit stone from another source for authorization.

#### 2.1.3.5 Source Documentation

Authorization of a proposed stone source will be based on a quarry inspection test results and/or service records. In general, current Corps of Engineers test results shall be required, as outlined in paragraph: Quality Compliance Testing, below. In special cases, however, the Contracting Officer's Representative may elect to use either past Corps of Engineers test results, test results from other agencies or private laboratories, or service records. A service record is considered to be acceptable if stone from the proposed source has remained sound and functional after at least 10 years of exposure on a project similar to the one to be constructed under these specifications.

#### 2.1.3.6 Listed Stone Sources

The following are a few of the sources within the project area (and some that are farther away), which have either undergone recent quality compliance testing for use on Corps of Engineers projects or have acceptable service records:

Source Name	Nearest City
Harlow	Corona
Corona-Pacific	Corona
All-American Asphalt	Corona
3M	Corona
Eagle Valley	Corona
Pebbly Beach	Catalina
Pyrite Street	Riverside
Ormond (Atkinson)	Riverside
Slover Mountain	Colton
Fish Canyon	Azusa
Gillibrand	Newhall

Listing of a stone source is not to be construed as to current or future availability of the source, authorization of all materials from the source, nor as a waiver of inspection and testing of the source. Stone produced from any listed source must meet all the requirements set forth in these specifications. Listing of a stone source is also not to be construed as an indication that the source can produce the total quantity of stone required for the project. Stone may be furnished from other sources designated by the Contractor and authorized by the Contracting Officer's Representative, subject to the conditions stated herein.

#### 2.1.4 Stone Quality

##### 2.1.4.1 Quality Compliance Testing

If the Contractor proposes to furnish stone from an unlisted source, or a listed source which has not been tested in 5 years, the Contractor shall have evaluation tests performed on stone samples collected from the proposed source. The samples shall be submitted to an approved laboratory for testing a minimum of 30 days in advance of the time when the stone will be required in the work. The samples shall consist of at least 300 pounds of representative stone. The quarry faces and the stockpiles to be used shall be examined and sampled. Samples shall be collected at the quarry by the Contracting Officer's Representative, a representative of the Contractor, a representative of the quarry, and an engineering geologist from the Geotechnical Branch of the Los Angeles District. The Contractor will then ship the samples at the Contractor's expense to an approved laboratory. The laboratory to perform the required testing shall be approved based on compliance with ASTM E 548 and relevant paragraphs of ASTM D 3470. The laboratory will be under the direct supervision of a state licensed Civil Engineer, Geologist, or Engineering Geologist. No testing shall be permitted until the laboratory has been inspected and approved. The results of the tests shall be delivered to the Contracting Officer's Representative as soon as they are received from the laboratory.

##### 2.1.4.2 Stone Quality Testing Requirements

Stone shall be subjected to such tests as are necessary to demonstrate to the satisfaction of the Contracting Officer's Representative that the materials are acceptable for use in the work. At a minimum, the stone shall meet the following test requirements:

Test	Test Method	Requirement
Specific Gravity (Bulk SSD)	ASTM C 127	2.60 minimum
Absorption	ASTM C 127	2.0% maximum
Wetting and Drying	SPD Test Procedure(1)	No fracturing(3)
Sulfate Soundness	ASTM C 88(2)	10% max.loss(4)
Abrasion Loss	ASTM C 535	40% max. loss(4)

In addition to the above tests, the stone shall be subjected to a petrographic and X-ray diffraction analysis, in accordance with ASTM C 295(5). The stone must not contain any expansive clays. Stone for grouted stone protection shall not contain excessive amounts of deleterious minerals, associated with alkali-silica or alkali-carbonate reactions, as described in ASTM C 33.

NOTE: (1): Test procedure for wetting and drying test. The entire sample is carefully examined, and representative test specimens are selected. The sample should be large enough to produce two cut slabs, each 25 millimeters (1 inch) thick (+/-6 millimeters), with a minimum surface area of 0.019 square meters (28.8 square inches) on one side. Two chunks, approximately seventy-six by one-hundred two millimeters (3 by 4 inches), are also chosen. The slabs and chunks are carefully examined under a low-power microscope, and all visible surface features are noted and recorded. The specimens are then oven-dried at 60 degrees C., for eight hours, cooled, and weighed to the nearest tenth of a gram. The test specimens are photographed, to show all surface features, before the test. The chunks and slabs are then subjected to fifteen cycles of wetting and drying. One slab and one chunk are soaked in fresh tap water, the other slab and chunk are soaked in salt water, prepared in accordance with ASTM D 1141. Each cycle consists of soaking for sixteen hours, at room temperature and then drying in an oven for eight hours, at 60 degrees C. After each cycle, the specimens are examined with the low-power microscope, to check for opening or movement of fractures, flaking along edges, swelling of clays, softening of rock surfaces, heaving of micaceous minerals, breakdown of matrix material, and any other evidence of weakness developing in the rock. The cycle in which any of these actions occurs is recorded. After fifteen cycles, the slabs and chunks are again carefully examined, and all changes in the rocks are noted and recorded. The test specimens, together with all particles broken-off during the test, are oven-dried, weighed, and photographed.

NOTE: (2): The test shall be made on 50 particles, each weighing 100 grams (0.22 lbs.), +/-25 grams, in lieu of the gradation given in ASTM C 88.

NOTE: (3): Weakening and loss of individual surface particles is permissible, unless bonding of the surface grains softens and causes general disintegration of the surface material.

NOTE: (4): Stone which has a loss greater than the specified limit will be accepted, if the Contractor demonstrates that the stone has a satisfactory service record.

NOTE: (5): The test procedure for Petrographic and X-ray Diffraction is

performed according to ASTM C 295, except for the following:

- (a) A color, microscopic photograph shall be made of each stone type, and the individual minerals within the stone shall be identified by labels and arrows, upon the photograph.
- (b) A very detailed macroscopic and microscopic description shall be made of the stone, to include all the mineral constituents, individual sizes, their approximate percentages, and mineralogical histories. A description of stone hardness, texture, weathering, and durability factors shall also be discussed.
- (c) A written summary of the suitability of stone for use as riprap, based on the Petrographic and X-ray tests and the results of ASTM C 535, shall be presented in the final laboratory report on stone quality.

#### 2.1.4.3 Stone Acceptance Criteria

Prior to placement, all stone shall be subject to acceptance, by the Contracting Officer's Representative. Acceptance of any stone shall not constitute acceptance of all stone from a source. All accepted stone shall be as follows:

- a. of the same lithology as the original stone from which test results or service records were taken, as a basis for authorization of the source;
- b. sound, durable, hard, and free of laminations, weak cleavages, undesirable weathering, or blasting or handling-induced fractures (or fracture zones, which subtend more than 1/3 of the total circumference of the stone, along the plane of fracturing);
- c. of such character that the stone will not disintegrate from the action of air, water, or the conditions of handling and placing; and,
- d. clean and free from earth, clay, refuse, or adherent coatings.
- e. UngROUTED Stone: UngROUTED stone shall be angular quarried material, with a shape which assures interlocking with adjacent stone, and with the greatest dimension of each piece not greater than 3 times the least dimension.
- f. Stone for Grouted Stone: Stone for grouted stone protection may be either rounded stone or angular quarried material, with a shape which assures reasonable adhesion with cement grout, yet allows flow of grout throughout the layer, to ensure adequate bonding. The greatest dimension of each piece shall be not greater than 3 times the least dimension.
- g. **THIS PARAGRAPH DELETED BY AMENDMENT 2**

## 2.1.5 Gradation

## 2.1.5.1 General

All points on individual grading curves shall be between the boundary limits, as defined by smooth curves, drawn through specified grading limits and plotted on a mechanical analysis diagram. The individual grading curves shall not exhibit abrupt changes in slope, denoting skip-grading or scalping of certain sizes. Specified grading of all material shall be met both at the source and as-delivered to the project. In addition, material not meeting the required grading, because of segregation or degradation during placement, shall be rejected. If test results show that stone does not meet the required grading, the hauling operation will be stopped immediately and will not resume, until processing procedures are adjusted, and a gradation test is completed, showing that gradation requirements are met. All gradation tests shall be at the expense of the Contractor.

- a. Stone for Riprap and Grouted Stone: Stone for grouted stone shall be reasonably well-graded and within the limits specified below when tested in accordance with ASTM D 5519, Test Method A. Salvaged stone shall be acceptable for grouted stone provided that not more than 5 percent is less than 5 pounds by weight.

Size of Individual Pieces (inches)	Percent Smaller (by weight)
15	100
12	50-100
10	15-50
8	0-15
#4 Sieve	0

- b. **THIS PARAGRAPH DELETED BY AMENDMENT 2**

## 2.1.5.2 Gradation Sampling and Testing

Testing shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government. Tests shall be performed by an approved testing laboratory, on samples selected by the Contracting Officer's Representative. Testing may be done by the Contractor, subject to approval by the Contracting Officer's Representative. If the Contractor elects to establish testing facilities, approval of such facilities shall be based on compliance with ASTM E 548, and no work requiring testing will be permitted, until the Contractor's facilities have been inspected and approved by the Contracting Officer's Representative. Testing shall be supervised by a registered Civil Engineer, experienced in rock-testing. The Government reserves the right to perform check-tests and to use the Contractor's sampling and testing facilities to make the tests. One gradation test shall be required at the beginning of production, prior to delivery of stone from the source to the project site. A minimum of one additional test shall be required for each 5000 tons of stone placed. Each sample shall consist of not less than 5

tons of stone, selected at random from the production run for the first test or from stone placed on grade or stockpiled on-site for required additional tests. All sampling and gradation tests performed by the Contractor shall be observed by the Contracting Officer's Representative.

#### 2.1.6 Rejected Stone

Stone of unsuitable quality and/or size distribution, as required by these specifications, shall be rejected. Any rejected stone shall be promptly removed from the project, at no expense to the Government. Any portions of the work covered by these specifications containing rejected stone will be considered incomplete.

### PART 3 EXECUTION

#### 3.1 FOUNDATION PREPARATION

##### 3.1.1 General

Subgrade preparation for material placement shall conform to the provisions of SECTION 02300 EARTHWORK. **Areas on which geotextile, material and/or stone is to be placed shall be trimmed and dressed to conform to cross-sections, indicated or directed, within an allowable tolerance of plus or minus 1 inch from the theoretical slope-lines and grades.** Where such areas are below the allowable minus tolerance limit, they shall be brought to grade by filling with earth, similar to the adjacent material and well-compacted, or by filling with approved material, and no additional payment will be made for any material thus required. **Immediately prior to placing the material, the prepared base shall be inspected by the Contracting Officer's Representative, and no material shall be placed thereon, until that area has been approved.**

#### 3.2 PLACEMENT

##### 3.2.1 General

Except as otherwise specified, the limits of stone in place shall follow, with reasonable variation, the indicated lines and slopes, without continuous under- or overbuilding. Templates shall be placed at adequate intervals, as determined by the Contracting Officer's Representative, to accurately delineate the surface of the work being placed. For all stonework, the Contractor shall submit the method of placement to the Contracting Officer's Representative for approval, before placement begins.

##### **3.2.2 THIS PARAGRAPH DELETED BY AMENDMENT 2**

##### 3.2.3 Riprap

Riprap shall be placed in a manner to produce a reasonably well-graded mass, with the minimum practicable percentage of voids, and shall be constructed to the lines and grades indicated or directed. Stone shall be placed to its full course thickness, in one operation, from the bottom of the slope or lowest portion requiring placement, to the top of the slope and in a manner to avoid displacing the underlying material. Material

shall not be dropped from a height of more than 18 inches. Method of placement shall be submitted to the Contracting Officer's Representative, for approval, prior to commencement of placement operations. The Contractor shall maintain the stone protection until accepted, and any material displaced by any cause, shall be replaced, at his expense, to the lines and grades shown on the drawings. Self-propelled equipment shall not be used on the embankment slopes. Hand-placing, barring, or placing by crane will be required only to the extent necessary, to secure the results specified. Placing stone by dumping into chutes or by similar methods, likely to cause segregation, will not be permitted. A tolerance of minus 2 to plus 2 inches from the indicated slope-lines and grades will be allowed in the finished surface, except that either extreme of such tolerance shall not be continuous over an area greater than 200 square feet.

#### 3.2.4 Stone for Grouted Stone

Stone for grouted stone shall be placed in such a manner to produce a reasonably well-graded mass and to insure that all individual stones can be satisfactorily embedded in grout. Method of placement shall be submitted to Contracting Officer's Representative, for approval, prior to commencement of placement operations. Stone shall be placed to its full course thickness, in one operation, and in such a manner to avoid displacing the underlying material. Material shall not be dropped from a height of more than 18 inches. The Contractor shall maintain the stone protection until accepted, and any material displaced by any cause shall be replaced at his expense, to the lines and grades indicated. Self-propelled equipment shall not be used on the slopes. Hand-placing, barring, or placing by crane will be required only to the extent necessary, to secure the results specified. Placing stone by dumping into chutes or by similar methods, likely to cause segregation will not be permitted. A tolerance of minus 2 to plus 2 inches, from the indicated slope-lines and grades will be allowed in the finished surface, except that either extreme of such tolerance shall not be continuous over an area greater than 200 square feet. Use of thin, flat stones will not be permitted.

### 3.3 DELIVERY

All stone delivered by rail or truck shall be weighed, and the scale tickets shall be certified, by authorized weighers. All railroad cars and trucks used for delivering stone shall be plainly numbered.

#### 3.3.1 Scales

Scales used for measurement shall, at the option of the Contractor, be either public scales or approved scales, provided by the Contractor. Weighing shall be at the point nearest the work at which the public scale is available or at which it is practicable for the Contractor to provide a scale. Scales shall be standard truck scales of the beam type. The scales shall be of sufficient size and capacity to accommodate all trucks used in hauling the material. Scales shall be tested, approved, and sealed by an inspector of the State Inspection Bureau, charged with scales inspection, within the state in which the project is located. Scales shall be calibrated and resealed as often as necessary, to insure continuous accuracy. The necessary number of standard weights for testing the scales

shall be on hand at all times, and, if an official inspection bureau of the state is not available, the scales will be tested by the Contracting Officer's Representative.

### 3.3.2 Waybills and Delivery Tickets

Copies of waybills or delivery tickets shall be submitted to the Contracting Officer's Representative, during the progress of the work. The Contractor shall furnish the Contracting Officer's Representative scale tickets for each load of material weighed; these tickets shall include tare weight, identification mark of each vehicle weighed, plus date, time, and location of the loading. Tickets shall be furnished at the point and time individual loads arrive at the work site. A master log of all vehicle loading shall be furnished for each day of loading operation. The Contractor shall file with the Contracting Officer's Representative the master log of loadings, certified waybills and/or certified tickets, within 24 hours of material delivery. Prior to the final payment, the Contractor shall furnish written certification that the material recorded on the submitted waybills and/or certified tickets was actually used in the construction covered by the contract.

-- End of Section --

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## SECTION 02811

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## SECTION 02811

## IRRIGATION SYSTEM

## 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 in the text by the basic designation only.

## AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C509 (2001; C509a-95) Resilient-Seated Gate Valves for Water Supply Service

## ASME INTERNATIONAL (ASME)

ASME B1.2 (1983; R 2001) Gages and Gaging for Unified Inch Screw Threads

ASME B16.3 (1998) Malleable Iron Threaded Fittings

ASME B40.1 (1991) Gauges - Pressure Indicating Dial Type - Elastic Element

## ASTM INTERNATIONAL (ASTM)

ASTM A 53/A 53M (2001) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

ASTM D 1785 (1999) Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120

ASTM D 2241 (2000) Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)

ASTM D 2464 (1999) Threaded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80

ASTM D 2466 (2001) Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40

ASTM D 2564 (1996a) Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems

ASTM D 2855 (1996) Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS  
INDUSTRY (MSS)

MSS SP-58	(1993) Pipe Hangers and Supports - Materials, Design and Manufacture
MSS SP-69	(1996) Pipe Hangers and Supports - Selection and Application
MSS SP-80	(1997) Bronze Gate, Globe, Angle and Check Valves

## NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code
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## 1.2 PERFORMANCE REQUIREMENTS

- a. The irrigation system is design to operate with a maximum 75 gallons per minute (GPM) with forty-five 45 PSI at the last spray head in each zone.
- b. The coordination and all applications (including plan submittals), permits and fees required for establishing the water service shall be the responsibility of the Contractor. The Contractor shall pay for all water utilized on this project for the duration of the contract.

## 1.3 GENERAL WATER SYSTEM REQUIREMENTS

## 1.3.1 Field Training

Contractor shall be responsible for training employees and subcontractors to ensure that all contractor operations personnel are familiar with safety rules and regulation and applicable governing agencies' and/or water districts' rules and/or regulations for irrigation systems. A copy of these rules and regulations shall be kept on the project site during all construction activities.

## 1.3.2 Service Area

Water service area shall be restricted to those areas explicitly approved by the applicable governing agencies and/or water districts.

## 1.3.3 Cross-Connections

Cross-connections between water system and any potable water system is strictly prohibited.

## 1.3.4 Sprinkler Heads

Contractor shall be responsible for the layout and adjusting all water irrigation sprinklers to eliminate overspray onto non-landscaped areas including, but not limited to, buildings, sidewalks, parking lots, roads

(paved and unpaved), trail systems, and flood control structures. Spray from sprinkler heads shall be limited to approved water service areas. Irrigation shall be done in a manner that will minimize runoff, pooling, and ponding.

#### 1.3.5 System Operation

Operation of the water system shall be limited to period of minimal use of the water service area by the general public as designated by the applicable governing agencies and/or water districts.

#### 1.3.6 As-built Drawings

Contractor shall provide to the Contracting Officer, as requested, the applicable governing agencies and/or water districts a full-size mylar copy of project as-built drawings prior to the final construction date.

#### 1.3.7 Modifications

Contractor shall obtain prior written approval from the Contracting Officer in addition to the applicable governing agencies and/or water districts for any proposed changes to the on-site water facilities.

#### 1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The "RE" designates that the Resident Office will review the submittal for the Government. Submit the following in accordance with Section 01330, SUBMITTAL PROCEDURES:

##### SD-02 Shop Drawings

Sprinkler System; G, RE

As-built Drawings which provide current factual information showing locations of mains, heads, valves, bubblers, sprinklers and controllers including deviations from and amendments to the drawings and changes in the work shall be included. Drawings shall include a complete list of equipment and materials, and manufacturer's descriptive and technical literature, performance charts and curves, catalog cuts, and installation instructions.

##### SD-03 Product Data

Framed Instructions

Labels, signs, and templates of operating instructions that are required to be mounted or installed on or near the product for normal, safe operation.

Field Training

Information describing training to be provided, training aids to be used, samples of training materials to be provided, and schedules and notification of training.

#### Sprinkler System

Detailed procedures defining the Contractor's provisions for accident prevention, health protection, and other safety precautions for the work to be done.

#### SD-06 Test Reports

##### Field Tests

Performance test reports, in booklet form, showing all field tests performed to adjust each component; and all field tests performed to prove compliance with the specified performance criteria, upon completion and testing of the installed system. Each test report shall indicate the final position of control valves.

#### SD-07 Certificates

##### Sprinkler System

The material supplier's or equipment manufacturer's statement that the supplied material or equipment meets specified requirements. Each certificate shall be signed by an official authorized to certify in behalf of material supplier or product manufacturer and shall identify quantity and date or dates of shipment or delivery to which the certificates apply.

#### SD-10 Operation and Maintenance Data

##### Sprinkler System

(Four) 4 copies of operation and (Four) 4 copies of maintenance manuals for the equipment furnished. One complete set prior to field testing and the remainder upon acceptance. Manuals shall be approved prior to the field training course. Operating manuals shall detail the step-by-step procedures required for system startup, operation, and shutdown. Operating manuals shall include the manufacturer's name, model number, parts list, and brief description of all equipment and their basic operating features. Maintenance manuals shall list routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides. Maintenance manuals shall include piping and equipment layout, simplified wiring and control diagrams of the system as installed, and system programming schedule.

#### 1.4 DELIVERY AND STORAGE

All equipment delivered and placed in storage shall be protected from the weather; excessive humidity and temperature variation; direct sunlight (in

the case of plastic or rubber materials); and dirt, dust, or other contaminants.

#### 1.5 FIELD MEASUREMENTS

The Contractor shall verify all dimensions in the field and shall advise the Contracting Officer of any discrepancy before performing the work.

### PART 2 PRODUCTS

#### 2.1 GENERAL MATERIALS AND EQUIPMENT REQUIREMENTS

##### 2.1.1 Standard Products

Materials and equipment shall be the standard products of a manufacturer who has produced similar systems which have performed well for a minimum period of two (2) years prior to bid opening. Equipment shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the site. As appropriate, irrigation components shall be applicable for use with irrigation systems.

##### 2.1.2 Nameplates

Each item of equipment shall have the manufacturer's name, address, type or style, model or serial number, and catalog number on a plate secured to the item of equipment.

##### 2.1.3 Extra Stock

The following extra stock shall be provided: Two (2) sprinkler heads of each size and type, two (2) valve keys for operating manual valves, two (2) wrenches for removing and installing each type of head, two (2) quick coupler keys and hose swivels, four (4) irrigation controller housing keys, and four (4) controller keys.

#### 2.2 PIPING MATERIALS

##### 2.2.1 Irrigation Piping and Procedures

###### 2.2.1.1 Lateral Lines and Fittings for Permanent Underground Installation

Lateral lines and fittings three inches (3") and smaller shall be Schedule 40 PVC.

###### 2.2.1.2 Main Line and Fittings for Permanent Underground Installation

- a. Main line and fittings two and one-half inches (2-1/2") and larger shall be Class 200 PVC Ringtite.
- b. Main lines and fittings two inches (2") and smaller shall be Schedule 40 PVC plastic pipe with Schedule 40 fittings.

##### 2.2.2 Galvanized Steel Pipe and Associated Fittings

#### 2.2.2.1 Pipe for Permanent Above-Ground Installation

All permanent above-ground piping shall be galvanized steel, or as shown on the contract drawings, conforming to ASTM A 53/A 53M, Schedule 40, standard weight.

#### 2.2.2.2 Fittings

- a. Fittings shall be Class 150 conforming to requirements of ASME B16.3. Contractor shall use non-hardening, non-toxic pipe joint sealant formulated for use on water-carrying pipes on all metal connections.
- b. Pipe hangers and supports for pipe under bridges shall be in conformance with MSS SP-58.

#### 2.2.3 Polyvinyl Chloride (PVC) Pipe, Fittings, and Solvent Cement

##### 2.2.3.1 Pipe

- a. Pipe shall conform to the requirements of ASTM D 1785, PVC 1120 Schedule 40; or ASTM D 2241, PVC 1120 SDR 21, Class 200.
- b. All PVC pipe shall bear markings including manufacturer's name, nominal pipe size, schedule or class, pressure rating in PSI, NSF approval, and date of extrusion.

##### 2.2.3.2 Fittings

- a. For plastic pipe: Solvent welded socket type fittings shall conform to requirements of ASTM D 2466, Schedule 40. Threaded type fittings shall conform to requirements of ASTM D 2464, Schedule 80.
- b. For Ringtite pipe: Fittings shall be Class 200 PSI PVC one(1)-piece molded rubber ring seal fittings.

##### 2.2.3.3 Plastic Pipe Joints

Plastic pipe joints shall be solvent welded or threaded. Solvent cement shall conform to the requirements of ASTM D 2564. Use of pipe dope or solvents on threaded joints will not be permitted.

#### 2.2.4 Sleeving Material

Pipe utilized for sleeves shall be Class 200 PVC.

#### 2.3 MAINLINE PRESSURE REGULATOR/FILTER (STRAINER)

##### 2.3.1 Pressure Regulator

Pressure regulator shall be of a cast iron body construction with a pressure rating of 200 PSI minimum and have a spring range capable of 80 to 85 PSI setting. Contractor to set pressure regulator in the fully open position at time of installation. The regulator shall be tapped and plugged for pressure gauge attachment.

### 2.3.2 Mainline Filter (Strainer)

Mainline filter (strainer) shall have a cast iron housing, fusion epoxy coating, flanged connections with machined seat in the body and tapered set in the cap for accurate screen alignment. Strainer shall have NPT blow-off connections. Filter/strainer shall have a stainless steel screen with one-sixteenth (1/16) perforations maximum with a working pressure of 175 PSI. Size shall be as noted on contract drawings.

### 2.4 SPRINKLER HEADS

#### 2.4.1 Pop-Up Spray Heads

Pop-up spray heads shall Rainbird 1800 series or equal. Nozzle **height shall be** as shown on the drawings. Body shall contain integral pressure regulator with debris screen.

#### 2.4.2 Sprinklers Heads

Sprinklers shall be Rain Bird 2045 A-Sam and Rain Bird 2045-PJ, or equal capable of covering eighty feet (80') diameter at forty-five (45) PSI with a distribution rate of 3.7 GPM. Construction shall be heavy duty plastic with a choice of nozzles and adjustable radius capabilities. Pop-up sprinklers heads shall be located on top of the channel slopes and in between the right of way and the service road. Impact sprinkles heads on 24" min. risers shall be located in the channel invert. Contractor shall install a check valve on the riser below each head. Installation of the sprinklers heads shall be as detailed on the contract drawings.

#### 2.4.3 Bubbler Heads

Heads shall be flood bubbler with fixed flow, pressure compensating, and designed for permanent mounting in drain tubes as detailed on the contract drawings:

- a. For trees, two (2) bubblers shall be installed in drain tubes as detailed on the contract drawings. Lateral length shall not exceed three-hundred feet (300') from each side of valve. Bubbler shall provide 1.0 GPM at 30 PSI.
- b. For shrubs, one (1) bubbler shall be installed in drain tube as detailed on the contract drawings. Lateral length shall not exceed three-hundred feet (300') from each side of valve. Bubbler shall provide 0.50 GPM at 30 PSI.
- c. For salvage trees, two (2) bubblers shall be installed in drain tubes as detailed on the contract drawings. Salvage tree locations shall be determined in the field. Lateral length shall not exceed fifty feet (50') from a bubbler system shown on the drawings. No more than 2 salvage trees per system. Bubbler shall provide 1.0 GPM at 30 PSI.

#### 2.4.4 Rotary Heads

Contractor may use approved gear driven rotary type heads capable of a

**distribution rate from 0.90 GPM to 4.2 GPM and a trajectory of 25°. Construction shall be heavy duty ABS plastic with a choice of twelve (12) nozzles and adjustable radius capabilities. Rotary heads installation shall be per pop-up sprinkler detailed on the contract drawings.**

#### 2.4.5 Deleted

### 2.5 VALVES

#### 2.5.1 Gate Valves, Less than Two and One-Half Inches (2-1/2")

Gate valves shall conform to the requirements of MSS SP-80, Type 1, Class 150, threaded ends, screw-in bonnet, non-rising stem and solid wedge disc. Gate valves shall include bronze cross handles.

#### 2.5.2 Gate Valves, Two and One-Half Inches (2-1/2") and Larger

Gate valves shall conform to the requirements of AWWA C509 and have encapsulated resilient wedge, parallel seats, non-rising stems, and open by counterclockwise turning. End connections shall be flanged. Interior construction of valves shall be bronze including stem containing a maximum two percent (2%) aluminum and maximum sixteen percent (16%) zinc.

#### 2.5.3 Quick Coupling Valves

Quick coupling valves shall have brass parts and shall be a two(2)-piece unit with one inch (1") FIP inlet threads. The valve shall use rod brass acme threaded keys for opening and closing. All lids shall be lockable, vinyl with spring for positive closure on key removal.

#### 2.5.4 Remote Electric Control Valves

Remote electric control valves shall be Hardie Ultra flow 700 series with flow control feature for flow adjustment, contamination proof self-flushing nylon screen, and manual shut off, or approved equal.

#### 2.5.5 Master Control Valves

a. Master control valve shall be cast iron body with removable seat and have two (2) inlet tappings for either angle or straight installation. The internal control system of the valves must be mechanically self-cleaning and automatically self-purging without the use of screens or filters. The diaphragm assembly unit must be hydraulically balanced and be mechanically guided in all positions. Upon opening, the internal control port shall enlarge in size, to purge, and gradually reduce during closure to prevent hammer and chatter. A manual flow stem to adjust the closing speed and internal flushing must be provided. When installed with the flow stem up, energizing and solenoid shall automatically exhaust all trapped air in the cover chamber. A drip tight, resilient seated petcock must be provided for manual opening without electricity. The solenoid pilot must be corrosion proof, molded in epoxy, and encased in brass housing.

b. Master control valves shall be normally open.

## 2.6 ACCESSORIES AND APPURTENANCES

### 2.6.1 Valve Keys for Manually Operated Valves

Valve keys shall be one-half inch (1/2") diameter by three feet (3') long, tee handles and keyed to fit valves.

### 2.6.2 Valve Boxes

Valve boxes shall be plastic and lockable. Box sizes shall be adjustable for each type of valve used. The applicable station number shall be cast on cover and painted white. Shaft diameter of box shall be minimum five and one-quarter inches (5-1/4"). Valve boxes shall not be placed in the channel invert.

### 2.6.3 Pressure Gauges

Pressure gauges shall conform to requirements of ASME B40.1, single style pressure gauge for water with two inch (2") dial brass or aluminum case, bronze tube, gauge cock, pressure scrubber, and siphon. Scale range shall be suitable for irrigation sprinkler systems.

### 2.6.4 Service Clamps

Service clamps shall be bronze flat, double strap, with neoprene gasket or "O"-ring seal.

## 2.7 AUTOMATIC CONTROLLERS

The controller(s) shall be solid-state conforming to the following:

- a. The controller(s) shall be used as a stand alone controller. The controllers shall have 24 stations, be of the same manufacturer, and be available with English and Spanish displays and manuals as indicated on the drawings.
- b. Weather-resistant steel, locking cabinet with an internal transformer.
- c. The units shall require 110VAC, 1 amp input power. The step down transformer (110VAC - 26.5VAC) rated at 1.8 amp output capacity for operating a maximum of eight (4) solenoids at one (1) time. All controller(s) shall be grounded to a 5ohm or less earth ground.
- d. The solid state design units shall have 11 daily starts times or cycle looping option for unlimited starts. Watering schedule programmable up to 16 days. Water Budgeting : 1-255% in 1% increments. Station timing shall be from one (1) minute minimum time to ninety-nine (99) minutes in one (1) minute increments and 0.1 hours to 9.9 hours in 0.1 hour increments.
- e. All controllers shall be of the same manufacturer for the project.

## 2.8 FLOW SENSOR

Flow sensor shall be an insertion type with a non-magnetic, spinning impeller (paddle wheel) as the only moving part. Sensor sleeve shall be 316 stainless steel with the sensor housing being glass-filled PPS. The impeller shall be glass-filled nylon with a Pennlon sleeve bearing or Tefzel with an integral bearing. The shaft material shall be tungsten carbide. The sensor will be supplied with a two inch (2") NPT adapter for installation into any commercially available weld-on fitting or pipe saddle. The adapter shall have two (2) ethylene-propylene O-rings. The sensor electronics shall be potted in an epoxy compound designed for prolonged immersion. Electrical connections shall be two (2) single conductor 18 AWG leads eighteen inches (18") long. Insulation shall be direct burial "UF" type colored red for the positive lead and black for the negative lead. Insertion of the sensor into any pipe size shall be one and one-half inches (1-1/2") from the inside wall to the end of the sensor housing. The sensor shall operate in line pressures up to 400 PSI and liquid temperatures up to 220°F and operate in flows of one foot (1') per second up to thirty feet (30') per second.

## 2.9 CONTROLLER ENCLOSURE CABINET

The controller enclosure shall be of a vandal and weather resistant nature manufactured entirely of stainless steel. The main housing shall be louvered upper and lower body to allow for cross flow ventilation. A stainless steel backboard shall be provided for the purpose of mounting a controller. The backboard shall be mounted on four (4) stainless steel bolts that will allow for removal of the backboard. The inside door area shall provide adequate storage for plans, operating instruction, and scheduling information. The enclosure door shall have a continuous stainless steel piano hinge on one (1) side, and a three (3) point locking mechanism on the other side. The handle controlling the locking mechanism shall be located at the base of the door and be concealed within the surface of the door. The provision for a padlock shall be included within the locking mechanism. All controller enclosures shall be keyed the same.

## 2.10 ELECTRICAL WORK

- a. Wiring type and rigid conduit for electrical power shall be in accordance with NFPA 70.
- b. Wire color shall be continuous over its entire length. Pilot wires shall be a different color for each valve. Common wires shall be white with a different color stripe for each controller.

## 2.11 CONCRETE MATERIALS

Concrete shall have a compressive strength of 3000 psi at twenty-eight (28) days.

## PART 3 EXECUTION

### 3.1 INSTALLATION

Sprinkler system shall be installed after site grading has been completed.

Excavation, trenching, and backfilling for sprinkler system shall be in accordance with the applicable provisions of SECTION 02316A EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS AND GRADING, except as modified herein. The contractor shall design and layout an automatic irrigation system to water all hydro seeded and mitigation areas. Using quick couplers as a temporary irrigation system will not be permitted. The contractor shall provide for Contracting Officer approval design calculations, detailed drawings laying out valves, lines, sprinklers heads and any other items necessary for the irrigation system. The contractor shall maintain the irrigation system throughout the contract period replacing sprinkler heads, lines and valves as directed by the Contracting Officer.

#### 3.1.1.1 Trenching

Trenching shall be field adjusted as appropriate to eliminate existing tree root damage. When no option for trench layout is available then trench around roots shall be hand excavated to pipe grade when roots of two inches (2") diameter or greater are encountered. Trench width shall be four inches (4") minimum or one and one-half (1-1/2) times the diameter of pipe, whichever is wider. Backfill shall be hand tamped over excavation. When rock is encountered, trench shall be excavated four inches (4") deeper and backfilled with silty sand (SM) or well-graded sand (SW) to pipe grade. Trenches shall be kept free of obstructions and debris that would damage pipe. Subsoil shall not be mixed with topsoil. Existing paved areas and other obstacles shall be bored at a depth conforming to bottom of adjacent trenches. Pipe sleeves for bored pipe shall be two (2) pipe diameters larger than sprinkler pipe.

#### 3.1.2 Piping System

##### 3.1.2.1 Cover

Underground piping shall be installed as to meet the minimum depth of backfill cover specified or as shown on the contract drawings.

##### 3.1.2.2 Clearances

Minimum horizontal clearances between lines shall be four inches (4") for pipe two inches (2") and less; twelve inches (12") for two and one-half inches (2-1/2") and larger. Minimum vertical clearances between lines shall be one inch (1").

##### 3.1.2.3 Pipe and Conduit Sleeves

Pipe and conduit sleeves shall be installed with a minimum of off-set at the joints to permit easy installation and removal of the irrigation and conduit lines. All plastic lines shall be installed in sleeves under paved areas and other structures. Sleeves shall extend at least twelve inches (12") beyond the edges of the pavement or structure. Sizes shall be:

<u>Pipe Sizes in Inches</u>	<u>Minimum Sleeve Size in Inches</u>
-----------------------------	--------------------------------------

1/2	2
3/4	2-1/2
1 to 1-1/2	3
2 to 2-1/2	4
3 and 4	6
6	10

Number of Wires  
Minimum Conduit Size in Inches

1 to 10	1
11 to 27	2
28 to 52	3

### 3.1.3 Piping Installation

#### 3.1.3.1 Polyvinyl Chloride (PVC) Pipe

- a. Rubber ring seal joint shall be factory-made male end or prepared field-cut male end to exact specifications of factory-made end. Carefully clean bell or coupling and insert rubber ring without lubricant. Position ring carefully according to manufacturer's instructions. Lubricate male end according to manufacturer's instructions and insert male end to specified depth. Use hands only when inserting PVC pipe. Thrust blocks shall be provided where necessary to resist system pressure on Ringtite pipe and fittings. Blocks shall be concrete and the size shall be based on an average soil safe bearing load of 1,000# per square foot. Form thrust block in such a manner that concrete comes in contact only with the fittings. Thrust blocks shall be between solid soil and the fitting.
- b. Solvent-cemented joints shall conform to the requirements of ASTM D 2855.
- c. Threaded joints shall be full cut with a maximum of three (3) threads remaining exposed on pipe and nipples. Threaded joints shall be made tight without recourse to wicks or fillers, other than polytetrafluoroethylene thread tape.
- d. Piping shall be joined to conform with requirements of ASTM D 2855, and pipe manufacturer's instructions. Pipe shall be installed in a serpentine (snaked) manner to allow for expansion and contraction in trench before backfilling. Pipes shall be installed at temperatures over 40° F.
- e. Install pipe with all markings pointing up for visual inspection and verification.

- f. Pipe shall be kept free from dirt and pipe scale. Pipe ends shall be cut square.

#### 3.1.3.2 Threaded Galvanized Steel Pipe

- a. Prior to installation, pipe shall be reamed. Threads shall be cut in conformance with ASME B1.2. Pipe joint compound shall be applied to male end only.
- b. Galvanized steel pipe for permanent underground installation shall be painted with two (2) coats of Koppers #50 bitumastic, or approved equal, or wrapped with 2 mil thick black plastic insulating tape as manufactured by 3M Company or approved equal.
- c. Pipe attachment installation under bridges shall be in conformance with MSS SP-69 and as directed by the Contracting Officer.

#### 3.1.3.3 Insulating Joints

Insulating and dielectric fittings shall be provided where pipes of dissimilar metal are joined and at connections to water supply mains as shown.

#### 3.1.4 Valves and Valve Boxes

- a. Valves, all types, shall be installed as detailed on the contract drawings.
- b. Valve boxes shall be individually provided for each gate valves, quick coupling valves, remote control valves, and master control valves.
- c. Only one (1) valve shall be installed in a valve box, extending from grade to below valve body, with a minimum of four inches (4") cover measured from finish grade to top of valve stem.
- d. Master control valve(s) and flow sensor(s) shall be installed per point-of-connection (POC) as detailed on the contract drawings.

#### 3.1.5 Sprinkler Heads and Valves

Sprinkler heads and valves shall be installed plumb and level with terrain.

#### 3.1.6 Mainline Pressure Regulator/Filter (Strainer)

Contractor shall install a pressure regulator and filter (strainer) at each point-of-connection (POC) on a concrete pad in a stainless steel LeMeur enclosure, or approved equal.

#### 3.1.7 Flow Sensor

**Contractor shall install a flow sensor at each point-of-connection (POC A & B) as detailed on the contract drawings. The flow sensor shall be wired to the closest controller. Maximum run of wire shall not exceed manufacturers recommendation between flow sensor and controller.**

### 3.1.8 Control Wire and Conduit

#### 3.1.8.1 Wires

Low voltage wires may be buried beside pipe in same trench. Rigid conduit shall be provided where wires run under paving. Wires shall be number tagged at key locations along main to facilitate service. One (1) control circuit shall be provided for each zone and a circuit to control sprinkler system. Wires shall be #10 common and #12 control with UL approval for direct burial.

#### 3.1.8.2 Loops

A thirty six inch (36") loop of wire shall be provided at each valve where controls are connected.

#### 3.1.8.3 Expansion and Contraction

Multiple tubes or wires shall be bundled and taped together at ten foot (10') intervals with twelve inch (12") loop for expansion and contraction.

#### 3.1.8.4 Splices

Electrical splices shall be waterproof.

### 3.1.9 Automatic Controllers

- a. Exact field location of controllers shall be determined before installation. Coordinate the electrical service to these locations with the electrical provider. Install in accordance with manufacturer's recommendations and NFPA 70.

#### 3.1.10 Thrust Blocks

Concrete shall be placed so that sides subject to thrust or load are against undisturbed earth, and valves and fittings are serviceable after concrete has set.

#### 3.1.11 Backfill

##### 3.1.11.1 Minimum Cover

Depth of cover above pipe shall be twelve (12") for all lateral lines; twenty-four inches (24") for all main lines; thirty-six inches (36") for pipes under traffic loads; and twenty-four inches (24") for low-voltage wires. Remainder of trench or pipe cover shall be filled to within three inches (3") of top with excavated soil, and compact soil with plate hand-held compactors to same density as undisturbed adjacent soil.

##### 3.1.11.2 Restoration

Top three inches (3") shall be filled with topsoil and compacted with same density as surrounding soil. Seeded areas and plants shall be restored in

accordance with Section 02921a, HYDROSEEDING, and Section 02930A, EXTERIOR PLANTING

#### 3.1.12 Adjustment

After grading, seeding, and rolling of planted areas, sprinkler heads shall be adjusted flush with finished grade or as shown on the drawings. Adjustments shall be made by providing new nipples of proper length or by use of heads having an approved device, integral with head, which will permit adjustment in height of head without changing piping.

#### 3.1.13 Cleaning of Piping

Prior to the hydrostatic and operation tests, the interior of the pipe shall be flushed with clean water until pipe is free of all foreign materials. Flushing and cleaning out of system pipe, valves, and components shall not be considered completed until witnessed and accepted by Contracting Officer.

### 3.2 FIELD TESTS

All instruments, equipment, facilities, and labor required to conduct the tests shall be provided by Contractor.

#### 3.2.1 Sprinkler Adjustment Test

Test shall consist of a coverage test of the on site irrigation system to ensure that overspray and runoff is controlled.

#### 3.2.2 Hydrostatic Pressure Test

Piping shall be tested hydrostatically before backfilling and proved tight at a hydrostatic pressure of 150 psi without pumping for a period of one hour with an allowable pressure drop of five (5) psi. If hydrostatic pressure cannot be held for a minimum of four (4) hours, Contractor shall make adjustments or replacements and the tests repeated until satisfactory results are achieved and accepted by the Contracting Officer.

#### 3.2.3 Operation Test

At conclusion of pressure test, bubblers, sprinkler heads, and quick coupling assemblies shall be installed and the entire system tested for operation under normal operating pressure. Operation test consists of the system operating through at least one complete programmed cycle for all areas to be irrigated.

#### 3.2.4 Coverage Test

The hydro seed and mitigation irrigation systems shall be tested for coverage to insure that all hydro seeded and mitigation areas are watered. The coverage test shall consist of the system operating through at least one complete programmed cycle for all areas to be sprinkled (where applicable). The contractor shall not space the sprinkler heads beyond the manufacturers recommendation for the prevailing wind conditions for the

project. The contractor shall make adjustments, or replacements and repeat the test until satisfactory results are achieved and accepted by contracting officer. Coverage test shall be conducted prior to hydro seeding and before landscape acceptance.

### 3.3 POSTING FRAMED INSTRUCTIONS

Framed instructions containing wiring and control diagrams under glass or in laminated plastic shall be posted where directed. Condensed operating instructions, prepared in typed form, shall be framed as specified above and posted beside the diagrams. The framed instructions shall be posted before acceptance testing of the system. After as-built drawings are approved by Contracting Officer, controller charts and programming schedule shall be prepared. One (1) chart for each controller shall be supplied. Chart shall be a reduced drawing of actual as-built system that will fit the maximum dimensions inside controller housing. Black line print for chart and a different pastel or transparent color shall indicate each station area of coverage. After chart is completed and approved for final acceptance, chart shall be sealed between two (2) 20 mil pieces of clear plastic.

### 3.4 CLEANUP

Upon completion of installation of system, all debris and surplus materials resulting from the work shall be removed.

### 3.5 MAINTENANCE

Contractor shall maintain all irrigation systems and components in good working order including water point-of-connection facilities (meter and the like) for the length of this contract.

-- End of Section --

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**SECTION 02910**

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**SECTION 02910****NATIVE PLANT EXTRACTION, SALVAGE AND STORAGE****PART 1 GENERAL**

The Contractor shall furnish qualified personnel, equipment, labor, and materials, and perform all work for native plant material extraction, salvage, and temporary plant storage as specified herein, shown on the Contract Drawings, and as directed by the Contracting Officer. Plants shall be salvaged prior to clearing and grubbing operations.

**1.1 PROFESSIONAL OVERSIGHT**

The CONTRACTOR shall provide a landscape professional with previous, successful native plant salvage experience to oversee the extraction and salvage operations for the duration of this work type at the Murrieta Creek Phase 1 project. To be considered qualified, the professional's experience must include at least 3 successful projects involving the extraction, salvage, and maintenance of riparian species. The Contractor shall use the landscape subcontractor they were successful low bidder with and who meets the required qualifications. No landscape subcontractor substitutions shall be allowed.

**1.2 SUBMITTALS**

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The "RE" designates that the Resident Office will review the submittal for the Government. Submit the following in accordance with Section 01330, SUBMITTAL PROCEDURES:

**SD-01 Preconstruction Submittals**

Equipment; G, RE.

A listing of equipment to be used for the plant extraction and salvage operation.

Temporary Irrigation Plan; G, RE.

The Contractor shall submit an irrigation plan outlining the operation of a temporary irrigation system to water plant materials stored in the temporary nursery from the time of salvage to the time of transplanting. The irrigation plan shall include water source, water quality report from a water quality laboratory, irrigation equipment, and the specifics of operation. The irrigation plan shall include the proposed watering schedule and quantity of water to be applied per each application. Methods to prevent run-off, puddling and plant wilting or water stress

shall be described.

### 1.3 INSPECTION

All extracted and salvaged native plant materials shall be inspected for plant condition and damage prior to being taken to the temporary storage facility. Plant materials that have been exposed to heat, excessive root drying, and damaged or mutilated stock shall be rejected and the Contractor will be charged for replacement fees at fair market value. All riparian plants shall be inspected to insure that the north orientation is clearly marked on each plant in such a manner that the marking will be protected during transport, storage, and transplanting. Any riparian plant materials that are salvaged without the north orientation being marked prior to extraction will be rejected by the Contracting Officer and the Contractor will be responsible for supplying replacement plants at no additional cost. Rejected plants shall not be stored in the temporary nursery.

### 1.4 REPLACEMENT OF DAMAGED, DEAD, VANDALIZED OR MISSING PLANT MATERIAL

The Contractor shall replace any damaged, dead, vandalized, rejected or missing plant materials at no additional cost. Replacement plants shall be of the same species, and size as original stock, and shall be subject to inspection and approval by the Contracting Officer.

## PART 2 PRODUCTS

### 2.1 PLANT MATERIALS

#### 2.1.1 Salvage Trees

**Prior to start of construction all trees over 20 inches diameter at breast height (DBH) shall be flagged by the Contracting Officer and salvaged by the Contractor, or replaced in-kind.**

- a. 5 Willows.
- b. 1 Cottonwood.
- c. 1 Eucalyptus.

### 2.2 WATER

Unless otherwise noted, irrigation water for salvage plant irrigation shall be the responsibility of the Contractor. Irrigation water shall not contain elements or metals toxic to plant life.

The temporary irrigation plan must be approved by the Contracting Officer prior to the Contractor beginning plant salvage operations. The Contractor shall submit a monthly report to the Contracting Officer documenting watering dates, application rates, person who can verify the watering schedule or answer questions pertaining to the required watering.

## PART 3 EXECUTION

The Contractor shall submit a listing of equipment to be used for the plant extraction and salvage operation. The Contractor shall also submit the

credentials and past project experience of the landscape professional. Past projects and current references that can verify the projects must be listed on the applicable submittal form.

### 3.1 EXTRACTION OF NATIVE PLANT MATERIALS

#### 3.1.1 Extraction Time

Native plant materials shall be extracted and salvaged from September 30, 2003 through November 30, 2003 for fall work; and from March 1, 2004 through March 14, 2004 for spring work.

#### 3.1.2 Salvage Conditions

Salvage operations shall be performed only during periods when beneficial results can be obtained. When drought, high temperatures, or other unsatisfactory conditions prevail, the work shall be stopped when directed.

When special conditions warrant a variance to the extraction and salvage operations, the Contractor shall propose alternate times for approval by the Contracting officer.

#### 3.1.3 Plant Orientation and Plant Locations

The north orientation of each individual riparian species plant being salvaged shall be marked prior to extraction from the growing site (if applicable). The marking must be clearly visible and must stay on the plant throughout the extraction, salvage, storage and planting phases. If necessary a compass shall be used to determine the north orientation at the time of marking. Marking shall not result in any damage to the plant such as cuts, bruises, or insertion of any foreign objects into plant tissues. Planting locations shall be determined by the Contracting Officer in the field prior to planting operations. Contractor shall inform Contracting Officer 5 days before start of planting operations.

#### 3.1.4 Plant Extraction, Salvage, and Storage

Willow and cottonwood trees shall be between a minimum of 5 feet in height, and a maximum of 20 feet in height. As much of the root ball as possible shall be dug and protected. At the Contractor's option and responsibility, plants may be stored in adequate sized boxed containers with the root-ball protected. Roots shall be protected at all times from drying and physical damage. Mycorrhizal fungi inoculum shall be added as recommended by the manufacturer for the salvage plant material specified. All plants shall be watered as necessary during storage to maintain the health of each tree.

### 3.2 TEMPORARY ON-SITE PLANT STORAGE

**The Contractor shall establish an on-site, temporary plant/tree nursery in a location as approved and directed by the Contracting Officer.** The temporary nursery shall not be in the way of major construction traffic which could damage the trees. The temporary nursery shall include plant pits as necessary to store the plant materials. The topography of the nursery shall be slightly sloped to drain so that no ponding will occur from irrigation of stored plant materials. The Contractor shall maintain

this nursery site until all trees are replanted. The contractor shall provide a temporary security fence to be placed around the plant nursery **area of 50' x 100'** with a gate, lock and keys (min. 3) for maintenance access. The fence and gate shall be capable of preventing unauthorized entry. The fence shall consist of 9-gauge chain link-fence fabric (2" square mesh) and be a minimum of six (6) feet high. Posts shall be 2" galvanized, set plumb, 10 feet O.C. in alignment and set in concrete as required for support.

### 3.2.1 Plant Protection During Storage Period

All native plant materials salvaged from the construction site shall be stored in the designated temporary nursery. Plants shall be protected from exposure to wind and direct sunlight, predators and vandals during the storage period. Plants shall be delivered to the temporary nursery as soon as possible after extraction to avoid drying of plant roots. Plants shall be supported and protected from tipping over or breaking off from winds or other forces. The CONTRACTOR shall replace unprotected plants that break from strong winds or vandalized at no additional cost to the Government. Replacement plants shall be equal in size and structure to plants being replaced.

### 3.2.2 Watering Stored Plant Materials

The native plant materials shall be watered 2 to 3 times per week during the hottest summer months and once per month in cool months (or as required to maintain healthy plant materials) for the duration of the time they are held in the temporary nursery or as directed by the Contracting Officer. Water shall be applied at a rate sufficient to ensure moist soil conditions at a depth that reaches the bottom of the root zone of each plant. Run-off, puddling, and wilting shall be prevented. Plants shall be protected from damage from equipment used to perform the watering. Plants damaged by watering activities shall be replaced by the Contractor at no additional cost.

### 3.2.3 Soil and Plant Damage Caused by Irrigation

Any damage to stored plants that result from the Contractor's excessive or irregular irrigation practices shall be the responsibility of the Contractor and such plants shall be replaced at no additional cost.

## 3.3 CLEAN UP

### 3.3.1 Pruning

Pruning shall be accomplished by trained and experienced personnel (min. 5 years of documented experience in the field). The pruning of salvage trees shall be in accordance with standard landscape practice. The total amount of foliage shall be pruned by one-fourth to one-third on salvage trees to compensate for loss of roots and transplanting shock. The typical growth habit of individual plant material shall be retained. Dead and broken material shall be pruned. Clean cuts shall be made flush with the parent trunk. Improper cuts, stubs, dead and broken branches shall be removed. "Headback" cuts at right angles to the line of growth will not be

permitted. Trees shall not be poled or the leader removed, nor shall the leader be pruned or "topped off".

3.3.2 Clean Up

Organic waste material generated from the plant extraction/salvage operation, clearing and grubbing activities shall be disposed of off-site in a location approved by the Contracting Officer. Inorganic waste materials must be hauled off-site to a landfill.

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## SECTION 02921

## HYDROSEEDING

## 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 in the text by basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM D 4972	(2001) pH of Soils
ASTM D 5268	(1992; R 1997) Topsoil Used for Landscaping Purposes

## U.S. DEPARTMENT OF AGRICULTURE (USDA)

AMS Seed Act	(1940; R 1988; R 1998) Federal Seed Act
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## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The "RE" designates that the Resident Office will review the submittal for the Government. Submit the following in accordance with Section 01330, SUBMITTAL PROCEDURES:

## SD-03 Product Data

## Equipment.

A listing of equipment to be used for the seeding operation.

## Delivery.

Delivery schedule.

## Topsoil.

Topsoil from the stripping and stock piling operation.

## Quantity Check.

Bag count or bulk weight measurements of material used compared with area covered to determine the application rate and quantity installed.

Seed Establishment Period.

Calendar time period for the seed establishment period. When there is more than one seed establishment period, the boundaries of the seeded area covered for each period shall be described.

Maintenance Record.

Maintenance work performed, area repaired or reinstalled, diagnosis for unsatisfactory stand of seeded plants.

Maintenance Plan; G, RE.

Maintenance plan indicating the contractor's method(s) to establish a healthy stand of native plants. Provide irrigation system layout plan and or indicate method(s) of water application and maintenance required to meet specification. The maintenance plan shall cover one year of plant establishment and shall include a watering and maintenance schedule.

Application of Pesticide.

Pesticide treatment plan with sequence of treatment work with dates and times. The pesticide trade name, EPA registration number, chemical composition, formulation, concentration of original and diluted material, application rate of active ingredients, method of application, area treated, amount applied; and the name and state license number of the state certified applicator shall be included.

Wood cellulose fiber mulch and tackifier.

Application rates recommended by the manufacture.

SD-04 Samples

Delivered Topsoil.

Samples taken from several locations at the source.

Soil Amendments.

A 5 lbs sample.

Mulch.

A 5 lbs sample.

Erosion Control Material

Soil erosion control material sample meeting requirements.

#### SD-06 Test Reports

Equipment Calibration.

Certification of calibration tests conducted on the equipment used in the seeding operation.

Soil Test.

Certified reports of inspections and laboratory tests, prepared by an independent testing agency, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.

#### SD-07 Certificates

Seed.

Topsoil.

pH Adjuster.

Fertilizer.

Soil Conditioner.

Mulch.

Pesticide.

Prior to the delivery of materials, certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include the following:

- a. Seed. Classification, botanical name, common name, percent pure live seed, minimum percent germination and hard seed, maximum percent weed seed content, and date tested.
- b. Topsoil. Particle size, pH, organic matter content, textural class, soluble salts, chemical, mechanical and plant growth analyses.
- c. pH Adjuster. Calcium carbonate equivalent and sieve analysis.
- d. Fertilizer. Chemical analysis and composition percent.
- e. Soil Conditioner: Composition and source.
- f. Mulch: Composition and source.

g. Pesticide. EPA registration number and registered uses.

### 1.3 SOURCE INSPECTION

The source of delivered topsoil shall be subject to inspection.

### 1.4 DELIVERY, INSPECTION, STORAGE, AND HANDLING

#### 1.4.1 Delivery

A delivery schedule shall be provided at least 10 calendar days prior to the first day of delivery.

##### 1.4.1.1 Delivered Topsoil

Prior to the delivery of any topsoil, its availability shall be verified in paragraph TOPSOIL. A soil test shall be provided for topsoil delivered to the site.

##### 1.4.1.2 Soil Amendments

Soil amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.

##### 1.4.1.3 Pesticides

Pesticide material shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses.

#### 1.4.2 Inspection

Seed shall be inspected upon arrival at the job site for conformity to species and quality. Seed that is wet, moldy, or bears a test date five months or older, shall be rejected. Other materials shall be inspected for compliance with specified requirements. The following shall be rejected: open soil amendment containers or wet soil amendments; topsoil that contains slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2 inch diameter; and topsoil that contains viable plants and plant parts. Unacceptable materials shall be removed from the job site.

#### 1.4.3 Storage

Materials shall be stored in designated areas. Seed and fertilizer shall be stored in cool, dry locations away from contaminants. Chemical treatment material shall be stored according to manufacturer's instructions and not with seeding operation materials.

#### 1.4.4 Handling

Except for bulk deliveries, materials shall not be dropped or dumped from

vehicles.

#### 1.4.5 Time Limitation

- a. Hydroseed slurry mixture for Seed Mix which has not been applied within twenty (20) minutes after mixing shall be rejected and replaced at the Contractor's expense.

## PART 2 PRODUCTS

### 2.1 SEED

#### 2.1.1 Seed Classification

State-certified seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. Labels shall be in conformance with AMS Seed Act and applicable state seed laws.

#### 2.1.2 Hydroseed Native Seed Species and Mixtures

Native seed species shall be as follows:

##### Pure Live Seed (PLS)

Botanical Name	Common Name	In Pounds Per Acre
SEED MIX :		
Festuca Ovina	Sheep Fescue	4.0
Festuca longifolia		4.0
Melica californica		8.0
Coreopsis lanceolata		4.0
<b>Layla platyglossa</b>	<b>Tiddy Tips</b>	<b>2.0</b>
Rudbeckia amplexicaulis		2.0
Eschscholzia californica	California Poppy	2.0
Festuca rubra molate	Native Red Fescue	6.0
Phacelis campanularia		2.0
Linaria maroccana		2.0
Gaillardia pulchella		4.0
Vulpia myuros "Zorro"	Zorro Fescue	4.0
TOTAL PLS in LBS/ACRE		<b>44.0</b>

Hydroseed Mitigation seed species for channel slopes shall be as follows:

##### Pure Live Seed (PLS)

Botanical Name	Common Name	In Pounds Per Acre
SEED MIX :		
Ambrosia psilostachya	Western ragweed	2.0
Eriogonum fasciculatum	Calif. buckwheat	4.0
Plantago ovata	Plantain	20.0
Urtica sp.	Stinging nettle	1.0
Isocoma menziesii	Golden bush	4.0

Solanum xanti	Purple nightshade	1.0
Nassella lepida	Foothill needlegrass	6.0
Heterotheca grandiflora	Telegraph weed	2.0
Galium sp.	Bedstraw	<u>2.0</u>
TOTAL PLS in LBS/ACRE		42.0

Broadcast Mitigation seed species for channel invert shall be as follows:

#### Pure Live Seed (PLS)

Botanical Name	Common Name	In Pounds Per Acre
SEED MIX :		
Ambrosia psilostachya	Western ragweed	2.0
Artemisia douglasiana	Douglas mugwort	4.0
Solanum xanti	Purple nightshade	1.0
Galium sp.	Bedstraw	<u>2.0</u>
TOTAL PLS in LBS/ACRE		9.0

#### 2.1.3 Seed Quality

- a. Weed seed shall not exceed one percent (1%) by weight of the total mixture. Wet, moldy, or otherwise damaged seed shall be rejected.
- b. Native plant seed shall have been inoculated with mycorrhizal fungi prior to purchase.

#### 2.1.4 Seed Mixing

The mixing of seed may be done by the seed supplier prior to delivery, or on site as verified by the Contracting Officer.

#### 2.1.5 Substitutions

Substitutions will not be allowed without written request and approval from the Contracting Officer. The contractor shall make all arrangements with the seed vendor(s) to hold the required amount of seeds needed for the project. The contractor shall verify and secure from the seed vendor(s) the required native seed species and quantity no later than 160 days or sooner prior to seeding operations.

#### 2.2 TOPSOIL

Topsoil shall be as defined in ASTM D 5268. When additional topsoil is required beyond the available topsoil, the topsoil shall be delivered and amended as recommended by the soil test(s) for the seed specified. The contractor shall pay for all soils tests as directed by the Contracting Officer. Topsoil shall be free from slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 3 inches in diameter. Topsoil shall be free from viable plants and plant parts.

#### 2.3 SOIL AMENDMENTS

Soil amendments shall consist of pH adjuster, fertilizer, and soil conditioner meeting the following requirements. Vermiculite shall not be

used.

### 2.3.1 pH Adjuster

The pH adjuster shall not be less than 99 percent elemental sulfur. The pH adjuster shall be used to create a favorable soil pH for the plant material specified.

### 2.3.2 Fertilizer

Fertilizer shall be commercial grade, free flowing, uniform in composition, and consist of a nitrogen-phosphorus-potassium ratio. The fertilizer shall conform to applicable State and Federal regulations and shall bear the manufacturer's guaranteed statement of analysis.

#### Fertilizer 1:

Nitrogen	5%
Phosphoric Acid	3%
Water Soluble Potash	1%
Humus (composted organic and mineral matter)	50%
Humic Acids (derived from compost)	15%
Soluble Metallic Iron	1%

#### Fertilizer 2 [based in a four (4) to six (6) month release form]:

Coated Slow Release Nitrogen*	9%
Urea Nitrogen	2%
Available Phosphoric Acid**	8%
Soluble Potash***	8%
Humus (composted organic and mineral matter)	25%
Humic Acid (derived from compost)	5%
Iron (derived from iron sulfate)	2%
Manganese (derived from manganese sulfate)	.05%
Zinc (derived from zinc sulfate)	.05%
Sulfur	7%

\* derived from sulfur coated urea (controlled release)

\*\* derived from triple super phosphate

\*\*\* derived from compost and muriate of potash

### 2.3.3 Agricultural Gypsum

Agricultural gypsum shall be commercially packaged, free flowing, of a finely ground form and an agricultural grade, minimum ninety-two percent (92%) calcium sulfate by volume, free of any toxic material. One-hundred percent (100%) of the ground material shall pass through a ten (10) mesh screen and at least fifty percent (50%) of the material shall pass through a 100-mesh screen.

### 2.3.4 Agricultural Sulfur

Agricultural sulfur shall be first quality commercial grade, commercially packaged, free flowing, of a flour of sulfur finely ground form.

### 2.3.5 Decomposed Wood Derivatives

Decomposed wood derivatives shall be rotted sawdust that is free of stones, sticks, soil, and toxic substances harmful to plants, and is fully composted. Rotted sawdust shall be stabilized with 7.5 pounds of nitrogen added uniformly to each cubic yard of material.

#### 2.3.6 Wood Cellulose Fiber

Wood cellulose fiber for use with hydraulic application of seed shall consist of specially prepared wood cellulose fiber processed to contain no growth or germination-inhibiting factors and dyed an appropriate color to facilitate visual monitoring of the application of materials (sawdust or grass clippings are not acceptable fibers). On an air-dry weight basis, the wood cellulose fiber shall contain a maximum of twelve percent (12%) moisture, plus or minus three percent (3%) at the time of manufacture. The pH range shall be between 4.5 and 6.5.

#### 2.4 WATER

Water for native seeding and plant establishment shall be the responsibility of the Contractor, unless otherwise noted. The contractor shall pay all water cost for the entire duration of the contract. Water shall not contain elements toxic to plant life.

#### 2.5 PESTICIDE

Pesticide shall be insecticide, herbicide, fungicide, nematocide, rodenticide or miticide. For the purpose of this specification, a soil fumigant shall have the same requirements as a pesticide. The pesticide material shall be EPA registered and approved.

#### 2.6 Erosion Control Material

Soil erosion control material shall be heavy, twisted jute mesh weighing approximately 1.22 pounds per linear yard and four feet (4') wide with mesh openings of approximately one inch (1") square. Deviation from this requirement shall be approved by the Contracting Officer.

Erosion control anchor material shall be installed as recommended by the manufacturer and as shown on the drawings.

#### 2.7 Tackifier

Tackifier shall be Ecology Control M-binder or approve equal.

### PART 3 EXECUTION

#### 3.1 INSTALLING SEED TIME AND CONDITIONS

##### 3.1.1 Seeding Time

Seed shall be installed from 1 October to 31 January.

##### 3.1.2 Seeding Conditions

Seeding operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work shall be stopped when directed.

A time variance to the seeding operations will not be allowed, unless approved by the Contracting Officer.

### 3.1.3 Equipment Calibration

Immediately prior to the commencement of seeding operations, calibration tests shall be conducted on the equipment to be used. These tests shall confirm that the equipment is operating within the manufacturer's specifications and will meet the specified criteria. The equipment shall be calibrated a minimum of once every day during the operation. The calibration test results shall be provided within 1 week of testing.

### 3.1.4 Soil Test

Delivered topsoil, existing soil in smooth graded areas, and stockpiled topsoil shall be tested in accordance with ASTM D 5268 and ASTM D 4972 for determining the particle size, pH, organic matter content, textural class, chemical analysis, soluble salts analysis, mechanical and plant growth analysis. Sample collections on site shall be random over the entire site.

Sample collections for stockpiled topsoil shall be at different levels in the stockpile. Three (3) samples shall be tested and the locations shall be determined by the Contracting Officer. The planting soil shall be free from debris, noxious weeds, toxic substances, or other materials harmful to plant growth. The test of stockpiled topsoil shall determine if additional quantities of soil amendments and soil conditioners are required to meet local growing conditions for the seed species specified.

## 3.2 SITE PREPARATION

### 3.2.1 Finished Grade and Topsoil

The Contractor shall verify that finished grades are as indicated on drawings, and the placing of topsoil, smooth grading, and compaction requirements have been completed in accordance with Section 02316A EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS AND GRADING, prior to the commencement of the seeding operation.

Seeded (and planted) areas shall be filled or have surplus soil removed for repair of erosion or other grade deficiencies to attain a smooth finished soil surface. Drainage patterns shall be maintained. Imported topsoil used for repair of erosion or grade deficiencies shall conform to "topsoil" requirements.

### 3.2.2 Application of Soil Amendments

Fertilizer and soil amendments shall be incorporated into the soil as part of the tillage operation to the depth of tillage at the following rates per 1,000 square feet of seeded area and watered in thoroughly such that soils are wet to a minimum depth of six inches (6") at least once prior to seeding/planting operations:

- a. for 2:1 or less slopes:
  - 150 pounds Fertilizer 1
  - 30 pounds Fertilizer 2
  - 40 pounds Agricultural Gypsum
  - 20 pounds Agricultural Sulfur

- b. for 2:1 or more slopes:
  - 90 pounds Fertilizer 1
  - 20 pounds Fertilizer 2
  - 28 pounds Agricultural Gypsum
  - 12 pounds Agricultural Sulfur

### 3.2.3 Tillage

- a. Tillage shall be accomplished by plowing, disking, harrowing, rototillage machinery, or other approved operations until the condition of the soil is acceptable. Undulations or irregularities in the surface shall be leveled before the next specified operations.
- b. Slopes up to a 2:1 (horizontal:vertical ratio) shall be tilled to a depth of at least six inches (6").
- c. Slopes between a 2:1 (horizontal:vertical ratio) and 1:1 shall be tilled to a depth of at least two inches (2").
- d. Slopes steeper than 1:1, shall be hand raked to a depth of at least one inches (1").

### 3.2.4 Prepared Surface

#### 3.2.4.1 Preparation

The prepared surface shall be a maximum 1 inch below the adjoining grade of any surfaced area. New surfaces shall be blended to existing areas. The prepared surface shall be completed with a light raking to remove debris.

#### 3.2.4.2 Debris

Debris over a minimum 2 inch in any dimension shall be removed from the surface. Rocks and stones may remain in the surface soil at the discretion of the Contracting Officer.

#### 3.2.4.3 Protection

Areas with the prepared surface shall be protected from compaction or damage by vehicular or pedestrian traffic and surface erosion.

### 3.3 INSTALLATION

Prior to installing seed, any previously prepared surface compacted or damaged shall be reworked to meet the requirements of paragraph SITE PREPARATION. Seeding operations shall not take place when the wind

velocity will prevent uniform seed distribution.

### 3.3.1 Installing Seed

Seeding methods shall be by Hydroseeding and Broadcast. Seeding procedure shall ensure even coverage.

#### 3.3.1.1 Broadcast Seeding

Broadcast Seeding shall be uniformly broadcast at the rate shown per acre using broadcast seeders. Half the total rate of seed application shall be broadcast in 1 direction, with the remainder of the seed rate broadcast at 90 degrees from the first direction. Seed shall be covered a maximum 1-1/2" by raking, or other approved device. Equipment used for broadcast seeding shall be approved by the contracting officer.

#### 3.3.1 Application Operations

Slurry shall be uniformly applied in the following two (2) step process under pressure over the entire area utilizing a sweeping arched stream motion allowing the fiber to build on itself until a uniform coat is achieved. Both operations shall be completed for a particular area in one (1) working day. The hydroseeded area shall not be rolled.

- a. Seed mixture and one-third (1/3) of the wood cellulose fiber mulch and tackifier shall be added to the appropriate amount of water, thoroughly mixed to produce a homogeneous slurry, and be applied to designated areas.
- b. After the initial spraying, the Contractor shall then mix the remaining two-thirds (2/3) of the wood cellulose fiber mulch and tackifier with the appropriate amount of water, thoroughly mixed to produce a homogeneous slurry, and apply to designated areas.

Slurry shall be allowed to dry for approximately two (2) hours and then immediately commence syringe irrigation to germinate seed. Water shall be applied at a rate sufficient to ensure continuously moist soil conditions to a minimum depth of one inch (1"). Run-off and puddling shall be prevented.

#### 3.3.2 Wood cellulose fiber mulch and tackifier

Wood cellulose fiber, paper fiber, or recycled paper shall be applied as part of the two step hydroseeding operation. The mulch and tackifier shall be mixed and applied in accordance with the manufacturer's recommendations.

#### 3.3.3 Watering Seed

The contractor shall submit a watering and maintenance plan prior to start of seeding operation. Watering shall be started immediately after completing the seeding of an area. Water shall be applied to supplement rainfall at a rate sufficient to ensure moist soil conditions to a minimum 1 inch depth. Run-off and puddling shall be prevented. Watering of other adjacent areas or plant material shall be prevented.

### 3.4 QUANTITY CHECK

For materials provided in bags, the empty bags shall be retained for recording the amount used. For materials provided in bulk, the weight certificates shall be retained as a record of the amount used. The amount of material used shall be compared with the total area covered to determine the rate of application used. Differences between the quantity applied and the quantity specified shall be adjusted as directed.

### 3.5 APPLICATION OF PESTICIDE

When application of a pesticide becomes necessary to remove a pest or disease, a pesticide treatment plan shall be submitted and coordinated with the installation pest management program.

A state certified applicator shall apply required pesticides in accordance with EPA label restrictions and recommendations. Clothing and personal protective equipment shall be used as specified on the pesticide label. A closed system is recommended as it prevents the pesticide from coming into contact with the applicator or other persons. Water for formulating shall only come from designated locations. Filling hoses shall be fitted with a backflow preventer meeting local plumbing codes or standards. Overflow shall be prevented during the filling operation. Prior to each day of use, the equipment used for applying pesticide shall be inspected for leaks, clogging, wear, or damage. Any repairs are to be performed immediately. A pesticide plan shall be submitted.

### 3.6 Weed Abatement

Irrigation system installation, tillage operations, and finish grade shall be completed and approved prior to weed abatement operations. Contractor shall then perform a two (2) step procedure as follows:

- a. Contractor shall operate the irrigation system to keep seeded areas uniformly moist for a period of three (3) weeks. At the end of the three (3) week period, Contractor shall spray all visible weeds with a contact herbicide. Application method shall be as recommended by manufacturer. After spraying, areas shall remain unwatered for a minimum of forty-eight (48) hours. Contractor shall then remove the weeds from the project.
- b. Contractor shall water seven (7) additional consecutive calendar days from the first application of herbicide, and apply a contact herbicide. After the second spraying, water shall not be applied for an additional forty-eight (48) hour period. Contractor shall then remove the weeds from the project and commence hydroseeding operations.

### 3.7 Placing Erosion Control Material

Jute mesh shall be placed as indicated in accordance with the manufacturer's recommendations and as shown on the drawings. Jute mesh shall be installed on all channel slopes and on back slopes 2:1 and greater. Placement of the erosion control material shall be accomplished

without damage to installed material or without deviation to finished grade.

### 3.8 RESTORATION AND CLEAN UP

#### 3.8.1 Restoration

Seeded areas, pavements, and facilities that have been damaged from the seeding operation shall be restored to original condition at Contractor's expense.

#### 3.8.2 Clean Up

Excess and waste material shall be removed from the seeded areas and shall be disposed offsite on a daily bases. Adjacent paved areas shall be cleaned

### 3.9 PROTECTION OF INSTALLED AREAS

Immediately upon completion of the seeding operation in an area, the area shall be protected against traffic or other use by erecting barricades and providing signage as required, or as directed. Signage shall be in accordance with this specifications.

### 3.10 SEED ESTABLISHMENT PERIOD

#### 3.10.1 Commencement

The plant establishment period to obtain a healthy stand of plants shall begin after seeding operation have been completed and approved by the contracting Officer. The seed establishment period shall be 1 year from the date of Contracting Officer's approval. Written calendar time period shall be furnished for the seed establishment period. When there is more than 1 seed establishment period, the boundaries of the seeded area covered for each period shall be described. The seed establishment period shall be modified for inclement weather, shut down periods, or for separate completion dates of areas.

#### 3.10.2 Proper Stand of seed

An acceptable healthy seed condition is defined as follows:

- a. SEED MIX shall have a solid soil surface growth ground covering with bare spots no larger than six inches (6") square and with barren areas not exceeding four percent (4%) of the total seeded area. Within this growth covering there shall be at least one (1) woody type plant species from the required seed mix (or as supplemented by planted stock) per twenty-four inches (24") square over the entire seeded area.

#### 3.10.3 Maintenance During Establishment Period

Maintenance of the seeded areas shall include eradicating weeds, insects and diseases; protecting seeded areas from surface erosion; maintaining slopes to design conditions; protecting installed areas from traffic; trash removal; watering; and post-fertilization. Weeds shall be removed as soon as possible and as directed by the Contracting Officer. The contractor

shall provide sufficient work force to remove weeds on a daily bases.

#### 3.10.4 Post-Fertilization

- a. Forty-five(45)calendar days after commencement of establishment, Fertilizer 1 shall be general broadcast over all seeded areas at the rate of twenty-five (25) pounds per 1,000 square feet and thoroughly irrigated into soils immediately after application.
- b. Fertilizer 1 shall be general broadcast over all planting areas at the rate of twenty-five (25) pounds per 1,000 square feet at the end of the Establishment Period.

#### 3.10.5 Pesticide Treatment

Treatment for disease or pest shall be in accordance with paragraph APPLICATION OF PESTICIDE.

#### 3.10.6 Repair or Reestablishment

Unsatisfactory stand of native plants and mulch shall be repaired or reinstalled. Eroded areas shall be repaired in accordance with paragraph SITE PREPARATION and per 3.3.1.1 Broadcast Seeding.

#### 3.10.7 Maintenance Record

The Contractor is required to furnish, upon written request from the Contracting Officer, daily maintenance records describing the maintenance work performed; daily watering information and amount, including durations, areas weeded (if applicable), areas repaired or reinstalled (if applicable), and diagnoses for unsatisfactory stands of grass plants.

### 3.11 FINAL ACCEPTANCE

#### 3.11.1 Preliminary Inspection

Prior to the completion of the establish period, a preliminary inspection shall be held by the Contracting Officer. Time for the inspection shall be establish in writing. The acceptability of the seeded areas in accordance with the specification shall be determined. An unacceptable stand of hydroseeded area shall be replanted per 3.3.1.1 Broadcast Seeding and as directed by the Contracting Officer as soon as seeding conditions permit.

#### 3.11.2 Final Inspection

A final inspection shall be held by the Contracting Officer to determined that the deficiencies noted in the preliminary inspection have been corrected. Time for the final inspection shall be in writing.

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## SECTION 02930

## EXTERIOR PLANTING

## 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 in the text by basic designation only.

## AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (ANLA)

ANLA Z60.1 (1996) Nursery Stock

## ASTM INTERNATIONAL (ASTM)

ASTM D 4972 (2001) pH of Soils

ASTM D 5268 (1992; R 1997) Topsoil Used for  
Landscaping Purposes

## U.S. GENERAL SERVICES ADMINISTRATION (GSA)

CID A-A-1909 Fertilizer

## FEDERAL SPECIFICATIONS (FS)

FS O-F-241(Rev D) Fertilizers, Mixed,  
Commercial

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The "RE" designates that the Resident Office will review the submittal for the Government. Submit the following in accordance with Section 01330, SUBMITTAL PROCEDURES:

SD-03 Product Data

Erosion Control Material

Manufacturer's literature including physical characteristics, application and installation instructions for erosion control material.

#### Delivery

Delivery schedule.

#### Plant Establishment Period

Calendar time period for the plant establishment period. When there is more than one establishment period, the boundaries of the planted areas covered for each period shall be described.

#### Maintenance Record

Maintenance work performed, quantity of plant losses, and replacements; and diagnosis of unhealthy plant material.

#### Application of Pesticide

Pesticide treatment plan with sequence of treatment work with dates and times. The pesticide trade name, EPA registration number, chemical composition, formulation, concentration of original and diluted material, application rate of active ingredients, method of application, area treated, amount applied; and the name and state license number of the state certified applicator shall be included.

#### SD-06 Test Reports

##### Soil Test

Certified reports of inspections and laboratory tests, prepared by an independent testing agency, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.

#### SD-07 Certificates

Plant Material.

Topsoil.

pH Adjuster.

Fertilizer.

Organic Material.

Soil Conditioner.

Mycorrhizal Fungi Inoculum.

Pesticide.

Prior to delivery of materials, certificates of compliance

attesting that materials meet the specified requirements. Certified copies of the material certificates shall include the following.

- a. Plant Material: Classification, botanical name, common name, size, quantity by species, and location where grown.
- b. Topsoil: Particle size, pH, organic matter content, textural class, soluble salts, chemical, mechanical and plant growth analyses.
- c. pH Adjuster: Sieve analysis and calcium carbonate equivalent.
- d. Fertilizer: Chemical analysis and composition percent.
- e. Organic Material: Composition and source.
- f. Soil Conditioner: Composition and source.
- g. Mycorrhizal Fungi Inoculum: Plant material treated.
- h. Pesticide. EPA registration number and registered uses.

#### SD-10 Operation and Maintenance Data

##### Maintenance Instructions

Instruction for year-round care of installed plant material.

### 1.3 SOURCE INSPECTIONS

The nursery or source of plant material and the source of delivered topsoil shall be subject to inspection.

### 1.4 DELIVERY, INSPECTION, STORAGE, AND HANDLING

#### 1.4.1 Delivery

A delivery schedule shall be provided at least 10 calendar days prior to the first day of delivery.

##### 1.4.1.1 Plant Material Identification

Plant material shall be identified with attached, durable, waterproof labels and weather-resistant ink, stating the correct botanical plant name and size. Ten (10) percent of the cuttings from each plant species shall be identified with attached durable waterproof labels stating the correct plant botanical name in weather resistant ink.

##### 1.4.1.2 Protection During Delivery

Plant material and cuttings shall be protected during delivery to prevent desiccation and damage to the branches, trunk, root system, or earth ball.

Branches shall be protected by tying-in. Exposed branches including cuttings shall be covered during transport.

#### 1.4.1.3 Delivered Topsoil

Prior to the delivery of any topsoil, the availability of topsoil shall be verified in paragraph TOPSOIL. A soil test shall be provided for delivered topsoil.

#### 1.4.1.4 Soil Amendments

Soil amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.

#### 1.4.1.5 Pesticide Material

Pesticide material shall be delivered to the site in the original, unopened containers bearing legible labels indicating the Environmental Protection Agency (EPA) registration number and the manufacturer's registered uses.

#### 1.4.2 Inspection

Plant material shall be well shaped, vigorous and healthy with a healthy, well branched root system, free from disease, harmful insects and insect eggs, sun-scald injury, disfigurement or abrasion. Plant material shall be checked for unauthorized substitution and to establish nursery grown status. Plant material showing desiccation, abrasion, sun-scald injury, disfigurement, or unauthorized substitution shall be rejected. The plant material shall exhibit typical form of branch to height ratio; and meet the caliper and height measurements specified. Plant material that measures less than specified, or has been poled, topped off or headed back, shall be rejected. Container-grown plant material shall show new fibrous roots and the root mass shall contain its shape when removed from the container. Plant material with broken or cracked balls; or broken containers shall be rejected. Plant cuttings shall be inspected upon arrival at the planting site by the Contracting Officer for conformity to the plans and specifications. Any unacceptable plant cuttings shall be removed from the project site. Other materials shall be inspected for compliance with paragraph PRODUCTS. Open soil amendment containers or wet soil amendments shall be rejected. Topsoil that contains slag, cinders, stones, lumps of soil, sticks, roots, trash or other material larger than 1-1/2 inch diameter shall be rejected. Topsoil that contains viable plant material and plant parts shall be rejected. Unacceptable material shall be removed from the job site.

#### 1.4.3 Storage

##### 1.4.3.1 Plant Material Storage

Plant material not installed on the day of arrival at the site shall be stored and protected in designated areas. Plant material shall not be stored longer than 30 days. Plant material shall be protected from direct

exposure to wind and sun. All plant material shall be kept in a moist condition by watering with a fine mist spray until installed. Plant cuttings shall be planted within 24 hours of collection or within four (4) days if properly stored. To properly store cuttings, the Contractor shall submerge the bottom two-thirds in water and shall cover them with a dark cloth. The "bottom" of a cutting is the end with the angled cut (see drawings).

#### 1.4.3.2 Other Material Storage

Storage of other material shall be in designated areas. Soil amendments shall be stored in dry locations and away from contaminants. Chemical treatment material shall be stored according to manufacturer's instructions and not with planting operation material.

#### 1.4.4 Handling

Plant material shall not be injured in handling. Cracking or breaking the earth ball of plant material shall be avoided. Plant material shall not be handled by the trunk or stems. Materials shall not be dropped from vehicles.

#### 1.5 WARRANTY

Furnished plant material shall have a warranty for plant growth to be in a vigorous growing condition for a minimum 12 month period. A minimum 12 month calendar time period for the warranty of plant growth shall be provided regardless of the contract time period. When plant material is determined to be unhealthy in accordance with paragraph PLANT ESTABLISHMENT PERIOD, it shall be replaced once under this warranty.

### PART 2 PRODUCTS

#### 2.1 PLANT MATERIAL

##### 2.1.1 Plant Material Classification

The plant material shall be nursery grown stock conforming to ANLA Z60.1 and shall be the species specified.

##### 2.1.2 Plant Schedule

The plant schedule shall provide botanical names as included in one or more of the publications listed under "Nomenclature" in ANLA Z60.1.

##### 2.1.3 Substitutions

Substitutions will not be permitted without written request and approval from the Contracting Officer.

##### 2.1.4 Quality

Well shaped, well grown, vigorous plant material having healthy and well branched root systems in accordance with ANLA Z60.1 shall be provided.

Plant material shall be provided free from disease, harmful insects and insect eggs, sun-scald injury, disfigurement and abrasion. Plant material shall be free of shock or damage to branches, trunk, or root systems, which may occur from the digging and preparation for shipment, method of shipment, or shipment. Plant quality is determined by the growing conditions; method of shipment to maintain health of the root system; and growth of the trunk and crown as follows.

#### 2.1.5 Growing Conditions

Plant material shall be native to or well-suited to the growing conditions of the project site. Plant material shall be grown under climatic conditions similar to those at the project site. Source plants for the collection of cuttings shall be "mature" plants existing within the project site or within the limits of Murrita Creek within one (1) mile up or down stream of the project site. If cuttings are not available in the specified quantities for the project, the contractor shall be required to identify additional plant sources. Alternate collection locations must be approved by the Contracting Officer with all collected cuttings grown under climatic conditions similar to those in the locality of the project site. All cuttings shall be taken from legal collection sites.

#### 2.1.6 Method of Shipment to Maintain Health of Root System

##### 2.1.6.1 Container-Grown Plant Material

Container size shall be in accordance with ANLA Z60.1. Plant material shall be grown in a container over a duration of time for new fibrous roots to have developed and for the root mass to retain its shape and hold together when removed from the container. **Container-grown plant material shall be inoculated with mycorrhizal fungi during germination in the nursery. The container shall be sufficiently rigid to hold ball shape and protect root mass during shipping.**

#### 2.1.7 Growth of Trunk and Crown

##### 2.1.7.1 Deciduous Trees

A height to caliper relationship shall be provided in accordance with ANLA Z60.1. Height of branching shall bear a relationship to the size and species of tree specified and with the crown in good balance with the trunk. The trees shall not be "poled" or the leader removed.

- a. Single stem: The trunk shall be reasonably straight and symmetrical with crown and have a persistent main leader.
- b. Multi-stem: All countable stems, in aggregate, shall average the size specified. To be considered a stem, there shall be no division of the trunk which branches more than 6 inches from ground level.

##### 2.1.7.2 Shrubs

Shrubs shall have the height and number of primary stems recommended by

ANLA Z60.1. Acceptable plant material shall be well shaped, with sufficient well-spaced side branches, and recognized by the trade as typical for the species grown in the region of the project.

#### 2.1.7.3 Coniferous Evergreen Plant Material

Coniferous Evergreen plant material shall have the height-to-spread ratio recommended by ANLA Z60.1. The coniferous evergreen trees shall not be "poled" or the leader removed. Acceptable plant material shall be exceptionally heavy, well shaped and trimmed to form a symmetrical and tightly knit plant. The form of growth desired shall be as indicated.

#### 2.1.7.4 Broadleaf Evergreen Plant Material

Broadleaf evergreen plant material shall have the height-to-spread ratio recommended by ANLA Z60.1. Acceptable plant material shall be well shaped and recognized by the trade as typical for the variety grown in the region of the project.

#### 2.1.7.5 Ground Cover and Vine Plant Material

Ground cover and vine plant material shall have the minimum number of runners and length of runner recommended by ANLA Z60.1. Plant material shall have heavy, well developed and balanced crown with vigorous, well developed root system and shall be furnished in containers.

#### 2.1.7.6 Plant Cuttings

Existing source plants utilized for the collection of cuttings shall be vigorous and healthy plants, typical of the species, and shall be free from disease, harmful insects and insect eggs. No more than twenty (20) percent of an individual plant's trunk/branch mass shall be collected for cuttings.

Cuttings shall be healthy, free from disease, harmful insects and insect eggs, sun-scald or other injury, disfigurement, abrasion and as specified herein.

Cuttings shall be cut from the source plant using sharp pruning shears and/or tree saw. Cuttings shall not be broken off or stripped from the source plant.

#### 2.1.8 Plant Material Size

Plant material shall be furnished in sizes indicated. Plant material larger in size than specified may be provided at no additional cost to the Government.

#### 2.1.9 Plant Material Measurement

Plant material measurements shall be in accordance with ANLA Z60.1.

#### 2.2 TOPSOIL

Topsoil shall be as defined in ASTM D 5268. When available, the topsoil

shall be the existing surface soil stripped and stockpiled onsite. When additional topsoil is required beyond the available topsoil from the stripping operation, topsoil shall be delivered and amended as recommended by the soil test for the plant material specified. Topsoil shall be free from slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2 inch diameter. Topsoil shall be free from viable plants and plant parts.

## 2.3 SOIL AMENDMENTS

Soil amendments shall consist of pH adjuster, fertilizer, organic material and soil conditioner meeting the following requirements.

### 2.3.1 pH Adjuster

Agricultural gypsum shall be commercially packaged, free flowing, of a finely ground form and an agricultural grade, minimum ninety-two percent (92%) calcium sulfate by volume, free of any toxic material. One hundred percent (100%) of the ground material shall pass through a ten (10) mesh screen and at least fifty percent (50%) of the material shall pass through a 100-mesh screen.

#### 2.3.1.1 Agricultural Sulfur

Agricultural sulfur shall be first quality commercial grade, commercially packaged, free flowing, of a flour of sulfur finely ground form

### 2.3.2 Fertilizer

Fertilizer shall be commercial grade, free flowing, uniform in composition and conforming to FS O-F-241 and CID A-A-1909.

#### Fertilizer 1:

Nitrogen	5%
Phosphoric Acid	3%
Water Soluble Potash	1%
Humus (composted organic and mineral matter)	50%
Humic Acids (derived from compost)	15%
Soluble Metallic Iron	1%

#### Fertilizer 2 based in a four (4) to six (6) month release form:

Coated Slow Release Nitrogen*	9%
Urea Nitrogen	2%
Available Phosphoric Acid**	8%
Soluble Potash***	8%
Humus (composted organic and mineral matter)	25%
Humic Acid (derived from compost)	5%
Iron (derived from iron sulfate)	2%
Manganese (derived from manganese sulfate)	.05%
Zinc (derived from zinc sulfate)	.05%
Sulfur	7%

\* derived from sulfur coated urea (controlled release)

\*\* derived from triple super phosphate

\*\*\* derived from compost and muriate of potash

#### 2.4 Erosion Control Material

Soil erosion control material shall be heavy, twisted jute mesh weighing approximately 1.22 pounds per linear yard and four feet (4') wide with mesh openings of approximately one inch (1") square. Deviation from this requirement shall be approved by the Contracting Officer.

Erosion control anchor material shall be as recommended by the manufacturer.

#### 2.5 WOOD STAKING MATERIAL

Wood stakes shall be treated 2 1/2" diameter lodge pole or 2" X 2" hardwood fir; rough sawn; free from knots, rot, cross grain, or other defects that would impair their strength as indicated on the project drawings.

#### 2.6 MYCORRHIZAL FUNGI INOCULUM

Mycorrhizal fungi inoculum shall be composed of multiple-fungus inoculum as recommended by the manufacturer for the plant material specified.

#### 2.7 WATER

Water and the coordination for obtaining the water shall be the responsibility of the Contractor. The contractor shall pay all water service fees throughout the contract period. Water shall not contain elements toxic to plant life.

#### 2.8 DECOMPOSED WOOD DERIVATIVES

Decomposed wood derivatives shall be ground bark, sawdust, or other wood waste material free of stones, sticks, and toxic substances harmful to plants and stabilized with nitrogen and having the following properties:

Particle Size	Minimum % by Weight Passing
No. 4 mesh screen	95
No. 8 mesh screen	80
Nitrogen Content	Minimum % Based on Dry Weight
Redwood Sawdust	0.5
Fir Sawdust	0.7
Fir or Pine Bark	1.0

#### 2.9 PESTICIDE

Pesticide shall be insecticide, herbicide, fungicide, nematocide, rodenticide or miticide. For the purpose of this specification a soil fumigant shall have the same requirements as a pesticide. The pesticide material shall be EPA registered and approved.

### PART 3 EXECUTION

### 3.1 INSTALLING PLANT MATERIAL TIME AND CONDITIONS

#### 3.1.1 Deciduous Plant Material Time

When approved by the Contracting Officer plant material shall be installed from November 1st to April 15th.

#### 3.1.2 Plant Material Conditions

Planting operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, frozen ground or other unsatisfactory conditions prevail, the work shall be stopped when directed. When special conditions warrant a variance to the planting operations, proposed planting times shall be submitted for approval.

#### 3.1.3 Tests

##### 3.1.3.1 Percolation Test

Test for percolation shall be done to determine positive drainage of plant pits. The Contracting Officer shall be notified in writing of all soil and drainage conditions detrimental to growth of plant material and shall submit proposal for correcting the condition.

##### 3.1.3.2 Soil Test

Delivered topsoil shall be tested in accordance with ASTM D 5268 and ASTM D 4972 for determining the particle size, pH, organic matter content, textural class, chemical analysis, soluble salts analysis, mechanical and growth analysis. Sample collection onsite shall be random over the entire site. Sample collection for stockpiled topsoil shall be at different levels in the stockpile. The soil shall be free from debris, noxious weeds, toxic substances, or other materials harmful to plant growth.

### 3.2 SITE PREPARATION

#### 3.2.1 Finished Grade, Topsoil and Underground Utilities

The Contractor shall verify that finished grades are as indicated on drawings, and that the placing of topsoil, the smooth grading, and the compaction requirements have been completed in accordance with Section 02921a HYDROSEEDING and Section 02316A EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS AND GRADING, prior to the commencement of the planting operation. The location of underground utilities and facilities in the area of the planting operation shall be verified. Damage to underground utilities and facilities shall be repaired at the Contractor's expense.

#### 3.2.2 **Layout**

Mitigation (riparian) **and salvage** plant locations shall be flagged on site. A flag for each plant shall be located by the contractor and approved by the contracting officer prior to plant installation. A different colored flag will be assigned to each plant species for identification. Plant

material locations may be adjusted to meet field conditions.

### 3.2.3 Protecting Existing Vegetation

Existing trees, shrubs, and plant beds located outside the limit of disturbed area shall be identified and protected in place prior to construction operations. Temporary colored plastic fence 5' high shall be staked (6' O.C.) and placed around each plant or group of plants located within 20' of this limit. The temporary fence shall be maintain during construction operations.

## 3.3 EXCAVATION

### 3.3.1 Obstructions Below Ground

When obstructions below ground affect the work, proposed adjustments to plant material location, type of plant and planting method shall be submitted for approval. **The contractor shall not plant any trees within 20 feet of center line of MWD pipe lines as shown on plans.**

### 3.3.2 Exotic Plant Removal

During clearing and grubbing operation all exotic plants including but not limited to *Arundo donax* (Giant Reed), *Tamarisk aphylla* (Salt Cedar), castor bean and cockleburr shall be removed from the project site to a depth that will ensure the removal of the entire root system. New growth shall not be allowed to reach a maximum 3 inches in height before being completely removed. The removal of exotic plants and other undesired vegetation shall continue through out the plant establishment period. All removed exotic plant material shall be hauled to a landfill approved by the Contracting Officer.

### 3.3.3 Plant Pits

Plant pits shall be dug to produce vertical sides and flat, uncompacted bottoms. When pits are dug with an auger and the sides of the pits become glazed, the glazed surface shall be scarified. The size of plant pits shall be as shown on the contract drawings.

## 3.4 INSTALLATION

### 3.4.1 Setting Plant Material

Plant material including salvage plants shall be set plumb and held in position until sufficient soil has been firmly placed around root system or cutting. In relation to the surrounding grade, the plant material shall be set even with the grade at which it was grown or as shown on the drawings. The cuttings shall be six(6) feet in length, and 3/8-inch to 1/2-inch in diameter. The cuttings shall be planted with the bottom end (angled cut) down, four (4) feet in the ground in augered planting pits, so that two (2) feet of the cutting is above ground and then backfilled, in accordance with the Planting Detail.

Salix plantings shall be planted **using the planting template as shown on**

**the drawings.** Planting density shall be per acre and as shown on the drawings. Quantities shall be as shown on the drawings.

Baccharis salicifolia (Mulefat) cuttings shall be planted **using the planting template as shown on the drawings.** Planting density shall be as shown on the drawings. Quantities shall be as shown on the drawings.

Fremont's Cottonwood and Western Sycamore shall be planted **using the planting template as shown on the drawings.** Planting density shall be as shown on the drawings. Quantities shall be as shown on the drawings.

**Mexican elderberry shall be planted throughout the mitigation (riparian) area in groupings of two (2) and three (3). The plants shall be spaced equally between the other plants.** Planting density shall be as shown on the drawings. Quantities shall be as shown on the drawings.

All other mitigation plantings shall be placed in groupings of thirty (30) to eighty (80). The plants shall be spaced at three (3) to four (4) feet on-center, triangular spacing. Planting density shall be as shown on the drawings. Quantities shall be as shown on the drawings.

**Salvage plants shall be located by the Contracting Officer within the channel invert terrace area.**

#### 3.4.2 Backfill Soil Mixture

The backfill soil shall be 100% native site soil that has been cleared of all debris and rock and broken up and made friable.

The following additives shall be mass blended thoroughly into the backfill soil mixture at the time of planting at the following rates per cubic yard of soil and all plants shall be thoroughly watered immediately upon completion of installation:

10 pounds	Fertilizer 1
2 pounds	Fertilizer 2
1/2 pound	Agricultural Sulfur
3 pounds	Agricultural Gypsum

#### 3.4.3 Adding Mycorrhizal Fungi Inoculum

Mycorrhizal fungi inoculum shall be added as recommended by the manufacturer for the plant material specified.

#### 3.4.4 Backfill Procedure

Prior to backfilling, all metal, wood, and synthetic products shall be removed avoiding damage to the root system. The backfill procedure shall remove air pockets from around the root system. Additional requirements are as follows.

##### 3.4.4.1 Container-Grown Plant Material

The plant material shall be carefully removed from containers. Prior to

setting the plant in the pit, a maximum 1/4 depth of the root mass, measured from the bottom, shall be spread apart to promote new root growth.

#### 3.4.4.2 Watering Basin

A watering basin shall be formed as shown on the project drawings with a minimum 4 inch depress basin around the plant pit to aid in water retention and to provide soil for settling adjustments.

#### 3.4.5 Plant Bed

Plant material shall be set in plant beds according to the drawings. Backfill soil mixture shall be placed on previously scarified subsoil to completely surround the root balls, and shall be brought to a smooth and even surface, blending to existing areas. Watering basin shall be provided as shown on the project drawings.

#### 3.4.6 Watering

Plant pits and plant beds shall be watered immediately after backfilling, until completely saturated.

### 3.5 FINISHING

#### 3.5.1 Plant Material

Prior to placing mulch, the installed area shall be raked and smoothed while maintaining the watering basin.

#### 3.5.2 Placing Erosion Control Material

Jute mesh shall be placed as shown on the drawings and in accordance with the manufacturer's recommendations. Jute mesh shall be installed on all channel slopes and on back slopes 2:1 and greater. Placement of the erosion control material shall be accomplished without damage to installed material or without deviation to finished grade.

#### 3.5.3 Placing Mulch

The placement of mulch shall occur a maximum 48 hours after planting. Contractor shall cover the rootball and backfill plant pit area with a two inch (2") layer of decomposed wood derivative. Mulch shall be kept out of the crowns of shrubs, ground cover, and vines and shall be kept off buildings, sidewalks and other facilities.

#### 3.5.4 Pruning (non mitigation areas)

Pruning shall be accomplished by trained and experienced personnel (min. 5 years of documented experience in the field). The pruning of trees shall be in accordance with standard landscape practice. The typical growth habit of individual plant material shall be retained. Dead and broken material shall be pruned. Clean cuts shall be made flush with the parent trunk. Improper cuts, stubs, dead and broken branches shall be removed.

"Headback" cuts at right angles to the line of growth will not be permitted. Trees shall not be poled or the leader removed, nor shall the leader be pruned or "topped off".

### 3.6 MAINTENANCE DURING PLANTING OPERATION

Installed plant material including cuttings **and salvage plants** shall be maintained in a healthy growing condition. Maintenance operations shall begin immediately after each plant is installed to prevent desiccation and shall continue until the plant establishment period commences. Installed areas shall be kept free of trash, weeds, grass (**other than seeded**), and other undesired vegetation. The maintenance includes maintaining the erosion control material, mulch, watering, and adjusting settling.

### 3.7 APPLICATION OF PESTICIDE

When application of a pesticide becomes necessary to remove a pest or disease, a pesticide treatment plan shall be submitted and coordinated with the installation pest management program.

#### 3.7.1 Technical Representative

The certified installation pest management coordinator shall be the technical representative, and shall be present at all meetings concerning treatment measures for pest or disease control. They may be present during treatment application.

#### 3.7.2 Application

A state certified applicator shall apply required pesticides in accordance with EPA label restrictions and recommendations.

### 3.8 RESTORATION AND CLEAN UP

#### 3.8.1 Restoration

Seeded areas, pavements and facilities that have been damaged from the planting operation shall be restored to original condition at the Contractor's expense.

#### 3.8.2 Clean Up

Excess and waste material shall be removed from the installed area and shall be disposed offsite. Adjacent paved areas shall be cleared.

### 3.9 PLANT ESTABLISHMENT PERIOD

#### 3.9.1 Commencement

The Post-Installation Plant Establishment Period shall commence on the last day of planting operations and shall be in effect for twelve (12) months or at the end of the Hydroseed Establishment Period under Section 02921a HYDROSEEDING which ever is longer. When the planting operation extends more than one season or there is a variance to the planting times, plant

establishment periods shall be established for the work completed. Written calendar time period shall be furnished to the Contracting Officer for the beginning of the Plant Establishment Period.

### 3.9.2 Maintenance During Establishment Period

Maintenance of plant material **including salvage plants** shall include straightening plant material, straightening stakes; supplementing mulch; pruning dead or broken branch tips; maintaining plant material labels; watering; eradicating weeds, insects and disease; post-fertilization; maintaining the erosion control material; removing and replacing unhealthy plants.

#### 3.9.2.1 Watering Plant Material

All plants **including salvage plants** shall be watered as necessary to maintain an adequate supply of moisture within the root zone. Run-off, puddling and wilting shall be prevented.

#### 3.9.2.2 Weeding

Weeds in the installed areas shall not be allowed to reach a maximum 3 inches in height before being completely removed, including the root system. The contractor shall ensure that there is enough labor force, which can weed the entire project area within a five day period.

#### 3.9.2.3 Pesticide Treatment

Treatment for disease or pest shall be in accordance with paragraph APPLICATION OF PESTICIDE.

#### 3.9.2.4 Post-Fertilization

- a. Dry fertilizer adhering to plants shall be flushed off. The application shall be timed prior to the advent of winter dormancy. The contractor shall notify the Contracting Officer prior to fertilization operations.
- b. Forty-five (45) calendar days after commencement of establishment, Fertilizer 1 shall be general broadcast in plant pit basin areas at the rate of twenty-five (25) pounds per 1,000 square feet and thoroughly irrigated into plant pits immediately after application.
- c. Fertilizer 2, in the four (4) to six (6) month release formulation shall be broadcast in plant pit basin areas at the rate of fifteen (15) pounds per 1,000 square feet between day 100 and day 110 and thoroughly irrigated into plant pits immediately after application. This application is in addition to the forty-five (45) day application.
- d. Mitigation plantings shall not be fertilized again at any time after installation.

#### 3.9.2.5 Plant Pit Settling

When settling occurs to the backfill soil mixture, additional backfill soil shall be added to the plant pit or plant bed until the backfill level is equal to the surrounding grade. Serious settling that affects the setting of the plant in relation to the maximum depth at which it was grown requires replanting in accordance with paragraph INSTALLATION. The earth berm shall be maintained.

#### 3.9.2.6 Maintenance Record

A record shall be furnished describing the maintenance work performed including but not limited to weeding and watering schedules, irrigation maintenance performed, the quantity of plant losses, diagnosis of the plant loss, and the quantity of replacements made on each site visit. The contractor shall provide dates, times, and weather conditions, if applicable.

#### 3.9.3 Unhealthy Plant Material

A tree shall be considered unhealthy or dead when the main leader has died back, or up to a maximum 25 percent of the crown has died. A shrub shall be considered unhealthy or dead when up to a maximum 25 percent of the plant has died. This condition shall be determined by scraping on a branch area 1/4 inch square, to determine if there is a green cambium layer below the bark. The Contractor shall determine the cause for unhealthy plant material and shall provide recommendations for replacement. Unhealthy or dead plant material shall be removed immediately and shall be replaced as soon as seasonal conditions permit.

#### 3.9.4 Replacement Plant Material

Unless otherwise directed, plant material shall be provided for replacement in accordance with paragraph PLANT MATERIAL. Replacement plant material shall be installed in accordance with paragraph INSTALLATION, and recommendations in paragraph PLANT ESTABLISHMENT PERIOD. Plant material shall be replaced in accordance with paragraph WARRANTY. An extended plant establishment period shall not be required for replacement plant material.

#### 3.9.5 Maintenance Instructions

Written instructions shall be furnished containing drawings and other necessary information for year-round care of the installed plant material; including, when and where maintenance should occur, and the procedures for plant material replacement.

#### 3.9.6 Saline Conditions

During the Establishment Period, the Contractor shall inform the Contracting Officer of plant material which may be experiencing stress due to saline conditions.

### 3.10 FINAL ACCEPTANCE

#### 3.10.1 Preliminary Inspection

Prior to the end of the plant establishment period, a preliminary inspection shall be held by the Contracting Officer. Time for the inspection will be established in writing. The quantity and type of plants installed and the acceptability of the plants in accordance with the plant establishment period shall be determined.

#### 3.10.2 Final Inspection

A final inspection shall be held by the Contracting Officer at the end of the plant establishment period to determine that deficiencies noted in the preliminary inspection have been corrected. Time for the inspection shall be established in writing. Acceptance of the planting operation is subject to the guarantee of plant growth.

-- End of Section --