

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>			1. CONTRACT ID CODE N/A	PAGE OF PAGES 1   23
2. AMENDMENT/MODIFICATION NO. 0015	3. EFFECTIVE DATE 12 JUN 03	4. REQUISITION/PURCHASE REQ. NO. N/A		5. PROJECT NO. (If applicable) SPEC. NO. 1296
6. ISSUED BY  DEPARTMENT OF THE ARMY CORPS OF ENGINEERS SACRAMENTO 1325 J STREET SACRAMENTO, CALIFORNIA		CODE	7. ADMINISTERED BY (If other than Item 6)  CODE	

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)		(√)	9A. AMENDMENT OF SOLICITATION NO. DACW05-03-B-0007
		×	9B. DATED (SEE ITEM 11) 21 APR 2003
			10A. MODIFICATION OF CONTRACTS/ORDER NO. N/A
			10B. DATED (SEE ITEM 13) N/A
CODE	FACILITY CODE		

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

12. ACCOUNTING AND APPROPRIATION DATA (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.)

SACRAMENTO RIVER FLOOD CONTROL SYSTEM PHASE 11 - MARYSVILLE/YUBA AREA SITE 7 EXTENSION  
YUBA COUNTY, CALIFORNIA

1 ENCL

NOTE: DELETE SECITON 03315N IN ITS ENTIRETY.

1) PRICING SCHEDULE, 00100, 02300A AND TABLE OF CONTENTS.

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	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
_____ (Signature of person authorized to sign)		BY _____ (Signature of Contracting Officer)	

PRICING SCHEDULE

CONTRACTOR SHALL FURNISH ALL PLANT, LABOR, MATERIAL, EQUIPMENT, ETC. NECESSARY TO PERFORM ALL WORK IN STRICT ACCORDANCE WITH THE TERMS AND CONDITIONS SET FORTH IN THE CONTRACT TO INCLUDE ALL ATTACHMENTS THERETO.

**SITE 7 EXTENSION**

LINE ITEM NO.	DESCRIPTION	QUANTITY	UNIT OF MEASURE	UNIT PRICE	TOTAL PRICE
0001	PREPARATORY WORK AND SITE CLEANUP	1	LUMP SUM	LUMP SUM	\$ _____
0002	CLEARING AND GRUBBING	1	LUMP SUM	LUMP SUM	\$ _____
0003	EMBANKMENT FILL	157,100*	CY	\$ _____	\$ _____
0004	GEOTEXTILE	131,500*	SY	\$ _____	\$ _____
0005	DRAIN ROCK	43,620*	TON	\$ _____	\$ _____
0006	EXCAVATION	4,000*	CY	\$ _____	\$ _____
0007	CONCRETE				
0007AA	DITCH LINER (4")	<b>3,700*</b>	<b>LF</b>	\$ _____	\$ _____
0007AB	HEADWALL	2*	CY	\$ _____	\$ _____
0008	FLAP GATE				
0008AA	FLAP GATE 8"	1	EA	\$ _____	\$ _____
0008AB	FLAP GATE 24"	1	EA	\$ _____	\$ _____
0009	ROCK RIPRAP	14*	TON	\$ _____	\$ _____
0010	TRASH RACK	1	LUMP SUM	LUMP SUM	\$ _____
0011	STORM DRAIN MANHOLE	1	EA	\$ _____	\$ _____
0012	8" DIA. STEEL PIPE	600*	LF	\$ _____	\$ _____
0012AA	24" DIA. STEEL PIPE	125*	LF	\$ _____	\$ _____

0052	COMBINATION AIR VACUUM VALVE AT PUMP	2	EA	\$ _____	\$ _____
0053	36" GATE VALVE AT PUMP	2	EA	\$ _____	\$ _____
0054	36" SWING CHECK VALVE AT PUMP	2	EA	\$ _____	\$ _____
0055	24" CLASS 4 REINFORCED CONCRETE PIPE	68	LF	\$ _____	\$ _____
0056	SD MANHOLE	1	EA	\$ _____	\$ _____
0057	WARNING SIGN ON LEVEE CROWN	3	EA	\$ _____	\$ _____
0058	OUTLET STRUCTURE (RIVERSIDE)	1	LUMP SUM	LUMP SUM	\$ _____
0059	GATE RISER STRUCTURE (LOCATED IN LEVEE- INCLUDES MANHOLE LADDER, LID, ETC.)	1	LUMP SUM	LUMP SUM	\$ _____
0060	84" X 60 " SLUICE GATE	1	EA	\$ _____	\$ _____
0061	84" X 60 " AUTOMATIC DRAINAGE GATE	1	EA	\$ _____	\$ _____
0062	36" AUTOMATIC DRAINAGE GATE	2	EA	\$ _____	\$ _____
0063	24" AUTOMATIC DRAINAGE GATE	1	EA	\$ _____	\$ _____
0064	24" FLARED END SECTION	1	EA	\$ _____	\$ _____
0065	ROCK SLOPE PROTECTION (FACING, METHOD B)	120*	TON	\$ _____	\$ _____
0066	EROSION CONTROL SEEDING	3.5*	ACRE	\$ _____	\$ _____

SUBTOTAL ESTIMATED PRICE \$ \_\_\_\_\_  
(ITEMS 0044 THRU 0066)

**OPTION**

**CONTRACTOR SHALL PROVIDE AND OPERATE "TEMPORARY FLOOD DISCHARGE PUMPING FACILITIES INCLUDING TEMPORARY POWER" WHICH ARE CAPABLE OF PUMPING NOT LESS THAN 40,000 GAL/MIN CAPACITY AGAINST A TOTAL HEAD OF 30 FEET WITH A WATER SURFACE IN THE SUMP AT ELEVATION 30 FEET. TEMPORARY FLOOD DISCHARGE PUMPING SHALL BE IN PLACE AND OPERATIONAL BY 15 NOVEMBER 2003.**

0067                    **TEMPORARY FLOOD**  
                           **DISCHARGE PUMPING**                    1                    **LUMP SUM    LUMP SUM**                    \$ \_\_\_\_\_

**TOTAL ESTIMATED PRICE**    \$ \_\_\_\_\_  
**(ITEMS 0001 THRU 0067)**

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

1. Prices must be submitted on all individual items of this Pricing Schedule. Failure to do so may be cause for rejection of bids.
2. If a modification to a price based on unit price is submitted which provides for a lump sum adjustment to the total estimated price, the applications of the lump sum adjustment to each unit price in the Pricing Schedule must be stated. If it is not stated, the bidder/offeror agrees that the lump sum adjustment shall be applied on a pro rata basis to every unit price in the Pricing Schedule.
3. The bidder/offeror shall distribute his indirect costs (overhead, profit, bond, etc.) over all the items in the Pricing Schedule. The Government will review all submitted Pricing Schedules for any unbalancing of the items. Any submitted Pricing Schedule determined to be unbalanced may be considered nonresponsive and cause the bidder to be ineligible for award.
4. The lump sum, "LS", line items above are not "estimated quantity" line items and therefore are not subject to the Variation in Quantity contract clause.
5. EFARS 52.214-5000    ARITHMETIC DISCREPANCIES (MAR 1995)
  - (a) For the purpose of initial evaluation of bids/offers, the following will be utilized in resolving arithmetic discrepancies found on the face of the Pricing Schedule as submitted by bidders/offerors:
    - (1) Obviously misplaced decimal points will be corrected;
    - (2) Discrepancy between unit price and extended price, the unit price will govern;
    - (3) Apparent errors in extension of unit prices will be corrected;
    - (4) Apparent errors in addition of lump-sum and extended prices will be corrected.
  - (b) For the purpose of bid/offer evaluation, the Government will proceed on the assumption that the bidder/offeror intends the bid/offer to be evaluated on basis of the unit prices, the totals arrived at by resolution of arithmetic discrepancies as provided above and the bid/offer will be so reflected on the abstract of bids/offers.
  - (c) These correction procedures shall not be used to resolve any ambiguity concerning which bid/offer is low.

**6. The successful bidder/offeror grants the options listed in the Pricing Schedule to the Government. This option may be exercised any time up to (60) days after receipt of Notice to Proceed. Exercise of the option occurs upon mailing of written notice to the Contractor. Exercise will be made by the Contracting Officer. The price for exercise of the option includes all work and effort associated with the scope of that item. For determination of lowest bid, see paragraph titled EVALUATION OF OPTIONS in Section 00100 of this solicitation. No additional time for contract completion will be allowed when an option is exercised. The given contract completion time was formulated to include time necessary to perform all option work.**

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es): <http://www.acqnet.gov>

(End of provision)

52.252-3 ALTERATIONS IN SOLICITATION (APR 1984)

Portions of this solicitation are altered as follows: N/A.

52.252-5 AUTHORIZED DEVIATIONS IN PROVISIONS (APR 1984)

(a) The use in this solicitation of any Federal Acquisition Regulation (48 CFR Chapter 1) provision with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the provision.

(b) The use in this solicitation of any Department of Defense FAR Supplement (48 CFR Chapter 2) provision with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of provision)

52.217-5 EVALUATION OF OPTIONS (JUL 1990)

*(a) Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate the Government to exercise the option(s).*

*(b) The Government may reject an offer as nonresponsive if it is materially unbalanced as to prices for the basic requirement and the option quantities. An offer is unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated for other work.*

*(End of provision)*

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## SECTION 02300A

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## SECTION 02300A

## EARTHWORK

~~12/97~~

## 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 ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS  
(AASHTO)

AASHTO T 180 (1997) Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and an 457 mm (18-in) Drop

AASHTO T 224 (1996) Correction for Coarse Particles in the Soil Compaction Test

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 136 (1996a) Sieve Analysis of Fine and Coarse Aggregates

~~ASTM D 422C 117 (1963; R 1998) Particle-Size Analysis of Soils~~  
Gradation tests

ASTM D 1140 (1997) Amount of Material in Soils Finer than the No. 200 (75-micrometer) Sieve

ASTM D 1556 (1990; R 1996e1) Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D 1557 (1991; R 1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu. m.))

ASTM D 2167 (1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method

ASTM D 2487 (1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)

~~ASTM D 2922 (1996e1) Density of Soil and~~

~~Soil Aggregate in Place by Nuclear Methods  
(Shallow Depth)~~

ASTM D 2937	(1994) Density of Soil in Place by the Drive-Cylinder Method
ASTM D 3017	(1988; R 1996e1) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	(1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

## 1.2 MEASUREMENT

## 1.2.1 Excavation

The unit of measurement for excavation ~~and borrow~~ will be the cubic yard, computed by the average end area method from cross sections taken before and after the excavation ~~and borrow~~ operations. The volume to be paid for will be the number of cubic yards of material measured in its original position and removed from the excavation ~~and borrow~~ areas, including the excavation for ditches, or gutters, ~~and channel changes~~, when the material is acceptably utilized or disposed of as herein specified. The measurements will include authorized excavation of rock, authorized excavation of unsatisfactory subgrade soil, and the volume of loose, scattered rocks and boulders collected within the limits of the work; allowance will be made on the same basis for selected backfill ordered as replacement. The measurement will not include the volume of subgrade material or other material that is scarified or plowed and reused in-place, and will not include the volume excavated without authorization or the volume of any material used for purposes other than directed. ~~The volume of overburden stripped from borrow pits and the volume of excavation for ditches to drain borrow pits, unless used as borrow material, will not be measured for payment.~~ The measurement will not include the volume of any excavation performed prior to the taking of elevations and measurements of the undisturbed grade.

~~1.2.2 Topsoil Requirements~~

~~Separate excavation, hauling, and spreading or piling of topsoil and related miscellaneous operations will be considered subsidiary obligations of the Contractor, covered under the contract unit price for excavation.~~

~~1.2.3 Overhaul Requirements~~

~~The unit of measurement for overhaul will be the station-yard. The number of station-yards of overhaul to be paid for will be the product of number of cubic yards of overhaul material measured in the original position, multiplied by the overhaul distance measured in stations of 100 feet. The overhaul distance will be the distance in stations between the center of volume of the overhaul material in its original position and the center of volume after placing, minus the free-haul distance in stations. The haul distance will be measured along the shortest route determined by the~~

~~Contracting Officer as feasible and satisfactory. Unsatisfactory materials or waste will not be measured for overhaul where the length of haul for borrow is within the free-haul limits.~~

### 1.3 PAYMENT

Payment will constitute full compensation for all labor, equipment, tools, supplies, and incidentals necessary to complete the work.

#### 1.3.1 Classified Excavation

Classified excavation will be paid for at the contract unit prices per cubic yard for common or rock excavation.

#### 1.3.2 Unclassified Excavation

Unclassified excavation will be paid for at the contract unit price per cubic yard for unclassified excavation.

#### ~~1.3.3 Classified Borrow~~

~~Classified borrow will be paid for at the contract unit prices per cubic yard for common or rock borrow.~~

#### ~~1.3.4 Unclassified Borrow~~

~~Unclassified borrow will be paid for at the contract unit price per cubic yard for unclassified borrow.~~

#### ~~1.3.5 Authorized Overhaul~~

~~Authorized overhaul will be paid for at the contract unit price per station yard for overhaul in excess of the free-haul limit as designated in paragraph DEFINITIONS.~~

### 1.4 DEFINITIONS

#### 1.4.1 Satisfactory Materials

Satisfactory materials shall comprise any materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SP, ~~[SM,] [SW-SM,] [SC,] [SW-SC,] [SP-SM,] [SP-SC,] [CL,] [ML,] [CL-ML,] [CH,] [MH].~~

Satisfactory materials for grading shall be comprised of stones less than 3 & inches, ~~except for fill material for pavements and railroads which shall be comprised of stones less than 3 inches~~ in any dimension.

#### 1.4.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills; trash; refuse; backfills from previous construction; and material classified as satisfactory which contains root and other organic matter or frozen material. The Contracting Officer shall be notified of any contaminated materials.

#### ~~1.4.3 Cohesionless and Cohesive Materials~~

~~Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic. Testing required for classifying materials shall be in accordance with ASTM D 4318, ASTM C 136, ASTM D 422, and ASTM D 1140.~~

#### 1.4.3 Degree of Compaction

Degree of compaction required, except as noted in the second sentence, is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 abbreviated as a percent of laboratory maximum density. Since ASTM D 1557 applies only to soils that have 30 percent or less by weight of their particles retained on the 3/4 inch sieve, the degree of compaction for material having more than 30 percent by weight of their particles retained on the 3/4 inch sieve shall be expressed as a percentage of the maximum density in accordance with AASHTO T 180 Method D and corrected with AASHTO T 224. To maintain the same percentage of coarse material, the "remove and replace" procedure as described in the NOTE 8 in Paragraph 7.2 of AASHTO T 180 shall be used.

#### ~~1.4.5 Overhaul~~

~~Overhaul is the authorized transportation of satisfactory excavation or borrow materials in excess of the free-haul limit of [ ] stations. Overhaul is the product of the quantity of materials hauled beyond the free-haul limit, and the distance such materials are hauled beyond the free-haul limit, expressed in station yards.~~

#### ~~1.4.6 Topsoil~~

~~Material suitable for topsoils obtained from [offsite areas] [excavations] [areas indicated on the drawings] is defined as [ ].~~

#### 1.5 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

Earthwork; [ ], [ ].

Procedure and location for disposal of unused satisfactory material.  
Blasting plan when blasting is permitted. ~~Proposed source of borrow material.~~

~~Notification of encountering rock in the project. Advance notice on the~~

~~opening of excavation or borrow areas. Advance notice on shoulder construction for rigid pavements.~~

#### SD-06 Test Reports

Testing; ~~[\_\_\_\_\_], [\_\_\_\_\_].~~

Within 24 hours of conclusion of physical tests, ~~Two[\_\_\_\_\_]~~ copies of test results, including calibration curves and results of calibration tests.

#### SD-07 Certificates

Testing; ~~[\_\_\_\_\_], [\_\_\_\_\_].~~

Qualifications of the commercial testing laboratory or Contractor's testing facilities.

### 1.6 SUBSURFACE DATA

~~No subsurface soil information is available for the project site. Materials in cut banks may be unyielding or contain rock that will require ripping and excavation by large trackhoe sized equipment; no additional compensation shall be forthcoming for extra construction effort to excavate rock and unyielding materials. Subsurface soil boring logs are [shown on the drawings] [appended to the SPECIAL CONTRACT REQUIREMENTS]. The subsoil investigation report and samples of materials taken from subsurface investigations may be examined at [\_\_\_\_\_]. These data represent the best subsurface information available; however, variations may exist in the subsurface between boring locations.~~

### 1.7 CLASSIFICATION OF EXCAVATION

~~[No consideration will be given to the nature of the materials, and all excavation will be designated as unclassified excavation.] [Excavation specified shall be done on a classified basis, in accordance with the following designations and classifications. Materials in the cut banks may be unyielding or contain rock that will require ripping and excavation by large trackhoe sized equipment; no additional compensation shall be forthcoming for extra excavation effort to excavate rock and unyielding materials.]~~

#### ~~1.7.1 Rock Excavation~~

~~Rock excavation shall include blasting, excavating, grading, and disposing of material classified as rock and shall include the satisfactory removal and disposal of boulders 1/2 cubic yard or more in volume; solid rock; rock material that is in ledges, bedded deposits, and unstratified masses, which cannot be removed without systematic drilling and blasting; and firmly cemented conglomerate deposits possessing the characteristics of solid rock impossible to remove without systematic drilling and blasting. The removal of any concrete or masonry structures, except pavements, exceeding 1/2 cubic yard in volume that may be encountered in the work shall be included in this classification. If at any time during excavation, including excavation from borrow areas, the Contractor~~

~~encounters material that may be classified as rock excavation, such material shall be uncovered and the Contracting Officer notified by the Contractor. The Contractor shall not proceed with the excavation of this material until the Contracting Officer has classified the materials as common excavation or rock excavation and has taken cross sections as required. Failure on the part of the Contractor to uncover such material, notify the Contracting Officer, and allow ample time for classification and cross sectioning of the undisturbed surface of such material will cause the forfeiture of the Contractor's right of claim to any classification or volume of material to be paid for other than that allowed by the Contracting Officer for the areas of work in which such deposits occur.~~

#### 1.7.1 Common Excavation

Common excavation shall include the satisfactory removal and disposal of all materials not classified as rock excavation.

#### 1.8 BLASTING

~~[Blasting shall be performed as specified in Section [\_\_\_\_\_]. The Contractor shall submit a Blasting Plan and obtain written approval prior to performing any blasting. The plan shall contain provisions for storing, handling and transporting explosives as well as for the blasting operations. The Contractor shall be responsible for damage caused by blasting operations.] [Blasting will not be permitted.]~~

#### 1.9 UTILIZATION OF EXCAVATED MATERIALS

Unsatisfactory materials removed from excavations shall be disposed of in designated waste disposal or spoil areas. Satisfactory material removed from excavations shall be used, insofar as practicable, in the construction of fills, embankments, subgrades, shoulders, bedding (as backfill), and for similar purposes. No satisfactory excavated material shall be wasted without specific written authorization. Satisfactory material authorized to be wasted shall be disposed of in designated areas approved for surplus material storage or designated waste areas as directed. Newly designated waste areas on Government-controlled land shall be cleared and grubbed before disposal of waste material thereon. Coarse rock from excavations shall be stockpiled and used for constructing slopes or embankments adjacent to streams, or sides and bottoms of channels and for protecting against erosion. No excavated material shall be disposed of to obstruct the flow of any stream, endanger a partly finished structure, impair the efficiency or appearance of any structure, or be detrimental to the completed work in any way.

#### PART 2 PRODUCTS (Not Applicable)

#### PART 3 EXECUTION

##### 3.1 STRIPPING OF TOPSOIL

Where indicated or directed, topsoil shall be stripped to a depth of six (6) [\_\_\_\_\_] inches. Topsoil shall be spread on areas already graded and prepared for topsoil, or transported and deposited in stockpiles convenient

to areas that are to receive application of the topsoil later, or at locations indicated or specified. Topsoil shall be kept separate from other excavated materials, brush, litter, objectionable weeds, roots, stones larger than 2 inches in diameter, and other materials that would interfere with planting and maintenance operations. Any surplus of topsoil from excavations and grading shall be ~~{stockpiled in locations indicated}~~ ~~{removed from the site}~~.

### 3.2 GENERAL EXCAVATION

The Contractor shall perform excavation of every type of material encountered within the limits of the project to the lines, grades, and elevations indicated and as specified. Grading shall be in conformity with the typical sections shown and the tolerances specified in paragraph FINISHING. Satisfactory excavated materials shall be transported to and placed in fill or embankment within the limits of the work. Unsatisfactory materials encountered within the limits of the work shall be excavated below grade and replaced with satisfactory materials as directed. Such excavated material and the satisfactory material ordered as replacement shall be included in excavation. Surplus satisfactory excavated material not required for fill or embankment shall be disposed of in areas approved for surplus material storage or designated waste areas. Unsatisfactory excavated material shall be disposed of in designated waste or spoil areas.

During construction, excavation and fill shall be performed in a manner and sequence that will provide proper drainage at all times. Material required for fill or embankment in excess of that produced by excavation within the grading limits shall be excavated ~~from the borrow areas indicated or~~ from other approved areas selected by the Contractor as specified.

#### 3.2.1 Ditches, or Gutters, ~~and Channel Changes~~

Excavation of ditches, or gutters, ~~and channel changes~~ shall be accomplished by cutting accurately to the cross sections, grades, and elevations shown. Ditches and gutters shall not be excavated below grades shown. Excessive open ditch or gutter excavation shall be backfilled with satisfactory, thoroughly compacted, material or with suitable stone or cobble to grades shown. Material excavated shall be disposed of as shown or as directed, except that in no case shall material be deposited less than 4 feet from the edge of a ditch. The Contractor shall maintain excavations free from detrimental quantities of leaves, brush, sticks, trash, and other debris until final acceptance of the work.

#### 3.2.2 Drainage Structures

Excavations shall be made to the lines, grades, and elevations shown, or as directed. Trenches and foundation pits shall be of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Rock or other hard foundation material shall be cleaned of loose debris and cut to a firm, level, stepped, or serrated surface. Loose disintegrated rock and thin strata shall be removed. When concrete or masonry is to be placed in an excavated area, the bottom of the excavation shall not be disturbed. Excavation to the final grade level shall not be made until just before the concrete or

masonry is to be placed. Where pile foundations are to be used, the excavation of each pit shall be stopped at an elevation 1 foot above the base of the footing, as specified, before piles are driven. After the pile driving has been completed, loose and displaced material shall be removed and excavation completed, leaving a smooth, solid, undisturbed surface to receive the concrete or masonry.

### ~~3.3 SELECTION OF BORROW MATERIAL~~

~~Borrow material shall be selected to meet the requirements and conditions of the particular fill or embankment for which it is to be used. Borrow material shall be obtained from the borrow areas [shown on drawings] [within the limits of the project site, selected by the Contractor] [or] [from approved private sources]. Unless otherwise provided in the contract, the Contractor shall obtain from the owners the right to procure material, pay royalties and other charges involved, and bear the expense of developing the sources, including rights-of-way for hauling. Borrow material from approved sources on Government-controlled land may be obtained without payment of royalties. Unless specifically provided, no borrow shall be obtained within the limits of the project site without prior written approval. Necessary clearing, grubbing, and satisfactory drainage of borrow pits and the disposal of debris thereon shall be considered related operations to the borrow excavation.~~

### 3.3 OPENING AND DRAINAGE OF EXCAVATION AND BORROW PITS

The Contractor shall notify the Contracting Officer sufficiently in advance of the opening of any excavation or borrow pit to permit elevations and measurements of the undisturbed ground surface to be taken. Except as otherwise permitted, ~~borrow pits and other~~ excavation areas shall be excavated providing adequate drainage. Overburden and other spoil material shall be transported to designated spoil areas or otherwise disposed of as directed. ~~Borrow pits shall be neatly trimmed and drained after the excavation is completed.~~ The Contractor shall ensure that excavation of any area, ~~operation of borrow pits,~~ or dumping of spoil material results in minimum detrimental effects on natural environmental conditions.

### 3.4 GRADING AREAS

Where indicated, work will be divided into grading areas within which satisfactory excavated material shall be placed in embankments, fills, and required backfills. The Contractor shall not haul satisfactory material excavated in one grading area to another grading area except when so directed in writing.

### 3.5 BACKFILL

Backfill adjacent to any and all types of structures shall be placed and compacted to at least 90 percent laboratory maximum density for cohesive materials ~~or 95 percent laboratory maximum density for cohesionless materials~~ to prevent wedging action or eccentric loading upon or against the structure. Ground surface on which backfill is to be placed shall be prepared as specified in paragraph PREPARATION OF GROUND SURFACE FOR EMBANKMENTS. Compaction requirements for backfill materials shall also

conform to the applicable portions of paragraphs PREPARATION OF GROUND SURFACE FOR EMBANKMENTS, EMBANKMENTS, and SUBGRADE PREPARATION, and Section 02630 STORM-DRAINAGE SYSTEM; and Section 02316 EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

### 3.6 PREPARATION OF GROUND SURFACE FOR EMBANKMENTS

#### 3.6.1 General Requirements

Ground surface on which fill is to be placed shall be stripped of live, dead, or decayed vegetation, rubbish, debris, and other unsatisfactory material; plowed, disked, or otherwise broken up to a depth of eight (8) [~~\_\_\_\_\_~~]; pulverized; moistened or aerated as necessary; thoroughly mixed; and compacted to at least 90 percent laboratory maximum density for cohesive materials ~~or 95 percent laboratory maximum density for cohesionless materials~~. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. The prepared ground surface shall be scarified and moistened or aerated as required just prior to placement of embankment materials to assure adequate bond between embankment material and the prepared ground surface, and compaction of the earth fill shall not in any way damage the filter fabric or drainage layer.

#### ~~3.7.2 Frozen Material~~

~~Embankment shall not be placed on a foundation which contains frozen material, or which has been subjected to freeze-thaw action. This prohibition encompasses all foundation types, including the natural ground, all prepared subgrades (whether in an excavation or on an embankment) and all layers of previously placed and compacted earth fill which become the foundations for successive layers of earth fill. All material that freezes or has been subjected to freeze-thaw action during the construction work, or during periods of temporary shutdowns, such as, but not limited to, nights, holidays, weekends, winter shutdowns, or earthwork operations, shall be removed to a depth that is acceptable to the Contracting Officer and replaced with new material. Alternatively, the material will be thawed, dried, reworked, and recompact to the specified criteria before additional material is placed. The Contracting Officer will determine when placement of fill shall cease due to cold weather. The Contracting Officer may elect to use average daily air temperatures, and/or physical observation of the soils for his determination. Embankment material shall not contain frozen clumps of soil, snow, or ice.~~

### 3.7 EMBANKMENTS

#### 3.7.1 Earth Embankments

Earth embankments shall be constructed from satisfactory materials free of organic or frozen material and rocks with any dimension greater than 3 inches. The material shall be placed in successive horizontal layers of loose material not more than eight (8) [~~\_\_\_\_\_~~] inches in depth. Each layer shall be spread uniformly on a soil surface that has been moistened or

aerated as necessary, and scarified or otherwise broken up so that the fill will bond with the surface on which it is placed. After spreading, each layer shall be plowed, disked, or otherwise broken up; moistened or aerated as necessary; thoroughly mixed; and compacted to at least 90 percent laboratory maximum density for cohesive materials or ~~95 percent laboratory maximum density for cohesionless materials~~. Compaction requirements for the upper portion of earth embankments forming subgrade for pavements shall be identical with those requirements specified in paragraph SUBGRADE PREPARATION. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

### ~~3.8.2 Rock Embankments~~

~~Rock embankments shall be constructed from material classified as rock excavation, as defined above, placed in successive horizontal layers of loose material not more than [ ] inches in depth. Pieces of rock larger than [ ] inches in the greatest dimension shall not be used. Each layer of material shall be spread uniformly, completely saturated, and compacted to a minimum density of [ ] pcf. Each successive layer of material shall adequately bond to the material on which it is placed. Compaction shall be accomplished with vibratory compactors weighing at least [ ] tons, heavy rubber-tired rollers weighing at least [ ] tons, or steel-wheeled rollers weighing at least [ ] tons. [Rock excavation shall not be used as fill material for the construction of pavements.][In embankments on which pavements are to be constructed, rock shall not be used above a point [ ] inch below the surface of the pavement.]~~

## 3.8 SUBGRADE PREPARATION

### 3.8.1 Construction

Subgrade shall be shaped to line, grade, and cross section, and compacted as specified. This operation shall include plowing, disking, and any moistening or aerating required to obtain specified compaction. Soft or otherwise unsatisfactory material shall be removed and replaced with satisfactory excavated material or other approved material as directed. Rock encountered in the cut section shall be excavated to a depth of 6 inches below finished grade for the subgrade. Low areas resulting from removal of unsatisfactory material or excavation of rock shall be brought up to required grade with satisfactory materials, and the entire subgrade shall be shaped to line, grade, and cross section and compacted as specified. ~~[After rolling, the surface of the subgrade for roadways shall not show deviations greater than one-half (½)[ ] inch when tested with a eight (8)[ ] foot straightedge applied both parallel and at right angles to the centerline of the area.] [After rolling, the surface of the subgrade for airfields shall not show deviations greater than [ ] inch when tested with a [ ] foot straightedge applied both parallel and at right angles to the centerline of the area.]~~ The elevation of the finish subgrade shall not vary more than 0.05 foot from the established grade and cross section.

### 3.8.2 Compaction

Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. Except for paved areas and railroads, each layer of the embankment shall be compacted to at least ninety(90)~~{\_\_\_\_\_}~~ percent of laboratory maximum density.

#### ~~3.9.2.1 Subgrade for Railroads~~

~~Subgrade for railroads shall be compacted to at least 90 percent laboratory maximum density for cohesive materials or 95 percent laboratory maximum density for cohesionless materials.~~

#### ~~3.8.2.1 Subgrade for Pavements~~

~~Subgrade for pavements shall be compacted to at least ninety (90)~~{\_\_\_\_\_}~~ percentage laboratory maximum density for the depth below the surface of the pavement shown. When more than one soil classification is present in the subgrade, the top six (6)~~{\_\_\_\_\_}~~ inches of subgrade shall be scarified, windrowed, thoroughly blended, reshaped, and compacted.~~

#### 3.8.2.1 Subgrade for Shoulders

Subgrade for shoulders shall be compacted to at least ninety(90)~~{\_\_\_\_\_}~~ percentage laboratory maximum density for the ~~{depth below the surface of shoulder shown}~~ ~~{full depth of the shoulder}~~.

### 3.9 SHOULDER CONSTRUCTION

Shoulders shall be constructed of satisfactory excavated or borrow material or as otherwise shown or specified. Shoulders shall be constructed as soon as possible after adjacent paving is complete, but in the case of rigid pavements, shoulders shall not be constructed until permission of the Contracting Officer has been obtained. The entire shoulder area shall be compacted to at least the percentage of maximum density as specified in paragraph SUBGRADE PREPARATION above, for specific ranges of depth below the surface of the shoulder. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. Shoulder construction shall be done in proper sequence in such a manner that adjacent ditches will be drained effectively and that no damage of any kind is done to the adjacent completed pavement. The completed shoulders shall be true to alignment and grade and shaped to drain in conformity with the cross section shown.

### 3.10 FINISHING

The surface of excavations, embankments, and subgrades shall be finished to a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations shown. The degree of finish for graded areas shall be within 0.1 foot of the grades and elevations indicated except that the degree of finish for subgrades shall be specified in paragraph SUBGRADE PREPARATION. Gutters and ditches shall be finished in a manner that will result in effective drainage. The surface of areas to be turfed

shall be finished to a smoothness suitable for the application of turfing materials.

### ~~3.12 PLACING TOPSOIL~~

~~On areas to receive topsoil, the compacted subgrade soil shall be scarified to a 2 inch depth for bonding of topsoil with subsoil. Topsoil then shall be spread evenly to a thickness of [ ] inches and graded to the elevations and slopes shown. Topsoil shall not be spread when frozen or excessively wet or dry. Material required for topsoil in excess of that produced by excavation within the grading limits shall be obtained from [offsite areas] [areas indicated].~~

### 3.11 TESTING

Testing shall be performed by an approved commercial testing laboratory or by the Contractor subject to approval. If the Contractor elects to establish testing facilities, no work requiring testing will be permitted until the Contractor's facilities have been inspected and approved by the Contracting Officer. Field in-place density shall be determined in accordance with ~~{ASTM DC 1556} 117 and ASTM C136~~ ~~{ASTM D 2167}~~ ~~{ASTM D 2922}~~. ~~{When ASTM D 2922 is used, the calibration curves shall be checked and adjusted using only the sand cone method as described in ASTM D 1556. ASTM D 2922 results in a wet unit weight of soil and when using this method ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall also be checked along with density calibration checks as described in ASTM D 3017; the calibration checks of both the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at intervals as directed by the Contracting Officer.} {ASTM D 2937, Drive Cylinder Method shall be used only for soft, fine-grained, cohesive soils.}~~ ~~When test results indicate, as determined by the Contracting Officer, that compaction is not as specified, the material shall be removed, replaced and recompacted to meet specification requirements. Tests on recompacted areas shall be performed to determine conformance with specification requirements. Inspections and test results shall be certified by a registered professional civil engineer. These certifications shall state that the tests and observations were performed by or under the direct supervision of the engineer and that the results are representative of the materials or conditions being certified by the tests. The following number of tests, if performed at the appropriate time, will be the minimum acceptable for each type operation.~~

#### 3.11.1 Fill and Backfill Material Gradation

One test per 1,000~~[ ]~~ cubic yards stockpiled or in-place source material. Gradation of fill and backfill material shall be determined in accordance with ~~{ASTM C 136}~~ ~~{ASTM D 422} 117 and C 136~~ ~~{ASTM D 1140}~~.

#### 3.11.2 In-Place Densities

- a. One test per 5,000~~[ ]~~ square feet, or fraction thereof, of each lift of fill or backfill areas compacted by other than hand-operated machines.

- b. One test per 1,000~~[\_\_\_\_\_]~~ square feet, or fraction thereof, of each lift of fill or backfill areas compacted by hand-operated machines.
- c. One test per 500~~[\_\_\_\_\_]~~ linear feet, or fraction thereof, of each lift of embankment or backfill for ~~[roads] [airfields]~~.
- ~~d. One test per [\_\_\_\_\_] linear feet, or fraction thereof, of each lift of embankment or backfill for railroads.~~

### 3.11.3 Check Tests on In-Place Densities

~~If ASTM D 2922 is used, i~~n-place densities shall be checked by ASTM D 1556 as follows:

- a. One check test per lift for each 20,000~~[\_\_\_\_\_]~~ square feet, or fraction thereof, of each lift of fill or backfill compacted by other than hand-operated machines.
- b. One check test per lift for each 5,000~~[\_\_\_\_\_]~~ square feet, of fill or backfill areas compacted by hand-operated machines.
- c. One check test per lift for each 1,000~~[\_\_\_\_\_]~~ linear feet, or fraction thereof, of embankment or backfill for ~~[roads] [airfields]~~.
- ~~d. One check test per lift for each [\_\_\_\_\_] linear feet, or fraction thereof, of embankment or backfill for railroads.~~

### 3.11.4 Moisture Contents

In the stockpile, excavation, or borrow areas, a minimum of two tests per day per type of material or source of material being placed during stable weather conditions shall be performed. During unstable weather, tests shall be made as dictated by local conditions and approved by the Contracting Officer.

### 3.11.5 Optimum Moisture and Laboratory Maximum Density

Tests shall be made for each type material or source of material including borrow material to determine the optimum moisture and laboratory maximum density values. One representative test per 5,000~~[\_\_\_\_\_]~~ cubic yards of fill and backfill, or when any change in material occurs which may affect the optimum moisture content or laboratory maximum density.

### 3.11.6 Tolerance Tests for Subgrades

Continuous checks on the degree of finish specified in paragraph SUBGRADE PREPARATION shall be made during construction of the subgrades.

## 3.12 SUBGRADE AND EMBANKMENT PROTECTION

During construction, embankments and excavations shall be kept shaped and drained. Ditches and drains along subgrade shall be maintained to drain

effectively at all times. The finished subgrade shall not be disturbed by traffic or other operation and shall be protected and maintained by the Contractor in a satisfactory condition until ballast, subbase, base, or pavement is placed. The storage or stockpiling of materials on the finished subgrade will not be permitted. No subbase, base course, ballast, or pavement shall be laid until the subgrade has been checked and approved, and in no case shall subbase, base, surfacing, pavement, or ballast be placed on a muddy, spongy, or frozen subgrade.

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