

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES	
			J	1	2
2. AMENDMENT/MODIFICATION NO. 0004	3. EFFECTIVE DATE 07-Apr-2003	4. REQUISITION/PURCHASE REQ. NO. W807PM-2352-6957		5. PROJECT NO.(If applicable)	
6. ISSUED BY CONSTRUCTION & A/E BRANCH 4155 CLAY STREET VICKSBURG MS 39183-3435	CODE DACW38	7. ADMINISTERED BY (If other than item 6) See Item 6		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)			X	9A. AMENDMENT OF SOLICITATION NO. DACW38-03-B-0007	
			X	9B. DATED (SEE ITEM 11) 18-Feb-2003	
				10A. MOD. OF CONTRACT/ORDER NO.	
				10B. DATED (SEE ITEM 13)	
CODE	FACILITY CODE				
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input checked="" type="checkbox"/> is extended, <input type="checkbox"/> is not extended.					
Offer 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 <u>1</u> 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 <input type="checkbox"/> is not, <input type="checkbox"/> 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.) Reference Invitation for Bid No. DACW38-03-B-0007 for FC/MR&T, Yazoo River Basin, Panola County, Mississippi, Demonstration Erosion Control (DEC), Bank Stabilization, Long Creek Watershed, Courtland City Creek (BS-02-01), scheduled to open at 1400 hours on 08 April 2003, is amended as follows: <p style="text-align: center;">BID OPENING DATE</p> A new bid opening date and time of 17 April 2003 at 1400 hours is hereby established. SEE PAGE 2 FOR CONTINUATION.					
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)		
			TEL: _____ EMAIL: _____		
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)		07-Apr-2003	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

TECHNICAL SPECIFICATIONS

1. Section 02111, CLEARING, GRUBBING, DEBRIS REMOVAL, AND EARTHWORK, is reissued in its entirety.
2. Section 02213, ENGINEERING FABRIC, is reissued in its entirety.
3. Section 02227, STRUCTURAL EXCAVATION, GRADING, AND FILL FOR GABIONS, is added in its entirety.
4. Make pen and ink change to Section 02952, paragraph 1.2.2 Payment, subparagraphs a, b, c: revise "job price" to read "lump sum price".

Pages revised by this amendment have the notation "Reissued by Amendment 0004" at the bottom of the page. Text added by this amendment is shown as underlined: and text deleted by this amendment is shown as overstruct.

Enclosures:
Section 02111, Pages 1-5
Section 02213, Pages 1-6
Section 02227, Pages 1-10

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SECTION 02111

CLEARING, GRUBBING, DEBRIS REMOVAL, AND EARTHWORK

PART 1 GENERAL

1.1 GENERAL

The work covered by this section consists of furnishing all plant, labor, equipment, and materials; performing all operations necessary for the clearing and grubbing of the areas shown on the drawings or specified herein; and removing and disposing of all cleared and grubbed materials as specified herein.

1.2 MEASUREMENT AND PAYMENT

1.2.1 Clearing

No measurement will be made for clearing. Payment for clearing covered herein shall be included in the contract ~~job~~ lump sum price for "Clearing and Grubbing" and payment thereof shall constitute full compensation for furnishing all plant, labor, materials, and performing all work as required.

1.2.2 Grubbing, Snagging, Clearing and Snagging, and Debris Removal

No measurement will be made for grubbing, snagging, and debris removal. Payment for grubbing, snagging, and debris removal covered herein shall be included in the contract ~~job~~ lump sum price for "Clearing and Grubbing" and payment thereof shall constitute full compensation for furnishing all plant, labor, materials, and performing all work as required.

1.2.3 Excavation

No separate measurement or payment will be made for excavation related to the Dikes and/or Tiebacks. Excavation, including borrow excavation, disposal of excess materials and all costs incidental thereto shall be included in the contract unit price per each for "Excavation and Backfill for Dikes and/or Tiebacks", item number 3.

~~Excavation and Fill for Gabions will be paid under item numbers 9 and 10.~~

1.2.4 Excavation and Backfill for Dikes and/or Tiebacks

No measurement will be made for excavation and backfill for dikes and/or tiebacks including excavating or placing streambed sand and/or gravel used in filling the voids in the stone or for filling holes in the creek. Payment for excavation and backfill for dikes and/or tiebacks will be made at the contract unit price per each for "Excavation and Backfill for Dikes and/or Tiebacks" which price and payment shall constitute full compensation for furnishing all plant, labor, inspection, materials, and equipment required to perform the excavation and backfill for all dikes and/or tiebacks and all operations incidental thereto.

1.3 QUALITY CONTROL

The Contractor shall establish and maintain quality control for clearing, grubbing, clearing and snagging, debris removal, and earthwork to assure compliance with contract requirements and maintain detailed records of his quality control for all construction operations including, but not limited to, the following:

- a. Clearing limited to minimum required for construction operations.
- b. Removal and disposal of debris and materials of value from clearing and grubbing operations.
- c. Clearing and snagging areas specified on the drawings.
- d. Excavation performed to limits and tolerances indicated on the drawings and disposal of excess material.
- e. Backfill performed as specified.

1.4 SUBMITTALS

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

SD-08 Statements

Requests to clear access roads or storage areas; GA.

Location of disposal area outside right-of-way; GA.

Request to vary depth of borrow; GA.

PART 2 PRODUCTS

2.1 STREAMBED SAND AND/OR GRAVEL

Sources of streambed sand and/or gravel used in the backfill may be obtained from the streambed within the right-of-way limits shown on the drawings or from any other source provided by the Contractor and approved by the Contracting Officer.

2.2 BACKFILL MATERIAL

Backfill material shall be streambed sand and/or gravel as defined in paragraph BACKFILL, PLACEMENT AND COMPACTION. Backfill material shall be obtained in the work reaches within the rights-of-way limits of the site as shown on the drawings. Backfill materials shall not be transferred between sites. See paragraph BORROW EXCAVATION, for borrow excavation requirements. Any other source of backfill material proposed by the Contractor is subject to the approval of the Contracting Officer. If, in the opinion of the Contracting Officer, sufficient suitable materials are not available for backfill at the site, the Contractor will provide the materials from a suitable source and an equitable adjustment will be made under the Contract Clause CHANGES.

PART 3 EXECUTION

3.1 CLEARING

The streambank shall be cleared of all trees, brush, drift, car bodies, miscellaneous debris, or other obstruction that would hinder excavation or grading, and subsequent construction operations. Clearing shall be limited to the absolute minimum necessary for construction of the work. Any materials of value removed shall be stockpiled behind top bank as directed by the Contracting Officer. Care shall be taken by the Contractor not to cut or injure any trees which do not unreasonably interfere with the construction. It is the intent of these specifications that growth around the work area be preserved to the maximum extent practicable. Clearing for access roads or storage areas shall be limited to approved areas. All trees and brush within the areas authorized to be cleared shall be felled and, together with drift, and other debris, shall be disposed of as directed in paragraph DISPOSAL OF CLEARED AND GRUBBED MATERIALS AND OTHER DEBRIS.

3.2 GRUBBING, SNAGGING, AND DEBRIS REMOVAL

3.2.1 Grubbing

All stumps exposed during excavation or grading operations shall be either cut off flush with the finished slope grade or grubbed out and disposed of as directed in paragraph DISPOSAL OF CLEARED AND GRUBBED MATERIALS AND OTHER DEBRIS.

3.2.2 Snagging

Prior to placing stone, all snags, stumps, or other obstructions shall be removed from the area to be covered by the stone and disposed of as directed in paragraph DISPOSAL OF CLEARED AND GRUBBED MATERIALS AND OTHER DEBRIS.

3.2.3 Clearing and Snagging

Where indicated on the drawings and as directed by the Contracting Officer, log jams and/or trees are to be removed from the stream. These log jams and/or trees shall be disposed of outside the rights-of-way at a disposal area provided by the Contractor and as approved by the Contracting Officer. The disposal area shall also be located as specified in paragraph DISPOSAL OF CLEARED AND GRUBBED MATERIALS AND OTHER DEBRIS.

3.3 DISPOSAL OF CLEARED AND GRUBBED MATERIALS AND OTHER DEBRIS

All debris resulting from construction operations shall be disposed of by removal from the site and disposed in offsite locations obtained by the Contractor at no expense to the Government in accordance with Section 01000 RIGHTS-OF-WAY. The Contractor shall make a reasonable effort to channel materials of value resulting from clearing operations into beneficial use.

Disposal of debris resulting from construction operations shall comply with all applicable Federal, State, local laws. The Contractor may, at his option, retain for his own use or disposal by sale or otherwise any such materials of value. The Government assumes no responsibility for the protection or safekeeping of any materials retained by the Contractor. Such materials shall be removed from the site of the work before the date of completion of the work under these specifications.

3.4 BORROW EXCAVATION

The Contractor shall use suitable material obtained from the streambed within the rights-of-way for backfill as specified in paragraph BACKFILL MATERIAL and BACKFILL, PLACEMENT AND COMPACTION. The Contracting Officer reserves the right at all times to specify the area(s) from which materials shall be procured, and the depths to which the excavation shall be made.

3.5 BACKFILL, PLACEMENT AND COMPACTION

Those portions of dikes and tiebacks which are landward of high top bank shall be backfilled as shown on the drawings. The backfill shall be accomplished by placing streambed sand and/or gravel over the stone landward of high top bank, applying a sufficient quantity of water to disperse this material into the voids in the stone, leaving a minimum thickness of 6 inches of sand and/or gravel over the stone, then completing the backfill using material obtained from excavation for the dikes and tiebacks. Backfill material which contains 25 percent or more of material finer than sand shall be placed in layers not to exceed 2 feet in thickness, and each layer shall be compacted by one complete pass of a bulldozer weighing not less than 20,000 pounds and exerting a tread pressure of not less than 6 psi. Sand is defined as material passing a No. 4 sieve and retained on a No. 200 sieve. Backfill composed of sand and/or gravel may be placed in lifts of any thickness, and no special compaction will be required. The backfill shall be sloped to drain landward and graded to a smooth surface transition into the surrounding surfaces. Backfill required to fill holes in the creek shall be composed of existing streambed sand and/or gravel. This backfill is necessary to support longitudinal peaked stone dikes when the placement of the stone passes over such holes.

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SECTION 02213

ENGINEERING FABRIC

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 SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 2487	(1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 3950	(1996) Strapping, Nonmetallic (and Joining Methods)
ASTM D 4354	(1996) Sampling of Geosynthetics for Testing
ASTM D 4355	(1992) Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
ASTM D 4439	(1998) Geosynthetics
ASTM D 4491	(1996) 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	(1995) Determining Apparent Opening Size of a Geotextile
ASTM D 4759	(1988; R 1996) Determining the Specification Conformance of Geosynthetics
ASTM D 4833	(1988; R 1996) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873	(1997) Identification, Storage, and Handling of Geosynthetic Rolls
ASTM D 4884	(1996) Strength of Sewn or Thermally Bonded Seams of Geotextiles

1.2 UNIT PRICES

1.2.1 Engineering Fabric

1.2.1.1 Payment

Payment shall be made at the contract unit price and shall constitute full compensation to the contractor for providing all plant, labor, material, and equipment and performing all operations necessary for the complete and satisfactory installation of the engineering fabric. The following items are included in the contract unit price for "Engineering Fabric" and shall not be counted a second time in the process of determining the extent of engineering fabric placed: Material and associated equipment and operation used in laps, seams, or extra length; securing pins and associated material, equipment, and operations. No payment will be made for engineering fabric replaced because of waste, contamination, damage, repair, or due to contractor fault or negligence.

1.2.1.2 Measurement

Installed engineering fabric will be measured for payment in place to the nearest square yard. Measurement will be made along the surface of the cloth and no allowance will be made for laps. Securing pins will not be measured for payment nor paid for separately and all cost incidental thereto shall be included in the contract unit price for "Engineering Fabric". Seams will not be measured for payment nor paid for separately and all cost incidental thereto shall be included in the contract unit price for "Engineering Fabric".

1.3 SUBMITTALS

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

SD-08 Statements

Installation; FIO.

Details for attaching the engineering fabric to structures or pipes shall be submitted for review not less than thirty (30) days prior to start of placement.

SD-13 Certificates

Engineering Fabric; FIO.

The Contractor shall submit in triplicate, a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the engineering fabric. Certificates shall identify the engineering fabric being furnished by roll identification number. Certificates of compliance attesting that the materials meet specification requirements shall be submitted in accordance with Section 01000 GENERAL CONTRACT REQUIREMENTS, paragraph CERTIFICATES OF COMPLIANCE.

SD-14 Samples

Fabric; FIO. Seams; FIO.

Samples of engineering fabric shall be submitted for testing not less than fourteen (14) days prior to the beginning of installation of the engineering fabric. Actual field sewn seam samples shall be submitted for testing not less than fourteen (14) days prior to the beginning of installation of the engineering fabric. The sample average test results (weaker principle direction for mechanical tests) for a particular property for any individual roll tested within a lot shall meet or exceed the Minimum Average Roll Value (MARV) indicated in the manufacturer's certification.

1.4 IDENTIFICATION, STORAGE, AND HANDLING

The geotextile shall be identified, stored, and handled in accordance with ASTM D 4873.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Fabric

The engineering fabric shall be a nonwoven geotextile, as defined by ASTM D 4439, consisting 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, ethylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic if necessary to make the filaments resistant to deterioration due to ultraviolet and heat exposure. The nonwoven engineering fabric shall conform to the physical property requirements tests in TABLE NO. 1 - PHYSICAL STRENGTH REQUIREMENTS, paragraph ACCEPTANCE REQUIREMENTS. The fabric rolls (strips) shall be manufactured in a minimum width of 12 feet.

2.1.2 Seams

The seams of the engineering fabric shall be sewn with thread of a material meeting the chemical requirements given above for the engineering fabric. The Contractor has the option of field sewing the sheets together to eliminate the overlapping of the sheets during field installation. The field seams shall be double sewn. Seams shall be tested in accordance with method ASTM D 4884. The strengths of the seam shall be not less than 80 percent of the required tensile strength (TABLE NO. 1 - PHYSICAL STRENGTH REQUIREMENTS) of the unaged fabric in any principal direction. Fabric and seams shall be aligned as specified in paragraph INSTALLATION OF ENGINEERING FABRIC.

2.1.3 Temporary Securing Pins

Temporary securing pins shall not be used.

2.1.4 Straps and Anchorage Material

The straps and anchorage material used to attach the engineering fabric to structures or pipes shall be stainless steel, or nonmetallic strapping meeting the requirements of ASTM D 3950, Type 1A, Grade 3; Type III, or Type IV, with a minimum breaking strength of 780 lbf.

2.1.5 Anchor Trench Backfill

Anchor trench backfill shall be pervious material such as sands or gravels (SP, SW, GW, or GP) classified in accordance with ASTM D 2487.

2.2 ACCEPTANCE REQUIREMENTS

All brands of engineering fabric and all seams, except field sewn seams, will be accepted on the following basis.

2.2.1 Testing

Government personnel may collect engineering fabric samples in accordance with ASTM D 4354 for testing to determine compliance with any or all of the requirements in this specification pursuant to ASTM D 4759 and the following table:

TABLE NO. 1 - PHYSICAL STRENGTH REQUIREMENTS

Minimum Average Roll Values (MARV)		
PHYSICAL PROPERTY	GRADE 2	TEST PROCEDURE
Tensile Strength +(unaged fabric)	240 lbs Minimum	ASTM D 4632
Elongation	25 percent Minimum	ASTM D 4632
Puncture Strength +(unaged fabric)	115 lbs Minimum	ASTM D 4833
Trapezoid Tear	90 lbs Minimum	ASTM D 4533
Permittivity	Greater than 0.7 per sec.	ASTM D 4491
Apparent Opening Size	Less than 70 sieve (less than 0.212mm)	ASTM D 4751
Ultraviolet Resistance	70 percent Minimum (percent of strength retained after 500 hours)	ASTM D 4355

+ Unaged fabric is defined as fabric in the condition received from the manufacturer or distributor.

2.2.2 Mill Certificates or Affidavits

The mill certificates or affidavits for engineering fabric shall attest that the fabric and factory seams meet chemical, physical, and manufacturing requirements stated in this specification. The mill certificates or affidavits shall specify the actual Minimum Average Roll Values (MARV) and shall identify the fabric supplied by manufacturer's name and roll identification numbers.

PART 3 EXECUTION

3.1 INSTALLATION OF ENGINEERING FABRIC

3.1.1 Installation: General

The engineering fabric shall be placed in the manner and at the locations shown. At the time of installation, fabric shall be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation or storage. The surface to receive engineering fabric shall be relatively smooth and free of obstructions, depressions, debris, and soft or low density pockets of material. The fabric shall be placed with the long dimension (machine direction) of the engineering fabric parallel to the centerline of the channel and shall be laid smooth and free of tension, stress, folds, wrinkles, or creases. The panels (sheets or strips) shall be placed to provide a minimum overlap width of 24 inches after placement of the riprap for each joint with the upstream panel overlapping the downstream panel and with the panels placed on channel slopes with the upper panel overlapping the next lower panel. Weights (Riprap) shall be used to temporarily hold the fabric in such a manner as to prevent the wind or other disturbance from lifting the fabric or shifting the overlap. The perimeter of the engineering fabric shall be anchored into the foundation with a trench or attached to the structure. When the engineering fabric is penetrated by pipes, the engineering fabric shall be attached to the pipe with straps. The trench at the top of the slope shall not be backfilled until the riprap is in place on the fabric. Anchor trench backfill shall be used to anchor the engineering fabric in the trench. The fabric shall be protected at all times during construction from contamination by surface runoff and fabric so contaminated shall be removed and replaced with uncontaminated fabric at no cost to the Government. Wheeled and/or tracked vehicles used in the placement of riprap are not allowed directly onto fabric and shall be of such design that they will not damage the underlying engineering fabric. Any fabric damaged during its installation or during placement of riprap shall be replaced by the Contractor at no cost to the Government. The work shall be scheduled so that the covering of the fabric with a layer of the specified material is accomplished within ten (10) days after placement of the fabric. Failure to comply shall require replacement of the engineering fabric at no additional cost to the Government. The engineering fabric shall be protected from damage due to the placement of riprap or other materials by limiting the height of drop of the material to 3 feet. Before placement of riprap, the Contractor shall demonstrate that the placement technique will prevent damage to the fabric.

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SECTION 02227

STRUCTURAL EXCAVATION, GRADING AND FILL FOR GABIONS

PART 1 GENERAL

1.1 GENERAL

The work covered by this section consists of furnishing all plant, labor, materials, structural excavation and grading, semicompacted fill construction, and ditching, complete, including disposition of material, all as specified herein and shown on the drawings.

1.2 MEASUREMENT AND PAYMENT

1.2.1 MEASUREMENT

1.2.1.1 Excavation and Grading

The unit of measurement for excavation and grading, excluding ditching, will be the cubic yard. Quantities will be computed from original cross sections taken at intervals of not more than 100 feet just prior to grading and the theoretical grades and slope lines as determined in the field at the time grading commences. Measurements will be made to the nearest 1/10 foot and volume determined to the nearest cubic yard. Excavated material from lateral ditches and standard drains shall be considered incidental to the contract with no additional compensation being allowed.

1.2.1.2 Semi-Compacted Fill

Semi-compacted fill will be measured for payment by the cubic yard, and quantities will be determined by the average end area method where applicable. The basis for measurement will be the cross section of the areas to be filled prior to the filling operations and the theoretical cross sections indicated on the construction drawings. No payment will be made for overfill or for placement of any material outside the lines and grades indicated on the drawings.

1.2.2 PAYMENT

1.2.2.1 Excavation and Grading

Payment for excavation and grading will be made at the contract unit price for "Gabion Excavation and Grading," which price and payment thereof shall constitute full compensation for furnishing all plant, labor, and materials and performing all work necessary in satisfactorily completing the excavation and grading, including disposition of material including that which is frozen.

1.2.2.2 Semi-Compacted Fill

Payment for semi-compacted fill will be made at the contract unit price per cubic yard for "Gabion Semi-Compacted Fill", which price and payment shall constitute full compensation for furnishing all plant, labor, inspection, materials and equipment, performing all surveys, transporting the material from the point of excavation to the point of use, and placing and

compacting the fill material and all operations incidental thereto.

1.2.2.3 Dewatering

Should the Contractor elect to use dewatering, no separate payment will be made for dewatering, and all cost in connection therewith shall be included in the contract unit price for "Excavation and Grading."

PART 2 PRODUCTS

2.1 SEMICOMPACTED EMBANKMENT MATERIALS

2.1.1 General

The embankment shall be constructed of earth obtained from required excavation. The embankment shall be constructed of earth that is free from unsuitable and frozen materials as defined in paragraphs UNSUITABLE MATERIALS and FROZEN MATERIAL. Unless otherwise specified in embankment construction, material classified by the Unified Soil Classification System (as shown on the Soil Boring Legend) as gravels (GW, GP, GM) shall not be used unless suitable blended with less pervious material, to the extent that it no longer classifies as these materials.

Semi-compacted fill material placed behind the gabion baskets shall be obtained from material excavated during the course of this contract. The fill material shall be as pervious or more pervious than the existing material it is placed against. Suitable fill material shall be free of masses of organic matter, sticks, branches, roots and other debris. Isolated pieces of wood will not be considered objectionable in the fill as long as their length does not exceed 1 foot, their cross-sectional area is less than 4 square inches, and they are distributed throughout the fill. Not more than 1 percent (by volume) of objectionable material shall be contained in the earth material placed in each cubic yard of fill. If enough suitable material is not obtained for the required excavation, the contractor will be required to provide the necessary material from an off site source.

2.1.2 Unsuitable Materials

Materials which are classified as unsuitable for the embankment or fill material are defined as masses of organic matter, sticks, branches, roots, and other debris. As earth from the designated excavation areas may contain excessive amounts of wood, isolated pieces of wood will not be considered objectionable in the embankment provided their length does not exceed 1 foot, their cross sectional area is less than 4 square inches and they are distributed throughout the fill. Not more than 1 percent by volume of objectionable material shall be contained in the earth material placed in each cubic yard of the embankment section. Pockets and/or zones of wood shall not be placed in the embankment.

2.1.3 Frozen Material

Under no circumstances shall frozen earth, snow, or ice be placed in the embankment. The Contracting Officer may require the wasting of frozen material in order that construction may proceed, and such material wasted by written order of the Contracting Officer will be paid for as specified in paragraph MEASUREMENT AND PAYMENT.

2.2 EQUIPMENT

2.2.1 Tamping Rollers.

2.2.1.1 Tractor-Drawn

Tractor-drawn tamping rollers shall consist of one or more units. Each unit shall consist of a cylindrical drum not less than 48 inches in length and not less than 40 inches in diameter. Each drum shall have staggered feet uniformly spaced over the cylindrical surfaces so as to provide approximately 3 tamping feet for each 2 square feet of drum surface. The tamping feet shall be 7 to 11 inches in clear projection from the cylindrical surface of the roller and shall have a face area of not less than 5 nor more than 10 square inches. The drums shall be water- or sand-and-water ballasted. The weight of the roller when fully loaded shall not be less than 1,150 pounds per linear foot of drum length and when empty shall be not more than 850 pounds per foot of drum length. The Contractor will be required to vary the amount of ballast in the drums to obtain optimum compactive effort for the material being compacted. The roller shall be equipped with cleaning devices so designed and attached to prevent the accumulation of material between the tamping feet. These cleaning devices shall be maintained at their full length and correct alignment throughout the periods of use of the roller. The rolling units of multiple-type tamping rollers shall be pivoted on the main frame in a manner which will permit the units to adapt themselves to uneven ground surfaces and to rotate independently. The roller shall be pulled by a tractor at a speed not to exceed 3.5 miles per hour.

2.2.1.2 Self-Propelled

At the option of the Contractor, self-propelled tamping rollers may be used in lieu of tractor-drawn tamping rollers provided these rollers conform to the towed roller requirements for the length and spacing of tamping feet, the empty weight per foot of drum, and cleaning devices. However, self-propelled rollers exceeding the empty weight requirements may be used provided that, by the substitution of tamping feet having a face area not exceeding 14 square inches, the nominal foot pressure on the tamping feet of the self-propelled roller can be adjusted to approximate the foot pressure of the towed roller for the particular working condition. Self-propelled rollers conforming to the above requirements but with tamping feet exceeding the 14 square inch maximum face area may be approved for use provided the Contractor demonstrates to the satisfaction of the Contracting Officer, by field tests performed in accordance with the provisions of paragraph ALTERNATIVE COMPACTION EQUIPMENT, that the roller can properly compact the fill without creating planes of weakness or laminations. For the self-propelled rollers in which steering is accomplished through the use of rubber-tired wheels, the tire pressure shall not exceed 40 pounds per square inch. The roller shall be operated at a speed of not more than 3.5 miles per hour.

2.2.2 Rubber-Tired Rollers

Rubber-tired rollers shall have a minimum of four wheels per axle equipped with pneumatic tires. The tires shall be of such size and ply as to be capable of being operated at tire pressures between 80 and 100 pounds per square inch at a 25,000-pound wheel load. The roller wheels shall be located abreast and so designed that each wheel will carry approximately equal load in traversing uneven ground. The spacing of the wheels shall be such that the distance between the nearest edges of adjacent tires is not greater than 50 percent of the rated tire width of a single tire. The

roller shall have a rigid steel frame provided with a body suitable for ballast loading so that the load per wheel may be varied, as directed by the Contracting Officer, from 18,000 to 25,000 pounds. The roller shall be towed at speeds not to exceed 5 miles per hour.

2.2.3 Crawler-Type Tractors

Crawler-type tractors used for spreading or compaction shall weigh not less than 20,000 pounds, shall exert a unit tread pressure of not less than 6 pounds per square inch, and shall be operated at speeds not to exceed 3.5 miles per hour.

2.2.4 Alternative Compaction Equipment

The Contractor may propose for use alternative types of compaction equipment not included in these specifications. The suitability of the alternative equipment must be demonstrated to the Contracting Officer by a field test conducted by and at the expense of the Contractor. The alternative compaction equipment must be capable of properly compacting the soil so that no planes of weakness or laminations are formed in the fill. The field test shall consist of compacting a minimum of three layers of an area of embankment with the alternative-type equipment. Testing and inspection of the area shall then be performed by the Contractor at no additional cost to the Government. Procedures for constructing and testing the area will be provided by the Contracting Officer. Each proposed alternative type of equipment must be capable of compacting a layer of soil not less than 12 inches thick. A minimum of four complete passes over each layer of the test fill will be required for each type of alternative equipment that is allowed for use, unless in the course of constructing the test fill the Contractor is able to demonstrate that proper compaction can be obtained with fewer passes. Alternative-type equipment shall be operated at speeds not to exceed 3.5 miles per hour. If sufficient previous testing has been performed on the alternative compaction equipment proposed by the Contractor to verify the suitability of the equipment to the Contracting Officer's satisfaction, the Contracting Officer may determine that the above specified field test is not required.

2.2.5 Miscellaneous Equipment

Scarifiers, disks, spring-tooth or spike-tooth harrows, spreaders, power tampers, and other equipment shall be types suitable for construction of embankment.

PART 3 EXECUTION

3.1 QUALITY CONTROL

3.1.1 General

The Contractor shall establish and maintain quality control for excavation and grading operations to assure compliance with contract specifications and maintain records of his quality control for all construction operations including, but not limited to, the following:

- a. Excavation and Grading. Check grade and slope for compliance with design sections, and disposition of excavated material.

3.1.2 Reporting

Three copies of these records, as well as the records of corrective action taken, shall be furnished the Government daily. The report shall be as prescribed in Section 01451 entitled CONTRACTOR QUALITY CONTROL.

3.2 STRUCTURAL EXCAVATION AND GRADING

3.2.1 General

Where indicated on the drawing, the natural ground at the construction site shall be excavated and graded to provide for complete placement of gabions and stone. Channel side slopes excavated for gabion construction are temporary and shall not be any flatter than a 1V on 1H slope. In the area of gabions, the Contractor may elect to excavate the channel side slopes to a grade steeper than a 1V on 1H.

During excavation and grading, logs, stumps, snags, and other debris are to be expected and, if encountered, shall not be considered as being materially different within the purview of Contract Clause entitled, DIFFERING SITE CONDITIONS, of the contract. Finished slopes and grades on which gabions and stone are to be placed shall have a tolerance of not more than plus or minus 6 inches from the grade indicated on the drawing and shall present a neat, smooth surface free from all obstructions. Placement of protection work shall follow the excavation and grading operations as soon as practicable.

Partial excavation will not be permitted. During this contract, the Contractor will be required to excavate around existing structures and utilities. During and after his excavation operations, some of these structures and utilities may have to be temporarily supported. The Contractor shall be required to construct and maintain these supports if they are necessary. Supports shall be approved by the Contractor Officer.

If any existing utilities and/or structures are damaged due to the Contractor's operation, it will be the Contractor's responsibility to repair the damage at no additional cost to the Government. Temporary supports are to be removed once adequate bank stabilization measures are in place.

Surfaces on which protection measures are to be placed that are excavated below the tolerance specified above shall be backfilled with material to the required elevations and compacted to the density of surrounding undisturbed soil at no additional cost to the Government.

3.2.2 Areas Where Existing Ground Surface is Below Grade Plane and Areas Where Fill is Required to Bring Upper Bank to Elevation Required

Areas where the foundation is below required grade shall be filled with suitable material to obtain the final grade. The material shall be placed and compacted according to Paragraph 3.3 SEMI-COMPACTED FILL MATERIAL. All swales, pockets, or other depressions within the limits of the cleared area shall be filled to the level of the adjacent ground surface with material removed in the excavation and grading operation.

3.2.3 Maintaining Flow

The Contractor shall be required to maintain flow through the work area in the creek at all times. Any damage occurring from flow blockage due to the Contractor's operation shall be the Contractor's responsibility to repair at no additional cost to the Government.

3.3 SEMI-COMPACTED FILL MATERIAL

3.3.1 Placement

The location and extent of the semi-compacted fill is shown on the drawings. Semi-compacted fill shall not be placed in water. The materials for semicompacted fill shall be placed or spread in layers, the first layer not more than 6 inches in thickness and the succeeding layers not more than 12 inches in thickness prior to compaction. Layers shall be started full out to the slope stakes and shall be carried substantially horizontal with sufficient crown or slope to provide satisfactory drainage during construction. When the surface of any compacted layer is too smooth to bond properly with the succeeding layer, it shall be adequately scarified before the next layer is placed.

Layers shall be placed substantially in a horizontal plane except that sufficient slope will be maintained to provide satisfactory drainage during construction.

In construction, the Contractor may be required to obtain fill material in excess of material obtained from required minimum excavation. The source for this material shall not be Government furnished but shall be approved by the Contracting Officer prior to placement.

When the surface of any compacted layer is too smooth to permit proper bond with the succeeding layer, it shall be scarified with a disk, harrow, or other approved equipment before the next layer is placed.

3.3.2 Moisture Control

It is intended that fill material will be placed at its natural moisture content. No moisture control will be required by the Contractor unless, in the opinion of the Contracting Officer, the desired compaction is not being obtained with the prescribed compactive effort due to the material being too wet or too dry. In such cases, the Contractor will be directed to perform moisture control as prescribed below. If the material is too wet, it shall either be stockpiled and allowed to drain before it is placed and/or the wet material shall be processed by disking and harrowing, if necessary, until the moisture content is reduced sufficiently. If the material is too dry, it shall either be prewet in the excavation area, or sufficient moisture shall be uniformly distributed in each layer before compaction. If the Contractor is directed to perform any moisture control as outlined in the paragraph, an equitable adjustment in the contract price and time will be made.

3.3.3 Slides

In case sliding occurs in any part of the prescribed excavation during construction or after completion but prior to acceptance, the Contractor shall remove and repair such portions of slides as the Contracting Officer may direct. If the slide is caused through fault or negligence of the Contractor, the slide shall be removed and repaired without cost to the Government. If the slide is not caused through fault or negligence of the Contractor, an equitable adjustment pursuant to the Contract Clause, CHANGES, will be made for removing and repairing the slide.

3.3.4 Compaction

When the moisture content and conditions of the spread layers are satisfactory to the Contracting Officer's Representative, each layer shall be compacted by any of the following methods at the option of the Contractor, except when the material is sand or silty sand. Then the compacting equipment shall be a crawler-type tractor or alternate equipment that meets the requirements as specified in paragraph ALTERNATIVE COMPACTION EQUIPMENT. For sand or silty sand materials, the layer thickness shall not exceed 8 inches.

a. Tractor Drawn And Self-Propelled Tamper-Type Roller

Four complete passes over each layer will be required. If tamping rollers are used in tandem, not more than two rows will be permitted; and in such case, one trip of the tandem rollers over any surface will be considered as two passes. When tamping rollers are used in tandem, the tamper foot spacing shall be offset so that the circumferential rows on the rear drums are in line with the midpoint of the circumferential rows of the forward drums. Each pass of the tamping roller shall overlap the preceding or adjacent pass by not less than 1.0 foot.

b. Rubber-Tired Roller

Two complete passes over each layer will be required.

c. Crawler-Type Tractor

Three complete passes over each layer will be required. The tractor will not be considered to be compacting while spreading materials.

3.3.5 Definition of Pass

A pass shall consist of one complete coverage of the surface of a layer by the treads of the roller, tractor, or other compacting equipment. Portions of the embankment which the compacting equipment cannot reach for any reason shall be compacted by an approved method to the density at least equal to that of the surrounding embankment.

3.3.6 Additional Compaction

If, in the opinion of the Contracting Officer, the desired compaction of any portion of the embankment cannot be secured by the minimum number of passes specified, additional complete passes shall be made over the surface area of such designated portion until the desired compaction has been obtained; and an equitable adjustment in the contract price and time will be made.

3.4 DITCHING

3.4.1 Outlet Drainage Ditches

Transitions to existing drainage ditches shall be constructed to carry surface water over the bank stabilization measures and shall be constructed as shown on the drawings. The exact locations shall be determined by the Contracting Officer at the time of construction.

3.5 DISPOSAL OF EXCAVATED MATERIAL

Excess excavated material, not used in the work, shall be disposed of

outside the right-of-way at the disposal area provided by the Contractor and as approved by the Contracting Officer. The disposal area must be an upland disposal area and shall not be located in any river, stream, lake or wetland area.

-- End of Section --