

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE J	PAGE OF PAGES 1 2
2. AMENDMENT/MODIFICATION NO. 0002	3. EFFECTIVE DATE 11-Dec-2002	4. REQUISITION/PURCHASE REQ. NO. W807PM-2231-7470		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		
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		<input checked="" type="checkbox"/>	9A. AMENDMENT OF SOLICITATION NO. DACW38-02-B-0046	
		<input checked="" type="checkbox"/>	9B. DATED (SEE ITEM 11) 11-Oct-2002	
			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 Bids (IFB) No. DACW38-02-B-0046, Flood Control, Mississippi River and Tributaries, Yazoo Basin, Desoto County, MS, Demonstration Erosion Control, Bank Stabilization, Coldwater River Watershed, Camp Creek (BS-02-07). Subject IFB is amended as follows: <p style="text-align: center;">BID OPENING DATE</p> A new bid opening date and time of 7 January 2003, 1400 Hours, is hereby established. See Page 2.				
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)		09-Dec-2002

SECTION SF 30 - BLOCK 14 CONTINUATION PAGE

TECHNICAL SPECIFICATIONS

Section 02110, GENERAL SITEWORK, is reissued in its entirety.

Section 02111, CLEARING, GRUBBING, DEBRIS REMOVAL, BRIDGE REMOVAL, AND EARTHWORK, is reissued in its entirety.

Section 03308, CONCRETE, is reissued in its entirety.

PLANS

(PEN AND INK CHANGES)

Drawing No. 3, Note 3, delete “and disposed of by others” and insert “intact” before “by Contractor.”

Drawing No. 3, Note 4, delete “be removed by Contractor and extended by others” and insert “remain in place during construction.”

Drawing No 3, Note 5, first sentence, delete “as directed.”

Encls

Section 02110, Pages 1-4

Section 02111, Pages 1-4

Section 03308, Pages 1-14

Pages revised by this amendment have the notation “Revised by Amendment 0002” at the bottom of the page. An asterisk appears before and after changed text. Enclosures as noted.

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SECTION 02110

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SECTION 02110

GENERAL SITEWORK

PART 1 GENERAL

1.1 SCOPE

These specifications provide for furnishing all equipment, labor, and materials and performing all work in strict accordance with the specifications, drawings, and schedules for all clearing, grubbing, debris removal, excavation and grading, erosion control and all other incidental work in connection with bridge removal, concrete golf cart path removal and replacement, and construction of stone paving at the location on the banks of Camp Creek in the vicinity of Olive Branch, DeSoto County, Mississippi, within a relatively short construction period. The work covered by these specifications requires steady and uninterrupted progress during construction. The Contractor shall diligently prosecute the work and provide the necessary equipment, skilled and experienced crew, and a regular and well-balanced supply of materials to insure uniform and continuous progress once construction has been started.

1.1.1 Suspension of Work

Except as provided in paragraph STAGE LIMITATIONS and Section 00800 SPECIAL CONTRACT REQUIREMENTS, paragraph COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK, the Contractor will not be permitted to suspend work without a request to suspend work or remove equipment from the location of work after the work has been started under this contract without prior approval of the Contracting Officer.

1.1.2 Excavation of Ramps

Excavating ramps through top bank will not be permitted within 25 feet of the limits of any stabilization work or existing bridges, roads, or houses. Unless otherwise directed, upon completion of construction, all ramps shall be restored to the original bank condition and provided with necessary treatment for erosion control.

1.1.3 Start and Completion of Work

The Contractor shall start and complete the work as specified in paragraph CONSTRUCTION SEQUENCE unless a request to change the construction sequence has been approved by the Contracting Officer.

1.1.4 Work to be Performed

The work to be performed is indicated on the drawings and includes the following types of work:

- a. Clearing, grubbing, clearing and snagging, debris removal, excavation, and grading.
- b. Bridge removal.
- *c. Concrete golf cart path within R/W limits removal and replacement.*

- c. Constructing stone paving.
- d. Erosion control and tree planting.
- e. Restoration of worksite and haul roads.

1.2 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

Request to suspend work or remove equipment from the location of work; GA.

Request to change the construction sequence; GA.

1.3 STAGE LIMITATIONS

1.3.1 High Water Stages

Because of the "flashy" nature of Camp Creek, high water stages can be expected to occur intermittently depending on basin rainfall. Interruptions and/or delays to construction may occur when high water stages and/or velocities make construction operations impracticable. The Contracting Officer reserves the right to delay operations whenever, in his opinion, high water stages and/or velocities make construction operations impracticable.

1.3.2 Extension of Contract Period Time

As provided in Contract Clause entitled, DEFAULT, the time stated for completion of the work will be extended to such extent that the work is delayed due to high water stages and/or velocities. If part of the work is delayed or interrupted by high water stages and/or velocities, the time stated for completion will be extended to such extent as final completion of all work is delayed as a result of the partial delay or interruption. The Contractor is responsible for any additional costs which may occur during or as a result of excusable delays due to those extensions or interruptions.

1.4 CONSTRUCTION SEQUENCE

Unless otherwise authorized, the sequence of operations listed below shall be followed for the bank stabilization work:

- a. All construction shall begin at the upstream end of the job and proceed to the downstream end of the job as directed by the Contracting Officer.
- *b. Concrete golf cart path removal within R/W limits and disposal.*
- c. Debris removal, clearing, clearing and snagging and grubbing.
- d. Perform the excavation and grading for the stone paving and other incidental excavation.

e. Construction of the stone paving shall follow the excavation and grading as closely as practicable.

f. DELETED

g. DELETED

h. Old wooden bridge shall then be removed intact.

i. New bridge on downstream end shall remain in place during construction.

j. Excavation , grading, and stone placement shall then be placed through bridge reach.

k. Concrete golf cart within R/W limits path replacement construction.

l. Erosion control and tree planting shall follow, as closely as practicable, completion of all other work in the area to receive erosion control and tree planting.

m. The contractor must request in writing and receive approval to deviate from the required construction sequence.

1.5 EXISTING STRUCTURES

No structures, power poles, telephone poles, overhead telephone and power lines that are within the limits of the work will be relocated and the Contractor will be required to work around those items except the items, if any, that are specified in Section 01000 GENERAL CONTRACT REQUIREMENTS paragraph, PUBLIC UTILITIES. (See Contract Clause entitled, ACCIDENT PREVENTION.)

PART 2 PRODUCTS (Not Applicable)

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SECTION 02111

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SECTION 02111

CLEARING, GRUBBING, DEBRIS REMOVAL, BRIDGE REMOVAL, AND EARTHWORK

PART 1 GENERAL

1.1 MEASUREMENT AND PAYMENT

1.1.1 Clearing

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

1.1.2 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 price for "Clearing and Grubbing" and payment thereof shall constitute full compensation for furnishing all plant, labor, materials, and performing all work as required.

1.1.3 Excavation

No measurement will be made for excavation and grading. Payment for excavation and grading will be made at the contract job price for "Excavation" which price and payment shall constitute full compensation for furnishing all plant, labor, inspection, materials, and equipment required to perform the excavation and grading for the stone paving and all operations incidental thereto.

1.1.3 Bridge Removal

No measurement will be made for bridge removal. Payment for bridge removal will be made at the contract job price for "Bridge Removal" which price and payment shall constitute full compensation for furnishing all plant, labor, and inspection, materials, and equipment for the bridge removal and all operations incidental thereto.

1.2 QUALITY CONTROL

The Contractor shall establish and maintain quality control for clearing, grubbing, clearing and snagging, debris removal, bridge 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 and grading performed to limits and tolerances indicated on the drawings and disposal of excess material.

e. Bridge removal.

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

Request to clear right-of-way or storage areas; GA.

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

PART 2 PRODUCTS

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 disposed of 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. Request to clear right-of-way or storage areas shall be submitted for approval and will 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 and removed from the site with the location of the disposal area outside of the right-of-way and 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 Federal, State and 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 material shall be removed from the site of the work before the date of completion of the work under these specifications.

3.4 EXCAVATION FOR STONE

Where indicated on the drawings, the natural ground shall be excavated and graded to provide for placement of the stone. The finished grade shall conform to the prescribed grade within the limits of plus or minus 6 inches, and shall present a neat, smooth surface, free from all obstructions.

3.5 NOT USED

3.6 NOT USED

3.7 DISPOSAL OF EXCAVATED MATERIAL

Excess excavated material, not used in the work, shall be disposed of outside the rights-of-way at a disposal area provided by the Contractor and as approved by the Contracting Officer and in accordance with Section 01000 RIGHTS-OF-WAY. The disposal area must be an upland disposal area and shall not be located in any river, stream, lake or wetland area.

3.8 BRIDGE REMOVAL

The old wooden bridge on the downstream end of work shall be removed intact. The new bridge on the downstream end shall remain in place during construction.

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SECTION 03308

CONCRETE

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.

ACI INTERNATIONAL (ACI)

ACI 308	(1992; R 1997) Standard Practice for Curing Concrete
ACI 318/318R	(1999) Building Code Requirements for Structural Concrete and Commentary
ACI 318M	(1995) Metric Building Code Requirements for Structural Concrete and Commentary
ACI 347R	(1994) Guide to Formwork for Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 185	(1997) Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
ASTM A 615/A 615M	(2000) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C 31/C 31M	(2000) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(2001) Concrete Aggregates
ASTM C 39/C 39M	(1999) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 94/C 94M	(2000e1) Ready-Mixed Concrete
ASTM C 143/C 143M	(2000) Slump of Hydraulic Cement Concrete
ASTM C 150	(1999a) Portland Cement
ASTM C 171	(1997a) Sheet Materials for Curing Concrete
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 231	(1997e1) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(2000) Air-Entraining Admixtures for Concrete

ASTM C 309	(1998a) Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 494/C 494M	(1999a) Chemical Admixtures for Concrete
ASTM C 618	(2000) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 685/C 685M	(2000a) Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C 920	(1998e1) Elastomeric Joint Sealants
ASTM D 75	(1997) Sampling Aggregates
ASTM D 98	(1998) Calcium Chloride
ASTM D 1752	(1984; R 1996e1) Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM E 96	(2000) Water Vapor Transmission of Materials

CORPS OF ENGINEERS (COE)

COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete
COE CRD-C 572	(1974) Corps of Engineers Specification for Polyvinylchloride Waterstop

1.2 UNIT PRICES

1.2.1 Concrete

1.2.1.1 Payment

Payment will be made at the lump sum price for "Concrete Golf Cart Path Removal and Replacement" for costs associated with concrete golf cart construction and removal and disposal of existing concrete golf cart path. Payment shall constitute full compensation for furnishing all plant, labor, materials, and equipment and constructing the concrete golf cart path and removal and disposal of the existing golf cart path.

1.2.1.2 Unit of Measure

Unit of measure: lump sum.

1.3 SYSTEM DESCRIPTION

1.3.1 Design Requirements

1.3.1.1 Concrete Mixture Proportions

Specified compressive strength f'c shall be 3,000 lb/sq in. at 28 days (90 days if pozzolan is used). The maximum nominal size coarse aggregate shall

be 1-in.. The air content shall be between 4.5 and 7.5 percent. The slump shall be between 2 and 5 inches. The maximum water cement ratio shall be 0.60.

1.3.2 Performance Requirements

1.3.2.1 Strength

Acceptance test results will be the average strengths of two specimens tested at 28 days (90 days if pozzolan is used). The strength of the concrete will be considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength, f'c, and no individual acceptance test result falls below f'c by more than 500 lb/sq in.

1.3.2.2 Construction Tolerances

A Class "C" finish shall apply to all surfaces except those specified to receive a Class "D" finish. A Class "D" finish shall apply to all surfaces which will be permanently concealed after construction. The surface requirements for the classes of finish required shall be as specified in ACI 347R.

1.3.3 Construction Testing by Government

The Government will maintain the option to sample and test joint sealer, joint filler material, aggregates and concrete to determine compliance with the specifications. The Contractor shall provide facilities and labor as may be necessary for procurement of representative test samples. Samples of aggregates will be obtained at the point of batching in accordance with ASTM D 75. Concrete will be sampled in accordance with ASTM C 172. Slump and air content will be determined in accordance with ASTM C 143/C 143M and ASTM C 231, respectively, when cylinders are molded. Compression test specimens will be made, cured, and transported in accordance with ASTM C 31/C 31M. Compression test specimens will be tested in accordance with ASTM C 39/C 39M. Samples for strength tests will be taken not less than once each shift in which concrete is produced from each class of concrete required. A minimum of three specimens will be made from each sample, two will be tested at 28 days (90 days if pozzolan is used) for acceptance, and one will be tested at 7 days for information.

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-01 Data

On-Site Batching and Mixing; FIO.; FIO.; Air-Entraining Admixtures; FIO. Water-Reducing or Retarding Admixtures; ; Reinforcement Steel FIO.; FIO.; FIO. Curing Materials; FIO. Expansion Joint Filler Strips; FIO. Joint Sealants; FIO. .

The Contractor shall submit Manufacturer's Literature from suppliers which demonstrates compliance with applicable specifications for all equipment and materials.

SD-07 Schedules

Concrete Placement; FIO.

The methods and equipment for transporting, handling, depositing, and consolidating the concrete shall be submitted prior to the first concrete placement.

SD-08 Statements

Concrete Mixture Proportions; FIO.

Concrete mixture proportions shall be the responsibility of the contractor and shall be designed in accordance with the criteria in paragraph CONCRETE MIXTURE PROPORTIONS. Ten days prior to placement of concrete, the contractor shall submit the mixture proportions that will produce concrete of the qualities required. Mixture proportions shall include the dry weights of cementitious material(s); the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic yard of concrete. All materials included in the mixture proportions shall be of the same type and from the same source as will be used on the project.

SD-09 Reports

Aggregates; FIO. Mixture Proportions Tests; FIO.

Aggregates will be accepted on the basis of test reports that show the material meeting the requirements of the specifications under which it is furnished.

Applicable test reports shall be submitted to verify that the concrete mixture proportions selected will produce concrete of the quality specified.

SD-13 Certificates

Cement; FIO.

Cementitious Material will be accepted on the basis of a manufacturer's certificate of compliance.

1.5 REGULATORY REQUIREMENTS

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

MISSISSIPPI STATE HIGHWAY DEPARTMENT (MS SHD)

MS SHD-01 (1990; Suppl 1991) Standard Specifications
for Road and Bridge Construction

1.6 NOT USED

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Cement

Cement shall be Portland cement or portland cement in combination with pozzolan and shall conform to appropriate specifications listed below:

2.1.1.1 Portland Cement

ASTM C 150, Type I, II, low alkali.

2.1.2 Pozzolan

Pozzolan shall conform to ASTM C 618, Class C or F, including requirements of Tables 1A and 2A.

2.1.3 Aggregates

Aggregates shall meet the quality and grading requirements of ASTM C 33, Class Designations 4M or better, or the requirements specified in MS SHD-01, see paragraph REGULATORY REQUIREMENTS, except for the coarse aggregate used for exposed aggregate concrete.

2.1.4 Admixtures

Admixtures to be used, when required or approved, shall comply with the appropriate specification listed below. Chemical admixtures that have been in storage at the project site for longer than 6 months or that have been subjected to freezing shall be retested at the expense of the contractor at the request of the Contracting Officer and shall be rejected if test results are not satisfactory.

2.1.4.1 Air-Entraining Admixture

Air-entraining admixtures shall meet the requirements of ASTM C 260.

2.1.4.2 NOT USED

2.1.4.3 Water-Reducing or Retarding Admixture

Water-reducing or retarding admixtures shall meet the requirements of ASTM C 494/C 494M, Type A, B, or D.

2.1.4.4 NOT USED

2.1.5 Curing Materials

Curing materials shall comply with the following:

2.1.5.1 Impervious Sheet Materials

ASTM C 171, type optional, except polyethylene film, if used, shall be white opaque.

2.1.5.2 Membrane - Forming Curing Compound

ASTM C 309, Type 1-D or 2, Class A.

2.1.6 Water

Water for mixing and curing shall be fresh, clean, potable, and free from injurious amounts of oil, acid, salt, or alkali, except that unpotable water may be used if it meets the requirements of COE CRD-C 400.

2.1.7 Reinforcement Steel

Welded steel wire fabric shall conform to the requirements of ASTM A 185. Details of reinforcement not shown shall be in accordance with ACI 318/318R, Chapters 7 and 12.

2.1.8 Formwork

Forms shall be of wood, steel, or other approved material. The type, size, shape, quality, and strength of all materials of which the forms are made shall be subject to approval. The design and engineering of the formwork, as well as its construction, shall be the responsibility of the Contractor.

2.1.9 Form Coatings

Forms for exposed surfaces shall be coated with a nonstaining form oil, which shall be applied shortly before concrete is placed.

2.1.10 Expansion Joint Filler Strips, Premolded

Premolded expansion joint filler strips shall be sponge rubber conforming to ASTM D 1752, Type I.

2.1.11 Joint Sealants - Field Molded Sealants

Field molded joint sealants shall conform to ASTM C 920, Type M, Grade P, Class 25, Use T for horizontal joints. Bond-breaker material shall be polyethylene tape, coated paper, metal foil or similar type materials. The backup material shall be compressible, nonshrink, nonreactive with the sealant, and a nonabsorptive material type such as extruded butyl or polychloroprene foam rubber. Immediately prior to installation of field molded sealants, the joint shall be cleaned of all debris and further cleaned using water, chemical solvents or other means as recommended by the sealant manufacturer or directed.

2.1.12 NOT USED

2.1.13 NOT USED

PART 3 EXECUTION

3.1 EXISTING CONCRETE GOLF CART PATH REMOVAL AND DISPOSAL

The existing concrete golf cart path within R/W limits shall be removed and disposed of from the site with the location of the disposal area outside of the right-of-way and as specified in Section 02111 CLEARING GRUBBING, DEBRIS REMOVAL, AND EARTHWORK.

3.2 PREPARATION

3.2.1 General

Construction joints shall be prepared to expose coarse aggregate and the surface shall be clean, damp, and free of laitance. Ramps and walkways, as necessary, shall be constructed to allow safe and expeditious access for concrete and workmen. Snow, ice, standing or flowing water, loose particles, debris, and foreign matter shall have been removed. Earth foundations shall be satisfactorily compacted. Spare vibrators shall be available. The entire preparation shall be accepted by the government prior to placing.

3.2.2 Embedded Items

Reinforcement shall be secured in place; joints, anchors, and other embedded items shall have been positioned. Internal ties shall be arranged so that when the forms are removed all metal will be not less than 2 inches from concrete surfaces permanently exposed to view or exposed to water on the finished structures. Embedded items shall be free of oil and other foreign matter such as loose coating or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. All equipment needed to place, consolidate, protect, and cure the concrete shall be at the placement site and in good operating condition.

3.2.3 Formwork Installation

3.2.3.1 General

Forms shall be properly aligned, adequately supported, and mortar-tight. The form surfaces shall be smooth, free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints and edges shall be chamfered, unless otherwise indicated.

3.2.3.2 NOT USED

3.2.4 Production of Concrete

3.2.4.1 Ready-Mixed Concrete

Ready-mixed concrete shall conform to ASTM C 94/C 94M, except as otherwise specified.

3.2.4.2 Volumetric Batching and Continuous Mixing

Volumetric batching and continuous mixing shall conform to ASTM C 685/C 685M.

3.2.4.3 On-Site Batching and Mixing

The Contractor shall have the option of using an on-site batching and mixing facility. The facility shall provide sufficient capacity to prevent cold joints. The method of measuring materials, batching operation, and mixer shall be submitted for review. On-site plant shall conform to the requirements of either ASTM C 94/C 94M or ASTM C 685/C 685M.

3.2.4.4 NOT USED

3.2.5 NOT USED

3.3 CONCRETE PLACEMENT

3.3.1 General

Concrete placement shall not be permitted when, in the opinion of the Contracting Officer, weather conditions prevent proper placement and consolidation. When concrete is mixed or transported by a truck mixer, the concrete shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours after introduction of the cement to the aggregate and water, or within 45 minutes when the placing temperature is 85 degrees F or greater, unless a retarding admixture is used. Concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods which prevent segregation or loss of ingredients. Concrete shall be in place and consolidated within 15 minutes after discharge from the mixer. Concrete shall be deposited as close as possible to its final position in the form and be so regulated that it may be effectively consolidated in horizontal layers 18 inches or less in thickness with a minimum of lateral movement. The placement shall be carried on at such a rate the formation of cold joints will be prevented.

3.3.2 Consolidation

Each layer of concrete shall be consolidated by rodding, or internal vibratory equipment. External vibratory equipment may be used when authorized. Internal vibration shall be systematically accomplished by inserting the vibrator through the fresh concrete into the layer below at a uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator and overlay the adjacent, just vibrated area by a few inches. It shall be held stationary until the concrete is consolidated and then withdrawn slowly at the rate of 3 inches per second.

3.3.2.1 NOT USED

3.3.3 Cold-Weather Requirements

No concrete placement shall be made when the ambient temperature is below 35 degrees F, nor if the ambient temperature is below 40 degrees F and falling. Suitable covering and other means, as approved, shall be provided for maintaining the concrete at a temperature of at least 50 degrees F for not less than 72 hours after placing and at a temperature above freezing for the remainder of the curing period. Salt, chemicals, or other foreign materials shall not be mixed with the concrete to prevent freezing. Concrete damaged by freezing shall be removed and replaced at the expense of the Contractor.

3.3.4 Hot Weather Requirements

When the rate of evaporation of surface moisture, as determined by use of Figure 1 of ACI 308, is expected to exceed 0.2 lb per square foot per hour, provisions for windbreaks, shading, fog spraying, or covering with a light-colored material, shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will

allow.

3.4 FORM REMOVAL

Forms shall not be removed before the expiration of 24 hours after concrete placement, except where otherwise specifically authorized. Supporting forms and shoring shall not be removed until the concrete has cured for at least 5 days. When conditions on the work are such as to justify the requirement, forms will be required to remain in place for longer periods.

3.5 FINISHING

3.5.1 General

No finishing or repair will be done when either the concrete or the ambient temperature is below 50 degrees F.

3.5.2 Finishing Formed Surfaces

3.5.2.1 General

Within 72 hours after removal of forms, all fines and loose materials shall be removed, and surface defects shall be filled. All honeycomb areas and other defects shall be repaired. Forms shall only be removed at a rate at which all surface defects can be repaired within the allotted 72 hours. All unsound concrete shall be removed from areas to be repaired. Surface defects greater than 1/2 inch in diameter in all surfaces not to receive additional concrete shall be reamed or chipped and filled with dry-pack mortar. The prepared area shall be brush-coated with an approved epoxy resin or latex bonding compound or with a neat cement grout after dampening and filled with mortar or concrete. The cement used in mortar or concrete for repairs to all surfaces permanently exposed to view shall be a blend of Portland cement and white cement so that the final color when cured will be the same as adjacent concrete.

3.5.2.2 NOT USED

3.5.3 Finishing Unformed Surfaces

All unformed surfaces that are not to be covered by additional concrete or backfill shall be float finished to elevations shown on the drawings, unless otherwise specified. Surfaces to receive additional concrete or backfill shall be brought to the elevations shown on the drawings and left as a true and regular surface. Exterior surfaces shall be sloped for drainage unless otherwise shown on the drawings. Joints shall be carefully made with a jointing tool. Unformed surfaces shall be finished to a tolerance of 3/8 inch for a float finish and a 5/16 inch for a trowel finish as determined by a 10 foot straightedge placed on surfaces shown on the plans to be level or having a constant slope. No water or cement shall be added to the surface during finishing.

3.5.3.1 Float Finish

Surfaces to be float finished shall be screed and darried or bullfloated to eliminate the ridges and to fill in the voids left by the screed. In addition, the darby or bullfloat shall fill all surface voids and only slightly embed the coarse aggregate below the surface of the fresh concrete. When the water sheen disappears and the concrete will support a

person's weight without deep imprint, floating should be completed. Floating should embed large aggregates just beneath the surface, remove slight imperfections, humps, and voids to produce a plane surface, compact the concrete, and consolidate mortar at the surface.

3.5.3.2 NOT USED

3.5.3.3 Broom Finish

A broom finish shall be applied to the concrete golf cart path. The concrete shall be screeded and floated to required plane with no coarse aggregate visible. After surface moisture disappears, the surface shall be broomed or brushed with a broom or fiber bristle brush in a direction transverse to that of the main traffic or as directed.

3.5.3.4 NOT USED

3.5.3.5 NOT USED

3.6 EXPANSION AND CONTRACTION JOINTS

Expansion and contraction joints shall be made in accordance with the details shown or as otherwise specified. Provide 1/2 inch thick transverse expansion joints where the new work abuts existing concrete. Expansion joints shall be provided at a maximum spacing of 28 feet on center, unless otherwise indicated. Contraction joints shall be provided at a spacing of between 4.5 and 7 linear feet, unless otherwise indicated. Cut contraction joints 0.25 the thickness with a jointing tool or concrete saw after the surface has been finished.

3.6.1 NOT USED

3.6.2 NOT USED

3.6.2.1 NOT USED

3.6.2.2 NOT USED

3.7 CURING AND PROTECTION

Beginning immediately after placement and continuing for at least 7 days, all concrete shall be cured and protected from premature drying, extremes in temperature, rapid temperature change, freezing, mechanical damage, and exposure to the rain or flowing water. All materials and equipment needed for adequate curing and protection shall be available and at the site of placement prior to the start of concrete placement. Preservation of moisture for concrete surfaces not in contact with forms shall be accomplished by one of the following methods:

- a. Continuous sprinkling or ponding.
- b. Application of absorptive mats or fabrics kept continuously wet.

- c. Application of sand kept continuously wet.
- d. Application of impervious sheet material conforming to ASTM C 171.
- e. Application of membrane-forming curing compound conforming to ASTM C 309, Type 1-D, on surfaces permanently exposed to view and Type 2 on other surfaces shall be accomplished in accordance with manufacturer's instruction.

The preservation of moisture for concrete surfaces placed against wooden forms shall be accomplished by keeping the forms continuously wet for 7 days . If forms are removed prior to end of the required curing period, other curing methods shall be used for the balance of the curing period. During the period of protection removal, the temperature of the air in contact with the concrete shall not be allowed to drop more than 25 degrees F within a 24 hour period.

3.8 TESTS AND INSPECTIONS

3.8.1 General

The individuals who sample and tests concrete as required in this specification shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to ACI minimum guidelines for certification of concrete Field Testing Technicians, Grade I.

3.8.2 Inspection Details and Frequency of Testing

3.8.2.1 Preparations for Placing

Foundation or construction joints, forms, and embedded items should be inspected in sufficient time prior to each concrete placement by the Contractor in order to certify to the Contracting Officer that it is ready to receive concrete.

3.8.2.2 Air Content

Air content will be checked at least once during each shift that concrete is placed . Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 231.

3.8.2.3 Slump

Slump shall be checked once during each shift that concrete is produced . Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 143/C 143M.

3.8.2.4 Consolidation and Protection

The Contractor shall ensure that the concrete is properly consolidated, finished, protected, and cured.

3.8.3 Action Required

3.8.3.1 Placing

The placing foreman shall not permit placing to begin until he has verified that an adequate number of acceptable vibrators, which are in working order and have competent operators, are available. Placing shall not be

continued if any concrete is inadequately consolidated.

3.8.3.2 Air Content

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment shall be made to the dosage of the air-entrainment admixture.

3.8.3.3 Slump

Whenever a test result is outside the specifications limits, the concrete shall not be delivered to the forms and an adjustment should be made in the batch weights of water and fine aggregate. The adjustments are to be made so that the water-cement ratio does not exceed that specified in the submitted concrete mixture proportion.

3.8.3.4 Reports

The Contractor shall prepare reports of all tests and inspections conducted at the project site and provide copies to the Contracting Officer as a part of his daily CQC Report.

-- End of Section --