US Army Corps
of Engineers
NEW YORK DISTRICT

WETLAND MITIGATION FOR THE FINDERNE SITE,
GREEN BROOK FLOOD CONTROL PROJECT

BRIDGEWATER TOWNSHIP,
SOMERSET COUNTY, NEW JERSEY

Specifications

IFB NO. W912DS-05-B-0017

Small Business Restricted

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

Contracts Branch
Contracting Division

SUBJECT: Central Contractor Registration

TO ALL PROSPECTIVE CONTRACTORS:

Please be advised that it is now required to register with the CCR (Central Contractor Registration) in order to perform work for the Federal Government. For additional information, please refer to the instruction sheet on the back of this letter, which includes the appropriate websites and telephone numbers.

Sincerely,

Ella D. Snell
Contracting Officer

CENTRAL CONTRACTOR REGISTRATION

HTTP://WWW.ACQ.OSD.MIL/EC

1(800) 334-3414

The Central Contractor Registry (CCR) is the Government's new national storing house of commercial and financial information on current and would-be contractors.

CCR eliminates the requirement for current and future contractors to submit Standard Form 129 and provides a single location for registering to conduct business with the Federal Government. Access to the register is available via the World Wide Web. A registration workbook is available for downloading from this site. It is highly recommended you review it prior to processing CCR to ensure all required information is available. Contractors are required to have a DUNS (Data Universal Numbering System) assigned by Dunn & Bradstreet at no charge (call 1-800-333-0505).

The initial Web Site application capability is for the initial contractor registration only. The ability to change, update or cancel a registration and query contractor information via the Web is currently in effect. After submitting a registration, contractors may use the Web application to inquire as to the status of their registration. Typically, a registration will be activated within 48 hours after receiving a complete and accurate application via the Internet. To register via the Internet, go to *http://ccr.edi.disa.mil*. Registration of an applicant through fax or mail may take up to 30 days. The mailing addresses are as follows: For firms with Legal business names beginning with the letters A-K or a number use CCR Registration Assistance Center, 2000 South Loop 256, Suite 11, Palestine, Texas 75801, FAX NO: (903) 729-7988. For firms with Legal business names beginning with the letters L-Z or a number use CCR Registration Assistance Center, 1450 Scalp Avenue, Johnstown, PA. 15904 FAX NO: (814) 262-2326. For those Contractor's who chose to register by mail, a paper registration form can be used and sent or faxed to the appropriate above address who will also furnish the form. Once successfully registered in CCR, a notice will be sent via email, fax, or regular post with information that a Trading Partner Identification Number (TPIN) will soon follow. For CCR implementation and contract questions please contact Robert Cooper at (703) 681-7573.

Anyone may access CCR via the Web to inquire whether vendor is registered at the following site: *http://ccr.edi.disa.mil.*

Information or assistance is available from your local Electronic Commerce Resources Center or Electronic Commerce Information Center at 1-800-334-3414 (8am-8pm), Monday-Friday, except Federal Holidays.

Additionally, your local Procurement Technical Assistance Center (PTAC) employs highly skilled professionals to help businesses like ours earn Federal and State Government contracts; assist with your CCR enrollment. The PTAC can provide Government specifications, daily listings of bid opportunities, bid history and contract award results, training and assistance with Electronic Data Exchange (EDI).

To find the office nearest you, the national PTAC directory can be accessed at Website *http://www.fedmarket.com/tecassis.html.*

US ARMY ENGINEER DISTRICT, NEW YORK

INVITATION FOR BID NO. W912DS-05-B-0017

CHECK LIST FOR BIDDERS

ATTACHED IS IFB NO. W912DS-05-B-0017

ALL INFORMATION REQUIRED BY THE TERMS OF THIS SOLICITATION MUST BE FURNISHED. MISTAKES OR OMISSIONS MAY RENDER YOUR BID INELIGIBLE FOR AWARD. IMPORTANT ITEMS FOR YOU TO CHECK ARE INCLUDED IN BUT NOT LIMITED TO THOSE LISTED BELOW. THIS INFORMATION IS FURNISHED ONLY TO ASSIST YOU IN SUBMITTING A PROPER BID.

__HAVE YOU ACKNOWLEDGED ALL AMENDMENTS?

__HAVE YOU COMPLETED THE "REPRESENTATIONS AND CERTIFICATIONS" (SECTION 00600) PORTION OF THE SOLICITATION?

__IS YOUR DUNS NUMBER LISTED ON THE STANDARD FORM 1442?

__IS YOUR BID PROPERLY SIGNED?

__A BID BOND IS REQUIRED. HAS YOUR SURETY PROVIDED YOU WITH A BID BOND ON STANDARD FORM 24 OR A SIMILAR FORM CONTAINING THE SAME LANGUAGE AS A STANDARD FORM 24?

__IS YOUR BID GUARANTEE IN THE PROPER AMOUNT?

__IS YOUR BID GUARANTEE PROPERLY SIGNED BY BOTH THE BIDDER AND SURETY AND ARE ALL REQUIRED SEALS AFFIXED?

__IS THE NAME IN WHICH YOU SUBMITTED THE BID THE SAME ON YOUR BID AS ON THE BID BOND?

__IS YOUR BID BOND INCLUDED WITH YOUR BID? (A LATE BID GUARANTEE IS TREATED THE SAME AS A LATE BID)

__HAVE YOU ENSURED THAT YOU HAVE NOT RESTRICTED YOUR BID BY ALTERING THE PROVISIONS OF THE SOLICITATION?

__WHEN REQUIRED, HAVE YOU ENTERED A UNIT PRICE FOR EACH BID ITEM? (THE SOLICITATION SPECIFICALLY STATES WHEN THIS IS NECESSARY.)

__ARE DECIMALS IN YOUR PRICES IN THE PROPER PLACE? ARE YOUR FIGURES LEGIBLE?

__IF YOU HAVE MADE ERASURES OR CORRECTIONS ON YOUR BID, ARE THEY INITIALED BY THE PERSON SIGNING THE BID?

__DOES THE ENVELOPE CONTAINING YOUR BID PROPERLY IDENTIFY THAT IT ISA SEALED BID AND DOES IT CONTAIN THE CORRECT SOLICITATION NUMBER AND BID OPENING TIME?

__WILL YOUR BID ARRIVE ON TIME? (SEE PARAGRAPH ENTITLED “LATE SUBMISSIONS, MODIFICATIONS, AND WITHDRAWALS OF BIDS” IN THE INSTRUCTIONS, CONDITIONS, AND NOTICES TO BIDDERS, SECTION 00100 OF THE SOLICITATION.)

__ IS YOUR BID GUARANTEE PROPERLY SIGNED BY BOTH THE BIDDER AND SURETY AND ARE ALL REQUIRED SEALS AFFIXED?"

__ DO THE BID BOND AND ACCOMPANYING DOCUMENTS BEAR SIGNATURES AND SEALS AFFIXED **AFTER** THE DOCUMENT WAS GENERATED, AS OPPOSED TO COMPUTER PRINTER-GENERATED SIGNATURES AND/OR SEALS?

NOTE: THERE ARE INCREASED SECURITY MEASURES AT JACOB K. JAVITS FEDERAL BUILDING, 26 FEDERAL PLAZA THAT MAY AFFECT THE TIME IT TAKES TO ENTER THE BUILDING. BIDDERS IS RESPONSIBLE TO ENSURE THAT ITS BID IS SUBMITTED TIMELY.

BIDDER IS RESPOSIBLE TO ENSURE BID IS SUBMITTED ON TIME.

NEW YORK DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK 10278-0090

INVITATION FOR BIDS

2

1. Attached is INVITATION FOR BIDS (IFB) NO. W912DS-05-B-0017

2. BIDS MUST BE SET FORTH full, accurate, and complete information as required by this Invitation for Bids, including attachments. The penalty for making false statements in bids is prescribed under Title 18, United States Code, Section 1001.

3. SUBMISSION OF BIDS: Complete details concerning proper submission of bids are contained in the INSTRUCTIONS, CONDITIONS, AND NOTICES TO BIDDERS (Section 00100).

4. Note the REQUIREMENT FOR AFFIRMATIVE ACTION of the EQUAL OPPORTUNITY clause as it applies to the contract resulting from this solicitation. (See paragraph NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY in Section 00100 of this IFB).

5. REPRESENTATIONS AND CERTIFICATIONS – SECTION 00600
   Bidders and Offerors are required to complete the REPRESENTATIONS AND CERTIFICATIONS and submit them with their bids.

   Within Section 00600, note in particular the CERTIFICATION OF NONSEGREGATED FACILITIES. Failure of a bidder or offeror to agree to the certification will render his bid or offer non-responsive to the terms of solicitations involving awards of contracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause (1984 APR).

6. THIS PROJECT IS RESTRICTED.

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GREEN BROOK FLOOD CONTROL PROJECT
BRIDGEWATER TOWNSHIP, SOMERSET COUNTY, NEW JERSEY

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SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NO. W912DS-05-B-0017	2. TYPE OF SOLICITATION [X] SEALED BID (IFB) [ ] NEGOTIATED *(RFP)*	3. DATE ISSUED 03-Aug-2005	PAGE OF PAGES 1 OF 85

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. W16ROE-5187-5653	6. PROJECT NO.

7. ISSUED BY CODE W912DS	8. ADDRESS OFFER TO *(If Other Than Item 7)* CODE
USA ENGINEER DISTRICT, NEW YORK ATTN:CENAN-CT ROOM 1843 26 FEDERAL PLAZA NEW YORK NY 10278	**See Item 7**
TEL:212-264-0238 FAX: 212-264-3013	TEL: FAX:

9. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. *(Include area code)* *(NO COLLECT CALLS)*
	NORMA J SMITH	917-790-8079

SOLICITATION

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

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

GREEN BROOK FLOOD CONTROL PROJECT FINDERNE FARMS, BRIDGEWATER, NEW JERSEY.

This acquisition is being solicited as a SMALL BUSINESS SET-ASIDE PROCUREMENT. The applicable NAICS Code is 562910 with a small business size standard of 500 Employees. The estimated cost range for this project is $3,000,000.00 to $6,000,000.00.

Note New Requirement: Bonds, Powers of Attorney, statements of authenticity and continuing validity, and all related documents MUST NOT bear computer printer -generated signatures and/or seals. Documents bearing signatures and/or seals generated as part of a document, as opposed to being affixed to the document after its generation, will not be accepted. Submission of such documents may render the bid or offer non-responsive and ineligible for award. Please review all bonds and accompanying documents required to be submitted.

11. The Contractor shall begin performance within 5 calendar days and complete it within 510 calendar days after receiving [ ] award, [X] notice to proceed. This performance period is [X] mandatory, [ ] negotiable. *(See _____ .)*

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? *(If "YES," indicate within how many calendar days after award in Item 12B.)* [X] YES [ ] NO	12B. CALENDAR DAYS 10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 1 copies to perform the work required are due at the place specified in Item 8 by 02:00 PM *(hour)* local time 07 Sep 2005 *(date).* If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee [X] is, [ ] is not required.

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

D. Offers providing less than 90 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

SOLICITATION, OFFER, AND AWARD (Continued)

(Construction, Alteration, or Repair)

OFFER ***(Must be fully completed by offeror)***

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*		15. TELEPHONE NO. *(Include area code)*
		16. REMITTANCE ADDRESS *(Include only if different than Item 14)* **See Item 14**
CODE	FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS	SEE SCHEDULE OF PRICES

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	20B. SIGNATURE	20C. OFFER DATE

AWARD ***(To be completed by Government)***

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)*	**ITEM**	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C. 2304(c) ☐ 41 U.S.C. 253(c)
26. ADMINISTERED BY CODE		27. PAYMENT WILL BE MADE BY: CODE

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return _ _ copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract.		☐ 29. AWARD *(Contractor is not required to sign this document.)* Your offer on this solicitation, is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.	
30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*		31A. NAME OF CONTRACTING OFFICER *(Type or print)* TEL: EMAIL:	
30B. SIGNATURE	30C. DATE	31B. UNITED STATES OF AMERICA BY	31C. AWARD DATE

Section 00010 - Solicitation Contract Form

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001		1	Lump Sum		
	GREENBROOK FINDERNE FARMS CONSTRUCTION FFP GREENBROOK FINDERNE FARMS CONSTRUCTION CONTRACT- All work associated with the wetland construction for the Finderne Site, Greenbook Flood Control Project, not including stream restoration construction (precast arch culvert included) or construction for recreational fields, access road, and parking lots. PURCHASE REQUEST NUMBER: W16ROE-5187-5653				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002 OPTION		1	Lump Sum		
	Stream Restoration Construction FFP All work associated with the stream restoration construction (precast arch culvert included) for the Finderne Site, Greenbook Flood Control Project.				
				NET AMT	

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003 OPTION	Construction for Recreational Fields FFP All work associated with construction for recreational fields, access road, and parking lots for the Finderne Site, Greenbook Flood Control Project.	1	Lump Sum		

NET AMT

FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0004 OPTION	Commercial General / Public Liability FFP Commercial General / Public Liability FFP Insurance, not less than $5,000,000.00 (See section 00800 paragraph 38 for details).	1	Lump Sum		

NET AMT

FOB: Destination

TOTAL BASE BID (CLIN 0001) $_____

TOTAL BASE BID PLUS OPTIONS (CLINS 0001- 0004) $_____

If needed, option will be exercised within 30 days of NTP.

Section 00100 - Bidding Schedule/Instructions to Bidders

CLAUSES INCORPORATED BY REFERENCE

52.214-3	Amendments To Invitations For Bids	DEC 1989
52.214-4	False Statements In Bids	APR 1984
52.214-5	Submission Of Bids	MAR 1997
52.214-6	Explanation To Prospective Bidders	APR 1984
52.214-7	Late Submissions, Modifications, and Withdrawals of Bids	NOV 1999
52.214-10	Contract Award--Sealed Bidding	JUL 1990
52.214-12	Preparation Of Bids	APR 1984
52.222-26	Equal Opportunity	APR 2002

CLAUSES INCORPORATED BY FULL TEXT

52.214-15 PERIOD FOR ACCEPTANCE OF BIDS (APR 1984)

In compliance with the solicitation, the bidder agrees, if this bid is accepted within 90 calendar days from the date specified in the solicitation for receipt of bids, to furnish any or all items upon which prices are bid at the price set opposite each item, delivered at the designated point(s), within the time specified in the Schedule.

(End of clause)

52.216-1 TYPE OF CONTRACT (APR 1984)

The Government contemplates award of a Firm Fixed Price contract resulting from this solicitation.

(End of clause)

52.222-18 CERTIFICATION REGARDING KNOWLEDGE OF CHILD LABOR FOR LISTED END PRODUCTS (FEBRUARY 2001)

(a) Definition.

Forced or indentured child labor means all work or service--

(1) Exacted from any person under the age of 18 under the menace of any penalty for its nonperformance and for which the worker does not offer himself voluntarily; or

(2) Performed by any person under the age of 18 pursuant to a contract the enforcement of which can be accomplished by process or penalties.

(b) Listed end products. The following end product(s) being acquired under this solicitation is (are) included in the List of Products Requiring Contractor Certification as to Forced or Indentured Child Labor, identified by their country of origin. There is a reasonable basis to believe that listed endproducts from the listed countries of origin may have been mined, produced, or manufactured by forced or indentured child labor.

Listed End Product

NA

Listed Countries of Origin

(c) Certification. The Government will not make award to an offeror unless the offeror, by checking the appropriate block, certifies to either paragraph (c)(1) or paragraph (c)(2) of this provision.

( ) (1) The offeror will not supply any end product listed in paragraph (b) of this provision that was mined, produced, or manufactured in a corresponding country as listed for that end product.

( ) (2) The offeror may supply an end product listed in paragraph (b) of this provision that was mined, produced, or manufactured in the corresponding country as listed for that product. The offeror certifies that it has made a good faith effort to determine whether forced or indentured child labor was used to mine, produce, or manufacture such end product. On the basis of those efforts, the offeror certifies that it is not aware of any such use of child labor.

(End of provision)

52.233-2 SERVICE OF PROTEST (AUG 1996)

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from U.S. Army Corps of Engineers, Room 1843, Contracting Division, 26 Federal Plaza, New York, NY 10278-0090.

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

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):

www.arnet.gov/far
http://farsite.hill.af.mil
http://www./dtic.mil/dfars

(End of provision

Section 00600 - Representations & Certifications

CLAUSES INCORPORATED BY REFERENCE

52.214-14	Place Of Performance--Sealed Bidding	APR 1985
52.222-38	Compliance With Veterans' Employment Reporting Requirements	DEC 2001
252.209-7001	Disclosure of Ownership or Control by the Government of a Terrorist Country	SEP 2004
252.225-7031	Secondary Arab Boycott Of Israel	JUN 2005

CLAUSES INCORPORATED BY FULL TEXT

52.203-11 CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (APR 1991)

(a) The definitions and prohibitions contained in the clause, at FAR 52.203-12, Limitation on Payments to Influence Certain Federal Transactions, included in this solicitation, are hereby incorporated by reference in paragraph (b) of this Certification.

(b) The offeror, by signing its offer, hereby certifies to the best of his or her knowledge and belief that on or after December 23, 1989,--

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the offeror shall complete and submit, with its offer, OMB standard form LLL, Disclosure of Lobbying Activities, to the Contracting Officer; and

(3) He or she will include the language of this certification in all subcontract awards at any tier and require that all recipients of subcontract awards in excess of $100,000 shall certify and disclose accordingly.

(c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision, shall be subject to a civil penalty of not less than $10,000, and not more than $100,000, for each such failure.

(End of provision)

52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)

(a) Definitions.

Common parent, as used in this provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

Taxpayer Identification Number (TIN), as used in this provision, means the number required by the Internal Revenue Service (IRS) to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security Number or an Employer Identification Number.

(b) All offerors must submit the information required in paragraphs (d) through (f) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the IRS. If the resulting contract is subject to the payment reporting requirements described in Federal Acquisition Regulation (FAR) 4.904, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

(d) Taxpayer Identification Number (TIN).

___ TIN:.----------

___ TIN has been applied for.

___ TIN is not required because:

___ Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States;

___ Offeror is an agency or instrumentality of a foreign government;

___ Offeror is an agency or instrumentality of the Federal Government.

(e) Type of organization.

___ Sole proprietorship;

___ Partnership;

___ Corporate entity (not tax-exempt);

___ Corporate entity (tax-exempt);

___ Government entity (Federal, State, or local);

___ Foreign government;

___ International organization per 26 CFR 1.6049-4;

___ Other----------

(f) Common parent.

___ Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this provision.

___ Name and TIN of common parent:

Name----------

TIN----------

(End of provision)

52.204-5 WOMEN-OWNED BUSINESS (OTHER THAN SMALL BUSINESS) (MAY 1999)

(a) Definition. Women-owned business concern, as used in this provision, means a concern that is at least 51 percent owned by one or more women; or in the case of any publicly owned business, at least 51 percent of its stock is owned by one or more women; and whose management and daily business operations are controlled by one or more women.

(b) Representation. [Complete only if the offeror is a women-owned business concern and has not represented itself as a small business concern in paragraph (b)(1) of FAR 52.219-1, Small Business Program Representations, of this solicitation.] The offeror represents that it ( ) is a women-owned business concern.

(End of provision)

52.209-5 CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS (DEC 2001)

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that-

(i) The Offeror and/or any of its Principals-

(A) Are ( ) are not ( ) presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have ( ) have not ( ), within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are ( ) are not ( ) presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph (a)(1)(i)(B) of this provision.

(ii) The Offeror has ( ) has not ( ), within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

This Certification Concerns a Matter Within the Jurisdiction of an Agency of the United States and the Making of a False, Fictitious, or Fraudulent Certification May Render the Maker Subject to Prosecution Under Section 1001, Title 18, United States Code.

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

(End of provision)

52.219-1 SMALL BUSINESS PROGRAM REPRESENTATIONS (MAY 2004)

(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is 562910.

(2) The small business size standard is 500 Employees .

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b) Representations. (1) The offeror represents as part of its offer that it ( ) is, ( ) is not a small business concern.

(2) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, for general statistical purposes, that it ( ) is, ( ) is not a small disadvantaged business concern as defined in 13 CFR 124.1002.

(3) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a women-owned small business concern.

(4) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a veteran-owned small business concern.

(5) (Complete only if the offeror represented itself as a veteran-owned small business concern in paragraph (b)(4) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a service-disabled veteran-owned small business concern.

(6) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, as part of its offer, that--

(i) It ( ) is, ( ) is not a HUBZone small business concern listed, on the date of this representation, on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration, and no material change in ownership and control, principal office, or HUBZone employee percentage has occurred since it was certified by the Small Business Administration in accordance with 13 CFR part 126; and

(ii) It ( ) is, ( ) is not a joint venture that complies with the requirements of 13 CFR part 126, and the representation in paragraph (b)(6)(i) of this provision is accurate for the HUBZone small business concern or concerns that are participating in the joint venture. (The offeror shall enter the name or names of the HUBZone small business concern or concerns that are participating in the joint venture:_____.) Each HUBZone small business concern participating in the joint venture shall submit a separate signed copy of the HUBZone representation.

(c) Definitions. As used in this provision--

Service-disabled veteran-owned small business concern--

(1) Means a small business concern--

(i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a service-disabled veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

"Small business concern," means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and the size standard in paragraph (a) of this provision.

Veteran-owned small business concern means a small business concern--

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

"Women-owned small business concern," means a small business concern --

(1) That is at least 51 percent owned by one or more women; in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

(d) Notice.

(1) If this solicitation is for supplies and has been set aside, in whole or in part, for small business concerns, then the clause in this solicitation providing notice of the set-aside contains restrictions on the source of the end items to be furnished.

(2) Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a small, HUBZone small, small disadvantaged, or women-owned small business concern in order to obtain a contract to be awarded under the preference programs established pursuant to section 8(a), 8(d), 9, or 15 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall--

(i) Be punished by imposition of fine, imprisonment, or both;

(ii) Be subject to administrative remedies, including suspension and debarment; and

(iii) Be ineligible for participation in programs conducted under the authority of the Act.

(End of provision)

52.219-2 EQUAL LOW BIDS. (OCT 1995)

(a) This provision applies to small business concerns only.

(b) The bidder's status as a labor surplus area (LSA) concern may affect entitlement to award in case of tie bids. If the bidder wishes to be considered for this priority, the bidder must identify, in the following space, the LSA in which the costs to be incurred on account of manufacturing or production (by the bidder or the first-tier subcontractors) amount to more than 50 percent of the contract price.

_____

_____

(c) Failure to identify the labor surplus area as specified in paragraph (b) of this provision will preclude the bidder from receiving priority consideration. If the bidder is awarded a contract as a result of receiving priority consideration under this provision and would not have otherwise received award, the bidder shall perform the contract or cause the contract to be performed in accordance with the obligations of an LSA concern.

52.219-22 SMALL DISADVANTAGED BUSINESS STATUS (OCT 1999)

(a) General. This provision is used to assess an offeror's small disadvantaged business status for the purpose of obtaining a benefit on this solicitation. Status as a small business and status as a small disadvantaged business for general statistical purposes is covered by the provision at FAR 52.219-1, Small Business Program Representation.

(b) Representations.

(1) General. The offeror represents, as part of its offer, that it is a small business under the size standard applicable to this acquisition; and either--

___ (i) It has received certification by the Small Business Administration as a small disadvantaged business concern consistent with 13 CFR 124, Subpart B; and

(A) No material change in disadvantaged ownership and control has occurred since its certification;

(B) Where the concern is owned by one or more disadvantaged individuals, the net worth of each individual upon whom the certification is based does not exceed $750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and

(C) It is identified, on the date of this representation, as a certified small disadvantaged business concern in the database maintained by the Small Business Administration(PRO0Net); or

___ (ii) It has submitted a completed application to the Small Business Administration or a Private Certifier to be certified as a small disadvantaged business concern in accordance with 13 CFR 124, Subpart B, and a decision on that application is pending, and that no material change in disadvantaged ownership and control has occurred since its application was submitted.

(2)___ For Joint Ventures. The offeror represents, as part of its offer, that it is a joint venture that complies with the requirements at 13 CFR 124.1002(f) and that the representation in paragraph (b)(1) of this provision is accurate for the small disadvantaged business concern that is participating in the joint venture. [The offeror shall enter the name of the small disadvantaged business concern that is participating in the joint venture: _____.]

(c) Penalties and Remedies. Anyone who misrepresents any aspects of the disadvantaged status of a concern for the purposes of securing a contract or subcontract shall:

(1) Be punished by imposition of a fine, imprisonment, or both;

(2) Be subject to administrative remedies, including suspension and debarment; and

(3) Be ineligible for participation in programs conducted under the authority of the Small Business Act.

(End of provision)

52.222-22 PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (FEB 1999)

The offeror represents that --

(a) ( ) It has, ( ) has not participated in a previous contract or subcontract subject to the Equal Opportunity clause of this solicitation;

(b) ( ) It has, ( ) has not, filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

(End of provision)

52.222-25 AFFIRMATIVE ACTION COMPLIANCE (APR 1984)

The offeror represents that

(a) [ ] it has developed and has on file, [ ] has not developed and does not have on file, at each establishment, affirmative action programs required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2),

or

(b) [ ] has not previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

(End of provision)

52.223-13 CERTIFICATION OF TOXIC CHEMICAL RELEASE REPORTING (AUG 2003)

(a) Executive Order 13148, of April 21, 2000, Greening the Government through Leadership in Environmental Management, requires submission of this certification as a prerequisite for contract award.

(b) By signing this offer, the offeror certifies that--

(1) As the owner or operator of facilities that will be used in the performance of this contract that are subject to the filing and reporting requirements described in section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023) and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13106), the offeror will file and continue to file for such facilities for the life of the contract the Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of EPCRA and section 6607 of PPA; or

(2) None of its owned or operated facilities to be used in the performance of this contract is subject to the Form R filing and reporting requirements because each such facility is exempt for at least one of the following reasons: (Check each block that is applicable.)

( ) (i) The facility does not manufacture, process, or otherwise use any toxic chemicals listed in 40 CFR 372.65;

( ) (ii) The facility does not have 10 or more full-time employees as specified in section 313.(b)(1)(A) of EPCRA 42 U.S.C. 11023(b)(1)(A);

( ) (iii) The facility does not meet the reporting thresholds of toxic chemicals established under section 313(f) of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

( ) (iv) The facility does not fall within the following Standard Industrial Classification (SIC) codes or their corresponding North American Industry Classification System sectors:

(A) Major group code 10 (except 1011, 1081, and 1094.

(B) Major group code 12 (except 1241).

(C) Major group codes 20 through 39.

(D) Industry code 4911, 4931, or 4939 (limited to facilities that combust coal and/or oil for the purpose of generating power for distribution in commerce).

(E) Industry code 4953 (limited to facilities regulated under the Resource Conservation and Recovery Act, Subtitle C (42 U.S.C. 6921, et seq.), 5169, 5171, or 7389 (limited to facilities primarily engaged in solvent recovery services on a contract or fee basis); or

( ) (v) The facility is not located within the United States or its outlying areas.

(End of clause)

52.226-2 HISTORICALLY BLACK COLLEGE OR UNIVERSITY AND MINORITY INSTITUTION REPRESENTATION (MAY 2001)

(a) Definitions. As used in this provision--

Historically black college or university means an institution determined by the Secretary of Education to meet the requirements of 34 CFR 608.2. For the Department of Defense, the National Aeronautics and Space Administration, and the Coast Guard, the term also includes any nonprofit research institution that was an integral part of such a college or university before November 14, 1986.

Minority institution means an institution of higher education meeting the requirements of Section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1067k, including a Hispanic-serving institution of higher education, as defined in Section 316(b)(1) of the Act (20 U.S.C. 1101a)).

(b) Representation. The offeror represents that it--

( ) is ( ) is not a historically black college or university;

( ) is ( ) is not a minority institution.

(End of provision)

252.247-7022 REPRESENTATION OF EXTENT OF TRANSPORTATION BY SEA (AUG 1992)

(a) The Offeror shall indicate by checking the appropriate blank in paragraph (b) of this provision whether transportation of supplies by sea is anticipated under the resultant contract. The term supplies is defined in the Transportation of Supplies by Sea clause of this solicitation.

(b) Representation. The Offeror represents that it:

____ (1) Does anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

____ (2) Does not anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

(c) Any contract resulting from this solicitation will include the Transportation of Supplies by Sea clause. If the Offeror represents that it will not use ocean transportation, the resulting contract will also include the Defense FAR Supplement clause at 252.247-7024, Notification of Transportation of Supplies by Sea.

(End of provision)

Section 00700 - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-6	Restrictions On Subcontractor Sales To The Government	JUL 1995
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	JUN 2003
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.204-7	Central Contractor Registration	OCT 2003
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	JAN 2005
52.211-18	Variation in Estimated Quantity	APR 1984
52.214-26	Audit and Records--Sealed Bidding	OCT 1997
52.214-27	Price Reduction for Defective Cost or Pricing Data - Modifications - Sealed Bidding	OCT 1997
52.214-28	Subcontracting Cost Or Pricing Data--Modifications--Sealed Bidding	OCT 1997
52.214-29	Order Of Precedence--Sealed Bidding	JAN 1986
52.219-8	Utilization of Small Business Concerns	MAY 2004
52.219-9 Alt I	Small Business Subcontracting Plan (Jan 2002) Alternate I	OCT 2001
52.219-16	Liquidated Damages-Subcontracting Plan	JAN 1999
52.222-1	Notice To The Government Of Labor Disputes	FEB 1997
52.222-3	Convict Labor	JUN 2003
52.222-6	Davis Bacon Act	FEB 1995
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	DEC 2001
52.222-39	Notification of Employee Rights Concerning Payment of Union Dues or Fees	DEC 2004
52.223-14	Toxic Chemical Release Reporting	AUG 2003
52.225-9	Buy American Act--Construction Materials	JAN 2005
52.225-10	Notice of Buy American Act Requirement--Construction Materials	MAY 2002
52.225-14	Inconsistency Between English Version And Translation Of Contract	FEB 2000
52.226-1	Utilization Of Indian Organizations And Indian-Owned Economic Enterprises	JUN 2000
52.227-1	Authorization and Consent	JUL 1995
52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	AUG 1996
52.228-15	Performance and Payment Bonds--Construction	JUL 2000
52.229-3	Federal, State And Local Taxes	APR 2003
52.232-5	Payments under Fixed-Price Construction Contracts	SEP 2002
52.232-9	Limitation On Withholding Of Payments	APR 1984

52.232-23	Assignment Of Claims	JAN 1986
52.233-1	Disputes	JUL 2002
52.233-3	Protest After Award	AUG 1996
52.236-3	Site Investigation and Conditions Affecting the Work	APR 1984
52.236-6	Superintendence by the Contractor	APR 1984
52.236-7	Permits and Responsibilities	NOV 1991
52.236-13	Accident Prevention	NOV 1991
52.242-13	Bankruptcy	JUL 1995
52.242-14	Suspension of Work	APR 1984
52.243-5	Changes and Changed Conditions	APR 1984
52.244-6	Subcontracts for Commercial Items	DEC 2004
52.246-1	Contractor Inspection Requirements	APR 1984
52.246-12	Inspection of Construction	AUG 1996
52.247-34	F.O.B. Destination	NOV 1991
52.249-2	Termination For Convenience Of The Government (Fixed-Price)	MAY 2004
52.249-10	Default (Fixed-Price Construction)	APR 1984
52.252-2	Clauses Incorporated By Reference	FEB 1998
52.253-1	Computer Generated Forms	JAN 1991
252.201-7000	Contracting Officer's Representative	DEC 1991
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2004
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.204-7004 Alt A	Central Contractor Registration (52.204-7) Alternate A	NOV 2003
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	MAR 1998
252.215-7000	Pricing Adjustments	DEC 1991
252.219-7003	Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (DOD Contracts)	APR 1996
252.219-7011	Notification to Delay Performance	JUN 1998
252.223-7004	Drug Free Work Force	SEP 1988
252.226-7001	Utilization of Indian Organizations and Indian-Owned Economic Enterprises, and Native Hawaiian Small Business Concerns	SEP 2004
252.227-7023	Drawings and Other Data to become Property of Government	MAR 1979
252.232-7003	Electronic Submission of Payment Requests	JAN 2004
252.236-7000	Modification Proposals-Price Breakdown	DEC 1991
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.244-7000	Subcontracts for Commercial Items and Commercial Components (DoD Contracts)	MAR 2000
252.246-7000	Material Inspection And Receiving Report	MAR 2003
252.247-7023	Transportation of Supplies by Sea	MAY 2002
252.247-7024	Notification Of Transportation Of Supplies By Sea	MAR 2000

CLAUSES INCORPORATED BY FULL TEXT

52.204-1 APPROVAL OF CONTRACT (DEC 1989)

This contract is subject to the written approval of the Contracting Officer and shall not be binding until so approved.

(End of clause)

CLAUSES INCORPORATED BY REFERENCE

52.211-10 Commencement, Prosecution, and Completion of Work APR 1984

CLAUSES INCORPORATED BY FULL TEXT

52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of $1,231.00 for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

(End of clause)

52.222-23 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
17.3%	6.9%

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, within 10 working days following award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the --

(1) Name, address, and telephone number of the subcontractor;

(2) Employer's identification number of the subcontractor;

(3) Estimated dollar amount of the subcontract;

(4) Estimated starting and completion dates of the subcontract; and

(5) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is the following Counties: Bergen, Essex, Hudson, Hunterdon, Middlesex,Morris, Passaic, **Somerset**, Sussex, Union and Warren Counties in New Jersey.

(End of provision)

52.222-26 EQUAL OPPORTUNITY (APR 2002)

(a) Definition. United States, as used in this clause, means the 50 States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, and Wake Island.

(b) If, during any 12-month period (including the 12 months preceding the award of this contract), the Contractor has been or is awarded nonexempt Federal contracts and/or subcontracts that have an aggregate value in excess of $10,000, the Contractor shall comply with paragraphs (b)(1) through (b)(11) of this clause, except for work performed outside the United States by employees who were not recruited within the United States. Upon request, the Contractor shall provide information necessary to determine the applicability of this clause.

(1) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. However, it shall not be a violation of this clause for the Contractor to extend a publicly announced preference in employment to Indians living on or near an Indian reservation, in connection with employment opportunities on or near an Indian reservation, as permitted by 41 CFR 60-1.5.

(2) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. This shall include, but not be limited to, (i) employment, (ii) upgrading, (iii) demotion, (iv) transfer, (v) recruitment or recruitment advertising, (vi) layoff or termination, (vii) rates of pay or other forms of compensation, and (viii) selection for training, including apprenticeship.

(3) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.

(4) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(5) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.

(6) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.

(7) The Contractor shall furnish to the contracting agency all information required by Executive Order 11246, as amended, and by the rules, regulations, and orders of the Secretary of Labor. The Contractor shall also file Standard Form 100 (EEO-1), or any successor form, as prescribed in 41 CFR part 60-1. Unless the Contractor has filed within the 12 months preceding the date of contract award, the Contractor shall, within 30 days after contract award, apply to either the regional Office of Federal Contract Compliance Programs (OFCCP) or the local office of the Equal Employment Opportunity Commission for the necessary forms.

(8) The Contractor shall permit access to its premises, during normal business hours, by the contracting agency or the OFCCP for the purpose of conducting on-site compliance evaluations and complaint investigations. The Contractor shall permit the Government to inspect and copy any books, accounts, records (including computerized records), and other material that may be relevant to the matter under investigation and pertinent to compliance with Executive Order 11246, as amended, and rules and regulations that implement the Executive Order.

(9) If the OFCCP determines that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts, under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended; in the rules, regulations, and orders of the Secretary of Labor; or as otherwise provided by law.

(10) The Contractor shall include the terms and conditions of subparagraphs (b)(1) through (11) of this clause in every subcontract or purchase order that is not exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor.

(11) The Contractor shall take such action with respect to any subcontract or purchase order as the contracting officer may direct as a means of enforcing these terms and conditions, including sanctions for noncompliance; provided, that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of any direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

(c) Notwithstanding any other clause in this contract, disputes relative to this clause will be governed by the procedures in 41 CFR 60-1.1.

(End of clause)

52.222-35 EQUAL OPPORTUNITY FOR SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS (DEC 2001)

(a) Definitions. As used in this clause--

All employment openings means all positions except executive and top management, those positions that will be filled from within the Contractor's organization, and positions lasting 3 days or less. This term includes full-time employment, temporary employment of more than 3 days duration, and part-time employment.

Executive and top management means any employee--

(1) Whose primary duty consists of the management of the enterprise in which the individual is employed or of a customarily recognized department or subdivision thereof;

(2) Who customarily and regularly directs the work of two or more other employees;

(3) Who has the authority to hire or fire other employees or whose suggestions and recommendations as to the hiring or firing and as to the advancement and promotion or any other change of status of other employees will be given particular weight;

(4) Who customarily and regularly exercises discretionary powers; and

(5) Who does not devote more than 20 percent or, in the case of an employee of a retail or service establishment, who does not devote more than 40 percent of total hours of work in the work week to activities that are not directly and closely related to the performance of the work described in paragraphs (1) through (4) of this definition. This paragraph (5) does not apply in the case of an employee who is in sole charge of an establishment or a physically separated branch establishment, or who owns at least a 20 percent interest in the enterprise in which the individual is employed.

Other eligible veteran means any other veteran who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized.

Positions that will be filled from within the Contractor's organization means employment openings for which the Contractor will give no consideration to persons outside the Contractor's organization (including any affiliates, subsidiaries, and parent companies) and includes any openings the Contractor proposes to fill from regularly established “recall” lists. The exception does not apply to a particular opening once an employer decides to consider applicants outside of its organization.

Qualified special disabled veteran means a special disabled veteran who satisfies the requisite skill, experience, education, and other job-related requirements of the employment position such veteran holds or desires, and who, with or without reasonable accommodation, can perform the essential functions of such position.

Special disabled veteran means--

(1) A veteran who is entitled to compensation (or who but for the receipt of military retired pay would be entitled to compensation) under laws administered by the Department of Veterans Affairs for a disability--

(i) Rated at 30 percent or more; or

(ii) Rated at 10 or 20 percent in the case of a veteran who has been determined under 38 U.S.C. 3106 to have a serious employment handicap (i.e., a significant impairment of the veteran's ability to prepare for, obtain, or retain employment consistent with the veteran's abilities, aptitudes, and interests); or

(2) A person who was discharged or released from active duty because of a service-connected disability.

Veteran of the Vietnam era means a person who--

(1) Served on active duty for a period of more than 180 days and was discharged or released from active duty with other than a dishonorable discharge, if any part of such active duty occurred--

(i) In the Republic of Vietnam between February 28, 1961, and May 7, 1975; or

(ii) Between August 5, 1964, and May 7, 1975, in all other cases; or

(2) Was discharged or released from active duty for a service-connected disability if any part of the active duty was performed--

(i) In the Republic of Vietnam between February 28, 1961, and May 7, 1975; or

(ii) Between August 5, 1964, and May 7, 1975, in all other cases.
(b) General. (1) The Contractor shall not discriminate against the individual because the individual is a special disabled veteran, a veteran of the Vietnam era, or other eligible veteran, regarding any position for which the employee or applicant for employment is qualified. The Contractor shall take affirmative action to employ, advance in employment, and otherwise treat qualified special disabled veterans, veterans of the Vietnam era, and other eligible veterans without discrimination based upon their disability or veterans' status in all employment practices such as--

(i) Recruitment, advertising, and job application procedures;

(ii) Hiring, upgrading, promotion, award of tenure, demotion, transfer, layoff, termination, right of return from layoff and rehiring;

(iii) Rate of pay or any other form of compensation and changes in compensation;

(iv) Job assignments, job classifications, organizational structures, position descriptions, lines of progression, and seniority lists;

(v) Leaves of absence, sick leave, or any other leave;

(vi) Fringe benefits available by virtue of employment, whether or not administered by the Contractor;

(vii) Selection and financial support for training, including apprenticeship, and on-the-job training under 38 U.S.C. 3687, professional meetings, conferences, and other related activities, and selection for leaves of absence to pursue training;

(viii) Activities sponsored by the Contractor including social or recreational programs; and

(ix) Any other term, condition, or privilege of employment.

(2) The Contractor shall comply with the rules, regulations, and relevant orders of the Secretary of Labor issued under the Vietnam Era Veterans' Readjustment Assistance Act of 1972 (the Act), as amended (38 U.S.C. 4211 and 4212).

(c) Listing openings. (1) The Contractor shall immediately list all employment openings that exist at the time of the execution of this contract and those which occur during the performance of this contract, including those not generated by this contract, and including those occurring at an establishment of the Contractor other than the one where the contract is being performed, but excluding those of independently operated corporate affiliates, at an appropriate local public employment service office of the State wherein the opening occurs. Listing employment openings with the U.S. Department of Labor's America's Job Bank shall satisfy the requirement to list jobs with the local employment service office.

(2) The Contractor shall make the listing of employment openings with the local employment service office at least concurrently with using any other recruitment source or effort and shall involve the normal obligations of placing a bona fide job order, including accepting referrals of veterans and nonveterans. This listing of employment openings does not require hiring any particular job applicant or hiring from any particular group of job applicants and is not

intended to relieve the Contractor from any requirements of Executive orders or regulations concerning nondiscrimination in employment.

(3) Whenever the Contractor becomes contractually bound to the listing terms of this clause, it shall advise the State public employment agency in each State where it has establishments of the name and location of each hiring location in the State. As long as the Contractor is contractually bound to these terms and has so advised the State agency, it need not advise the State agency of subsequent contracts. The Contractor may advise the State agency when it is no longer bound by this contract clause.

(d) Applicability. This clause does not apply to the listing of employment openings that occur and are filled outside the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, American Samoa, Guam, the Virgin Islands of the United States, and Wake Island.

(e) Postings. (1) The Contractor shall post employment notices in conspicuous places that are available to employees and applicants for employment.

(2) The employment notices shall--

(i) State the rights of applicants and employees as well as the Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified employees and applicants who are special disabled veterans, veterans of the Vietnam era, and other eligible veterans; and

(ii) Be in a form prescribed by the Deputy Assistant Secretary for Federal Contract Compliance Programs, Department of Labor (Deputy Assistant Secretary of Labor), and provided by or through the Contracting Officer.

(3) The Contractor shall ensure that applicants or employees who are special disabled veterans are informed of the contents of the notice (e.g., the Contractor may have the notice read to a visually disabled veteran, or may lower the posted notice so that it can be read by a person in a wheelchair).

(4) The Contractor shall notify each labor union or representative of workers with which it has a collective bargaining agreement, or other contract understanding, that the Contractor is bound by the terms of the Act and is committed to take affirmative action to employ, and advance in employment, qualified special disabled veterans, veterans of the Vietnam era, and other eligible veterans.

(f) Noncompliance. If the Contractor does not comply with the requirements of this clause, the Government may take appropriate actions under the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

(g) Subcontracts. The Contractor shall insert the terms of this clause in all subcontracts or purchase orders of $25,000 or more unless exempted by rules, regulations, or orders of the Secretary of Labor. The Contractor shall act as specified by the Deputy Assistant Secretary of Labor to enforce the terms, including action for noncompliance.

(End of clause)

52.228-1 BID GUARANTEE (SEP 1996)

(a) Failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

(b) The bidder shall furnish a bid guarantee in the form of a firm commitment, e.g., bid bond supported by good and sufficient surety or sureties acceptable to the Government, postal money order, certified check, cashier's check, irrevocable letter of credit, or, under Treasury Department regulations, certain bonds or notes of the United States.

The Contracting Officer will return bid guarantees, other than bid bonds, (1) to unsuccessful bidders as soon as practicable after the opening of bids, and (2) to the successful bidder upon execution of contractual documents and bonds (including any necessary coinsurance or reinsurance agreements), as required by the bid as accepted.-

(c) The amount of the bid guarantee shall be 20% percent of the bid price or $3,000,000.00, whichever is less.-

(d) If the successful bidder, upon acceptance of its bid by the Government within the period specified for acceptance, fails to execute all contractual documents or furnish executed bond(s) within 10 days after receipt of the forms by the bidder, the Contracting Officer may terminate the contract for default.-

(e) In the event the contract is terminated for default, the bidder is liable for any cost of acquiring the work that exceeds the amount of its bid, and the bid guarantee is available to offset the difference.

(End of clause)

52.232-27 PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS (OCT 2003)

Notwithstanding any other payment terms in this contract, the Government will make invoice payments under the terms and conditions specified in this clause. The Government considers payment as being made on the day a check is dated or the date of an electronic funds transfer. Definitions of pertinent terms are set forth in sections 2.101, 32.001, and 32.902 of the Federal Acquisition Regulation. All days referred to in this clause are calendar days, unless otherwise specified. (However, see paragraph (a)(3) concerning payments due on Saturdays, Sundays, and legal holidays.)

(a) Invoice payments--(1) Types of invoice payments. For purposes of this clause, there are several types of invoice payments that may occur under this contract, as follows:

(i) Progress payments, if provided for elsewhere in this contract, based on Contracting Officer approval of the estimated amount and value of work or services performed, including payments for reaching milestones in any project.

(A) The due date for making such payments is 14 days after the designated billing office receives a proper payment request. If the designated billing office fails to annotate the payment request with the actual date of receipt at the time of receipt, the payment due date is the 14th day after the date of the Contractor's payment request, provided the designated billing office receives a proper payment request and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(B) The due date for payment of any amounts retained by the Contracting Officer in accordance with the clause at 52.232-5, Payments Under Fixed-Price Construction Contracts, is as specified in the contract or, if not specified, 30 days after approval by the Contracting Officer for release to the Contractor.

(ii) Final payments based on completion and acceptance of all work and presentation of release of all claims against the Government arising by virtue of the contract, and payments for partial deliveries that have been accepted by the Government (e.g., each separate building, public work, or other division of the contract for which the price is stated separately in the contract).

(A) The due date for making such payments is the later of the following two events:

(1) The 30th day after the designated billing office receives a proper invoice from the Contractor.

(2) The 30th day after Government acceptance of the work or services completed by the Contractor. For a final invoice when the payment amount is subject to contract settlement actions (e.g., release of claims), acceptance is deemed to occur on the effective date of the contract settlement.

(B) If the designated billing office fails to annotate the invoice with the date of actual receipt at the time of receipt, the invoice payment due date is the 30th day after the date of the Contractor's invoice, provided the designated billing office receives a proper invoice and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(2) Contractor's invoice. The Contractor shall prepare and submit invoices to the designated billing office specified in the contract. A proper invoice must include the items listed in paragraphs (a)(2)(i) through (a)(2)(xi) of this clause. If the invoice does not comply with these requirements, the designated billing office must return it within 7 days after receipt, with the reasons why it is not a proper invoice. When computing any interest penalty owed the Contractor, the Government will take into account if the Government notifies the Contractor of an improper invoice in an untimely manner.

(i) Name and address of the Contractor.

(ii) Invoice date and invoice number. (The Contractor should date invoices as close as possible to the date of mailing or transmission.)

(iii) Contract number or other authorization for work or services performed (including order number and contract line item number).

(iv) Description of work or services performed.

(v) Delivery and payment terms (e.g., discount for prompt payment terms).

(vi) Name and address of Contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice of assignment).

(vii) Name (where practicable), title, phone number, and mailing address of person to notify in the event of a defective invoice.

(viii) For payments described in paragraph (a)(1)(i) of this clause, substantiation of the amounts requested and certification in accordance with the requirements of the clause at 52.232-5, Payments Under Fixed-Price Construction Contracts.

(ix) Taxpayer Identification Number (TIN). The Contractor shall include its TIN on the invoice only if required elsewhere in this contract.

(x) Electronic funds transfer (EFT) banking information.

(A) The Contractor shall include EFT banking information on the invoice only if required elsewhere in this contract.

(B) If EFT banking information is not required to be on the invoice, in order for the invoice to be a proper invoice, the Contractor shall have submitted correct EFT banking information in accordance with the applicable solicitation provision (e.g., 52.232-38, Submission of Electronic Funds Transfer Information with Offer), contract clause (e.g., 52.232-33, Payment by Electronic Funds Transfer--Central Contractor Registration, or 52.232-34, Payment by Electronic Funds Transfer--Other Than Central Contractor Registration), or applicable agency procedures.

(C) EFT banking information is not required if the Government waived the requirement to pay by EFT.

(xi) Any other information or documentation required by the contract.

(3) Interest penalty. The designated payment office will pay an interest penalty automatically, without request from the Contractor, if payment is not made by the due date and the conditions listed in paragraphs (a)(3)(i) through (a)(3)(iii) of this clause are met, if applicable. However, when the due date falls on a Saturday, Sunday, or legal holiday, the designated payment office may make payment on the following working day without incurring a late payment interest penalty.

(i) The designated billing office received a proper invoice.

(ii) The Government processed a receiving report or other Government documentation authorizing payment and there was no disagreement over quantity, quality, Contractor compliance with any contract term or condition, or requested progress payment amount.

(iii) In the case of a final invoice for any balance of funds due the Contractor for work or services performed, the amount was not subject to further contract settlement actions between the Government and the Contractor.

(4) Computing penalty amount. The Government will compute the interest penalty in accordance with the Office of Management and Budget prompt payment regulations at 5 CFR part 1315.

(i) For the sole purpose of computing an interest penalty that might be due the Contractor for payments described in paragraph (a)(1)(ii) of this clause, Government acceptance or approval is deemed to occur constructively on the 7th day after the Contractor has completed the work or services in accordance with the terms and conditions of the contract. If actual acceptance or approval occurs within the constructive acceptance or approval period, the Government will base the determination of an interest penalty on the actual date of acceptance or approval. Constructive acceptance or constructive approval requirements do not apply if there is a disagreement over quantity, quality, or Contractor compliance with a contract provision. These requirements also do not compel Government officials to accept work or services, approve Contractor estimates, perform contract administration functions, or make payment prior to fulfilling their responsibilities.

(ii) The prompt payment regulations at 5 CFR 1315.10(c) do not require the Government to pay interest penalties if payment delays are due to disagreement between the Government and the Contractor over the payment amount or other issues involving contract compliance, or on amounts temporarily withheld or retained in accordance with the terms of the contract. The Government and the Contractor shall resolve claims involving disputes, and any interest that may be payable in accordance with the clause at FAR 52.233-1, Disputes.

(5) Discounts for prompt payment. The designated payment office will pay an interest penalty automatically, without request from the Contractor, if the Government takes a discount for prompt payment improperly. The Government will calculate the interest penalty in accordance with the prompt payment regulations at 5 CFR part 1315.

(6) Additional interest penalty. (i) The designated payment office will pay a penalty amount, calculated in accordance with the prompt payment regulations at 5 CFR part 1315 in addition to the interest penalty amount only if--

(A) The Government owes an interest penalty of $1 or more;

(B) The designated payment office does not pay the interest penalty within 10 days after the date the invoice amount is paid; and

(C) The Contractor makes a written demand to the designated payment office for additional penalty payment, in accordance with paragraph (a)(6)(ii) of this clause, postmarked not later than 40 days after the date the invoice amount is paid.

(ii)(A) The Contractor shall support written demands for additional penalty payments with the following data. The Government will not request any additional data. The Contractor shall--

(1) Specifically assert that late payment interest is due under a specific invoice, and request payment of all overdue late payment interest penalty and such additional penalty as may be required;

(2) Attach a copy of the invoice on which the unpaid late payment interest was due; and

(3) State that payment of the principal has been received, including the date of receipt.

(B) If there is no postmark or the postmark is illegible--

(1) The designated payment office that receives the demand will annotate it with the date of receipt provided the demand is received on or before the 40th day after payment was made; or

(2) If the designated payment office fails to make the required annotation, the Government will determine the demand's validity based on the date the Contractor has placed on the demand, provided such date is no later than the 40th day after payment was made.

(b) Contract financing payments. If this contract provides for contract financing, the Government will make contract financing payments in accordance with the applicable contract financing clause.

(c) Subcontract clause requirements. The Contractor shall include in each subcontract for property or services (including a material supplier) for the purpose of performing this contract the following:

(1) Prompt payment for subcontractors. A payment clause that obligates the Contractor to pay the subcontractor for satisfactory performance under its subcontract not later than 7 days from receipt of payment out of such amounts as are paid to the Contractor under this contract.

(2) Interest for subcontractors. An interest penalty clause that obligates the Contractor to pay to the subcontractor an interest penalty for each payment not made in accordance with the payment clause--

(i) For the period beginning on the day after the required payment date and ending on the date on which payment of the amount due is made; and

(ii) Computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty.

(3) Subcontractor clause flowdown. A clause requiring each subcontractor to use:

(i) Include a payment clause and an interest penalty clause conforming to the standards set forth in paragraphs (c)(1) and (c)(2) of this clause in each of its subcontracts; and

(ii) Require each of its subcontractors to include such clauses in their subcontracts with each lower-tier subcontractor or supplier.

(d) Subcontract clause interpretation. The clauses required by paragraph (c) of this clause shall not be construed to impair the right of the Contractor or a subcontractor at any tier to negotiate, and to include in their subcontract, provisions that--

(1) Retainage permitted. Permit the Contractor or a subcontractor to retain (without cause) a specified percentage of each progress payment otherwise due to a subcontractor for satisfactory performance under the subcontract without incurring any obligation to pay a late payment interest penalty, in accordance with terms and conditions agreed to

by the parties to the subcontract, giving such recognition as the parties deem appropriate to the ability of a subcontractor to furnish a performance bond and a payment bond;

(2) Withholding permitted. Permit the Contractor or subcontractor to make a determination that part or all of the subcontractor's request for payment may be withheld in accordance with the subcontract agreement; and

(3) Withholding requirements. Permit such withholding without incurring any obligation to pay a late payment penalty if--

(i) A notice conforming to the standards of paragraph (g) of this clause previously has been furnished to the subcontractor; and

(ii) The Contractor furnishes to the Contracting Officer a copy of any notice issued by a Contractor pursuant to paragraph (d)(3)(i) of this clause.

(e) Subcontractor withholding procedures. If a Contractor, after making a request for payment to the Government but before making a payment to a subcontractor for the subcontractor's performance covered by the payment request, discovers that all or a portion of the payment otherwise due such subcontractor is subject to withholding from the subcontractor in accordance with the subcontract agreement, then the Contractor shall--

(1) Subcontractor notice. Furnish to the subcontractor a notice conforming to the standards of paragraph (g) of this clause as soon as practicable upon ascertaining the cause giving rise to a withholding, but prior to the due date for subcontractor payment;

(2) Contracting Officer notice. Furnish to the Contracting Officer, as soon as practicable, a copy of the notice furnished to the subcontractor pursuant to paragraph (e)(1) of this clause;

(3) Subcontractor progress payment reduction. Reduce the subcontractor's progress payment by an amount not to exceed the amount specified in the notice of withholding furnished under paragraph (e)(1) of this clause;

(4) Subsequent subcontractor payment. Pay the subcontractor as soon as practicable after the correction of the identified subcontract performance deficiency, and--

(i) Make such payment within--

(A) Seven days after correction of the identified subcontract performance deficiency (unless the funds therefor must be recovered from the Government because of a reduction under paragraph
(e)(5)(i)) of this clause; or

(B) Seven days after the Contractor recovers such funds from the Government; or

(ii) Incur an obligation to pay a late payment interest penalty computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contracts Disputes Act of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty;

(5) Notice to Contracting Officer. Notify the Contracting Officer upon--

(i) Reduction of the amount of any subsequent certified application for payment; or

(ii) Payment to the subcontractor of any withheld amounts of a progress payment, specifying--

(A) The amounts withheld under paragraph (e)(1) of this clause; and

(B) The dates that such withholding began and ended; and

(6) Interest to Government. Be obligated to pay to the Government an amount equal to interest on the withheld payments (computed in the manner provided in 31 U.S.C. 3903(c)(1)), from the 8th day after receipt of the withheld amounts from the Government until--

(i) The day the identified subcontractor performance deficiency is corrected; or

(ii) The date that any subsequent payment is reduced under paragraph (e)(5)(i) of this clause.

(f) Third-party deficiency reports--(1) Withholding from subcontractor. If a Contractor, after making payment to a first-tier subcontractor, receives from a supplier or subcontractor of the first-tier subcontractor (hereafter referred to as a “second-tier subcontractor”) a written notice in accordance with section 2 of the Act of August 24, 1935 (40 U.S.C. 270b, Miller Act), asserting a deficiency in such first-tier subcontractor's performance under the contract for which the Contractor may be ultimately liable, and the Contractor determines that all or a portion of future payments otherwise due such first-tier subcontractor is subject to withholding in accordance with the subcontract agreement, the Contractor may, without incurring an obligation to pay an interest penalty under paragraph (e)(6) of this clause--

(i) Furnish to the first-tier subcontractor a notice conforming to the standards of paragraph (g) of this clause as soon as practicable upon making such determination; and

(ii) Withhold from the first-tier subcontractor's next available progress payment or payments an amount not to exceed the amount specified in the notice of withholding furnished under paragraph (f)(1)(i) of this clause.

(2) Subsequent payment or interest charge. As soon as practicable, but not later than 7 days after receipt of satisfactory written notification that the identified subcontract performance deficiency has been corrected, the Contractor shall--

(i) Pay the amount withheld under paragraph (f)(1)(ii) of this clause to such first-tier subcontractor; or

(ii) Incur an obligation to pay a late payment interest penalty to such first-tier subcontractor computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contracts DisputesAct of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty.

(g) Written notice of subcontractor withholding. The Contractor shall issue a written notice of any withholding to a subcontractor (with a copy furnished to the Contracting Officer), specifying--

(1) The amount to be withheld;

(2) The specific causes for the withholding under the terms of the subcontract; and

(3) The remedial actions to be taken by the subcontractor in order to receive payment of the amounts withheld.

(h) Subcontractor payment entitlement. The Contractor may not request payment from the Government of any amount withheld or retained in accordance with paragraph (d) of this clause until such time as the Contractor has determined and certified to the Contracting Officer that the subcontractor is entitled to the payment of such amount.

(i) Prime-subcontractor disputes. A dispute between the Contractor and subcontractor relating to the amount or entitlement of a subcontractor to a payment or a late payment interest penalty under a clause included in the subcontract pursuant to paragraph (c) of this clause does not constitute a dispute to which the Government is a party. The Government may not be interpleaded in any judicial or administrative proceeding involving such a dispute.

(j) Preservation of prime-subcontractor rights. Except as provided in paragraph (i) of this clause, this clause shall not limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or a subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor or deficient subcontract performance or nonperformance by a subcontractor.

(k) Non-recourse for prime contractor interest penalty. The Contractor's obligation to pay an interest penalty to a subcontractor pursuant to the clauses included in a subcontract under paragraph (c) of this clause shall not be construed to be an obligation of the Government for such interest penalty. A cost-reimbursement claim may not include any amount for reimbursement of such interest penalty.

(l) Overpayments. If the Contractor becomes aware of a duplicate contract financing or invoice payment or that the Government has otherwise overpaid on a contract financing or invoice payment, the Contractor shall immediately notify the Contracting Officer and request instructions for disposition of the overpayment.

(End of clause)

52.232-33 PAYMENT BY ELECTRONIC FUNDS TRANSFER—CENTRAL CONTRACTOR REGISTRATION (OCT 2003)

(a) Method of payment. (1) All payments by the Government under this contract shall be made by electronic funds transfer (EFT), except as provided in paragraph (a)(2) of this clause. As used in this clause, the term “EFT” refers to the funds transfer and may also include the payment information transfer.

(2) In the event the Government is unable to release one or more payments by EFT, the Contractor agrees to either--

(i) Accept payment by check or some other mutually agreeable method of payment; or

(ii) Request the Government to extend the payment due date until such time as the Government can make payment by EFT (but see paragraph (d) of this clause).

(b) Contractor's EFT information. The Government shall make payment to the Contractor using the EFT information contained in the Central Contractor Registration (CCR) database. In the event that the EFT information changes, the Contractor shall be responsible for providing the updated information to the CCR database.

(c) Mechanisms for EFT payment. The Government may make payment by EFT through either the Automated Clearing House (ACH) network, subject to the rules of the National Automated Clearing House Association, or the Fedwire Transfer System. The rules governing Federal payments through the ACH are contained in 31 CFR part 210.

(d) Suspension of payment. If the Contractor's EFT information in the CCR database is incorrect, then the Government need not make payment to the Contractor under this contract until correct EFT information is entered into the CCR database; and any invoice or contract financing request shall be deemed not to be a proper invoice for the purpose of prompt payment under this contract. The prompt payment terms of the contract regarding notice of an improper invoice and delays in accrual of interest penalties apply.

(e) Liability for uncompleted or erroneous transfers. (1) If an uncompleted or erroneous transfer occurs because the Government used the Contractor's EFT information incorrectly, the Government remains responsible for--

(i) Making a correct payment;

(ii) Paying any prompt payment penalty due; and

(iii) Recovering any erroneously directed funds.

(2) If an uncompleted or erroneous transfer occurs because the Contractor's EFT information was incorrect, or was revised within 30 days of Government release of the EFT payment transaction instruction to the Federal Reserve System, and--

(i) If the funds are no longer under the control of the payment office, the Government is deemed to have made payment and the Contractor is responsible for recovery of any erroneously directed funds; or

(ii) If the funds remain under the control of the payment office, the Government shall not make payment, and the provisions of paragraph (d) of this clause shall apply.

(f) EFT and prompt payment. A payment shall be deemed to have been made in a timely manner in accordance with the prompt payment terms of this contract if, in the EFT payment transaction instruction released to the Federal Reserve System, the date specified for settlement of the payment is on or before the prompt payment due date, provided the specified payment date is a valid date under the rules of the Federal Reserve System.

(g) EFT and assignment of claims. If the Contractor assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, the Contractor shall require as a condition of any such assignment, that the assignee shall register separately in the CCR database and shall be paid by EFT in accordance with the terms of this clause. Notwithstanding any other requirement of this contract, payment to an ultimate recipient other than the Contractor, or a financial institution properly recognized under an assignment of claims pursuant to subpart 32.8, is not permitted. In all respects, the requirements of this clause shall apply to the assignee as if it were the Contractor. EFT information that shows the ultimate recipient of the transfer to be other than the Contractor, in the absence of a proper assignment of claims acceptable to the Government, is incorrect EFT information within the meaning of paragraph (d) of this clause.

(h) Liability for change of EFT information by financial agent. The Government is not liable for errors resulting from changes to EFT information made by the Contractor's financial agent.

(i) Payment information. The payment or disbursing office shall forward to the Contractor available payment information that is suitable for transmission as of the date of release of the EFT instruction to the Federal Reserve System. The Government may request the Contractor to designate a desired format and method(s) for delivery of payment information from a list of formats and methods the payment office is capable of executing. However, the Government does not guarantee that any particular format or method of delivery is available at any particular payment office and retains the latitude to use the format and delivery method most convenient to the Government. If the Government makes payment by check in accordance with paragraph (a) of this clause, the Government shall mail the payment information to the remittance address contained in the CCR database.

(End of Clause)

52.233-4 APPLICABLE LAW FOR BREACH OF CONTRACT CLAIM (OCT 2004)

United States law will apply to resolve any claim of breach of this contract.

(End of clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses 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. Also, the full text of a clause may be accessed electronically at this/these address(es):

www.arnet.gov/far
http://farsite.hill.af.mil
http://www./dtic.mil/dfars

(End of clause)

52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES (APR 1984)

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

(b) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of clause)

252.236-7001 CONTRACT DRAWINGS, MAPS, AND SPECIFICATIONS (AUG 2000)

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall--

(1) Check all drawings furnished immediately upon receipt;

(2) Compare all drawings and verify the figures before laying out the work;

(3) Promptly notify the Contracting Officer of any discrepancies;

(4) Be responsible for any errors that might have been avoided by complying with this paragraph (b); and

(5) Reproduce and print contract drawings and specifications as needed.

(c) In general--

(1) Large-scale drawings shall govern small-scale drawings; and

(2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified on the following index of drawings:

Title	File	Drawing No.

Included in the Specifications

(End of clause)

252.247-7023 Transportation of Supplies by Sea (MAY 2002)

(a) Definitions. As used in this clause --

(1) "Components" means articles, materials, and supplies incorporated directly into end products at any level of manufacture, fabrication, or assembly by the Contractor or any subcontractor.

(2) "Department of Defense" (DoD) means the Army, Navy, Air Force, Marine Corps, and defense agencies.

(3) "Foreign flag vessel" means any vessel that is not a U.S.-flag vessel.

(4) "Ocean transportation" means any transportation aboard a ship, vessel, boat, barge, or ferry through international waters.

(5) "Subcontractor" means a supplier, materialman, distributor, or vendor at any level below the prime contractor whose contractual obligation to perform results from, or is conditioned upon, award of the prime contract and who is performing any part of the work or other requirement of the prime contract.

(6) "Supplies" means all property, except land and interests in land, that is clearly identifiable for eventual use by or owned by the DoD at the time of transportation by sea.

(i) An item is clearly identifiable for eventual use by the DoD if, for example, the contract documentation contains a reference to a DoD contract number or a military destination.

(ii) "Supplies" includes (but is not limited to) public works; buildings and facilities; ships; floating equipment and vessels of every character, type, and description, with parts, subassemblies, accessories, and equipment; machine tools; material; equipment; stores of all kinds; end items; construction materials; and components of the foregoing.

(7) "U.S.-flag vessel" means a vessel of the United States or belonging to the United States, including any vessel registered or having national status under the laws of the United States.

(b)(1) The Contractor shall use U.S.-flag vessels when transporting any supplies by sea under this contract.

(2) A subcontractor transporting supplies by sea under this contract shall use U.S.-flag vessels if--

(i) This contract is a construction contract; or

(ii) The supplies being transported are--

(A) Noncommercial items; or

(B) Commercial items that--

(1) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it contracts for f.o.b. destination shipment);

(2) Are shipped in direct support of U.S. military contingency operations, exercises, or forces deployed in humanitarian or peacekeeping operations; or

(3) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

(c) The Contractor and its subcontractors may request that the Contracting Officer authorize shipment in foreign-flag vessels, or designate available U.S.-flag vessels, if the Contractor or a subcontractor believes that --

(1) U.S.-flag vessels are not available for timely shipment;

(2) The freight charges are inordinately excessive or unreasonable; or

(3) Freight charges are higher than charges to private persons for transportation of like goods.

(d) The Contractor must submit any request for use of other than U.S.-flag vessels in writing to the Contracting Officer at least 45 days prior to the sailing date necessary to meet its delivery schedules. The Contracting Officer will process requests submitted after such date(s) as expeditiously as possible, but the Contracting Officer's failure to grant approvals to meet the shipper's sailing date will not of itself constitute a compensable delay under this or any other clause of this contract. Requests shall contain at a minimum --

(1) Type, weight, and cube of cargo;

(2) Required shipping date;

(3) Special handling and discharge requirements;

(4) Loading and discharge points;

(5) Name of shipper and consignee;

(6) Prime contract number; and

(7) A documented description of efforts made to secure U.S.-flag vessels, including points of contact (with names and telephone numbers) with at least two U.S.-flag carriers contacted. Copies of telephone notes, telegraphic and facsimile message or letters will be sufficient for this purpose.

(e) The Contractor shall, within 30 days after each shipment covered by this clause, provide the Contracting Officer and the Maritime Administration, Office of Cargo Preference, U.S. Department of Transportation, 400 Seventh Street SW., Washington, DC 20590, one copy of the rated on board vessel operating carrier's ocean bill of lading, which shall contain the following information:

(1) Prime contract number;

(2) Name of vessel;

(3) Vessel flag of registry;

(4) Date of loading;

(5) Port of loading;

(6) Port of final discharge;

(7) Description of commodity;

(8) Gross weight in pounds and cubic feet if available;

(9) Total ocean freight in U.S. dollars; and

(10) Name of the steamship company.

(f) The Contractor shall provide with its final invoice under this contract a representation that to the best of its knowledge and belief--

(1) No ocean transportation was used in the performance of this contract;

(2) Ocean transportation was used and only U.S.-flag vessels were used for all ocean shipments under the contract;

(3) Ocean transportation was used, and the Contractor had the written consent of the Contracting Officer for all non-U.S.-flag ocean transportation; or

(4) Ocean transportation was used and some or all of the shipments were made on non-U.S.-flag vessels without the written consent of the Contracting Officer. The Contractor shall describe these shipments in the following format:

ITEM DESCRIPTION	CONTRACT LINE ITEMS	QUANTITY

TOTAL_____

(g) If the final invoice does not include the required representation, the Government will reject and return it to the Contractor as an improper invoice for the purposes of the Prompt Payment clause of this contract. In the event there has been unauthorized use of non-U.S.-flag vessels in the performance of this contract, the Contracting Officer is entitled to equitably adjust the contract, based on the unauthorized use.

(h) In the award of subcontracts for the types of supplies described in paragraph (b)(2) of this clause, the Contractor shall flow down the requirements of this clause as follows:

(1) The Contractor shall insert the substance of this clause, including this paragraph (h), in subcontracts that exceed the simplified acquisition threshold in part 2 of the Federal Acquisition Regulation.

(2) The Contractor shall insert the substance of paragraphs (a) through (e) of this clause, and this paragraph (h), in subcontracts that are at or below the simplified acquisition threshold in part 2 of the Federal Acquisition Regulation.

(End of clause)

EFARS 52.232-5001

52.232-5001 CONTINUING CONTRACTS (MAR 1995)--EFARS

(a) This is a continuing contract, as authorized by Section 10 of the River and Harbor Act of September 22, 1922 (33 U.S. Code 621). The payment of some portion of the contract price is dependent upon reservations of funds from future appropriations, and from future contribution to the project having one or more non-federal project sponsors. The responsibilities of the Government are limited by this clause notwithstanding any contrary provision of the "Payments to Contractor" clause or any other clause of this contract.

(b) The sum of $250,000.00 has been reserved for this contract and is available for payments to the contractor during the current fiscal year. It is expected that Congress will make appropriations for future fiscal years from which additional funds together with funds provided by one or more non-federal project sponsors will be reserved for this contract.

(c) Failure to make payments in excess of the amount currently reserved, or that may be reserved from time to time, shall not entitle the contractor to a price adjustment under the terms of this contract except as specifically provided in paragraphs (f) and (i) below. No such failure shall constitute a breach of this contract, except that this provision shall not bar a breach-of-contract action if an amount finally determined to be due as a termination allowance remains unpaid for one year due solely to a failure to reserve sufficient additional funds therefore.

(d) The Government may at any time reserve additional funds for payments under the contract if there are funds available for such purpose. The contracting officer will promptly notify the contractor of any additional funds reserved for the contract by issuing an administrative modification to the contract.

(e) If earnings will be such that funds reserved for the contract will be exhausted before the end of any fiscal year, the contractor shall give written notice to the contracting officer of the estimated date of exhaustion and the amount of additional funds which will be needed to meet payments due or to become due under the contract during that fiscal year. This notice shall be given not less than 45 nor more than 60 days prior to the estimated date of exhaustion.

(f) No payments will be made after exhaustion of funds except to the extent that additional funds are reserved for the contract. The contractor shall be entitled to simple interest on any payment that the contracting officer determines was actually earned under the terms of the contract and would have been made except for exhaustion of funds. Interest shall be computed from the time such payment would otherwise have been made until actually or constructively made, and shall be at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41, 85 STAT 97, as in effect on the first day of the delay in such payment.

(g) Any suspension, delay, or interruption of work arising from exhaustion or anticipated exhaustion of funds shall not constitute a breach of this contract and shall not entitle the contractor to any price adjustment under the "Suspension of Work" clause or in any other manner under this contract.

(h) An equitable adjustment in performance time shall be made for any increase in the time required for performance of any part of the work arising from exhaustion of funds or the reasonable anticipation of exhaustion of funds.

(i) If, upon the expiration of sixty (60) days after the beginning of the fiscal year following an exhaustion of funds, the Government has failed to reserve sufficient additional funds to cover payments otherwise due, the contractor, by written notice delivered to the contracting officer at any time before such additional funds are reserved, may elect to treat his right to

proceed with the work as having been terminated. Such a termination shall be considered a termination for the convenience of the Government.

(j) If at any time it becomes apparent that the funds reserved for any fiscal year are in excess of the funds required to meet all payments due or to become due the contractor because of work performed and to be performed under the contract during the fiscal year, the Government reserves the right, after notice to the contractor, to reduce said reservation by the amount of such excess.

(End of clause)

SECTION 00800

SPECIAL CONTRACT REQUIREMENTS

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1. COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK

a. The Contractor shall be required to (1) commence work under this Contract within 5 calendar days after the Contractor receives the Notice to Proceed, (ii) prosecute the work diligently, and (iii) complete the entire work ready for use, not later than 510 calendar days after the day the Contractor receives the Notice to proceed.

The time stated for completion shall include final cleanup of the premises.

.b. Location: The site of work is along the Raritan River in Bridgewater, Somerset County, New Jersey.
. c. The Contractor shall furnish all labor, materials, equipment and services (except those furnished by the Government) for the following work:

Creation and restoration of wetlands.

. d. All work shall be in accordance with the plans and specifications or instructions attached hereto and made a part thereof, or to be furnished hereafter by the Contracting Officer and subject in every detail to his supervision, direction, and instructions.
.e. Magnitude of Construction Project: The estimated value of the work is between $3,000,00 and $6,000,000.

2. LIQUIDATED DAMAGES - CONSTRUCTION (APR 1984)

. a. If the Contractor fails to complete the work within the time specified in the Contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of $1,231.00 for each day of delay.
. b. If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.
. c. If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted. (FAR 52.212-5)
. d. At a time before the Project is physically complete but is functionally complete to the satisfaction of the Government, the Government at its sole discretion may agree to accept transfer of the facility or project provided that the remaining work to be done ("punchlist") is completed no later than 30 days from the date of transfer. In this case the Contractor shall pay liquidated damages for punchlist items not completed in the daily amount of $100 per day commencing after 30 days of project transfer or after date required for project completion (including all extensions), whichever occurs later.

3. EQUAL OPPORTUNITY PREAWARD CLEARANCE OF SUBCONTRACTS (1984 APR)

Notwithstanding the clause of this Contract entitled "Subcontracts" the Contractor shall not enter into a first-tier Subcontract for an estimated or

actual amount of $1 million or more without obtaining in writing from the Contracting Officer a clearance that the proposed Subcontractor is in compliance with the equal opportunity requirements and therefore is eligible for award.

4. CERTIFICATES OF COMPLIANCE

Any Certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in 4 copies. Each certificate shall be signed by an official authorized to certify in behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet the specific requirements. (ECI 7-670.3)

5. BID GUARANTEE

See Bid Guarantee Clause of Section 00700, CONTRACT CLAUSES.

6. CONTRACT DRAWINGS, MAPS, AND SPECIFICATIONS (52.236-7001)

See Contract Drawings, Maps and Specifications Clause of Section 00700, CONTRACT CLAUSES. For list of drawings see Sheet T01 of the plans.

7. RECORD DRAWINGS

. a. General: The Contractor will maintain as-built drawings during the construction period and will submit final record drawings at the completion of individual facilities. The Government will provide to the Contractor the Microstation files consisting of CD's of the Project's drawing files. The Contractor is required to make prints or mylars from the files and continuously maintain drawings to show current as-built conditions for the duration of the construction. Except for updates as indicated below, the Contractor may maintain as-built drawings by marking up drawings by hand or by electronic methods. Scanned drawings will not be acceptable. If the Government cannot provide electronic files for the project drawings, mylar (reproducible) drawings will be provided. The Contractor will then be required to comply with all requirements indicated herein by the use of hand drafting.

. b. Progress As-built Prints: During construction the Contractor is responsible for maintaining up to date one set of paper prints to show as-built construction conditions. These prints shall be kept current and

available on the job site at all times. All changes from the Contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accordingly and neatly recorded as they occur by means of details and notes. The as-built prints will be jointly inspected for accuracy and completeness by the Contracting Officer's Representative and a responsible representative of the Contractor prior to submission of each monthly pay estimate. Progress as-builts shall show the following information, but not limited thereto:

. (1) The location and description of any utility lines, valves, or other installations of any kind within the construction area. The location includes dimensions to permanent features.
. (2) The location and dimensions of any changes of structures.
. (3) Correct grade or alignment of roads, structures or utilities if any changes were made from the Contract plans.
. (4) Correct elevations if changes were made in site grading
. (5) Changes in details of design or additional information obtained from working plans specified to be prepared and/or furnished by the Contractor including but not limited to fabrication, erection, installation plans and placing details; pipe sizes; etc.
. (6) The topography and grades of all drainage installed or affected as part of the Project construction.
. (7) All changes that result from Contract modifications.
. (8) Where plans or specifications allow options, only the option selected for construction shall be shown on the as-built prints.
. (9) All amendments to the plans issued during the solicitation period shall be posted on the as-built drawings.
. d. Protection of Records: The Contractor shall be responsible for the protection and safety of electronic record until returned to the Contracting Officer. Any plans damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at his expense.
.e. 50% As-Built Update: At the 50% point in construction of this Project (as determined by progress payments) the Contractor will update the electronic files of the Project plans in Microstation format to show as-built conditions as above, and submit an updated CD and one set of prints to the Contracting Officer for approval. The Contractor shall submit one set of prints to the Contracting Officer for approval. Any required corrections will be made by the Contractor before payment will be approved for this item. The Contractor must use the updated electronic record or mylar drawings to produce required prints.
. f. Preliminary Record Drawing Submittal: At least thirty calendar (30) days before the anticipated date of final acceptance inspection the Contractor shall deliver two copies of progress prints showing final as-built conditions to the Contracting Officer for review and approval. These prints shall correctly show all the features of the Project as it has been constructed, adding such additional plans as may be necessary. They shall be printed from the electronic files updated in Microstation format. Within ten days, the Government will provide the Contractor one set of prints indicating required corrections to the preliminary submittal. Contractor will correct and resubmit within 5 days. Any required subsequent review and resubmission periods will each be accomplished within 5 days. Upon Government approval of the preliminary submittal, the Contractor will prepare final record drawings.
.g. Record Drawing Submission: In Microstation each drawing shall be marked with the words "RECORD DRAWING AS-BUILT" followed by the name of the Contractor in font which will print at least 3/16" high. All revisions to the original plans will be dated in the revision block. All prints must be reproduced from the updated electronic files. A minimum of 5 calendar days before the anticipated date of final acceptance inspection of the Project the Contractor shall deliver to the Contracting Officer:

Three (3) CD's of electronic files of Record Drawings.
One (1) copy of prints of Record Drawings.

Failure to make an acceptable submission of Record Drawings will delay the Final Acceptance Inspection for the Project and shall be cause for withholding any payment due the Contractor under this Contract..

.h. Property: All paper prints and electronic files will become property of the Government upon final approval. Approval and acceptance of the final record drawings shall be accomplished before final payment is made to the Contractor.
.i. Payment: No separate payment will be made for the as-built and record drawings or updating of electronic files required under this Contract, and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor.

8. PHYSICAL DATA

Information and data furnished or referred to below are not intended representations or warranties but are furnished for information only. It is expressly understood that the Government will not be responsible for any deduction, interpretation, or conclusion drawn therefrom by the Contractor: (FAR 52.236-4) (APR 1984).

a. Survey and Subsurface Investigations: The physical conditions indicated on the plans and the specifications are the result of site investigations by survey and spoon sampling. While the Government's procedures for subsurface investigations may produce representative information at their respective locations, local variation characteristics of the subsurface materials of this region are to be expected. Should any question or discrepancy arise, the condition should be independently confirmed by the Contractor.

b. Transportation Facilities: Interstate 78, Interstate 287, U.S. Route 22, and New Jersey State Route 28 are located in the vicinity of the Project site. The Contractor shall make his own investigation of available roads for transportation, load limits of bridges and roads, and other road conditions affecting the transportation of materials, equipment, supplies and other facilities to the site. The Contractor shall also construct such temporary haul roads and bridges as may be necessary for the conduct of his work with the approval of the Contracting Officer and in accordance with the specifications. Any such temporary construction shall be restored to its original condition at the completion of the Contract. All costs for the use of existing transportation facilities, for the construction of temporary facilities, and for maintenance, repair, removal and restoration shall be the responsibility of the Contractor.

9. PAYMENT FOR MATERIALS DELIVERED OFF-SITE

Pursuant to the Contract Clauses in this Contract titled "Payments Under Fixed-Price Construction Contracts", materials delivered to the

Contractor at locations other than the site of the work may be taken into consideration in making payments if included in payment estimates and if all the conditions of the Contract Clauses are fulfilled. Payment for items delivered to locations other than the work site will be limited to those materials which have been approved, if required by the technical provisions; those materials which have been fabricated to the point where they are identifiable to an item of work required under this Contract. Such payment will be made only after receipt of paid or receipted invoices or invoices with cancelled check showing title to the items in the prime Contractor and including the value of materials and labor incorporated into the item.

10. EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE

a. Allowable cost for construction, planting, and seeding equipment in sound workable condition owned or controlled and furnished by a Contractor or Subcontractor at any tier shall be based on actual cost data when the Government can determine both ownership and operating costs for each piece of equipment or equipment groups of similar serial and series from the Contractor's accounting records. When both ownership and operating costs cannot be determined from the Contractor's accounting records, equipment costs shall be based upon the applicable provisions of EP 1110-1-8,* "Construction Equipment Ownership and Operating Expense Schedule," Region 1. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified Otherwise by the Contracting Officer. For equipment not included in the schedule, rates for comparable pieces or equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retrospective pricing, the schedule in effect at the time the work was performed shall apply.

(* This manual can be ordered from the Government Printing Office by calling Tel. No. (202) 783-3238. There is a charge for the manual.)

. b. Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36 substantiated by certified copies of paid invoices. Rates for equipment rented from an organization under common control, lease-purchase or sale-leaseback arrangements will be determined using the schedule except that rental costs leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated leases are allowable. Costs for major repair and overhaul are unallowable.

. c. When actual equipment costs are proposed and the total amount of the pricing action is over $25,000, cost or pricing data shall be submitted on Standard Form 1411, "Contract Pricing Proposal Cover Sheet." By submitting cost or pricing data, the Contractor grants to the Contracting Officer or an authorizing representative the right to examine those books, records, documents and other supporting data that will permit evaluation of the proposed equipment costs. After price agreement the Contractor shall certify that the equipment costs or pricing data submitted are accurate, complete and current.

11. AVAILABILITY AND USE OF UTILITY SERVICES (APR 1984)

The responsibility shall be upon the Contractor to provide and maintain at his own expense adequate supply of electricity, water, and sanitary facilities for his use for construction purposes and the use of his construction forces and to install and maintain necessary supply connections for same, but only at such locations and in such manner as may be approved by the Contracting Officer. All installations shall comply with all applicable codes, standards and requirements. Before final acceptance, temporary connections installed by the Contractor shall be removed in a manner satisfactory to the Contracting Officer.

12. LAYOUT OF WORK

. a. The Contractor will establish at his own expense the baseline using the established monuments/and benchmarks as shown on the plans.
. b. From the established baselines and benchmarks, the Contractor shall complete the layout of the work and shall be responsible for all measurements that may be required for the execution of the work to the location and limit marks prescribed in the specifications or on the plans, subject to such modifications as the Contracting Officer may require to meet changed conditions or as a result of necessary modifications to the Contract work.
. C. The Contractor shall furnish, at his own expense, such stakes, templates, platforms, equipment, tools and material, and all labor as may be required in laying out any part of the work from the baselines and bench marks. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established until authorized to remove them, and if such marks are destroyed by the Contractor, or through his negligence prior to their authorized removal, they shall be replaced by the Contractor, at his own expense, if directed by the Contracting Officer. The Contracting Officer may require that work be suspended at any time when location and limit marks established by the Contractor are not reasonably adequate to permit checking of the work.

13. FIELD OFFICE AND VEHICLE

. a. The Contractor shall furnish at the job site, prior to the start of work, a lockable field office and equipment for the use of the Contracting Officer, meeting the following requirements:
. b. A raised walkway with stairs completely enclosed from the weather with minimum two doors shall connect office space consisting of multiple trailers. Shop drawings shall be submitted for approval prior to site selection and construction.
. c. The office shall be located immediately adjacent to the project site within view of the construction project.

d. The following equipment shall be submitted for approval:

-Office space with two (2) rooms of not less than 800 square feet (SF), with lockable interior doors, the space (if rented in a building) shall be in new condition. Each office shall contain at least two (2) operable windows with screens.

-Once (1) partitioned meeting area having a minimum of 800 SF of open floor area.

-Three (3) office desks with lockable drawers (60 inches x 30 inches), laminated top, and high-back cloth swivel chairs.

-Three (3) Telephones: 3 separate telephones with extension and intercom connection, a separate cordless station phone 900 MHz two (2) line (Total four (4) units). Telephone shall be two (2) lines with twenty (20) number memories. Phone service shall be applied in the Contractor's name and itemized bills paid by the Contractor. Installation and phone company fees to be paid by the Contractor. The Contractor shall arrange for the telephone service and instruments as follows:

* Two (2) lines with four (4) instruments, five (5) jacks, for voice communications and intercom.
. * One (1) line dedicated for use by fax machines.
. * One (1) line dedicated for use by two (2) computer modems.
. * One (1) TCIP modem line for the network computer.

-One (1) two (2)-line digital telephone answering machine with remote answering and access capability and voice time/day stamp.

-Three (3) fire-proof, four (4)-drawer, legal size lockable filing cabinets.

-Two (2) shelf sets, four (4) shelves high x twelve (12) inches deep x three (3) feet long, (attachable to wall).

-One (1) plain paper fax machine with dedicated telephone line and an adequate supply of paper. The Contractor shall replenish the supply of fax paper weekly, as required by the Contracting Officer.

-Three (3) new IBM-compatible personal computer P6/450 Pentium IV or equivalent with computer desk with printer stand, to be supplied complete in all respects to the Contracting Officer within 10 days of notice to proceed, including for each machine:

-One of the three computers shall be set up as a network server for the remaining two units. The computer shall be set up for a scanner, plotter, and two printers, as well as the feed for digital camera inputs by means of a SCSI ("SCUZZY") multi-pot card or equal.

.* Pentium IV processor running at 2.4 GHz Pentium IV with 3D TECHNOLOGY
.* High speed cache memory controller with 512 KB L2 PIPELINE BURST
.* Ethernet Network card
.* One (1) 3.5" 1.44 MB diskette drives with drive controller
.* 60 CGB hard drive with 512 MB memory
.* Multi I/O card
.* Seven (7) expansion slots and two (2) USB ports
.* Sound card WITH SPEAKERS
.* Enhanced Natural (i.e., split) 101 keyboard
.* Windows 2000 Professional
.* Six (6) outlet surge protector
.* TFT, digital FLAT SCREEN COLOR monitor - 18 inch equal to Compaq Presario FP500 or better with 60MB 100MHz (AGPZ)
.* 60MB 100 MHz (AGPZ) 3D color graphics card minimum
.* Hewlett-Packard Desk Jet 2000c Color Printer or equivalent printer with ability to print 8 pages per minute with at least 200 sheets per input tray

.* 10,000 sheets of 8-1/2 x 11 laser type print paper
.* Original WINDOWS manual and disks installed
.* Mouse with pad
.* DSL cable modem with Verizon ISP

-Cable DSL Router with minimum 4-port switch to create a VPN (Virtual Private Networking)

.* Voice recognition software with 95% accuracy and microphone
.* Software 95% Scan OCR Accuracy
.* CD ROM (DVD 40x/Speed) (INTERNAL)
.* CD 52x40x52 R/W (READ/WRITE CD) with 20 DISKS (INTERNAL)

-250 MB (internal) ZIP drive (or equal) which will read 250 MB ZIP disks

.* Windows 2000, and Windows NT
.* Primavera for Windows, including all original disks and manuals or equivalent
.* Microsoft Office Professional 2000, including MS Word and Excel, Power Point, and Access programs or equivalent, able to read "Office" files without conversion
.* Database manager
.* Anti-Virus software 2 types (2004 version)
.* Communication Software
.* LYNX PHOTO IMAGING PHOTO PROCESSOR SOFTWARE AND FILE MANAGER OR EQUAL
.* AUTO CAD VER 15 or equivalent
.* All software shall be the latest version available, compatible with hardware, and shall be provided with CD ROM disks and manuals as installed
.* Computer must be completely set up with DOS and the above software operable. Setup person will give an eight-hour demonstration period to show that all components are functioning properly and answer any questions the Contracting Officer may have ABOUT ANY PROGRAM
.* ALL REQUIRED CABLES, CONNECTORS, AND WIRING TO CREATE THE COMPUTER NETWORK AND HARDWARE.

-DSL or Cable Modem Service: Business DSL or Cable modem service with all required equipment (modems, filters, Ethernet NIC cards, etc.) shall be provided for the entire duration of the contract. DSL service shall be 1.5 Mbps downstream/384 Kbps upstream. Service shall utilize Static IP addresses for the computer connections. Contractor shall pay all costs associated with this service including any ISP fees. DSL or Cable Modem service shall be a 'dedicated' service, and this line shall not be shared with any other Users external to the COE field office (i.e., Contractors Field Office Trailer and USACE Field Office Trailer shall not utilize the same DSL or Cable Modem line via an Ethernet Switch/Hub). All field office computers shall be connected to the DSL or Cable Modem Service, and contractor shall provide and install all required equipment (Switch/Hub, Ethernet NIC Cards, modems, etc.).

The following equipment shall also be provided:

-One (1) new 19" Color TV with basic cable service with the Weather Channel available.
-Wall TV/VCR swivel mount with outlet surge protector.
-One (1) new Digital Camera KODAK DC22 (OR EQUAL) 028 to 105 ZOOM COMPACT WITH PROPRIETY SOFTWARE ESTABLISHED TO BE LEGAL COURT DOCUMENTS with case, spare battery and memory card, computer interface and program and desk charger.

-One (1) new Video Cassette Recorder (VCR) VHS Format Record/Play ability.
-One (1) new digital Video Camera, with TFT or LCD screen including computer interface, software, spare battery and memory card, case and charger.
-One (1) HP Design Jet 500 Color Plotter or equivalent connected to both computers via printer switching terminals with STAND AND ROLL PAPER FEED WITH TEN (10) ROLLS size E paper.
-One (1) new HP Color Laserjet Printer, or equal.
-One (1) new Optical scanner-legal size page 9600 DPI Enhanced with optical character reader and OMNI PAGE PRO software USB port interface with driver card TWAIN driver.
-Three (3) office conference tables, 2-1/2 feet by 8 feet with laminated top oval configuration.
-Eight (8) straight high-back office chairs with wheels.
-One (1) bulletin board, 3 feet by 5 feet.
-Four (4) wastebaskets with supply of bags.
-One (1) vertical filing plan rack for twelve (12) sets of E size plans.
-One (1) drafting table FOR E size drawings and chair.
-Three (3) office tables, 3 feet by 8 feet with laminated top.
-One (1) heavy duty, digital dry process photocopying machine, with auto document feeder, sorter, collator, enlarging/reduction capability, 8.5 x 11; one (1) 8.5 x 14 and one (1) 11 x 17 paper trays and an adequate supply of copy paper and printing supplies. The supply of copy paper shall be replenished by the Contractor regularly, as required by the Contracting Officer
-Two (2) coat racks.
-One (1) paper towel dispenser with towels.
-One (1) paper cup dispenser with cups.
-One (1) water cooler/heater.
-Toilet facilities as specified.
-One (1) steel locking storage cabinet.
-All structures installed under this paragraph FIELD OFFICE shall be provided with, as a minimum, the following services:

.* Lighting. Electric light, non-glare types luminaries to provide a minimum illumination level of 50-foot candles at desk height level
.* Heating and Cooling. Adequate equipment to maintain an ambient air temperature of 70 degrees F +/- 3 degrees
.* Window blinds
.* Potable bottled water
.* Fire Extinguisher. Non toxic, dry chemical, fire extinguisher meeting Underwriters Laboratories, Inc. approval for Class A, Class B, and Class C fires with a minimum rating of 10A; 20B; 10C
.* Toilet. Two separate enclosed rooms power ventilated, heated and complying with applicable sanitary codes including hot and cold running water and flush type toilet
.* Radio communication equipment including base station and two (2) portable units on the Contractor's frequency, all with desk chargers. If Contractor's frequency is not VHF, then provide, in addition to the Contractor's frequency equipment, a VHF Base Station and FOUR (4) hand-held VHF radios with desk chargers similar to ICOM IC-M125 (Base Station) and IC-M15 Hand Held.
.* 24-Hour electronic security alarm system with direct feed to local police department

-Janitorial services on a daily basis including, but not limited to, sweeping,

emptying baskets. Weekly mopping, dusting all surfaces, servicing of toilets and washing and waxing of floors, cleaning all windows (inside and out) and re-supply of paper goods and soap. -Sufficient supply of electrical outlets meeting NEC code for residential construction.

. e. The Contractor shall be responsible for the monthly utility and telephone payment and installation cost of the above service and equipment.
. f. The Contractor shall also supply a vehicle to the Area Engineer Staff for their own use. This vehicle shall be a utility vehicle type six-passenger pick-up truck, with 4-wheel drive. Maintenance of the vehicle shall be the Contractor's responsibility.
.g. No separate payment will be made for providing the above accommodations and all costs in connection therewith will be considered the obligation of the Contractor. The field office and facilities shall be removed from the project site at the original contract completion date or the extended contract completion date, as directed by the Contracting Officer. No payment shall be made for Mobilization until the field office is complete and accepted.

Computer Security Requirements:
The Contractor will agree to accept responsibilities and comply with procedures indicated below in connection with the furnishing of Contractor-owned computers for use by Government personnel in accordance with contract requirements.

. a. The computers must be dedicated exclusively for Government use. Contractor will not use any computer it supplies which is designated for use by the Government. Contractor will assure that the Central Processing Unit (CPU) is electronically isolated from the Contractor's and not inter-connected via Local Area Network (LAN).
. b. Normal access to the computer shall be restricted to Government personnel. The Contractor shall supply a separate lockable trailer where the computers are to be set up. The Contractor must immediately notify Government personnel when emergency access to the trailer was exercised by non-Government individuals, and what the circumstances were.
. c. If the CPU hard drive fails, the Government will furnish an equivalent hard drive to the owner of the computer, and the old hard drive will b returned to the Government. The Contractor shall not remove any hard drive nor proceed with any repair of the computer unless an authorized Government employee witnesses and approves of the repair.
. d. At the time of return of the computer, the Contractor will allow the Government to first remove all information from the hard drive.
. e. The Contractor agrees to provide a written certification signed by an authorized officer of the company agreeing to the above policy.

14. BULLETIN BOARD

Immediately upon beginning of work under this Contract, the Contractor shall provide at the job site a weatherproof glass-covered bulletin board for displaying the fair employment poster, wage rates, and safety bulletins and posters. Emergency telephone numbers and reporting instructions for ambulance, physician, hospital, fire and police shall be posted. The bulletin board shall be located in a conspicuous place easily accessible to all and legible copies of the aforementioned data shall be displayed until work under the Contract is completed. No direct payment will be made for the bulletin board.

15. QUANTITY SURVEYS (APR 1984)

. a. Quantity surveys shall be conducted, and the data derived from these surveys shall be used in computing the quantities of work performed and the actual construction completed and in place.
. b. The Contractor shall conduct the original and final surveys and surveys for any periods for which progress payments are requested. All these surveys shall be conducted under the direction of the Contracting Officer, unless the Contracting Officer waives this requirement in a specific instance. The Government shall make such computations as are necessary to determine the quantities of work performed or finally in place. The Contractor shall make the computations based on the surveys for any periods for which progress payments are requested.

c. Promptly upon completing a survey, the Contractor shall furnish the originals of all field notes and all other records relating to the survey or to the layout of the work to the Contracting Officer, who shall use them as necessary to determine the amount of progress payments. The Contractor shall retain copies of all such material furnished to the Contracting Officer. (FAR 52.236-16)

16. SUPERINTENDENCE OF SUBCONTRACTORS (JAN 1965)

a. The Contractor shall be required to furnish the following, in addition to the superintendence required by the Contract Clause titled, "SUPERINTENDENCE BY THE CONTRACTOR".

. (1) If more than 50% and less than 70% of the value of the Contract work is subcontracted, one superintendent shall be provided at the site and on the Contractor's payroll to be responsible for coordinating, directing, inspecting and expediting the subcontract work.
. (2) If 70% or more of the value of the work is subcontracted, the Contractor shall be required to furnish two such superintendents to be responsible for coordinating, directing, inspecting and expediting the subcontract work.
. b. If the Contracting Officer, at any time after 50% of the subcontracted work has been completed, finds that satisfactory progress is being made, he may waive all or part of the above requirement for additional superintendence subject to the right of the Contracting Officer to reinstate such requirement if at any time during the progress of the remaining work he finds that satisfactory progress is not being made. (DoD FAR Supplement 52.236-7008)

17. SCHEDULING AND DETERMINATION OF PROGRESS

Pursuant to the Contract Clause, SCHEDULES FOR CONSTRUCTION CONTRACTS, the Contractor shall prepare and submit for approval a practicable project schedule. The type of schedule and detailed requirements as well as timing of this submittal shall be as specified in specification section "PROJECT SCHEDULE".

This schedule will be the medium through which the timeliness of the Contractor's construction effort is appraised. When changes are authorized that result in Contract time extensions, Contractor shall submit a modified schedule for approval by the Contracting Officer.

The terms of Contract Clause, SCHEDULES FOR CONSTRUCTION CONTRACTS, with reference to overtime, extra shifts, etc., may be invoked when the Contractor fails to start or complete work features or portions of same by the time indicated by the milestone dates on the approved project schedule, or when it is apparent to the Contracting Officer from the Contractor's actual progress that these dates will not be met.

Neither on the project schedule as originally submitted nor on any updated periodic schedules which the Contractor is required to prepare and submit, shall the actual progress to be entered include or reflect any materials which even though on the Project Site, are not yet installed or incorporated in the work. For payment purposes only, an allowance will be made by the Contracting Officer of up to 100 percent of the invoiced cost of materials or equipment delivered to the Project Site but not incorporated into the construction, pursuant to Contract Clauses, PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS. The making of such an allowance will be contingent upon a determination by the Contracting Officer that the Contractor's compliance with the quality control requirements of the Contract is more than satisfactory.

18. PROCEDURES FOR SUBMISSION AND PAYMENT OF ALL CONTRACT PAYMENTS

In addition to the requirements contained in the Contract Clause entitled "PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS" and to implement the requirements of the Prompt Payment Act Amendments of 1988, P.L. 100-496, the following shall apply to all payments made under this Contract:

. a. At the time of submission of the progress chart, the Contractor shall submit for approval by the Contracting Officer or his authorized representative a breakdown of the Contract work which shall be to the degree of detail required by the Contracting Officer or his representative to effect reasonable progress payments. The Contracting Officer or his representative shall review this breakdown within 30 calendar days after receipt and either advise the Contractor that it is approved or disapproved, and if disapproved the reasons for disapproval. Only after the breakdown is approved shall any payment invoice be accepted from the Contractor and any payment made to him. The Contracting Officer can determine if it is in the best interest of the Government to make payment without an approved breakdown, however, in no case shall more than 10% of the Contract amount be paid unless the breakdown is approved.
. b. The Contractor shall submit his request for payment by submission of a proper invoice to the office or Person(s) designated in subparagraph (c). For purposes of payment a "proper invoice" is defined as the following:

. (1) An estimate of the work completed in accordance with the approved breakdown indicating the percentage of work of each item and the associated costs.
. (2) A properly completed Eng Form 93 and 93a (where required).
. (3) All contractual submissions indicated elsewhere in this Contract to be submitted with payment, such as updated progress schedules, updated submittal registers, etc.
. (4) The following certification executed by a responsible official of the organization authorized to bind the firm. A "responsible official" would be either a corporate officer, partner or owner, in the case of a sole proprietorship

. I hereby certify, to the best of my knowledge and belief, that -
.(a) The amounts requested are only for performance in accordance with the specifications, terms and conditions of the Contract;
. (b) Payments to Subcontractors and suppliers have been made from previous payments received under the Contract and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with Subcontract requirements and the requirements of chapter 39 of Title 31, United States Code; and
. (c) This request for progress payments does not include any amounts, which the prime Contractor intends to withhold or retain from a Subcontractor or supplier in accordance with the terms and conditions of the Subcontract.
. (d) All required prime and Subcontractor payrolls have been submitted.

_____
(Name)

_____
(Title)

_____
(Date)

. c. The Government shall designate the office or person(s) who shall first receive the invoice submissions and the Contractor shall be so notified at the preconstruction conference. In addition to the designated Project Engineer, the Contractor shall at the same time submit one copy of the detailed breakdown and the Eng Form 93 and 93a Form to the Area Engineer.
. d. The Government representative shall return any request for payment, which is deemed defective within 7 days of receipt and shall specify the defects. If the defect concerns a disagreement as to the amount of work performed and/or the amount of the payment being submitted, the Government and the Contractor's representative should meet to resolve the differences and reach agreement. Upon agreement, the Contractor shall submit a new breakdown and Eng Form 93 (and 93a) and any other submissions requiring correction. These will be incorporated with the previous submittal and will then constitute a proper invoice.
. e. If agreement cannot be reached, the Government shall determine the proper amount per Contract Clause, PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS and process the payment accordingly. In this event, a "proper invoice" for Prompt Payment Act purposes will not have been submitted to the Government.
. f. The Government shall pay the Contractor in accordance with the following time frames:

. (1) Progress Payments - From the date a "proper invoice" is received, in accordance with subparagraphs b and d of this clause, the Government will issue a check within 14 calendar days.
. (2) Reduction in Retainage Payment. If during the course of the contract, a reduction in retainage payment is required, the Government shall issue a check within 30 calendar days after the approval of the release to the Contractor by the Contracting Officer or his authorized representative.
. (3) Final Payment. A final payment request shall not be considered valid until the Contractor has fulfilled all Contract requirements including all administrative items, payrolls, warranties, etc. and has submitted a release of claims. When the Contractor has fulfilled all Contract requirements and a "proper invoice" has been submitted, the Government shall issue a check within 30 days from the date of acceptance of the Project by the Contracting Officer.

19. SUBMISSION OF CLAIMS

The following shall be submitted to the Contracting Officer at the following address: U.S. Army Corps of Engineers, New York District, 26 Federal Plaza, New York, New York 10278-0090:

.a. claims referencing or mentioning the Contracting Disputes Act of 1978
. b. requests for a written decision by the Contracting Officer
.c. claims certified in accordance with the Contract Disputes Act of 1978

No other Government representative is authorized to accept such requests. A copy shall also be provided to the Authorized Representative of the Contracting Officer.

The Contractor shall also provide the Contracting Officer with a copy of any requests for additional time, money or interpretation of Contract requirements which were provided to the Authorized Representative of the Contracting Officer and which have not been resolved after 90 days.

20. PROGRESS PAYMENTS

Progress Payments made pursuant to the PAYMENTS TO CONTRACTOR clause for any item of work in the bid schedule shall be based on the Contract unit price or lump sum amount set forth in the bid schedule for that item of work. If the amount of the unit price or lump sum bid for any item of work is in excess of 125% of the Government estimate for such item, the Contracting Officer may require the Contractor to produce cost data to justify the price of the bid item. Failure to justify the bid item price to the satisfaction of the Contracting Officer may result in payment of an amount equal to 125% of the Government estimate for such bid item upon completion of work on the item and payment of the remainder of the bid item price upon final acceptance of all Contract work.

21. PERFORMANCE EVALUATION OF CONTRACTOR (1985 JAN HQ USACE)

As a minimum, the Contractor's performance will be evaluated upon final acceptance of the work. However, interim evaluation may be prepared at any time during Contract performance when determined to be in the best interest of the Government.

The format for the evaluation will be SF 1421, and the Contractor will be rated either outstanding, satisfactory, or unsatisfactory in the areas of Contractor Quality Control, Timely Performance, Effectiveness of Management, Compliance with Labor Standards, and Compliance with Safety Standards. The Contractor will be advised of any unsatisfactory rating, either in an individual element or in the overall rating, prior to completing the evaluation, and all Contractor comments will be made a part of the official record. Performance Evaluation Reports will be available to all DoD Contracting Officers for their future use in determining Contractor responsibility, in compliance with DFARS 36.201(c)(1).

22. SAFETY AND HEALTH REQUIREMENTS MANUAL

The Contractor shall comply with all pertinent provisions of the latest edition of the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385- 1-1, in effect on the date of the solicitation. The latest edition, as referenced in the Accident Prevention Clause of the CONTRACT CLAUSES, is dated 3 November 2003. Changes of EM 385-1-1 are available at http://www.hq.usace.army.mil (at the HQ homepage, select Safety and Occupational Health). The Contractor shall be responsible for complying with the current edition and all changes posted on the web as of the effective date of this solicitation.

As discussed in Section 01525 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS, before commencing the work, the Contractor shall - (1) Submit a written proposal for implementing the Accident Prevention Plan; and (2) Meet with representatives of the Contracting Officer to discuss and develop a mutual understanding relative to administration of the overall safety program.

23. AUTHORIZED CONSTRUCTION AREA AND TRESPASSING

The Contractor shall not inflict damage upon land and properties outside the authorized construction areas by unwarranted entry upon, passage through, damage to, or disposal of, material on such land or property. The Contractor may make a separate agreement with any other party, regarding the use of, or right to, land or facilities outside the Project Site. If such an agreement is made, it shall be in writing and a copy shall be furnished the Contracting Officer. The Contractor shall hold and save the Government, its officers, and agents free from liability of any nature or kind arising from any trespassing or damage occasioned by his operations.

24. DAMAGE TO WORK

The responsibility for damage to any part of the permanent work shall be as set forth in the article of the Contract clause entitled "PERMITS AND RESPONSIBILITIES". However, if in the judgment of the Contracting Officer, any part of the permanent work performed by the Contractor is damaged by flood, earthquake, hurricane, severe coastal storm or tornado, for which damage is not due to the failure of the Contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of the work, the Contractor will make the repairs as ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable Contract unit or lump-sum prices as fixed and established in the Contract. If, in the opinion of the Contracting Officer, there are no Contract unit or lump sum prices applicable to any part of such work, an equitable adjustment, pursuant to Contract Clause entitled CHANGES, will be made as full compensation for the repairs of that part of the permanent work for which there are not applicable Contract unit or lump-sum prices. Except as herein provided, damage to all work, utilities, materials, equipment, including temporary construction and utilities, and plant and seed materials, pavements, and other property along the routes used by the Contractor's vehicles, shall be repaired to the satisfaction of the Contracting Officer, Bridgewater Township, Somerset County the State of New Jersey and the utilities companies, at the Contractor's expense regardless of the cause of such damage.

25. ENVIRONMENTAL LITIGATION (1974 NOV) (OCE)

. a. If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or a Subcontractor at any tier not required by the terms of this Contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a Subcontractor at any tier other than as required by the terms of this Contract, such suspension, delay, or interruption shall be considered as if ordered by the Contracting Officer in the administration of this Contract under the terms of the "Suspension of Work" clause of this C ontract. The period of such suspension, delay or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this Contract (excluding profit) as provided in that clause, subject to all the provisions thereof.

. b. The term "environmental litigation", as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment. (ECI 7-671.10)

26. LABOR-ADDITIONAL REQUIREMENTS

Fringe benefits statement: The method of payment of applicable fringe benefits will be indicated on DD Form 879, Statement of Compliance, and attached to each weekly payroll.

27. ACCESS AREA

Areas designated on the plans as "Work Site Access Road" shall be used by the Contractor solely for the purpose of access to and from the " Approximate Project Limits". The Contractor shall arrange his use of these access areas so as to minimize interference with the property owners' (or user's) access or normal use.

28. TIME EXTENSIONS (APR 1984)

a. Notwithstanding any other provisions of this Contract, it is mutually understood that the time extensions for changes in the work will depend upon the extent, if any, by which the changes cause delay in the completion of the various elements of construction. The change order granting the time extension may provide that the Contract completion date will be extended only for those specific elements so delayed and that the remaining Contract completion dates for all other portions of the work will not be altered and may further provide for an equitable readjustment of liquidated damages under the new completion schedule. (FAR 52.211-13)

b. Time Extensions for Unusually Severe Weather.

.(1) This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with the Contract clause entitled "Default: (Fixed Price Construction)". In order for the Contracting Officer to award a time extension under this clause, the following conditions

must be satisfied:
. a. The weather experienced at the Project Site during the Contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the Project location during any given month.
. b. The unusually severe weather must actually cause a delay to the completion of the Project. The delay must be beyond the control and without the fault or negligence of the Contractor.
. (2) The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the Project location and will constitute the baseline for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER
DELAY WORK DAYS BASED ON (5) DAY WORK
WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
(7)	(6)	(7)	(5)	(6)	(5)	(6)	(5)	(5)	(4)	(4)	(6)

(3) Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the Contract, the Contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph 2, above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the Contract clause entitled "Default (Fixed Price Construction)".

29. VEHICULAR AND OTHER TRAFFIC CONTROL

The Contractor shall be required to provide and maintain barriers, flagmen and warning devices during construction and hauling operations which may interfere with vehicular and other traffic. The Contractor shall also be required to effect necessary traffic control as required by the appropriate agencies. All safety precautions shall be subject to the approval of the Contracting Officer.

30. STORAGE AREAS

The Contractor may store his required materials and equipment within the "staging area" or anywhere else within the "Approximate Project Limits" as shown on the plans. No storage will be allowed outside the designated limits. The Contractor may make his own arrangements with parties or agencies involved for storage areas outside the designated limits. All storage will be subject to applicable local, state and federal laws.

31. VERIFICATION OF SMALL BUSINESS UTILIZATION

. a. This clause is applicable to small business concerns whose contracts exceed $1,000,000.
. b. In accordance with the clause at FAR 52.219-8, entitled UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL DISADVANTAGED BUSINESS CONCERNS, in effect on the date of this Contract, the Contracting Officer may survey the extent of small and small disadvantaged business utilization under this Contract. The Contractor may be required to report to the Contracting Officer statistical data on the number and dollars amounts of subcontracting awards with small businesses and small disadvantaged businesses.
. c. As appropriate, the Contracting Officer may require one or more follow-up reports to the initial report.
. d. The Contractor agrees to insert this clause in any Subcontract that may exceed $1,000,000, including this subparagraph (d).

32. PRECONSTRUCTION CONFERENCE

. a. A pre-construction conference will be arranged by the Contracting Officer, or his Representative, after award of Contract and before commencement of work. The Contracting Officer's representative will notify the Contractor of the time and date set for the meeting. At this conference the Contractor will be oriented with respect to Government procedures and line of authority, contractual, administrative, and construction matters. Additionally, a schedule of required submittals will be discussed.
.b. The Contractor shall bring to this conference the following items in either completed or draft form:

-The Contractor's order of work.
-Accident Prevention Plan. (See Accident Prevention Clause in Section 00700 Contract Clauses and paragraph 25.
-Quality Control Plan. (See Section 01451A QUALITY CONTROL)
-Letter appointing Superintendent.
-List of Subcontractors, if any.

33. COORDINATION CONFERENCES

Routine coordination conferences will be scheduled by the Contracting Officer throughout the life of this Contract. Coordination conferences will be held to discuss Contract administration, Contractor quality control, phasing, scheduling, and other aspects relating to this construction. The Government and the Contractor will be represented at each of these meetings. Similar information concerning replacement personnel shall be forwarded to the Contracting Officer, should any replacement be required at any time during the life of this Contract. Coordination conferences will be scheduled to occur on a weekly basis.

34. CONTRACTOR WORKING HOURS

Unless specifically authorized by the Contracting Officer, Contract work shall be restricted to the hours of 7:00 A.M. to 6:00 P.M., Mondays through Saturdays. No work will be permitted on Sundays and federal and state legal holidays. The Contractor shall comply with paragraph 01.c.04 of EM 385-

1-1, the U.S. Army Corps of Engineers Safety and Health Requirements Manual, in effect on the date of this solicitation.

35. PARTNERSHIP IMPLEMENTATION PLAN

To more effectively accomplish this Contract, the Government proposes to form a partnership with the Contractor. This partnership would draw on the strengths of each organization in an effort to achieve a quality product within budget and on schedule. This partnership would be bilateral in make-up and participation would be required. The Contractor shall retain the services of a facilitator with experience as a Partnering Consultant. The facilitator satisfactory to both parties shall be hired who would be responsible to arrange for an offsite location, provide all workshop materials, and compile and distribute a completed partnering agreement to all participants within 30 days of the partnering session. Conference site location will be coordinated with the Contracting Officer for approval. Contractor should plan for the attendance of approximately 10-12 individuals from the Government, 5-7 representatives from Somerset County, 2-4 representatives from the Green Brook Flood Control Commission, 5-7 individuals from the State of New Jersey, in addition to the Contractor's and Subcontractor's personnel. All costs associated with partnership implementation will be borne by the Contractor. It is anticipated that the initial partnership conference will require the facilitator and a conference site. After the initial meeting, monthly partnership meetings will be hosted by the Contractor at the Project site.

36. GOVERNMENT RESIDENT MANAGEMENT SYSTEM

The Government will utilize an in-house Contract administration program entitled "Resident Manage System" (RMS). The Contractor shall utilize a Government furnished CQC Programming Module. See Section 01312A QUALITY CONTROL SYSTEM (QCS) for requirements.

37. CONSTRUCTION PROJECT SIGNS AND PUBLIC SAFETY SIGN

The Contractor shall construct three signs, one for Project identification, one to show on-the-job safety performance, and one public safety sign. Sample sign drawings together with mounting and fabrication details are provided at the end of this section. The signs shall be erected within 15 calendar days after the date of Notice to Proceed. The Project identification and safety performance signs are to be displayed side by side and mounted for reading by passing viewers. The public safety sign shall be the same size as the project signs.

Exact placement location will be designated by the Contracting Officer. Panels are fabricated using HDO (High Density Overlay) plywood with dimensional lumber uprights and bracing. The sign faces are non-reflecting vinyl. All legends are to be die-cut or computer-cut in the sizes and type-faces specified and applied to the white panel background following the graphic formats shown on the attached sheets. The Communications Red panel on the left side of the construction project sign with Corps signature

(reverse version) is screen printed onto the white background.

The Contractor shall maintain the signs in good condition throughout the construction period. No separate payment will be made for erecting and maintaining the signs and all costs in connection therewith will be considered the obligation of the Contractor. Upon completion of the Project, the Contractor shall remove the signs from the Project Site.

38. INSURANCE PROCURED BY CONTRACTOR

a. The Contractor shall procure and maintain during the entire period of this performance under this contract the attached insurance policies:
.(1) Commercial General Liability Insurance in limits of not less than Five Million Dollars ($5,000,000) combined single limit per occurrence for bodily injury, death, personal injury and property damage, including but not limited to coverage for Broad Form Property Damage. Such coverage shall not contain any environmental exclusion clause and there shall be no exclusions for property damage arising out of explosion, collapse or underground property damage hazards and no exclusion for waterfront activities.
.(2) The policies described above shall be endorsed (i) to include The New Jersey Department of Environmental Protection and Somerset County as additional insured and (ii) to provide that notice of an occurrence to the insurance company from any insured shall serve as notice from all insured.
.(3) Comprehensive Automobile Liability Insurance in limits of not less than five million dollars combined single limit per occurrence for bodily injury, death, and property damage covering all owned, non-owned and hired vehicles in connection with the work to be performed in connection with this permit.
.(4) Certificates of Insurance evidencing the issuance of all insurance required hereby, and guaranteeing at least thirty (30) days prior notice to the Government of cancellation or non-renewal, shall be delivered to The New Jersey Department of Environmental Protection and Somerset County, prior to entry of the Government's contractors upon the project area, or, in the case of new or renewal policies replacing any policies expiring during the period, no later than thirty (30) days before the expiration dates of such expiring policies.
.b. Prior to the commencement of work hereunder, the Contractor shall furnish to the Contracting Officer a certificate or statement of the above required insurance. The policies evidencing required insurance shall contain an endorsement to the effect that cancellation or any material change in the policies adversely affecting the interests of the Government in such insurance shall not be effective for such a period as may be prescribed by the laws of the State in which this contract is to be performed and in no event less than thirty (30) days after written notice thereof to the Contracting Officer.
.c. The Contractor agrees to insert the substances of this clause, including paragraph c., in all subcontracts hereunder.

39. LABOR SURPLUS AREA EXPENDITURE REQUIREMENTS (JUL 1978)

a. The site of the construction work is located in an area determined by the Secretary of Labor to be a Labor Surplus Area. Accordingly the Contractor hereby agrees to perform a substantial portion of the Contract work in this or in any other labor surplus area. "Substantial portion" means the aggregate costs that will be incurred by the Contractor and his first-tier Subcontractors and suppliers, on account of manufacturing, production or services performed in this or any labor surplus area, and the costs that will

be incurred by second-tier and lower-tier Subcontractors on the construction site will exceed fifty percent (50%) of the price of this Contract.

. b. Upon request, the Contractor shall furnish to the Contracting Officer data to substantiate that this obligation is satisfied.
. c. The Contracting Officer will furnish upon request a list of Labor Surplus Areas.

40. CONTINUING CONTRACT (1985 OCT OCE):

. a. This is a continuing Contract, as authorized by Section 10 of the River and Harbor Act of September 22, 1922 (33 U.S. Code 621). The payment of some portion of the Contract price is dependent upon reservation of funds from future appropriations. The responsibilities of the Government are limited by this clause notwithstanding any contrary provision of the "Payment to the Contractor" clause or any other clause of this Contract.
. b. (1) The sum of $250,000 has been reserved for this Contract and is available for payments to the Contractor during the current fiscal year. It is expected that Congress will make appropriations for future fiscal years from which additional funds will be reserved for this Contract.

. (2) Failure to make payments in excess of the amount currently reserved, or that may be reserved from time to time, shall not entitle the Contractor to a price adjustment under the terms of this Contract except as specifically provided in paragraphs (d) and (e) below. No such failure shall constitute a breach of this Contract, except that this provision shall not bar a breach-of-contract action if an amount finally determined to be due as a termination allowance remains unpaid for one year due solely to a failure to reserve sufficient funds therefore.
. c. (1) The Government may at any time reserve additional funds for payments under the Contract if there are funds available for such purpose. The Contracting Officer will promptly notify the Contractor in writing of any additional funds reserved for the Contract.
. (2) If earnings will be such that funds reserved for the Contract will be exhausted before the end of the fiscal year, the Contractor shall give written notice to the Contracting Officer of the estimated date of exhaustion and the amount of additional funds which will be needed to meet payments due or to become due under the Contract during the fiscal year. This notice shall be given not less than 45 or more than 60 days prior to the estimated date of exhaustion.
. d. (1) No payments will be made after exhaustion of funds except to the extent that additional funds are reserved for the Contract. The Contractor shall be entitled to simple interest on any payment that the Contracting Officer determines was actually earned under the terms of the Contract and would have been made except for exhaustion of funds. Interest shall be computed from the time such payment would otherwise have been made until actually or constructively made, and shall be at the rate established by the Secretary of the Treasury pursuant to Policy Law 92-41, 85 STAT 97, for the Renegotiation Board, as in effect on the first day of the delay in such payment.
. (2) Any suspension, delay, or interruption of work arising from exhaustion or anticipated exhaustion of funds shall not constitute a breach of this Contract and shall not entitle the Contractor to any price adjustment under the "Suspension of Work" clause or in any other manner under this Contract.
. (3) An equitable adjustment in performance time shall be made for any increase in the time required for performance of any part of the work arising from exhaustion of funds or the reasonable anticipation of exhaustion of

funds.

. e. If, upon expiration of sixty (60) days after the beginning of the fiscal year following an exhaustion of funds, the Government has failed to reserve sufficient additional funds to cover payments otherwise due, the Contractor, by written notice delivered to the Contracting Officer at anytime before such additional funds are reserved, may elect to treat his right to proceed with the work as having been terminated. Such termination shall be considered a termination for the convenience of the Government.

. f. If at any time it becomes apparent that funds reserved for any fiscal year are in excess of the funds required to meet all payments due or to become due the Contractor because of work performed and to be performed under the Contract during the fiscal year, the Government reserves the right, after notice to the Contractor, to reduce said reservation by the amount of such excess.

41. ADDITIONAL CONTRACTOR REQUIREMENTS

The Contractor shall employ a supervisor (Wetland Environmental Specialist), for QA/QC purposes, with a background in plant and soils sciences who has provided construction oversight for a minimum of three wetland restoration/creation projects that are greater than or equal to 5 acres in size, with the following complexities: stream crossings, highly organic soils, and herbivory predator issues.

42. NURSERIES

The following or equivalent nurseries may be used for ordering plant stock:

.a. Pinelands Nursery and Supply, Columbus, New Jersey (800) 667-2729
.b. Greenbelt Native Plant Center, Staten Island, New York (718) 667-2165
.c. Wild Earth Native Plant Nursery, Freehold, New Jersey (732) 308-9777
.d. Sylva Native Nursery and Seed Company, New Freedom, Pennsylvania (717) 227-0486
.e. Ernst Conservation Seeds, Meadville, Pennsylvania (800) 873-3321

US ARMY

CORPS of ENGINEERS New York District

RED CASTLE

FINDERNE WETLAND MITIGATION SITE
GREEN BROOK FLOOD CONTROL PROJECT

CONTRACTOR:
FUNDED BY: FEDERAL % LOCAL %
COMPLETION DATE:

FOR YOUR SAFETY

1. DO NOT ENTER DESIGNATED WORK AREAS
2. OBEY ALL BRIDGEWATER TOWNSHIP/SOMERSET COUNTY SOMERSET PARKS DEPARTMENT REGULATIONS

DISTRICT ENGINEER COL RICHARD J. POLO

RED LETTER

PUBLIC SAFETY SIGN

PROJECT IDENTIFICATION SIGN
MILITARY PROJECT

The graphic format for this 4' x 6' sign panel follows the legend guidelines and layout as specified below. The large 4' x 4' section of the panel in the right is to be white with black legend. The 2' x 4' section of the sign on the left with the full corps Signature (reverse version) is to be screen printed Communications Red on the white background. The castle insignia will be furnished by the Government in pressure sensitive vinyl for affixing by the Contractor. See attached sheet for fabrication and mounting guidelines.

Legend Group 1: One to two-line description of Corps relationship to project
Color: white
Typeface: 1.25" Helvetica Regular
Maximum line length: 19"

Legend Group 2: Division or District Name (optional, Place below 10.5" Reverse Signature (6" Castle)
Color: white
Typeface: 1.25" Helvetica Regular

Legend Group 3: One-to three-line project title legend describes the work being done under this contract.
Color: Black
Typeface: 3" Helvetica Bold
Maximum line length: 42"

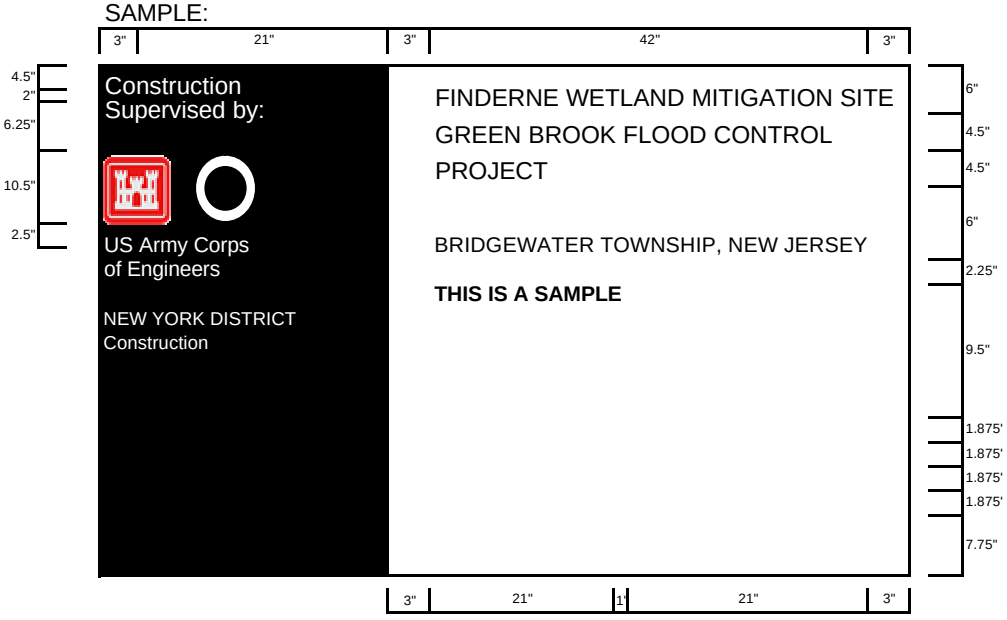
Legend Group 4: One-to two-line identification of project or facility (civil works) or name of sponsoring department (military).
Color: Black
Typeface: 1.5" Helvetica Regular
Maximum line length: 42"

Cross-align the first of Legend Group 4 with the first line of the Corps Signature (US Army Corps) as shown.

Legend Group 5a-b: One-to-five line identification of prime contractors including: type (architect, general contractor, etc.), corporate or firm name, city, state. Use of Legend Group 5 is optional.
Color: Black
Typeface: 1.25" Helvetica Regular
Maximum line length: 21"

All typography is flush left and rag right upper and lower case with initial capitals only as shown. Letter and word spacing to follow Corps standards as specified in
* Appendix D

SAMPLE:



(Dimensions are in inches)

Sign Type	Legend	Panel Size	Post Size	Specification Code	Mounting Height	Color Bkg/Lgd
CID-01	various	4' x 6'	4' x 4'	HDO-3	48"	WH-RD/BK

* Refers to the U.S. Army Corps of Engineers, "Sign Standards Manual", EPS-310-1-6.

As Construction Project Identification signs and Safety Performance signs are to be fabricated and installed as described below. The signs are to be erected at a location designated by the contracting officer and shall conform to the size, format, and typographic standards shown on the attached sheets.

The sign panels are to be fabricated from .75" High Density Overlay Plywood. Panel preparation to follow HDD specifications provided in Appendix B. **

Sign graphics to be prepared on a white non-reflective vinyl film with positionable adhesive backing.

All graphics except for the Communications Red background with Corps signature on the project sign are to be die-cut or computer-cut non-reflective vinyl, pre-spaced legends prepared in the sizes and typefaces specified and applied to the background panel following the graphic formats shown on the attached sheets.

The 2'x4' Communications Red panel (to match PMS-032) with full Corps signature (reverse version) is to be screen printed on the white background. Identification of the District or Division may be applied under the signature with white cut vinyl letters prepared to Corps standards. Large scale reproduction artwork for the signature is provided on page 4.8 (photographically enlarge from 6.875" to 10.5"). **

Drill and insert six (6) .375" T-nuts from the front face of the HDD sign panel. Position holes as shown. Flange of T-nut to be flush with sign face.

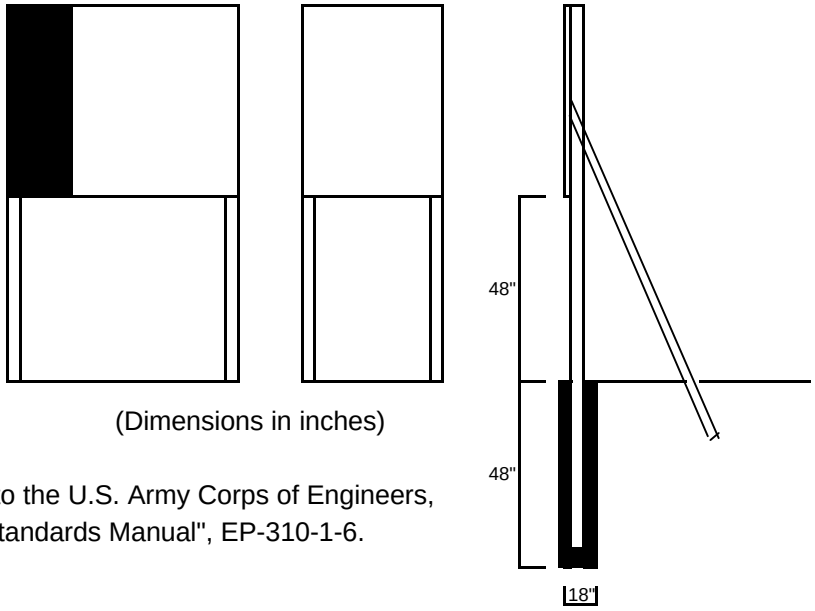
Apply graphic panel to prepared HDD plywood panel following manufacturers' instructions.

Sign uprights to be structural grade 4"x4" treated Douglas Fir or Southern Yellow Pine. No.1 or better. Post to be 12' long. Drill six (6) .375" mounting holes in uprights to align with T-nuts in sign panel. Countersink (.5") back of hole to accept socket head cap screw (4"x.375").

Assemble sign panel and uprights. Imbed assembled sign panel and uprights in 4' hole. Local soil conditions and/or wind loading may require bolting additional 2"x4" struts on inside face of uprights to reinforce installation as shown.

Detailed specifications for HDD plywood panel preparation are provided in Appendix B.**

Shown below the mounting diagram is a panel layout grid with spaces provided for project information. Photocopy this page and use as a worksheet when preparing sign legend orders.



(Dimensions in inches)

** Refers to the U.S. Army Corps of Engineers, "Sign Standards Manual", EP-310-1-6.

Construction Project Sign

Legend Group 1: Corps Relationship

1. _____
2. _____

Legend Group 2: Divison/District Name

1. _____
2. _____

Legend Group 3: Project Title

1. _____
2. _____
3. _____

Legend Group 4: Facility Name

1. _____
2. _____

Legend Group 5a: Contractor/A&E

1. _____
2. _____
3. _____
4. _____
5. _____

Legend Group 5b: Contractor /A&E

1. _____
2. _____
3. _____
4. _____
5. _____

Safety Performance Sign

Legend Group 1: Project Title

1. _____
2. _____

Legend Group 2: Contractor/A&E

1. _____
2. _____

SAFETY PERFORMANCE SIGN

The graphic format, color, size and type-faces used on the sign are to be reproduced exactly as specified below. The title with First Aid logo in the top section of the sign, and the performance record captions are standard for all signs of this type. Legend Group 2 and 3 below identify the project and the contractor and are to be placed on the sign as shown. Safety record numbers are mounted on individual metal plates and are screw-mounted to the background to allow for daily revisions to posted safety performance record.

Legend Group1: Standard two-line title "Safety is a Job Requirement", with (8" od.) Safety Green First Aid logo. Color: To match PMS 347
Typeface: 3" Helvetica Bold
Color: Balck

Legend Group 2: One- to two-line project title legend describes the work being done under this contract and name of host project.
Color: Black
Typeface: 1.5" Helvetica Regular
Maximum line length: 42"

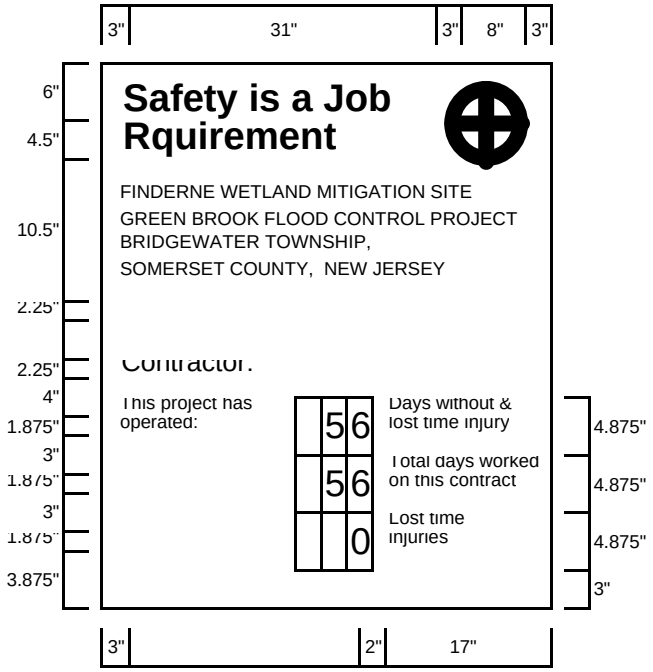
Legend Group 3: One - to two-line identification: name of prime contractor and city, state address.
Color: Black
Typeface: 1.5" Helvetica Regular
Maximum line length: 42"

Legend Group 4: Standard safety record captions as shown.
Color: Black

Typeface: 1.25" Helvetica Regular

Replaceable numbers are to be mounted on white .060: aluminum plates and screw-mounted to background.
Color: Black
Typeface: 3" Helvetica Regular
Plate size: 2.5"x.5"

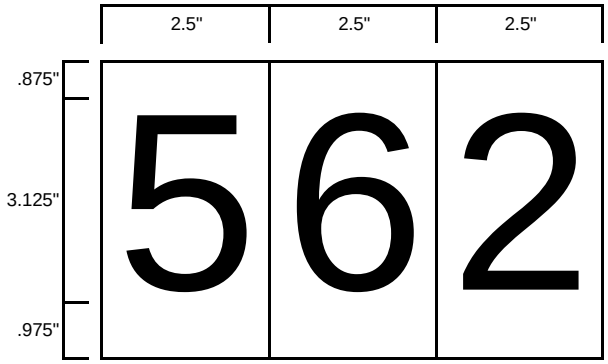
All typography is flush left and rag right, upper and lower case with initial capitals only as shown. Letter- and word-spacing to follow Corps standards as specified in Appendix D. *



Dimensions inches.
See attached sheet for fabrication and mounting guidelines.

* Refer to the U.S. Army Corps of Engineers, "Sign Standards Manual", EPS-310-1-6.

Sign Type	Legend Size	Panel Size	Post Size	Specifications Code	Mounting Height	Color Bkg/Lgd
CID-02	various	4"x4"	4"x4"	HDO-3	48"	WH/BK-GR



WAGE RATES

General Decision Number: NJ030003 07/29/2005 NJ3

Superseded General Decision Number: NJ020003 sg 7/29/05

State: New Jersey

Construction Types: Building, Heavy and Highway

Counties: Bergen, Essex, Hudson, Hunterdon, Middlesex, Morris, Passaic, Somerset, Sussex, Union and Warren Counties in New Jersey.

Does not include building construction in Hunterdon and Somerset Counties

BUILDING CONSTRUCTION PROJECTS (does not include single family homes and apartments up to and including 4 stories) (does not include building construction in Hunterdon or Somerset Counties)

HEAVY AND HIGHWAY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	06/13/2003
1	12/19/2003
2	01/23/2004
3	02/27/2004
4	03/05/2004
5	03/19/2004
6	05/07/2004
7	06/04/2004
8	07/02/2004
9	08/13/2004
10	01/28/2005
11	06/10/2005
12	07/29/2005

* ASBE0032-001 09/01/2004

BERGEN, ESSEX AND HUDSON COUNTIES; HUNTERDON COUNTY (Borough of Califon; Township of Tewksbury); MIDDLESEX COUNTY (Boroughs of Carteret and Dunellen; Township of Edison; Boroughs of Highland Park, Metuchen and Middlesex; City of New Brunswick; Township of Old Bridge; City of Perth Amboy; Township of Piscataway; Borough of Sayreville; City of South Amboy; Boroughs of South Plainfield and South River; Township of Woodbridge); MORRIS AND PASSAIC COUNTIES: SOMERSET COUNTY (Boroughs of Bernardsville and Bound Brook; Township of Bridgewater; Borough of Far Hills; Township of Green Brook; Boroughs of North Plainfield, Peapack-Gladstone, Raritan, Somerville, South Bound Brook and Watchung; Township of Warren); SUSSEX AND UNION COUNTIES; WARREN COUNTY (Townships of Allamuchy, Blairstown and Frelinghuysen; Town of Hackettstown; Townships of Hope, Independence, Knowlton, Liberty and Mansfield):

	Rates	Fringes
Asbestos worker/insulator (includes the application of all insulating materials, protective coverings, coatings and finishings to all types of mechanical systems; also, the application of firestopping material to openings and penetrations in walls, floors, ceilings and curtain walls; also, all lead abatement)	$ 36.27	20.91
Includes the application of all insulating materials, protective coverings, coatings and finishings to all types of mechanical systems	$ 36.27	20.91
Hazardous material handler/asbestos removal worker	$ 21.75	5.00

ASBE0089-001 09/01/2004

HUNTERDON COUNTY (remainder of county); MIDDLESEX COUNTY (remainder of county); SOMERSET COUNTY (Townships of Branchburg, Franklin, Hillsborough and Montgomery); WARREN COUNTY (Townships of Franklin, Greenwich, Harmony, Lopatcong, Oxford, Pohatcong, Washington and White):

	Rates	Fringes
Asbestos worker/insulator Includes the application of all insulating materials, protective coverings, coatings, and finishings to all types of mechanical systems	$ 30.00	10.00

BOIL0028-001 08/01/2004

	Rates	Fringes
Boilermaker	$ 34.28	44% + 7.83

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* BRNJ0004-001 11/01/2003

BERGEN, ESSEX AND HUDSON COUNTIES; HUNTERDON COUNTY (remainder of county); MORRIS AND PASSAIC COUNTIES; SOMERSET COUNTY (north of a line drawn from the point where the Lamington River leaves the boundary line between Hunterdon and Somerset Counties; then, continuing along the Lamington River to where it becomes the North Branch of the Raritan River; then, continuing along the North Branch of the Raritan River to where it becomes Chambers Brook; then, continuing along Chambers Brook until it becomes the boundary line between the Townships of Bernards and Bridgewater; then, continuing along the boundary line between the Townships of Bernards and Bridgewater, until that boundary intersects with Route 78; then, continuing along Route 78 until Route 78 intersects with Route 525; then, continuing along

Route 525 until Route 525 intersects with the boundary line between the Townships of Bridgewater and Warren; then, continuing along the boundary line between the Townships of Bridgewater and Warren until that boundary line intersects with Route 22; then, following Route 22 until Route 22 intersects with Sebrings Mills Rd. (also known as King George Rd.); then, continuing south on Sebrings Mills Rd. until it goes over Green Brook, which is the Middlesex County line); SUSSEX, UNION AND WARREN COUNTIES:

	Rates	Fringes
Bricklayer	$ 31.37	15.55

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* BRNJ0005-002 01/01/2004

HUNTERDON (Townships of Lebanon and Readington) ; MIDDLESEX COUNTY; SOMERSET COUNTY (remainder of county):

	Rates	Fringes
Bricklayer	$ 30.55	15.40

CARP0006-001 05/01/2005

BERGEN County (east of the Hackensack River); HUDSON COUNTY (east of the Hackensack River):

	Rates	Fringes
Carpenter	$ 34.52	15.88

CARP0015-001 05/01/2005

BERGEN COUNTY (west of the Hackensack River (does not include the city of Garfield, or the Boroughs of Lodi and Wallington)):

	Rates	Fringes
Carpenter	$ 34.52	15.88

CARP0029-003 05/01/2004

	Rates	Fringes
Soft Floor Layer	$ 31.04	40.23% + .04

CARP0031-002 05/01/2005

HUNTERDON COUNTY (starting at the south of the town of Frenchtown on the Delaware River, thence following the line in the center of the road to Bapistown to Croton to the City of Flemington to Flemington Junction to Three Bridges, thence following the Somerset County line northward, all territory south of this line including the city of Flemington); SOMERSET COUNTY (all territory south of a line beginning at Amwell on the county line to Zion to Fairview to Dutchtown to Plainsville to Bell Mead to Griggstown to the Delaware and Raritan Canal):

	Rates	Fringes
Carpenter	$ 34.52	15.88

CARP0041-002 05/01/2005

ESSEX COUNTY (Township of Millburn); MIDDLESEX AND MORRIS COUNTIES; SOMERSET COUNTY (Municipalities of Greenbrook, North Plainfield, Watchung, and all communities east of King George's Road); SUSSEX AND UNION COUNTIES:

	Rates	Fringes
Carpenter & Insulator.....	$ 34.52	15.88

CARP0099-001 05/01/2005

	Rates	Fringes
Lather.....	$ 35.25	15.15

CARP0124-001 05/01/2005

BERGEN COUNTY (City of Garfield and Boroughs of Lodi and Wallington); PASSAIC COUNTY:

	Rates	Fringes
Carpenter.....	$ 34.52	15.88

CARP0399-001 05/01/2005

WARREN COUNTY:

	Rates	Fringes
Carpenter & Insulator.....	$ 34.52	15.88

CARP0715-001 05/01/2004

	Rates	Fringes
Millwright.....	$ 34.22	45% + .18

Work of erection and dismantling of elevators and towers, such as concrete conveyors and temporary material elevators, scaffolding or other structures to be used as scaffolding inside or outside buildings: the first sixty feet at the regular rate, 10% per hour additional for each additional fifty feet thereafter.

CARP1342-001 05/01/2005

ESSEX COUNTY (does not include the township of Millburn); HUDSON COUNTY (west of the Hackensack River):

	Rates	Fringes
Carpenter.....	$ 34.52	15.88

CARP1456-001 05/01/2003

	Rates	Fringes
Diver Tender.....	$ 28.82	26.41
Diver.....	$ 38.28	26.41

CARP1456-002 05/01/2003

	Rates	Fringes
Dock Builder & Piledriver person	$ 31.54	26.41

ELEC0017-001 07/01/1994

	Rates	Fringes
Commercial Telephone Installation	$ 21.20	26.5%
Electrician (RAILROAD CONSTRUCTION)	$ 21.20	26.5%

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* ELEC0102-001 06/01/2003

MORRIS AND PASSAIC COUNTIES; SOMERSET COUNTY (Township of Franklin (west of a line following Cedar Grove Lane from the Raritan River, southwest to the Millstone Branch of the Pennsylvania Railroad; then, west along the railroad to the Delaware and Raritan Canal; then, south along the canal to the Middlesex County line)): SUSSEX, UNION AND WARREN COUNTIES:

	Rates	Fringes
Line Construction:		
Cable splicer	$ 42.13	42.5%
Ground person	$ 22.98	42.5%
Line technician and equipment operator	$ 38.30	42.5%

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* ELEC0102-002 06/01/2004

HUNTERDON COUNTY (Townships of Alexandria and Bethlehem; Borough of Bloomsbury; Borough of Califon; Town of Clinton; Township of Clinton; Township of Delaware (west of a line following County Route 523 from the Delaware River north to the Raritan Township line); Township of East Amwell (east of State Hwy. 31); Township of Franklin; Boroughs of Frenchtown, Glen Gardner, Hampton and High Bridge); Townships of Holland and Kingwood; Borough of Lebanon; Township of Lebanon; Borough of Milford; Township of Raritan (east of State Hwy. 31 and north of County Route 523); Townships of Readington, Tewksbury and Union); MORRIS AND PASSAIC COUNTIES; SOMERSET COUNTY (Township of Franklin (west of a line following Cedar Grove Lane from the Raritan River, southwest to the Millstone Branch of the Pennsylvania Railroad; then, west along the railroad to the Delaware and Raritan Canal; then, south along the canal to the Middlesex County line)); SUSSEX, UNION AND WARREN COUNTIES:

	Rates	Fringes
Cable splicer	$ 44.52	45%
Electrician	$ 40.47	45%

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* ELEC0164-001 08/15/2000

BERGEN, ESSEX AND HUDSON COUNTIES:

	Rates	Fringes

```
  Line Construction:
     Cable splicer...............$ 38.89             41%
     Ground person...............$ 20.66             41%
     Line technician, welder, x-
     ray technician, equipment
     repair person, and
     equipment service person....$ 34.42             41%
-----------------------------------------------------------------
* ELEC0164-002 06/01/2005

BERGEN, ESSEX AND HUDSON COUNTIES:

                                  Rates          Fringes

  Cable splicer..................$ 49.87             46%
  Electrician on radio tower work$ 53.40             46%
  Electrician....................$ 44.13             46%
-----------------------------------------------------------------
* ELEC0456-001 06/01/2005

MIDDLESEX COUNTY; SOMERSET COUNTY (Township of Franklin (east
of a line following Cedar Grove Lane from the Raritan River,
southwest to the Millstone Branch of the Pennsylvania Railroad;
then, west along the railroad to the Delaware and Raritan
Canal; then, south along the canal to the Middlesex County
line)):

                                  Rates          Fringes

  Cable splicer..................$ 48.18             47%
  Electrician....................$ 42.64             47%

  Work on line voltage of 440 volts and over: 10% per hour
  additional.

  Work from trusses, scaffolds and ladders 40 ft. or more from
  the ground or floor; or under air pressure; or over
  conveyors or moving equipment or machinery: 10% per hour
  additional.
-----------------------------------------------------------------
ELEC0456-002 06/01/2002

MIDDLESEX COUNTY:

                                  Rates          Fringes

  Line Construction:
     Cable splicer...............$ 38.95           45.75%
     Ground person...............$ 33.98           45.75%
     Line technician.............$ 34.77           45.75%
     Winch operator..............$ 33.98           45.75%
-----------------------------------------------------------------
* ELEV0001-001 01/01/2004

                                  Rates          Fringes

  Elevator Mechanic
     Construction................$ 39.26           14.845
     Modernization...............$ 31.43           14.695

PAID HOLIDAYS:
  New Year's Day, Lincoln's Birthday, Washington's Birthday,
  Memorial Day, Independence Day, Labor Day, Columbus Day,
```

Election Day, Veteran's Day, Thanksgiving Day and Christmas Day.

VACATION PAY CREDIT:
A worker with 6 months but less than 5 years of service receives two weeks vacation; a worker with 5 years or more of service receives three weeks vacation.

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* ELEV0084-005 01/01/2005

HUNTERDON AND WARREN COUNTIES:

	Rates	Fringes
Elevator mechanic	$ 33.24	12.115

PAID HOLIDAYS:
New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day.

VACATION PAY CREDIT:
A worker with 6 months but less than 5 years of service receives two weeks vacation; a worker with 5 years or more of service receives three weeks vacation.

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* ENGI0825-003 07/01/2005

	Rates	Fringes
Power equipment operators:		
Tank erection:		
GROUP 1	$ 36.71	19.65
GROUP 2	$ 35.77	19.65
GROUP 3	$ 36.25	19.65
GROUP 4	$ 33.68	19.65
GROUP 5	$ 31.22	19.65
GROUP 6	$ 29.97	19.65
GROUP 7	$ 28.47	19.65

Hazardous waste removal:
Work where the worker is in direct contact with hazardous material, and when personal protective equipment is required for respiratory, skin and eye protection: 20% per hour additional.

PAID HOLIDAYS:
New Year's Day, Washington's Birthday observed, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided 1) that the worker works three of the preceding five work days before the holiday; or, the work day before the holiday and the work day after the holiday; and, 2) that the worker works the work day before and the work day after the holiday.

DEFINITION OF GROUPS:

GROUP 1: Operating engineer - on all equipment, including cranes and derricks with boom including jib, 140 ft. or more above the ground

GROUP 2: Operating engineer - on all equipment, including

cranes and derricks with boom including jib, less than 140 ft. above the ground

GROUP 3: Helicopter pilot

GROUP 4: Air compressor, welding machine and generator (gas, diesel, or electrical-driven equipment and sources of power from a permanent plant (steam, compressed air, hydraulic or other power), for the operation of any machine or automatic tool used in the erection, alteration, repair and dismantling of tanks and any and all "dual-purpose" trucks used on the construction job site

GROUP 5: Concrete cleaning/decontamination machine operator, decontamination and remediation work only; directional boring machine; heavy equipment robotics, operator/technician, decontamination and remediation work only; master environmental maintenance technician, decontamination and remediation work only; ultra high-pressure waterjet cutting tool system operator/maintenance technician, decontamination and remediation work only; vacuum blasting machine operator/maintenance technician, decontamination and remediation work only

GROUP 6: Off-road back dump

GROUP 7: Oiler

---

* ENGI0825-004 07/01/2005

	Rates	Fringes
Power equipment operators:		
Steel erection:		
GROUP 1	$ 36.89	19.65
GROUP 2	$ 35.98	19.65
GROUP 3	$ 37.75	19.65
GROUP 4	$ 33.69	19.65
GROUP 5	$ 31.03	19.65
GROUP 6	$ 29.50	19.65
GROUP 7	$ 27.74	19.65

Hazardous waste removal:
Work where the worker is in direct contact with hazardous material, and when personal protective equipment is required for respiratory, skin and eye protection: 20% per hour additional.

PAID HOLIDAYS:
New Year's Day, Washington's Birthday observed, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided 1) that the worker works three of the preceding five work days before the holiday; or, the work day before the holiday and the work day after the holiday; and, 2) that the worker works the work day before and the work day after the holiday.

DEFINITION OF GROUPS:

GROUP 1: Cranes (all cranes, land or floating with boom including jib, 140 ft. and over, above ground); derricks (all derricks, land, floating or Chicago boom type with

boom including jib, 140 ft. and over, above ground)

GROUP 2: Cranes (all cranes, land or floating with boom including jib, less than 140 ft. above ground); derricks (all derricks, land, floating or Chicago boom type with boom including jib, less than 140 ft. above ground)

GROUP 3: Helicopter pilot

GROUP 4: "A" frame; cherry picker (10 ton and under); hoist (all types of hoist, including steam, gas, diesel, electric, air, hydraulic, single and double drum, concrete, brick shaft caisson, or any other similar type of hoisting machine, portable or stationary, except Chicago boom type); jack (screw, air, hydraulic power-operated unit or console type (not hand jack or pile load test type); side boom; straddle carrier

GROUP 5: Aerial platform used as a hoist; compressor, two or three in battery; directional boring machine; elevator or house car; concrete cleaning/decontamination machine operator, decontamination and remediation work only; conveyor and tugger hoist; fire fighter; forklift; generator, two or three in battery; heavy equipment robotics, operator/technician, decontamination and remediation work only; maintenance, utility person; master environmental maintenance technician, decontamination and remediation work only; rod bending machine (power); ultra high-pressure waterjet cutting tool system operator/maintenance technician, decontamination and remediation work only; vacuum blasting machine operator/maintenance technician, decontamination and remediation work only; welding machine (gas or electric, two or three in battery, including diesel); captain, power boat; tug master, power boat; oiler, with either one compressor or one welding machine

GROUP 6: Compressor, single; off-road back dump; welding machine (single, gas, diesel and electric converters of any type); welding system, multiple (rectifier, transformer type); generator, single

GROUP 7: Oiler; deckhand

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* ENGI0825-005 07/01/2005

	Rates	Fringes
Power equipment operators:		
Oilostatic mainline & transportation pipeline:		
GROUP 1	$ 37.00	19.65
GROUP 2	$ 36.35	19.65
GROUP 3	$ 33.21	19.65
GROUP 4	$ 31.81	19.65
GROUP 5	$ 29.99	19.65
GROUP 6	$ 38.93	19.65

Hazardous waste removal: 20% per hour additional.

PAID HOLIDAYS:
New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving

Day and Christmas Day.

DEFINITION OF GROUPS:

GROUP 1: Backhoe; crane (all types); dragline; front end loader (5 cu. yd. and over); gradall; scooper (loader and shovel); Koehring and trench machine

GROUP 2: "A" frame/backhoe combination; hoe loader; boring and drilling machine; ditching machine, small; ditchwitch or similar type; forklift; front end loader (2 cu. yd. and over but less than 5 cu. yd.); grader, finish (fine); hydraulic crane, 10 tons and under (over 10 tons - crane rate applies); side boom and winch truck (hoisting)

GROUP 3: Backfiller; broom and sweeper; bulldozer; compressor (2 or 3 in battery); front end loader (under 2 cu. yd.); generator; giraffe grinder; grader and motor patrol; mechanic; pipe bending machine (power); tractor; water and sprinkler truck; welder and repair mechanic

GROUP 4: Compressor (single); dope pot (mechanical with or without pump); dust collector; farm tractor; pump (4-in. suction and over); pump (2, less than 4-in. suction); pump, diesel engine and hydraulic (immaterial of power); welding machine, gas or electric converter of any type, single; welding machine, gas or electric converter of any type, 2 or 3 in battery; multiple welder; wellpoint system (including installation and maintenance)

GROUP 5: Oiler; grease person; gas, fuel and supply trucks; tire repair and maintenance

GROUP 6: Helicopter pilot

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* ENGI0825-009 07/01/2005

	Rates	Fringes
Power Equipment Operator		
GROUP 1	$ 36.37	19.65
GROUP 2	$ 34.78	19.65
GROUP 3	$ 32.87	19.65
GROUP 4	$ 31.24	19.65
GROUP 5	$ 29.53	19.65
GROUP 6	$ 38.09	19.65

Hazardous waste removal work:
Work where the worker is in direct contact with hazardous material, and when personal protective equipment is required for respiratory, skin and eye protection: 20% per hour additional.

PAID HOLIDAYS:
New Year's Day, Washington's Birthday observed, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided 1) that the worker works three of the preceding five work days before the holiday; or, the work day before the holiday and the work day after the holiday; and, 2) that the worker works the work day before and the work day after the holiday.

DEFINITION OF GROUPS:

GROUP 1: Autograde - combination subgrader; base metal spreader and base trimmer (CMI and similar types); autograde placer - trimmer spreader combination (CMI and similar types); autograde slipform paver (CMI and similar types); backhoe; central power plant (all types); concrete paving machine; crane (all types, including overhead and straddle traveling type); crane, gantry; derrick (land, floating or Chicago boom type); drillmaster, quarrymaster (down-the-hole drill, rotary drill, self-propelled hydraulic drill, self-powered drill); dragline; elevating grader; front end loader (5 cu. yd. and over); gradall; grader, raygo; locomotive (large); mucking machine; pavement and concrete breaker (superhammer and hoe ram); pile driver (length of boom, including length of leads, shall determine premium rate applicable); roadway surface grinder; scooper (loader and shovel); shovel; tree chopper with boom; trench machine (cable plow)

GROUP 2: "A" frame/backhoe combination; boom attachment on loader (rate based on size of bucket, not applicable to pipehook); boring and drilling machine; brush chopper, shredder and tree shredder; carryall; concrete pump; concrete pumping system, pumpcrete and similar type; conveyor, 125 ft. and over; drill doctor, including dust collecting and maintenance work); front end loader (2 cu. yd. but less than 5 cu. yd.); grader (finish); groove cutting machine (ride-on type); heater planer; hoist (all types of hoist, shall also include steam, gas, diesel, electric, air, hydraulic, single and double drum, concrete, brick shaft caisson, snorkel roof, and/or any other similar type hoisting machine, portable or stationary, except Chicago boom type) (if hoist is "outside material tower hoist", long boom rate is to be applied); hydraulic crane, 10 tons and under; hydro-axe; hydro-blaster; jack (screw, air, hydraulic power-operated unit or console type (not hand jack or pile load test type); log skidder; pan; pavers (all) (concrete); plate and frame filter press; pumpcrete machine; squeezecrete and concrete pump (regardless of size); scraper; side boom; straddle carrier, Ross and similar type; whip hammer; winch truck (hoisting)

GROUP 3: Asphalt curbing machine; asphalt plant engineer; asphalt spreader; autograde tube finisher and texturing machine (CMI and similar types); autograde curecrete machine (CMI and similar types); autograde curb trimmer and sidewalk, shoulder, slipform (CMI and similar types); bar bending machine (power); batcher; batching plant and crusher on site; belt conveyor system; boom-type skimmer machine; bridge deck finisher; bulldozers (all); car dumper (railroad); compressor and blower-type unit (used independently or mounted on dual-purpose truck, on jobsite or in conjunction with jobsite, in loading and unloading of concrete, cement, fly ash, instantcrete, or similar type materials); compressor (2 or 3) (battery) (within 100 ft.); concrete cleaning/decontamination machine operator, when used for decontamination and remediation; concrete finishing machine; concrete saw and cutter (ride-on type); concrete spreader, hetzel, rexomatic and similar type; concrete vibrator; conveyor, under 125 ft.; crushing machine; directional boring machine; ditching machine, small (Ditchwitch, Vermeer or similar type); dope pot

(mechanical with or without pump); dumpster; elevator; fire fighter; forklift (Economobile, Lull and similar type of equipment); front end loader (1 cu. yd. and over but less than 2 cu. yd.); generator (2 or 3) in battery (within 100 ft.); giraffe grinder; grader and motor patrol; gunite machine (does not include nozzle); hammer, vibratory (in conjunction with generator); heavy equipment robotics, operator/technician, when used for decontamination and remediation; hoist (roof, tugger, aerial platform hoist and house cars); hopper; hopper door (power-operated); hydro-blaster, where required; ladder (motorized); laddervator; locomotive, dinky type; maintenance, utility person; master environmental maintenance technician, when used for decontamination and remediation; mechanic; mixer (except paving mixer); motor patrol and grader; pavement breaker, small, self-propelled ride-on type (also maintains compressor or hydraulic unit); pavement breaker, truck-mounted; pipe bending machine (power); pitch pump; plaster pump regardless of size; posthole digger (post pounder and auger); rod bending machine (power); roller, blacktop; scale, power; seaman pulverizing mixer; shoulder widener; silo; skimmer machine (boom type); steel cutting machine, servicing and maintaining; tractor; captain (power boat); tug master (power boat); ultra high-pressure waterjet cutting tool system operator/maintenance technician, when used for decontamination and remediation; vacuum blasting machine operator/maintenance technician, when used for decontamination and remediation; vibrating plant (used in conjunction with unloading); welder and repair mechanic

GROUP 4: Broom and sweeper; chipper; compressor (single); concrete spreader (small type); conveyor loader (does not include elevating grader); engine, large diesel (1620 H.P.) and staging pump; farm tractor; fertilizing equipment (operation and maintenance of); fine grade machine (small type); form line grader (small type); front end loader (under 1 cu. yd.); generator (single); grease, gas, fuel and oil supply truck; heater (Nelson or other type including propane, natural gas or flow-type unit); lights (portable generating light plant); mixer, concrete, small; mulching equipment (operaton and maintenance of); off-road back dump; pump (4-in. suction and over, including submersible pump); pump (diesel engine and hydraulic) (immaterial of power); road finishing machine (small type); roller, grade, fill or stone base; seeding equipment (operation and maintenance of); sprinkler and water pump truck; steam jenny and boiler; stone spreader; tamping machine, vibrating ride-on; temporary heating plant (Nelson or other type, including propane, natural gas or flow-type unit); water and sprinkler truck; welding machine (gas, diesel, and/or electric converter of any type, single, two or three in a battery) (within 100 ft.); welding system, multiple (rectifier transformer type); wellpoint system

GROUP 5: Oiler; tire repair and maintenance

GROUP 6: Helicopter pilot; helicopter engineer

IRON0011-002 07/01/2002

BERGEN, ESSEX AND HUDSON COUNTIES; HUNTERDON COUNTY (west half); MIDDLESEX COUNTY (north half); MORRIS AND PASSAIC

COUNTIES; SOMERSET COUNTY (north half); SUSSEX AND UNION COUNTIES:

	Rates	Fringes
Ironworkers:		
Reinforcing	$ 27.63	24.10
Structural	$ 29.53	24.10

IRON0036-003 07/01/2003

WARREN COUNTY:

	Rates	Fringes
Ironworker:		
Projects $25 million and over	$ 27.95	14.02
Projects under $25 million	$ 27.45	14.02

IRON0068-004 07/01/2003

HUNTERDON COUNTY (east half); MIDDLESEX COUNTY (south half); SOMERSET COUNTY (south half):

	Rates	Fringes
Ironworkers:		
Ornamental & structural	$ 28.41	23.80
Reinforcing	$ 26.41	23.80

LABO0172-001 03/01/2005

HEAVY AND HIGHWAY CONSTRUCTION:

	Rates	Fringes
Laborers:		
GROUP 1	$ 24.95	15.45
GROUP 2	$ 25.15	15.45
GROUP 3	$ 25.45	15.45
GROUP 4	$ 25.65	15.45
GROUP 5	$ 25.90	15.45
GROUP 6	$ 29.45	15.45
GROUP 7	$ 25.95	15.45
GROUP 8	$ 27.95	15.45

PAID HOLIDAYS:
New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day, provided the worker works three days for the same employer within a period of ten working days consisting of five working days before and five working days after the day upon which the holiday falls or is observed.

DEFINITION OF GROUPS:

GROUP 1: Common laborer; landscape laborer; railroad track laborer; flag person; salamander tender; pit person; dump person; waterproofing laborer; raker and tamper on cold patch work; laborer (wrapping and coating of all pipe)

GROUP 2: Powder carrier; magazine tender; signal person

GROUP 3: Sewer pipe; laser person; conduit and duct line layer; power tool operator; jackhammer; chipping hammer; pavement breaker; power buggy; concrete cutter; asphalt cutter; sheet hammer operator; tree cutter operator; laborer (sandblasting, cutting, burning and operating such other power tools used to perform work usually done manually by laborers)

GROUP 4: Wagon drill operator; timber person; drill master

GROUP 5: Finisher; manhole; catch basin or inlet builder; form setter; rammer; paver; gunite nozzle person; stonecutter

GROUP 6: Blaster

GROUP 7: Hazardous waste removal work, Levels A, B, C, or D, personal protection not required

GROUP 8: Hazardous waste removal work, Levels A, B or C, personal protection required

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* LABO0172-002 03/01/2005

	Rates	Fringes
Laborers:		
FREE AIR TUNNEL:		
GROUP 1	$ 29.40	15.45
GROUP 2	$ 26.00	15.45
GROUP 3	$ 25.85	15.45
GROUP 4	$ 25.35	15.45

PAID HOLIDAYS:
New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day, provided the worker works three days for the same employer within a period of ten working days consisting of five working days before and five working days after the day upon which the holiday falls or is observed.

DEFINITION OF GROUPS:

GROUP 1: Blaster

GROUP 2: Skilled laborer (miner, drill runner, iron person, maintenance person, conveyor person, safety miner, rigger, blocklayer, cement finisher, rod person, caulker, powder carrier)

GROUP 3: Semi-skilled laborer (chuck tender, track person, nipper, brake person, derail person, cable person, hose person, grout person, gravel person, form person, bell or signal person (top or bottom), form worker and mover, concrete worker, shaft person, tunnel laborer)

GROUP 4: Powder watch person, change house attendant, top laborer

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LABO0172-003 03/01/2005

	Rates	Fringes

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  Laborers:
     ASPHALT WORK:
      GROUP 1....................$ 25.75            15.45
      GROUP 2....................$ 25.35            15.45
      GROUP 3....................$ 25.60            15.45
      GROUP 4....................$ 25.45            15.45

Traffic control coordinator: $.50 per hour additional.

PAID HOLIDAYS:
  New Year's Day, Washington's Birthday, Memorial Day,
  Independence Day, Labor Day, Presidential Election Day,
  Veteran's Day, Thanksgiving Day and Christmas Day, provided
  the worker works three days for the same employer within a
  period of ten working days consisting of five working days
  before and five working days after the day upon which the
  holiday falls or is observed.

DEFINITION OF GROUPS:

GROUP 1: Head raker

  GROUP 2: Painter, shoveler, roller person, kettle person,
  smother person, tamper

GROUP 3: Raker, screed person, lute person

GROUP 4: Milling controller
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LABO0222-002 05/01/2004

BUILDING CONSTRUCTION:

                                  Rates          Fringes
  Laborer
     GROUP 1....................$ 24.65            13.37
     GROUP 2....................$ 24.15            13.37
     GROUP 3....................$ 20.53            13.37

DEFINITION OF GROUPS:

  GROUP 1: Jackhammer; tamper; motorized tamper and compactor;
  street cleaning machine; scaffold builder; hydro;
  demolition equipment; all types of motorized forklift;
  riding motor buggy operator; Bobcat operator; mortar
  person; burner; nozzle person on gunite work

GROUP 2: All laborers not listed in Groups 1 or 3

  GROUP 3: Laborer doing janitorial-type light clean-up work
  associated with the turnover of the project to the owner;
  flag person; laborer manning temporary heat of all types
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LABO1030-001 05/01/2004

                                  Rates          Fringes
  Laborer
     The removal, abatement,
     enclosure and
     decontamination of
     personal protective
     equipment, chemical
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protective clothing and machinery relating to asbestos and/or toxic and hazardous waste or materials which shall include but not necessarily be limited to: the erection, moving, servicing and dismantling of all enclosures, scaffolding and barricades; the operation of all tools and equipment normally used in the removal or abatement of asbestos and toxic or hazardous waste or materials; the labeling, bagging, cartoning, crating, or other packaging of materials for disposal; the clean-up of the worksite; and all other work incidental to the removal, abatement, encapsulation, enclosure, and decontamination of asbestos and toxic or hazardous waste or materials; and, in addition, all work tasks involved in the maintenance and operation of energy resource recovery plants (co-generation plants).....$ 23.35 12.11

PAIN0711-003 05/01/2005

	Rates	Fringes
Glazier	$ 32.05	27% + 4.55

PAIN0711-004 05/01/2005

Repaint work, on projects on which no major alterations occur (does not include work on bridges, stacks, elevated tanks and generating stations):

	Rates	Fringes
Drywall Finisher	$ 24.55	27% + 4.55
Painter, Brush and Roller	$ 24.55	27% + 4.55
Painter, Spray	$ 27.00	27% + 4.55

PAIN0711-009 05/01/2005

All other work:

	Rates	Fringes
Drywall Finisher	$ 32.05	27% + 4.55
Painter, Brush and Roller	$ 32.05	27% + 4.55

Painter, Spray.....$ 35.25 27% + 4.55

PLAS0008-006 05/01/2004

HUNTERDON, MIDDLESEX AND SOMERSET COUNTIES:

	Rates	Fringes
Plasterer.....	$ 28.35	15.80

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* PLAS0029-001 05/01/2005

BERGEN, ESSEX, HUDSON, MORRIS, PASSAIC, SUSSEX, UNION AND WARREN COUNTIES:

	Rates	Fringes
Cement Masons & Plasterers.....	$ 34.00	15.55

Cement masons:
Work on suspended staging, not supported from the ground, and over twenty feet above the ground: $.50 per hour additional.

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* PLAS0592-030 11/01/2004

HUNTERDON, MIDDLESEX AND SOMERSET COUNTIES:

	Rates	Fringes
Cement Mason.....	$ 31.70	17.46

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* PLUM0009-001 03/01/2005

	Rates	Fringes
Air Conditioning and refrigeration mechanic.....	$ 27.92	11.83

PAID HOLIDAYS:
New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and Christmas Day.

SCOPE OF WORK:
Installation of refrigeration equipment for any type of building where the combined compressor tonnage does not exceed 5 tons; installation of water-cooled air conditioning that does not exceed 10 tons (including the piping of the component system and the erection of the water tower); installation of air-cooled air conditioning that does not exceed 15 tons.

PLUM0009-002 07/01/2004

HUNTERDON COUNTY (Township of West Amwell); MIDDLESEX COUNTY (remainder of county); SOMERSET COUNTY (Townships of Green Brook and Warren):

	Rates	Fringes
Plumber.....	$ 38.08	18.80

PLUM0009-009 07/01/2004

HUNTERDON COUNTY (Township of West Amwell); MIDDLESEX COUNTY (Townships of Cranbury, East Brunswick, Edison, Monroe, North Brunswick, Old Bridge, Plainsboro, South Brunswick and Woodbridge); SOMERSET COUNTY (Townships of Green Brook and Warren):

	Rates	Fringes
Pipefitter.....	$ 38.08	18.80

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* PLUM0014-002 05/01/2005

BERGEN COUNTY; HUDSON COUNTY (City of Bayonne, Town of Guttenberg, City of Hoboken, City of Jersey City, Township of North Bergen, Town of Secaucus, City of Union City, Township of Weehawken, and Town of West New York); MORRIS, PASSAIC, SUSSEX AND WARREN COUNTIES:

	Rates	Fringes
Plumber.....	$ 39.91	19.59

PLUM0024-001 05/01/2003

ESSEX COUNTY; HUNTERDON COUNTY (remainder of county); MIDDLESEX COUNTY (Township of Piscataway); MORRIS COUNTY (Townships of Chatham, Chester, Harding, Mendham, Mount Olive and Washington); SOMERSET COUNTY (remainder of county); UNION COUNTY; WARREN COUNTY (Townships of Franklin, Greenwich, Harmony, Hope, Lopatcong, Mansfield, Oxford, Washington and White):

	Rates	Fringes
Plumber.....	$ 37.28	16.45

PLUM0274-002 05/01/2004

BERGEN, HUDSON, PASSAIC AND SUSSEX COUNTIES:

	Rates	Fringes
Pipefitter.....	$ 39.93	18.07

PLUM0475-001 05/01/2004

ESSEX COUNTY; HUNTERDON COUNTY (remainder of county):

	Rates	Fringes
Pipefitter.....	$ 36.91	21.04

ROOF0004-002 06/01/2002

ESSEX COUNTY; HUDSON COUNTY (west of the Hackensack River); MORRIS, SUSSEX, UNION AND WARREN COUNTIES:

	Rates	Fringes
Roofer.....	$ 29.57	12.75

ROOF0008-004 07/01/2004

HUDSON COUNTY (east of the Hackensack River):

	Rates	Fringes
Roofer	$ 32.08	21.28

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* ROOF0010-001 06/01/2005

BERGEN AND PASSAIC COUNTIES:

	Rates	Fringes
Mop person	$ 30.40	13.45
Roofers:		
Mop person	$ 31.50	13.70
Roofer	$ 30.75	13.70

Work operating slag chipping machine, felt laying machine, power broom machine and adhesive machine:
New work: $1.00 per hour additional.
Re-roofing: $.50 per hour additional.

Work operating mechanized equipment (felt-layer, hot spreader, slag spreader) (on new work only): $.50 per hour additional.

Work involving the use of pitch, including all tear-offs: $1.00 per hour additional.

Work involving asbestos removal: $1.00 per hour additional.

Work operating adhesive machine on one-ply system (on new work only): $.50 per hour additional.

SFNJ0669-001 01/01/2005

HUNTERDON; MIDDLESEX (Remainder); AND WARREN COUNTIES

	Rates	Fringes
Sprinkler Fitter	$ 35.55	6.20

SFNJ0696-001 07/01/2003

BERGEN, ESSEX AND HUDSON COUNTIES; MIDDLESEX COUNTY (Township of Old Bridge); MORRIS, PASSAIC AND UNION COUNTIES:

	Rates	Fringes
Sprinkler Fitter	$ 40.45	10.55

SHEE0019-014 06/01/2003

WARREN COUNTY:

	Rates	Fringes
Sheet metal worker	$ 24.57	17.09

SHEE0025-001 06/01/2000

BERGEN, ESSEX, HUDSON, MORRIS, PASSAIC, SOMERSET, SUSSEX AND UNION COUNTIES:

	Rates	Fringes
Sheet metal worker	$ 26.92	16.12

SHEE0027-001 01/01/2004

HUNTERDON AND MIDDLESEX COUNTIES:

	Rates	Fringes
Sheet metal worker	$ 34.20	21.10

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* TEAM0408-001 05/01/1997

ESSEX AND MORRIS COUNTIES; UNION COUNTY (north of Wood Ave.):

	Rates	Fringes
Truck drivers:		
GROUP 1	$ 24.45	7.01
GROUP 2	$ 24.50	7.01
GROUP 3	$ 24.60	7.01
GROUP 4	$ 24.70	7.01

Hazardous waste removal:
With suit-up: $3.00 per hour additional.
Without suit-up: $1.00 per hour additional.

Paid Holidays:
New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Election Day, Veteran's Day, Thanksgiving Day and Christmas Day, provided the worker has been assigned to work or "shifts" one day of the calendar week during which the holiday falls.

Employer contributes $663.57 per month per worker for health and welfare.

DEFINITION OF GROUPS:

GROUP 1: Driver of the following types of vehicles: dump, flat, float, pick-up, container hauler, fuel, water sprinkler, road oil, stringer bead, hot pass, bus, dumpcrete, transit mixer, agitator mixer, half truck, winch truck, side-o-matic, dynamite, powder, x-ray, welding, skid, jeep, station wagon, A-frame, dual purpose truck, truck with mechanical tailgate, asphalt distributor, batch truck, seeding, mulching, fertilizing, air compressor truck (in transit); parts chaser; escort; scissor; hi-lift; telescope; concrete breaker; gin pole; stone, sand, asphalt distributor and spreader; nipper; fuel truck (driver of fuel truck including handling of hose and nozzle - entire unit); team driver; vacuum or vac-all truck (entire unit); skid truck (debris container - entire unit); concrete mobile truck (entire unit); expediter (parts chaser); beltcrete truck; pumpcrete truck; line truck; reel truck; wrecker; utility truck; tack truck; warehouse person; warehouse parts person; yard person; lift truck in

warehouse; warehouse clerk; parts person; material checker; receiver; shipper; binning person (materials); cardex person; drivers on the following type of vehicle: Broyhill coal tar epoxy truck, Littleford bituminous distributor, slurry seal truck or vehicle, thiokol track master, pick-up (swamp cat pick-up), bucker loader, dump truck and any rubber-tired tractor used in pulling and towing farm wagons and trailers of any description; off-site and on-site repair shop

GROUP 2: Drivers of 3-axle materials truck and float

GROUP 3: Drivers of all Euclid-type vehicles: Euclid, International Harvester, Wabco, Caterpillar, Koehring, tractor and wagon; dumpster; bottom, rear and side dump; carry-all and scraper (not self-loading, loading over the top); water sprinkler trailer; water pull and similar types of vehicle; driver of tractor and trailer-type vehicles: flat, float, I-beam, low bed, water sprinkler, bituminous transit mix, road oil, fuel, bottom dump hopper, rear dump, office, shanty, epoxy, asphalt, agitator mixer, mulching, stringing, seeding, fertilizing, pole, spread, bituminous distributor, water pull (entire unit), tractor trailer, reel trailer and similar types of vehicle

GROUP 4: Winch trailer driver

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* TEAM0469-001 05/01/2000

HUNTERDON, MIDDLESEX AND SOMERSET COUNTIES; UNION COUNTY (south of Wood Ave.); WARREN COUNTY:

	Rates	Fringes
Truck drivers:		
GROUP 1	$ 26.35	11.835
GROUP 2	$ 26.40	11.835
GROUP 3	$ 26.50	11.835
GROUP 4	$ 26.60	11.835

Hazardous waste removal: $3.00 per hour additional.

PAID HOLIDAYS:
New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Election Day, Veteran's Day, Thanksgiving Day and Christmas Day, provided that the worker has been assigned to work or "shifts" one day of the calendar week during which the holiday falls.

Employer contributes $400.00 per year per worker for apprenticeship training.

DEFINITION OF GROUPS:

GROUP 1: Driver of the following types of vehicle: dump, flat, float, pick-up, container hauler, fuel, water sprinkler, road oil, stringer bead, hot pass, bus, dumpcrete, transit mixer, agitator mixer, half truck, winch truck, side-o-matic, dynamite, powder, x-ray, welding, skid, jeep, station wagon, A-frame, dual purpose truck, truck with mechanical tailgate, asphalt distributor, batch truck, seeding, mulching, fertilizing, air compressor truck (in transit); parts chaser; escort; scissor; hi-lift;

telescope; concrete breaker; gin pole; stone, sand, asphalt distributor and spreader; nipper; fuel truck (driver of fuel truck including handling of hose and nozzle - entire unit); team driver; vacuum or vac-all truck (entire unit); skid truck (debris container - entire unit); concrete mobile truck (entire unit); expediter (parts chaser); beltcrete truck; pumpcrete truck; line truck; reel truck; wrecker; utility truck; tack truck; warehouse person; warehouse parts person; yard person; lift truck in warehouse; driver of the following type vehicles: Broyhill coal tar epoxy truck, Littleford bituminous distributor, slurry seal truck or vehicle, thiokol track master, pick-up (swamp cat pick-up); bucket loader, dump truck and any rubber-tired tractor used in pulling and towing farm wagons and trailers of any description; off-site and on-site repair shop

GROUP 2: Driver of 3-axle materials truck and float

GROUP 3: Driver of all Euclid-type vehicles: Euclid, International Harvester, Wabco, Caterpillar, Koehring tractor and wagon; dumpster; bottom, rear and side dump; carry-all and scraper (not self-loading, loading over the top); water sprinkler trailer; water pull and similar types of vehicle; driver of tractor and trailer-type vehicle: flat, float, I-beam, low bed, water sprinkler, bituminous transit mix, road oil, fuel, bottom dump hopper, rear dump, office, shanty, epoxy, asphalt, agitator mixer, mulching, stringing, seeding, fertilizing, pole, spread, bituminous distributor, water pull (entire unit), tractor trailer, reel trailer and similar types of vehicle

GROUP 4: Winch trailer driver

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* TEAM0560-001 05/01/2005

BERGEN, HUDSON AND PASSAIC COUNTIES:

	Rates	Fringes
Truck drivers:		
Utility work:		
GROUP 1	$ 22.68	17.88
GROUP 2	$ 22.60	17.88
GROUP 3	$ 22.52	17.88
GROUP 4	$ 22.48	17.88
All other work:		
GROUP 1	$ 28.35	17.88
GROUP 2	$ 28.25	17.88
GROUP 3	$ 28.15	17.88
GROUP 4	$ 28.10	17.88

Hazardous waste removal: $3.00 per hour additional.

PAID HOLIDAYS:
New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day.

DEFINITION OF GROUPS:

GROUP 1: Driver of the following types of vehicle: dump, flat, float, pick-up, container hauler, fuel, water

sprinkler, road oil, stringer, bead, hot pass, bus, dumpcrete, transit mixer, agitator mixer, half truck, winch truck, side-o-matic, dynamite, powder, x-ray, welding, skid, jeep, station wagon, A-frame, dual-purpose truck, truck with mechanical tailgate, asphalt distributor, batch truck, seeding, mulching, fertilizing, air compressor truck (in transit), parts chaser, escort, scissor, hi-lift, telescope, concrete breaker, gin pole; stone, sand, asphalt distributor and spreader; nipper; fuel truck (driver of fuel truck including handling of hose and nozzle - entire unit); team driver; vacuum or vac-all trucks (entire unit); skid truck (debris container - entire unit); concrete mobile truck (entire unit); expediter (parts chaser); beltcrete truck; pumpcrete truck; line truck, reel truck, wrecker; utility truck; tack truck; warehouse person; warehouse parts person; yard person; lift truck in warehouse; warehouse clerk; parts person; material checker; receiver; shipper; binning person (materials); cardex person; driver on the following types of vehicle: Broyhill coal tar epoxy truck, Littleford bituminous distributor, slurry seal truck or vehicle, thiokol track master, pick-up (swamp cat pick-up); bucket loader truck and any rubber-tired tractor used in pulling and towing farm wagons and trailers of any description; off-site and on-site repair shop

GROUP 2: Driver of 3-axle materials truck and float

GROUP 3: Driver of all Euclid-type vehicles: Euclid, International Harvester, Wabco, Caterpillar, Koehring tractor and wagon; dumpster; bottom, rear and side dump; carry-all and scraper (not self-loading, loading over the top); water sprinkler trailer; water pull and similar types of vehicle; driver of tractor and trailer-type vehicle: flat, float, I-beam, low bed, water sprinkler, bituminous transit mix, road oil, fuel, bottom dump hopper, rear dump, office, shanty, epoxy, asphalt, agitator mixer, mulching, stringing, seeding, fertilizing, pole, spread, bituminous distributor, water pull (entire unit) tractor trailer, reel trailer, and similar types of vehicle

GROUP 4: Winch trailer driver

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

Section 00901 STREAM ENCROACHMENT PERMIT

State of New Jersey

Richard J. Codey
Acting Governor

Department of Environmental Protection

Land Use Regulation Program
P.O. Box 439, Trenton, NJ 08625-0439
Fax # (609) 292-8115
Fax # (609) 777-3656
www.state.nj.us/landuse

Bradley M. Campbell
Commissioner

FAX

DATE: 7-26-05

Number of pgs including cover: 5

To: JOHN Finkledey / Donal Stevens The Louis Berger Group, Inc. 30 Vreeland Rd. Florham Park NJ 07932	**From:** GEORGE DAVIS DEP, LURP TRENTON NJ 08625
Phone:	**Phone:** 609 9840232
Fax: 973 765 9891	**Fax:**

REMARKS: ☐ Urgent ☑ For your Review ☐ Reply ASAP ☐ Please Comment

Prepared and

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

(See Issuing Division below)

PERMIT*

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to the further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit.

Permit No. 1806-02-0013.1 FHA 050001	Application No.

Issuance Date JUL 27 2005	Effective Date JUL 27 2005	Expiration Date JUL 27 2010

Name and Address of Applicant New Jersey Department of Protection, Division of Engineering and Construction 501 East State Street Trenton, New Jersey 08625-0419		Name and Address of Operator
Location of Activity/Facility *(Street Address)* Lot: 8;1; and 1.03 Block: 303 Twp: Bridgewater County: Somerset	Issuing Division Land Use Regulation Program	Statute(s) NJSA 13:1D-1 NJSA 58:10A-1 NJSA 58:16A-50, et. seq.

Type of Permit Stream Encroachment	Maximum Approved Capacity, if applicable

This permit grants permission to:

establish the 100-year floodplain and to construct a replacement culvert on an unnamed tributary to the Raritan River, to construct two recreation fields, two gravel parking areas, a nature trail, and a wetlands mitigation area, all in the floodway and floodplain of the Raritan River, within Lot Nos. 8, 1 and 1.03 of Block No. 303, located approximately 2000' northwesterly of the intersection of Dukes Parkway and Finderne Street, in the Township of Bridgewater, Somerset County, New Jersey.

Prepared By: George Davis

George Davis

(See page 4 for Section Chief's signature.)

Revised Date	Approved by the Department of Environmental Protection Name (Print or Type) _____ Title _____ Signature _____ Title _____

Terms And Conditions

This permit is subject to the following terms and conditions:

1. This permit is revocable, or subject to modification or change at any time, pursuant to the applicable regulations, when in the judgement of the Department of Environmental Protection of the State of New Jersey such revocation, modification or change shall be necessary.

2. The issuance of the permit shall not be deemed to affect in any way action by the Department of Environmental Protection of the State of New Jersey on any future application.

3. The works, facilities, and/or activities shown by plans and/or other engineering data, which are this day approved, subject to the conditions herewith established, shall be constructed and/or executed in conformity with such plans and/or engineering data and the said conditions.

4. No change in plans or specifications shall be made except with the prior written permission of the Department of Environmental Protection of the State of New Jersey.

5. The granting of this permit shall not be construed to in any way affect the title or ownership of property, and shall not make the Department of Environmental Protection or the State a party in any suit or question of ownership.

6. This permit does not waive the obtaining of Federal or other State or local government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained.

7. A copy of this permit shall be kept at the work site, and shall be exhibited upon request of any person.

8. In cases of conflict, the conditions of this permit shall supersede the plans and/or engineering data.

9. Limit and Extent of Approval

    a. This approval grants permission to the applicant and/or its agents to undertake an activity regulated by the State of New Jersey as described by the text of this permit and as detailed by the herein approved plans. Any construction, grading, removal of vegetation, or other activity at this site within or affecting a regulated flood plain, other than specifically approved by this permit or as detailed by the approved drawings, shall require additional approvals from the Department. The commencement of such regulated activities without the appropriate approvals shall be in violation of State law.

    b. All activities authorized by this permit shall be completed within five years of the issuance date as listed on the first page of this document. At that time, this approval, if not previously revoked, shall automatically become null and void, and none of the activities referenced herein may commence or continue until a new approval has been granted by the Department.

10. Method of Construction

    a. All activities approved by this permit shall be performed under the supervision and direction of a Professional Engineer licensed in the State of New Jersey, and shall be undertaken using the best management practices available. Furthermore, the site shall be subject to inspection at any time by representatives of the Department to ensure the

continuous application of the provisions of this permit.

b. During the course of construction, neither the applicant nor its agents shall cause or permit any unreasonable interference with the free flow of the stream by placing or dumping any materials, equipment, debris or structures within or adjacent to the stream corridor. Upon completion or abandonment of the work, the applicant and/or its agents shall remove and dispose of in a lawful manner all excess materials, equipment and debris from the stream corridor and adjacent lands.

c. All activities authorized by this permit shall be stabilized in accordance with the *Standards for Soil Erosion and Sediment Control in New Jersey* (obtainable from local Soil Conservation District offices), or equal engineering specifications, to prevent eroded soil and sediment from entering adjacent waterways and wetlands at any time during and subsequent to construction. The Department reserves the right to order the suspension of any activity if unacceptable levels of erosion or turbidity result from the same. Furthermore, the applicant shall maintain the stream corridor as shown on the approved drawing/s for either such time as is required for the channel and/or banks to become reasonably stabilized, or for one year after completion of the project (as evidenced by a Certificate of Completion), whichever period of time is longer.

11. Responsibilities of Applicant

a. The granting of this permit does not in any way relieve the applicant and/or its agents from the responsibility for damages caused by any construction or activities hereby approved, nor does the Department accept responsibility for any structural designs.

b. No construction authorized by this permit may begin until the enclosed **permit acceptance form** has been signed by the applicant and is returned to the Department. By signing and submitting this form, the applicant accepts this permit in its entirety and agrees to adhere to all of its terms and conditions. Please be advised that this permit may be declared null and void should it be determined that adequate measures had not been taken by the applicant and/or its agents to ensure the continuous implementation of these terms and conditions.

c. Within ten (10) days of the receipt of this permit by the applicant, this permit shall be recorded in its entirety in the office of the County Clerk or the Registrar of Deeds and Mortgages for each county where this permit is located. Verified notice of this action shall be forwarded to the Department immediately thereafter.

d. The enclosed **construction notice** shall be completed by the applicant or its agent and submitted to the Department at least fourteen (14) days prior to the commencement of the herein approved activities.

e. The enclosed **completion report** shall be completed by a Professional Engineer licensed in the State of New Jersey and submitted to the Department within thirty (30) days after completion of the herein approved activities.

12. All excavated material must be disposed of in a lawful manner outside of any regulated flood plain, open water, freshwater wetlands or adjacent transition areas, and in such a way as not to interfere with the positive drainage of the receiving area.

13. In order to protect the general warm-water spawning and anadromous migrations within Raritan River, any proposed grading or construction activities within the banks of this or any other watercourse on site are prohibited between May 1st and June 30th of each year. (Note: this timing restriction shall be waived if a spring planting scheme is necessary provided

adequate SCS erosion controls are in place to prevent sediment transport down through stream or river). In addition, any activity within the 100-year flood plain or flood hazard area of this watercourse that could introduce sediment into said watercourse or that could cause an increase in the natural level of turbidity is also prohibited during this period. The Department reserves the right to suspend all regulated activities on site should it be determined that the applicant has not taken proper precautions to ensure continuous compliance with this condition.

14. Trees, shrubs, grasses, and other vegetation within 25 feet from the top of all stream banks on site shall not be disturbed for any reason, except as approved by the Department and as shown on the approved site plans. This condition applies to all streams and waterways on site, regardless of the contributory drainage area.

15. The drawings hereby approved are seventeen (17) sheets prepared by The Louis Berger Group, Inc., dated April 15, 2005, unrevised unless otherwise noted, entitled:

"WETLAND MITIGATION DESIGN FOR THE FINDERNE SITE, GREEN BROOK FLOOD CONTROL PROJECT BRIDGEWATER TOWNSHIP SOMERSET COUNTY, NEW JERSEY CONTRACT NO. DACW51-03-D-0001 DELIVERY ORDER 0006"

"BASELINE & TIE SHEET" sheet no. 03 of 39

"GRADING PLAN" sheet nos. 18, 19, 20, 21, 22 and 23 of 39

"CROSS SECTIONS" sheet nos. 30, 31, 32 and 33 of 39

"CONSTRUCTION DETAILS" sheet nos. 36 and 37 of 39

"HEC-RAS CROSS SECTION LOCATIONS" sheet no. 39 of 39

"WETLAND MITIGATION DESIGN FOR THE FINDERNE SITE, GREEN BROOK FLOOD CONTROL PROJECT BRIDGEWATER TOWNSHIP, SOMERSET COUNTY, NEW JERSEY CONTRACT No._____"

"CONSTRUCTION DETAILS" sheet nos. 41, 44 and 45 of 50, dated June 24, 2005

Madhu Guru

Madhu Guru, PE
Section Chief
Northwest central Engineering

7/27/05
DATE

SECTION 01110

SUMMARY OF WORK
08/04

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

1.1.1 Project Description

The work includes the creation and restoration of wetlands and the restoration of the unnamed tributary (Finderne Brook) that transects the western portion of the site to mitigate for the adverse environmental impacts that will occur due to the Green Brook Flood Control Project. Additional project components include creation of two recreational fields and two gravel parking areas, as well as the replacement of a structurally deficient culvert. Construction activities will include implementation of soil erosion and sediment control measures; clearing and grubbing; earthwork, including excavation, replacement of stockpiled topsoil, and grading; creation of microtopography; wetland and riparian planting and seeding; and creation of a nature trail and associated site amenities.

1.1.2 Location

The work shall be located at the Finderne Site (Project Site), Bridgewater Township, Somerset County, NJ, as shown on the project plans. The exact location will be shown by the Contracting Officer.

1.2 Definitions

1.2.1 Contracting Officer

Throughout the plans and specifications, the term Contracting Officer shall include the Government's Contracting Officer and any person he designates as his representative or alternate.

1.3 EXISTING WORK

In addition to "FAR 52.236-9, Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements":

a. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which remain.

b. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as approved by the Contracting Officer. At the completion of operations, existing work shall be in a condition equal to or better than that which existed before new work started.

1.4 LOCATION OF UNDERGROUND UTILITIES

It is the Contractor's responsibility to detect, mark, and protect existing utilities (to remain) from damage during construction, as well as coordinate disconnection of utility services as necessary. Between 2 and 10 working days prior to start of construction, not including the day of the call, the Contractor is required to notify:

New Jersey One Call
399 Hoes Lane
Piscataway, 08854
Phone # 1-800-272-1000
Fax #732-394-3002

Movement of construction machinery and equipment over pipes, valve boxes, and utilities to remain during construction shall be at the Contractor's risk. If a utility is inadvertently damaged, it shall be the Contractor's responsibility to restore that utility to operating condition, equal to that existing prior to damage. The Contractor shall remain at the site with the damaged utility until it has been restored and there is no danger to the public (i.e. exposed live electrical wires, etc.). Should the Contractor need to cut off utilities or services during the performance of the work, the County Department, City Department or Utility Company owning or controlling services shall be notified and requested to cut off these services. Any services cut off or interrupted by the Contractor's operations shall be restored at the Contractor's expense.

Any work adjacent to non-Government utilities shall be performed as indicated in accordance with procedures outlined by utility company. Excavation made with power-driven equipment is not permitted within 2 feet of known Government-owned utilities or subsurface construction.

For work immediately adjacent to or for excavations exposing a utility or other buried obstruction, excavation shall be done by hand. Hand excavation shall be started on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Uncovered lines or other existing work affected by the Contract excavation shall be supported until approval for backfill is granted by the Contracting Officer. Damage to utility lines or subsurface construction shall be reported immediately to the Contracting Officer.

The Contractor shall remove only the existing utilities indicated on the plans. When utility lines are detected and/or encountered that are not indicated on the drawings, the Contracting Officer shall be notified prior to further work in that area.

1.5 UTILITY PROTECTION PLAN

Prior to commencement of construction, the Contractor shall submit a Utility Protection Plan detailing the methods for protection of all utilities, pipes, and valve boxes at the project site, as described in Section 01355A Environmental Protection.

1.6 SUBMITTALS

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

SD-01 Preconstruction Submittals

Utility Protection Plan; G, RO.
The Contractor shall submit a Utility Protection Plan 30 days prior to commencement of construction.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

SPECIFICATION COVER SHEET

DEPARTMENT OF THE ARMY

CONTRACT NO:
DACW51-03-D-0001,
DELIVERY ORDER 0006

WETLAND MITIGATION DESIGN FOR THE FINDERNE SITE, GREENBROOK FLOOD CONTROL PROJECT
at the

BRIDGEWATER TOWNSHIP, SOMERSET COUNTY, NJ

DESIGN BY:

THE LOUIS BERGER GROUP

30 VREELAND ROAD, BUILDING A
FLORHAM PARK, NJ 07932

SPECIFICATION PREPARED BY:

Civil: KA Other: JM

SPECIFICATION SUBMITTED BY: _____ DATE: _____

SPECIFICATION APPROVED BY: _____ DATE: _____

-- End of Section --

SECTION 01312A

QUALITY CONTROL SYSTEM (QCS)
08/04

1.1 GENERAL

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. The Contractor module, user manuals, updates, and training information can be downloaded from the RMS web site.This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

Administration
Finances
Quality Control
Submittal Monitoring
Scheduling
Import/Export of Data

1.1.1 Correspondence and Electronic Communications

For ease and speed of communications, both Government and Contractor will, to the maximum extent feasible, exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.1.2 Other Factors

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01320A, PROJECT SCHEDULE, Section 01330, SUBMITTAL PROCEDURES, and Section 01451A, CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.2 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the

Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on 3-1/2 inch high-density diskettes or CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

1.3 SYSTEM REQUIREMENTS

The following is the minimum system configuration that the Contractor shall have to run QCS:

RMS Server

Hardware

IBM-compatible PC with 1000 MHz Pentium or higher processor

1000+ MB RAM

1 GB free disk space

3 1/2 inch high-density floppy drive

Compact Disk (CD) Reader 8x speed or higher

TCP/IP Network/Internet Connection

Software

Windows 2000 or higher

Oracle 8i Server

Virus protection software that is regularly upgraded with all issued manufacturer's updates

Personnel

Oracle Database Administrator (DBA)

RMS Workstation

Hardware

IBM-compatible PC with 1000 MHz Pentium or higher processor

256+ MB RAM for workstation

500 MB free disk space

3 1/2 inch high-density floppy drive

Compact Disk (CD) Reader 8x speed or higher

SVGA or higher resolution monitor (1024x768, 256 colors)

Mouse or other pointing device

Windows compatible printer. (Laser printer must have 4 MB+ of RAM)

TCP/IP Network/Internet Connection

Software

MS Windows 2000 or higher

Oracle 8i Client

Word Processing software: MS Word 2000 or newer

Latest version of: Netscape Navigator, Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher

Electronic mail (E-mail) MAPI compatible

Virus protection software that is regularly upgraded with all issued manufacturer's updates

QCS and QAS System

Hardware

IBM-compatible PC with 1000 MHz Pentium or higher processor

256+ MB RAM for workstation / 512+ MB RAM for server

1 GB hard drive disk space for sole use by the QCS system

3 1/2 inch high-density floppy drive

Compact Disk (CD) Reader 8x speed or higher

SVGA or higher resolution monitor (1024x768, 256 colors)

Mouse or other pointing device

Windows compatible printer. (Laser printer must have 4 MB+ of RAM)

Connection to the Internet, minimum 56k BPS

Software

MS Windows 2000 or higher

QAS-Word Processing software: MS Word 2000 or newer

Latest version of: Netscape Navigator, Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher

Electronic mail (E-mail) MAPI compatible

Virus protection software that is regularly upgraded with all issued manufacturer's updates

1.4 RELATED INFORMATION

1.4.1 QCS User Guide

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website; the Contractor can obtain the current address from the Government. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.4.2 Contractor Quality Control(CQC) Training

The use of QCS will be discussed with the Contractor's QC System Manager during the mandatory CQC Training class.

1.5 CONTRACT DATABASE

Prior to the pre-construction conference, the Government shall provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by files attached to E-mail. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.6 DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government shall be submitted by E-mail with file attachments, e.g., daily reports, schedule updates, payment requests. If permitted by the Contracting Officer, a data diskette or CD-ROM may be used instead of E-mail (see Paragraph DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM). The QCS database typically shall include current data on the following items:

1.6.1 Administration

1.6.1.1 Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver Contractor administrative data in electronic format via E-mail.

1.6.1.2 Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver subcontractor administrative data in electronic format via E-mail.

1.6.1.3 Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home (main) office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

1.6.1.4 Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.6.1.5 Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.6.2 Finances

1.6.2.1 Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.6.2.2 Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet and include it with the payment request. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment requests with supporting data by E-mail with file attachment(s). If permitted by the Contracting Officer, a data diskette may be used instead of E-mail. A

signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.6.3 Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. The Contractor shall provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01451A, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a data diskette or CD-ROM reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.6.3.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by Section 01451A, CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government using E-mail or diskette within 24 hours after the date covered by the report. Use of either mode of submittal shall be coordinated with the Government representative. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

1.6.3.2 Deficiency Tracking.

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.6.3.3 Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.6.3.4 Accident/Safety Tracking.

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any

accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 300.

1.6.3.5 Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.6.3.6 QC Requirements

The Contractor shall develop and maintain a complete list of QC testing, transferred and installed property, and user training requirements in QCS. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

1.6.4 Submittal Management

The Government will provide the initial submittal register in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update shall be produced using QCS. RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.6.5 Schedule

The Contractor shall develop a construction schedule consisting of pay activities, in accordance with Contract Clause "Schedules for Construction Contracts", or Section 01320A, PROJECT SCHEDULE, as applicable. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01320A PROJECT SCHEDULE). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.6.6 Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data, and schedule data using SDEF.

1.7 IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the

Contractor's management of quality control.

1.8 DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of updates, payment requests, correspondence and other data is by E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of computer diskettes or CD-ROM for data transfer. Data on the disks or CDs shall be exported using the QCS built-in export function. If used, diskettes and CD-ROMs will be submitted in accordance with the following:

1.8.1 File Medium

The Contractor shall submit required data on 3-1/2 inch double-sided high-density diskettes formatted to hold 1.44 MB of data, capable of running under Microsoft Windows 95 or newer. Alternatively, CD-ROMs may be used. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.8.2 Disk or CD-ROM Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.8.3 File Names

The Government will provide the file names to be used by the Contractor with the QCS software.

1.9 MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions. The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

-- End of Section --

SECTION 01320A

PROJECT SCHEDULE
05/02

PART 1 GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1-1-11	(1995) Progress, Schedules, and Network Analysis Systems

1.2 QUALIFICATIONS

The Contractor shall designate an authorized representative who shall be responsible for the preparation of all required project schedule reports.

1.3 PAYMENT

There shall be no separate payment for establishing and maintaining the project schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Pursuant to the Contract Clause, SCHEDULE FOR CONSTRUCTION CONTRACTS, a Project Schedule as described below shall be prepared. The scheduling of construction shall be the responsibility of the Contractor. Contractor management personnel shall actively participate in its development. Subcontractors and suppliers working on the project shall also contribute in developing and maintaining an accurate Project Schedule. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

3.2 BASIS FOR PAYMENT

The schedule shall be the basis for measuring Contractor progress. Lack of an approved schedule or scheduling personnel will result in an inability of the Contracting Officer to evaluate Contractor's progress for the purposes of payment. Failure of the Contractor to provide all information, as specified below, shall result in the disapproval of the entire Project Schedule submission and the inability of the Contracting Officer to

evaluate Contractor progress for payment purposes. In the case where Project Schedule revisions have been directed by the Contracting Officer and those revisions have not been included in the Project Schedule, the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until revisions to the Project Schedule have been made.

3.3 PROJECT SCHEDULE

The computer software system utilized by the Contractor to produce the Project Schedule shall be capable of providing all requirements of this specification. Failure of the Contractor to meet the requirements of this specification shall result in the disapproval of the schedule. Manual methods used to produce any required information shall require approval by the Contracting Officer.

3.3.1 Use of the Critical Path Method

The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The Contractor shall provide the Project Schedule in the Precedence Diagram Method (PDM).

3.3.2 Level of Detail Required

The Project Schedule shall include an appropriate level of detail. Failure to develop or update the Project Schedule or provide data to the Contracting Officer at the appropriate level of detail, as specified by the Contracting Officer, shall result in the disapproval of the schedule. The Contracting Officer will use, but is not limited to, the following conditions to determine the appropriate level of detail to be used in the Project Schedule:

3.3.2.1 Activity Durations

Contractor submissions shall follow the direction of the Contracting Officer regarding reasonable activity durations. Reasonable durations are those that allow the progress of activities to be accurately determined between payment periods (usually less than 2 percent of all non-procurement activities' Original Durations are greater than 20 days).

3.3.2.2 Permit Activities

Permitting activities, including necessary conferences and follow-up actions and agency review dates, shall be integrated into the schedule.

3.3.2.3 Procurement Activities

Tasks related to the procurement of long lead materials or equipment shall be included as separate activities in the project schedule. Long lead materials and equipment are those materials that have a procurement cycle of over 90 days. Examples of procurement process activities include, but are not limited to: submittals, approvals, procurement, fabrication, and delivery.

3.3.2.4 Critical Activities

The following activities shall be listed as separate line activities on the Contractor's project schedule:

a. Installation of SESC measures.

b. Clearing and grubbing.

c. Wetland Construction Activities

d. Stream Construction Activities

e. Recreational Features Construction Activities

f. Submission and approval of O & M manuals.

g. Submission and approval of as-built drawings.

h. Prefinal inspection.

i. Correction of punchlist from prefinal inspection.

j. Final inspection.

3.3.2.5 Government Activities

Government and other agency activities that could impact progress shall be shown. These activities include, but are not limited to: environmental permit approvals, inspections, utility tie-in, and Notice to Proceed (NTP) for phasing requirements.

3.3.2.6 Responsibility

All activities shall be identified in the project schedule by the party responsible to perform the work. Responsibility includes, but is not limited to, the subcontracting firm, contractor work force, or government agency performing a given task. Activities shall not belong to more than one responsible party. The responsible party for each activity shall be identified by the Responsibility Code.

3.3.2.7 Work Areas

All activities shall be identified in the project schedule by the work area in which the activity occurs. Activities shall not be allowed to cover more than one work area. The work area of each activity shall be identified by the Work Area Code.

3.3.2.8 Modification or Claim Number

Any activity that is added or changed by contract modification or used to justify claimed time shall be identified by a mod or claim code that changed the activity. Activities shall not belong to more than one

modification or claim item. The modification or claim number of each activity shall be identified by the Mod or Claim Number. Whenever possible, changes shall be added to the schedule by adding new activities. Existing activities shall not normally be changed to reflect modifications.

3.3.2.9 Bid Item

All activities shall be identified in the project schedule by the Bid Item to which the activity belongs. An activity shall not contain work in more than one bid item. The bid item for each appropriate activity shall be identified by the Bid Item Code.

3.3.2.10 Phase of Work

All activities shall be identified in the project schedule by the phases of work in which the activity occurs. Activities shall not contain work in more than one phase of work. The project phase of each activity shall be by the unique Phase of Work Code.

3.3.2.11 Category of Work

All Activities shall be identified in the project schedule according to the category of work which best describes the activity. Category of work refers, but is not limited, to the procurement chain of activities including such items as submittals approvals, procurement, fabrication, delivery, installation, start-up, and testing. The category of work for each activity shall be identified by the Category of Work Code.

3.3.2.12 Feature of Work

All activities shall be identified in the project schedule according to the feature of work to which the activity belongs. Feature of work refers, but is not limited to, a work breakdown structure for the project. The feature of work for each activity shall be identified by the Feature of Work Code.

3.3.3 Scheduled Project Completion

The schedule interval shall extend from NTP to the contract completion date.

3.3.3.1 Project Start Date

The schedule shall start no earlier than the date on which the NTP was acknowledged. The Contractor shall include as the first activity in the project schedule an activity called "Start Project". The "Start Project" activity shall have an "ES" constraint date equal to the date that the NTP was acknowledged, and a zero day duration.

3.3.3.2 Constraint of Last Activity

Completion of the last activity in the schedule shall be constrained by the contract completion date. Calculation on project updates shall be such that if the early finish of the last activity falls after the contract completion date, then the float calculation shall reflect a negative float on the critical path. The Contractor shall include as the last activity in

the project schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the completion date for the project, and a zero day duration.

3.3.3.3 Early Project Completion

In the event the project schedule shows completion of the project prior to the contract completion date, the Contractor shall identify those activities that have been accelerated and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. Contractor shall specifically address each of the activities noted in the narrative report at every project schedule update period to assist the Contracting Officer in evaluating the Contractor's ability to actually complete prior to the contract period.

3.3.4 Interim Completion Dates

Contractually specified interim completion dates shall also be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim completion date.

3.3.4.1 Start Phase

The Contractor shall include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase X" activity shall have an "ES" constraint date equal to the date on which the NTP was acknowledged, and a zero day duration.

3.3.4.2 End Phase

The Contractor shall include as the last activity in a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the completion date for the project, and a zero day duration.

3.3.4.3 Phase X

The Contractor shall include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5 Default Progress Data Disallowed

Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual Start and Finish dates on the CPM schedule shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the Actual Start and Finish dates on the Daily Quality Control report for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. Updating of the percent

complete and the remaining duration of any activity shall be independent functions. Program features which calculate one of these parameters from the other shall be disabled.

3.3.6 Out-of-Sequence Progress

Activities that have posted progress without all preceding logic being satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case approval of the Contracting Officer. The Contractor shall propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule.

3.3.7 Negative Lags

Lag durations contained in the project schedule shall not have a negative value.

3.4 PROJECT SCHEDULE SUBMISSIONS

The Contractor shall provide the submissions as described below. The data disk, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

3.4.1 Preliminary Project Schedule Submission

The Preliminary Project Schedule shall be submitted for approval within 14 calendar days after the NTP is acknowledged.

3.4.2 Periodic Schedule Updates

Based on the result of progress meetings, specified in "Periodic Progress Meetings," the Contractor shall submit periodic schedule updates. These submissions shall enable the Contracting Officer to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgement of the Contracting Officer or authorized representative is necessary for verifying the Contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made.

3.4.3 Standard Activity Coding Dictionary

The Contractor shall use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used.

3.5 SUBMISSION REQUIREMENTS

The following items shall be submitted by the Contractor for the preliminary submission and every periodic project schedule update throughout the life of the project:

3.5.1 Data Disks

Two data disks or CD-ROM's containing the project schedule shall be provided. Data on the disks shall adhere to the SDEF format specified in ER 1-1-11, Appendix A.

3.5.1.1 File Medium

Required data shall be submitted on 3.5 disks or CD-ROM's , formatted to hold 1.44 MB of data, under the MS-DOS Version 5. or 6.x, unless otherwise approved by the Contracting Officer.

3.5.1.2 Disk Label

A permanent exterior label shall be affixed to each disk submitted. The label shall indicate the type of schedule (Preliminary, Initial, Update, or Change), full contract number, project name, project location, data date, name and telephone number of person responsible for the schedule, and the MS-DOS version used to format the disk. For CD-ROM's, a permanent marker may be used to record this information directly on the disk.

3.5.1.3 File Name

Each file submitted shall have a name related to either the schedule data date, project name, or contract number. The Contractor shall develop a naming convention that will ensure that the names of the files submitted are unique. The Contractor shall submit the file naming convention to the Contracting Officer for approval.

3.5.2 Narrative Report

A Narrative Report shall be provided with the preliminary and each update of the project schedule (only changes in the preliminary narrative report need to be provided with updates). This report shall be provided as the basis of the Contractor's progress payment request. The Narrative Report shall include: a description of activities along the critical paths, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to relay to the Government, the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through that analysis.

3.5.3 Approved Changes Verification

Only project schedule changes that have been previously approved by the Contracting Officer shall be included in the schedule submission. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4 Schedule Reports

The format for each activity for the schedule reports listed below shall

contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float. Actual Start and Actual Finish Dates shall be printed for those activities in progress or completed.

3.5.4.1 Activity Report

A list of all activities sorted according to activity number.

3.5.4.2 Logic Report

A list of Preceding and Succeeding activities for every activity in ascending order by activity number. Preceeding and succeeding activities shall include all information listed above in paragraph Schedule Reports. A blank line shall be left between each activity grouping.

3.5.4.3 Total Float Report

A list of all incomplete activities sorted in ascending order of total float. Activities which have the same amount of total float shall be listed in ascending order of Early Start Dates. Completed activities shall not be shown on this report.

3.5.4.4 Earnings Report

A compilation of the Contractor's Total Earnings on the project from the NTP until the most recent Monthly Progress Meeting. This report shall reflect the Earnings of specific activities based on the agreements made in the field and approved between the Contractor and Contracting Officer at the most recent Monthly Progress Meeting. Provided that the Contractor has provided a complete schedule update, this report shall serve as the basis of determining Contractor Payment. Activities shall be grouped by bid item and sorted by activity numbers. This report shall: sum all activities in a bid item and provide a bid item percent; and complete and sum all bid items to provide a total project percent complete. The printed report shall contain, for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Total Quantity, Quantity to Date, Percent Complete (based on cost), and Earnings to Date.

3.5.5 Network Diagram

The network diagram shall be required on the preliminary schedule submission and on monthly schedule update submissions. The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1 Continuous Flow

Diagrams shall show a continuous flow from left to right with no arrows from right to left. The activity number, description, duration, and estimated earned value shall be shown on the diagram.

3.5.5.2 Project Milestone Dates

Dates shall be shown on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3 Critical Path

The critical path shall be clearly shown.

3.5.5.4 Banding

Activities shall be grouped to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

3.5.5.5 S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.6 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment shall include a monthly onsite meeting or other regular intervals mutually agreed to at the preconstruction conference. During this meeting the Contractor shall describe, on an activity by activity basis, all proposed revisions and adjustments to the project schedule required to reflect the current status of the project. The Contracting Officer will approve activity progress, proposed revisions, and adjustments as appropriate.

3.6.1 Meeting Attendance

The Contractor's Project Manager and Scheduler shall attend the regular progress meeting.

3.6.2 Update Submission Following Progress Meeting

A complete update of the project schedule containing all approved progress, revisions, and adjustments, based on the regular progress meeting, shall be submitted not later than 4 working days after the monthly progress meeting.

3.6.3 Progress Meeting Contents

Update information, including Actual Start Dates, Actual Finish Dates, Remaining Durations, and Cost-to-Date shall be subject to the approval of the Contracting Officer. As a minimum, the Contractor shall address the following items on an activity by activity basis during each progress meeting.

3.6.3.1 Start and Finish Dates

The Actual Start and Actual Finish dates for each activity currently in-progress or completed .

3.6.3.2 Time Completion

The estimated Remaining Duration for each activity in-progress. Time-based progress calculations shall be based on Remaining Duration for each activity.

3.6.3.3 Cost Completion

The earnings for each activity started. Payment will be based on earnings for each in-progress or completed activity. Payment for individual activities will not be made for work that contains quality defects. A portion of the overall project amount may be retained based on delays of activities.

3.6.3.4 Logic Changes

All logic changes pertaining to NTP on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, lag durations, and other changes that have been made pursuant to contract provisions shall be specifically identified and discussed.

3.6.3.5 Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary. 3) Changes required to correct a schedule which does not represent the actual or planned prosecution and progress of the work.

3.7 REQUESTS FOR TIME EXTENSIONS

In the event the Contractor requests an extension of the contract completion date, or any interim milestone date, the Contractor shall furnish the following for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract: justification, project schedule data, and supporting evidence as the Contracting Officer may deem necessary. Submission of proof of delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is obligatory to any approvals.

3.7.1 Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the schedule, will not be a cause for a time extension to the contract completion date.

3.7.2 Submission Requirements

The Contractor shall submit a justification for each request for a change in the contract completion date of under 2 weeks based upon the most recent schedule update at the time of the NTP or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

a. A list of affected activities, with their associated project schedule activity number.

b. A brief explanation of the causes of the change.

c. An analysis of the overall impact of the changes proposed.

d. A sub-network of the affected area.

Activities impacted in each justification for change shall be identified by a unique activity code contained in the required data file.

3.7.3 Additional Submission Requirements

For any requested time extension of over 2 weeks, the Contracting Officer may request an interim update with revised activities for a specific change request. The Contractor shall provide this disk within 4 days of the Contracting Officer's request.

3.8 DIRECTED CHANGES

If the NTP is issued for changes prior to settlement of price and/or time, the Contractor shall submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The proposed revisions to the schedule will be approved by the Contracting Officer prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor with suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted, and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, the Contractor shall advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9 OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

-- End of Section --

SECTION 01330

SUBMITTAL PROCEDURES
08/04

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Submittal

Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.1.2 Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by SD numbers and titles as follows.

SD-01 Preconstruction Submittals

Certificates of insurance.
Surety bonds.
List of proposed subcontractors.
List of proposed products.
Construction Progress Schedule.
Submittal register.
Schedule of prices.
Health and safety plan.
Work plan.
Quality control plan.
Environmental protection plan.

SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-04 Samples

Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.

Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.

Field samples and mock-ups constructed on the project site establish standards by which the ensuring work can be judged. Includes assemblies or portions of assemblies which are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

Calculations, mix designs, analyses or other data pertaining to a part of work.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)

Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports.

Daily checklists.

Final acceptance test and operational test procedure.

SD-07 Certificates

Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.

Confined space entry permits.

Text of posted operating instructions.

SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions.

SD-09 Manufacturer's Field Reports

Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

Factory test reports.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

1.1.3 Approving Authority

Office authorized to approve submittal.

1.1.4 Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.2 SUBMITTALS

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

SD-01 Preconstruction Submittals

Submittal Register; G, RO.

1.3 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.3.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.3.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.3.3 Government Approval/Acceptance (G)

All submittals classified for Government Approval/Acceptance (G) are identified in the approved submittal register Form 4025. A code following the "G" designation indicates the approving authority; codes of "RO" for Resident Office approval, "DO" for NYD Engineering Division approval, and "AE" for Architect-Engineer approval.

1.4 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.5 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.6 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required

approvals have not been obtained.

1.7 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.8 SUBMITTAL REGISTER

At the end of this section is a submittal register showing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Government will provide the initial submittal register in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns in accordance with Section 01312A QUALITY CONTROL SYSTEM (QCS). Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall track all submittals.

1.9 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 5 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

1.10 SUBMITTAL REGISTER (ENG FORM 4025)

The submittal register (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the the specifications. These forms will be

furnished to the Contractor.

1.11 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.11.1 Procedures

The Government will further discuss detailed submittal procedures with the Contractor at the Preconstruction Conference.

1.11.2 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.12 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.13 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. 2 copies of the submittal will be retained by the Contracting Officer and 2 copies of the submittal will be returned to the Contractor.

1.14 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

1.15 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR

(Firm Name)

_____ Approved

_____ Approved with corrections as noted on submittal data and/or attached sheets(s).

SIGNATURE: _____

TITLE: _____

DATE: _____

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

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		01110	SD-01 Preconstruction Submittals															
			Utility Protection Plan	1.5	G	RO												
		01330	SD-01 Preconstruction Submittals															
			Submittal Register	1.8	G	RO												
		01355A	SD-01 Preconstruction Submittals															
			Environmental Protection Plan	1.7	G	AE												
		01525	SD-01 Preconstruction Submittals															
			Accident Prevention Plan (APP)	1.6	G	RO												
			Activity Hazard Analysis (AHA)	1.7	G	RO												
			SD-06 Test Reports															
			Reports	1.11														
			Accident Reports	1.11.1														
			Monthly Exposure Reports	1.11.3														
		02231	SD-03 Product Data															
			Herbicide	2.1	G	AE												
			SD-04 Samples															
			Herbicide	2.1	G	AE												
		02300	SD-06 Test Reports															
			Testing	3.11	G	AE												
			SD-07 Certificates															
			Testing	3.11	G	RO												
		02301	SD-03 Product Data															
			Bedding Harrow	2.1.1	G	RO												
			Tractor	2.1.2	G	RO												
			Finished Grade	3.1	G	RO												
			SD-08 Manufacturer's Instructions															

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		02301	Bedding Harrow	2.1.1	G RO													
			Tractor	2.1.2	G RO													
		02369	SD-03 Product Data															
			Silt Fence	2.1	G RO													
		02378	SD-03 Product Data															
			Separation Geotextile	2.1.1.1	G RO													
			Stabilization Geotextile	2.1.1.2	G RO													
			SD-04 Samples															
			Separation Geotextile	2.1.1.1	G RO													
			Stabilization Geotextile	2.1.1.2	G RO													
			SD-07 Certificates															
			Separation Geotextile	2.1.1.1	G RO													
			Stabilization Geotextile	2.1.1.2	G RO													
		02722	SD-03 Product Data															
			Graded-Crushed Aggregate Base Course	2.1	G RO													
			Equipment and Tools	1.8	G RO													
			SD-06 Test Reports															
			Sampling and Testing	3.7	G AE													
		02731	SD-03 Product Data															
			Aggregate Surface Course	2.1	G RO													
			Equipment and Tools	1.7	G RO													
			SD-06 Test Reports															
			Sampling and Testing	3.9	G AE													
		02821A	SD-03 Product Data															
			Chain Link Security Fence	2.1	G RO													

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		02821A	Construction Fence	2.2	G RO													
			Herbivory Fence	2.3	G AE													
			Gates	2.4	G RO													
			SD-07 Certificates															
			Chain Link Security Fence	2.1														
		02921	SD-03 Product Data															
			Warm Season Native Seed Mix, Type N	2.1.4	G AE													
			Wet Meadow Seed Mix, Type W	2.1.5	G AE													
			Recreational Field Seed Mix	2.1.6	G AE													
			Temporary Seed Mix	2.1.7	G AE													
			Fertilizer	2.2	G AE													
			Mulch	2.3	G AE													
			Delivery Schedule	1.7.1	G AE													
			Equipment	3.2.4	G AE													
			Finished Grade	3.2.3	G AE													
			Quantity Check	3.4	G AE													
			SD-04 Samples															
			Mulch	2.3	G AE													
			SD-06 Test Reports															
			Germination and Purity Test for Seed	2.1.1	G AE													
			Soil Test	3.1.1.3	G AE													
			Equipment	3.2.4	G AE													
			SD-07 Certificates															

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		02921	Warm Season Native Seed Mix, Type N	2.1.4	G	AE												
			Wet Meadow Seed Mix, Type W	2.1.5	G	AE												
			Recreational Field Seed Mix	2.1.6	G	AE												
			Temporary Seed Mix	2.1.7	G	AE												
			One-year Plant Guarantee - Seeding	1.6	G	AE												
		02930	SD-01 Preconstruction Submittals															
			Plant Material Order	2.1	G	AE												
			Quality Control Record	3.4	G	AE												
			SD-03 Product Data															
			Riparian Forest Plants	2.1.1	G	AE												
			Upland Forest Plants	2.1.1	G	AE												
			Wetland Forest Plants	2.1.1	G	AE												
			Upland Scrub/Shrub Plants	2.1.1	G	AE												
			Emergent Wetland Plants	2.1.1	G	AE												
			Streambank Plants	2.1.1	G	AE												
			Emergent Plant Fertilizer	2.2.1	G	AE												
			Shrub/Tree Fertilizer	2.2.2	G	AE												
			Mycorrhizal Fungi Inoculum	2.4	G	AE												
			Delivery Schedule	1.5.1	G	AE												
			Equipment	3.1.3	G	AE												
			Finished Grade	3.1.2	G	AE												
			SD-06 Test Reports															
			Equipment	3.1.3	G	AE												
			SD-07 Certificates															

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		02930	One-Year Plant Guarantee	1.8	G	AE												
			Nursery Certifications	1.4.1	G	AE												
			State Landscape Contractor's License	1.4.3	G	AE												
			SD-11 Closeout Submittals															
			As-Planted Plan	3.3.6	G	AE												
		02940	SD-03 Product Data															
			Coir Fiber Matting	2.1	G	AE												
			Finished Grade	3.1	G	AE												
			SD-04 Samples															
			Coir Fiber Matting	2.1	G	AE												
		03101A	SD-02 Shop Drawings															
			Shop Drawings	1.4	G	AE												
			SD-03 Product Data															
			Materials	2.1	G	AE												
			SD-06 Test Reports															
			Inspection	3.3														
		03301	SD-03 Product Data															
			Portland Cement	2.1	G	AE												
			Aggregates	2.2	G	AE												
			Concrete Mixture Proportioning	2.3	G	AE												
			Equipment	3.2	G	AE												
			Cold-Weather Placing	3.4.4	G	AE												
			Hot-Weather Placing	3.4.5	G	AE												
			Finishing	3.5	G	AE												
			Curing and Protection	3.6	G	AE												

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		03301	SD-04 Samples															
			Government Testing and Sampling	3.1														
			SD-06 Test Reports															
			Government Testing and Sampling	3.1														
			Tests and Inspections	3.8	G AE													
			SD-07 Certificates															
			Portland Cement	2.1	G AE													
			Concrete Field Testing Technicians	3.8	G AE													
			Concrete Transportation Construction Inspector	3.8	G AE													
		03410	SD-02 Shop Drawings															
			Drawings of the Precast Arch Culvert		G AE													
			SD-05 Design Data															
			Design calculations		G AE													
			SD-06 Test Reports															
			Air Content Test Reports		G AE													
			Compressive Strength Test Reports		G AE													
			SD-07 Certificates															
			Precaster Certifications		G AE													
			Precaster Qualifications		G AE													
		05055A	SD-02 Shop Drawings															

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		05055A	Detail Drawings	2.2.1	G	AE												
			SD-03 Product Data															
			Materials Orders	2.1.1														
			Materials List	2.1.2														
			Shipping Bill	2.1.3														
			SD-05 Design Data															
			Welding Procedures for Structural Steel	2.2.2.1														
			Welding Procedures for Aluminum	2.2.2.2														
			SD-07 Certificates															
			Qualification of Welders and Welding Operators	1.4														
			SD-09 Manufacturer's Field Reports															
			Tests, Inspections, and Verifications	2.3														
		05502A	SD-02 Shop Drawings															
			Shop Fabricated Metal Items	2.2	G	AE												
			SD-03 Product Data															
			Miscellaneous Metals and Standard Metal Articles	2.1														
			Shop Fabricated Metal Items	2.2														
			SD-04 Samples															
			Miscellaneous Metals and Standard Metal Articles	2.1														

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		05502A	Shop Fabricated Metal Items	2.2														
			SD-06 Test Reports															
			Miscellaneous Metals and	2.1														
			Standard Metal Articles															
			Shop Fabricated Metal Items	2.2														
			SD-07 Certificates															
			Miscellaneous Metals and	2.1														
			Standard Metal Articles															
			Shop Fabricated Metal Items	2.2														
		06100A	SD-02 Shop Drawings															
			Timber Curbing and Anchor	2.1	G	AE												
			Posts															
			Timber Railing	2.1	G	AE												
			SD-04 Samples															
			Timber Curbing and Anchor	2.1	G	AE												
			Posts															
			Timber Railing	2.1	G	AE												
			SD-07 Certificates															
			Timber Curbing and Anchor	2.1	G	AE												
			Posts															
			Timber Railing	2.1	G	AE												
		10430	SD-02 Shop Drawings															
			Interpretive Signs	2.1	G	AE												
			Support System for Interpretive	2.1.1	G	AE												
			Signs															
			SD-03 Product Data															

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		10430	Interpretive Signs	2.1														
			Graphics For Interpretive Signs	2.2	G	AE												
			Wind Load Requirements	1.5														
			SD-06 Test Reports															
			Testing	3.2														
			SD-07 Certificates															
			Testing	3.2														

SECTION 01355A

ENVIRONMENTAL PROTECTION
02/02

Work Item No. 0001 Floating Turbidity Barrier

PART 1 GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety -- Safety and Health Requirements
WETLAND MANUAL	Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1

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

33 CFR 328	Definitions of Waters of the United States
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
40 CFR 68	Chemical Accident Prevention Provisions
49 CFR 171 - 178	Hazardous Materials Regulations

1.2 SCOPE OF WORK

The Contractor shall prepare an Environmental Protection Plan that minimizes environmental pollution and damage that may occur as the result

of construction operations. The Soil Erosion and Sediment Control (SESC) plan sheets shall be incorporated into the Environmental Protection Plan. The Contractor shall use Best Management Practices (BMP) in accordance with the SESC plan. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental federal, state, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

Floating turbidity barriers shall be installed at the locations shown on the plans to the satisfaction of the Contracting Officer. Installation methods and materials shall be as required under Section 212 Soil Erosion and Sediment Control of the New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction, 2001. (Installation - 212.06 Soil Erosion and Sediment Control Measures, letter "H"; materials - 212.02 Materials.)

The Contractor shall comply with all requirements under the terms and conditions set forth in the Stream Encroachment Permit obtained by the New Jersey Department of Environmental Protection (NJDEP). The Stream Encroachment Permit is included in Section 00901 APPENDIX A - PROJECT PERMITS.

The Contractor shall be responsible for obtaining a permit for implementation of the Soil Erosion and Sediment Control Plan from the Somerset-Union County Soil Conservation District, Somerset 4-H Center, Milltown Road, Bridgewater, New Jersey 08807, Phone (908) 526-2701. The Contractor will be responsible for any fees associated with this permit.

As discussed in Section 02231 CLEARING AND GRUBBING, the Contractor is responsible for obtaining a permit from NJDEP for herbicide application. The Contractor shall also be responsible for obtaining a "request for authorization for storm water discharges associated with construction acitivities" from the New Jersey Discharge Pollution Elimination System Program.

1.3 PAYMENT

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

1.4 SUBMITTALS

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

SD-01 Preconstruction Submittals

Environmental Protection Plan; G, AE.
An Environmental Protection Plan shall be submitted within 15 days of notice to proceed. As described below, the plan shall include an Appendix that contains copies of all environmental permits, notifications, certifications, etc.

1.5 DEFINITIONS

1.5.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.5.2 Environmental Protection

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

1.5.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners,excess paints, excess solvents, and waste solvents.

1.5.4 Land Application for Discharge Water

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

1.5.5 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm

sewers,creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

1.5.6 Waters of the United States

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

1.5.7 Wetlands

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

1.6 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.7.1 Compliance

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

1.7.2 Contents

The Environmental Protection Plan shall include, but shall not be limited to, the following:

a. A list of federal, state, and local laws, regulations, and permits concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.

b. Methods for protection of features to be preserved within authorized work areas including trees, shrubs, vines, grasses and ground cover, landscape features, utilities culverts to remain in place, and fish and wildlife.

c. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

d. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

e. Description of the Contractor's environmental protection personnel training program.

f. The SESC plan sheets from the project drawings identify the type and location of the erosion and sediment controls to be provided. The Contractor shall comply with SESC plan sheets that show locations of proposed temporary work site access roads, anti-tracking pad, stream crossings, structures, and stockpiles. Any changes in location of or types of SESC measures must be approved by the Contracting Officer. The Contractor shall include a list of the monitoring and reporting requirements, as well as methods to control runoff and to contain materials on the site, to assure that the control measures are functional and are in compliance with the federal, state, and local laws and regulations, including those of the Somerset-Union County Soil Conservation Service.

g. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

h. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under state or local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and the local Fire Department in addition to

the legally required federal, state, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

i. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal (i.e. construction debris). The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted.

j. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

k. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with f ederal, state, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in

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

l. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

m. A historical, archaeological, cultural resources, biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

n. Installation methods for temporary seeding and temporary mulching, if necessary, as specified herein.

1.7.3 Appendix

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

1.8 PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features

included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

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

1.10 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with federal, state, or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

PART 2 PRODUCTS

2.1 MATERIALS

Construction fencing: Construction fencing shall conform to the products requirements described in Section 02821A FENCING.

Pruning equipment: Shears, saws or other equipment for removing tree branches.

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by federal, state, regional, and local environmental laws and regulations.

3.2 PROTECTION OF TREES

3.2.1 Protection Methods

The Contractor shall protect existing trees marked to be preserved on the plans during the life of this Contract using the following methods.

1. For protection from construction equipment, the Contractor shall install construction fencing around the trees marked for preservation. The construction fencing shall be placed far enough away from trees, i.e. not less than the dripline of the tree or the perimeter of the canopy, so that tall equipment does not contact tree branches.

2. The Contractor shall limit soil placement over existing tree roots to a maximum of 3 inches.

3. The Contractor shall not do any work, including lowering grades or cutting tree roots, within the boundaries of the construction fencing.

4. The Contractor shall avoid spills of oil, gas, and other contaminants in the vicinity of the trees marked for preservation.

6. If damage to protected trees occurs under this Contract, the Contractor shall repair any damage to the crown, trunk, or root system immediately. If the damage causes the death of a tree marked to be preserved, the Contractor shall replace the tree to the satisfaction of the Contracting Officer at no additional cost to the Government. If repairs are necessary, they shall be made as follows and to the satfisfaction of the Contracting Officer:

   a. Roots shall be repaired by cutting off the damaged areas. Tree roots that must be severed should be cut clean. The Contractor shall spread moist top soil over exposed roots at a minimum depth of 3 inches.

   b. Damage to bark shall be repaired by trimming around the damaged area and tapering the cut to provide drainage.

   c. Broken branches shall be pruned using pruning equipment listed and approved by the Contracting Officer. The branch collar on all branches whether living or dead should not be damaged. The 3 cut method shall be used on all branches between 2 to 6 inches in diameter at the cut. The 3 cut method is as follows: First, cut about one-third the way through the underside of the limb (about 6 to 12 inches from the tree trunk). Approximately 1 inch further from the tree trunk, make a second cut through the entire limb from the upper side and remove the branch. Lastly, remove the remaining stub. The 4 cut method shall be used if the branch is larger than 6 inches in diameter. For the 4 cut method, cuts 1 and 2 remain the same as the 3 cut system. Cut 3 should be from the underside of the limb, on the outside of the branch collar, and should be one-fourth to one-third the way through the limb. Cut 4 should be from the top and in alignment with the third cut.

7. During dry periods, the Contractor shall moisten the root zone of stressed trees. The water shall be allowed to soak in 12 to 18 inches deep by applying a slow trickle throughout the spread of the tree's roots.

8. Subsequent to completion of all earthwork activities and prior to the commencement of seeding operations, the Contractor shall remove construction fencing from around the preserved trees at the direction of the Contracting Officer. Fencing shall become the property of the Contractor and shall be removed from the Project Site and disposed of off-site.

3.2.2 Alternate Protection Methods

If, at any time, the Contractor determines that construction of the proposed grades as shown on the plans will infringe upon the dripline or canopy perimeter of a tree marked to be preserved, the Contracting Officer shall be notified immediately and an alternate tree protection method shall be determined.

3.3 PROTECTION OF UTILITIES

At a minimum, the Contractor shall install construction fencing around all utilities so their locations are visibly apparent throughout the project site. Any damage to any utilities during the entire duration of this Contract shall be repaired by the Contractor, at no additional cost to the Government.

3.4 TEMPORARY SEEDING AND TEMPORARY MULCHING

For conditions including, but not limited to the following, the Contractor shall apply temporary seeding or temporary mulching: 1) planting zones are ready to be seeded or planted outside of the specified seasons; 2) a quick cover is required to prevent surface erosion; 3) Contract delays require temporary erosion control measures; and/or 4) If and when directed by the Contracting Officer.

Installation shall be in accordance with Section 02921 SEEDING. Temporary seeding shall be performed if construction is completed between June 2 and August 15. Temporary mulching shall be performed if construction is completed between October 16 and March 15.

3.5 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil or other materials displaced into uncleared areas shall be removed by the Contractor.

3.5.1 Work Area Limits

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

3.5.2 Landscape

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

3.5.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with federal, state, and local laws and regulations. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent SESC measures, including the use of BMPs, as indicated on the drawings. All SESC measures shall be maintained throughout the life of the Contract. Any temporary measures shall be removed subsequent to the end of construction.

The Contractor shall provide the Somerset-Union Soil Conservation District with written notification at least 72 hours prior to land clearing activities.

3.5.4 Contractor Facilities and Work Areas

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

3.6 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas

affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by state or federally issued Clean Water Act permits.

3.6.1 Retardation and Control of Runoff

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

3.6.2 Diversions and Dewatering Operations

Construction operations for dewatering shall be controlled at all times to maintain compliance with existing state water quality standards and designated uses of the surface water body. The Contractor shall comply with the State of New Jersey water quality standards and the Clean Water Act Section 404. A dewatering plan for the entire project shall be included as part of the Environmental Protection Plan.

3.6.3 Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the federal, state, and local governments. Construction of stream crossing structures shall be in compliance with Clean Water Act.

3.6.4 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands, except as authorized herein and shown on the plans. The Contractor shall be responsible for the protection of wetlands shown on the drawings in accordance with paragraph ENVIRONMENTAL PERMITS, REVIEWS, AND APPROVALS. Authorization to enter specific wetlands identified shall not relieve the Contractor from any obligation to protect other wetlands within, adjacent to, or in the vicinity of the construction site and associated boundaries.

3.7 AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all federal and state air emission and performance laws and standards.

3.7.1 Particulates

Dust particles, aerosols and gaseous by-products from construction activities, and processing and preparation of materials shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, permanent and temporary access roads, plant sites, and other work areas within or outside the project boundaries free from particulates which would cause the

federal, state, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all state and local visibility regulations.

3.7.2 Odors

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

3.7.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State of New Jersey rules.

3.7.4 Burning

Burning shall be prohibited.

3.8 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

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

3.8.1 Solid Wastes

Solid wastes shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government property and dispose of it in compliance with federal, state, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate.

3.8.2 Chemicals and Chemical Wastes

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

stored, and disposed of in accordance with federal, state, and local laws and regulations.

3.8.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable state and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, state, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off Government property within 30 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with federal, state, and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

If the Contractor has to dispose of hazardous wastes/excess hazardous materials he/she will prepare and sign the waste analysis/waste profiles and land ban restrictions and in accordance with these documents shall prepare the manifests for the signature of the Government. The person preparing the documents shall be properly trained in the USEPA (RCRA) and USDOT regulations covering hazardous wastes for shipments. The manifests shall include the name and telephone number of the emergency response point of contact per the USDOT requirements. The point of contact shall be fully knowledgeable regarding the manifests and the hazardous wastes/excess hazardous materials and shall personally staff this telephone at all hours, day and night during the period of the shipment.

3.8.4 Fuel and Lubricants

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

3.9 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste

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

a. Construction Debris Disposed in cubic yards or tons, as appropriate.

3.10 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

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

3.11 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with federal, state, regional, and local laws and regulations.

3.12 PREVIOUSLY USED EQUIPMENT

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

3.13 MAINTENANCE OF POLLUTION FACILITIES

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

3.14 MILITARY MUNITIONS

In the event the Contractor discovers or uncovers military munitions as defined in 40 CFR 260, the Contractor shall immediately stop work in that area and immediately inform the Contracting Officer.

3.15 TRAINING OF CONTRACTOR PERSONNEL

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

3.16 POST CONSTRUCTION CLEANUP

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

-- End of Section --

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS
07/04

1.1 REFERENCES

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

1.2 ORDERING INFORMATION

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

ACI INTERNATIONAL (ACI)
P.O. Box 9094
Farmington Hills, MI 48333-9094
Ph: 248-848-3700
Fax: 248-848-3701
E-mail: bkstore@concrete.org
Internet: http://www.aci-int.org

ALUMINUM ASSOCIATION (AA)
900 19th Street N.W., Suite 300
Washington, DC 20006
Ph: 202-862-5100
Fax: 202-862-5164
Internet: http://www.aluminum.org

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
444 North Capital Street, NW, Suite 249
Washington, DC 20001
Ph: 202-624-5800
Fax: 202-624-5806
E-Mail: info@aashto.org
Internet: http://www.aashto.org

AMERICAN FOREST & PAPER ASSOCIATION (AF&PA)
American Wood Council

ATTN: Publications Department
1111 Nineteenth Street NW, Suite 800
Washington, DC 20036
Ph: 800-890-7732 or 202-463-2766
Fax: 202-463-2791
Internet: http://www.awc.org/

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
1819 L Street, NW, 6th Floor
Washington, DC 20036
Ph: 202-293-8020
Fax: 202-293-9287
E-mail: info@ansi.org
Internet: http://www.ansi.org/

Note --- ANSI documents beginning with the letter "S" can be ordered from:

Acoustical Society of America (ASA)
2 Huntington Quadrangle, Suite 1NO1
Melville, NY 11747-4502
Ph: 516-576-2360
Fax: 516-576-2377
E-mail: asa@aip.org
Internet: http://asa.aip.org

AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (ANLA)
1000 Vermont Avenue, NW, Suite 300
Washington, DC 20005-4914
Ph: 202-789-2900
Fax: 202-789-1893
Internet: http://www.anla.org

AMERICAN WELDING SOCIETY (AWS)
550 N.W. LeJeune Road
Miami, FL 33126
Ph: 800-443-9353 - 305-443-9353
Fax: 305-443-7559
E-mail: info@aws.org
Internet: http://www.aws.org

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)
P.O. Box 388
Selma, AL 36702-0388
Ph: 334-874-9800
Fax: 334-874-9008
E-mail: email@awpa.com
Internet: http://www.awpa.com

ASME INTERNATIONAL (ASME)
Three Park Avenue
New York, NY 10016-5990
Ph: 212-591-7722
Fax: 212-591-7674

E-mail: infocentral@asme.org
Internet: http://www.asme.org

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: http://www.astm.org

L.H. BAILEY HORTORIUM (LHBH)
Dept of Plant Biology
c/o Cornell University
228 Plant Science Building
Ithaca, NY 14853
Ph: 607-255-4477
Internet: http://www.plantbio.cornell.edu/Hort.php

NATIONAL READY MIXED CONCRETE ASSOCIATION (NRMCA)
900 Spring Street
Silver Spring, MD 20910
Ph: 301-587-1400
Fax: 301-585-4219
Internet: http://www.nrmca.org

SOUTHERN PINE INSPECTION BUREAU (SPIB)
4709 Scenic Highway
Pensacola, FL 32504-9094
Ph: 850-434-2611
Fax: 850-433-5594
E-mail: spib@spib.org
Internet: http://www.spib.org

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3909 Halls Ferry Road
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Fax: 601-634-2388
E-mail: mtc-info@erdc.usace.army.mil
Internet: http://www.wes.army.mil/SL/MTC/handbook.htm

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-- End of Section --

SECTION 01451A

CONTRACTOR QUALITY CONTROL
01/03

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM D 3740	(2001) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 329	(2002) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction

and construction related activities at the site.

3.2 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than 7 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 7 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities approved by the Contracting Officer shall be used.)

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.2 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.3 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 5 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a person with a minimum of 2 years in related constructionwork. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned as System Manager but may have duties as project superintendent in addition to quality control. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

3.4.3 CQC Personnel

In addition to CQC personnel specified elsewhere in the contract, the Contractor shall provide as part of the CQC organization specialized personnel to assist the CQC System Manager for the following areas: civil and environmental. These individuals may be employees of the prime or subcontractor; be responsible to the CQC System Manager; be physically present at the construction site during work on their areas of responsibility; have the necessary education and/or experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan.

Experience Matrix

	Area	Qualifications
a.	Civil	Graduate Civil Engineer or a graduate of construction management with 10 years experience
b.	Environmental	Graduate Environmental Engineer/Scientist with 3 yrs experience

3.4.4 Additional Requirement

In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered at ASK CORPS.

3.4.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in Section 01330 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be

accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.

b. A review of the contract drawings.

c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. Review of provisions that have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. A review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

j. Discussion of the initial control phase.

k. The Government shall be notified at least 48 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

f. The Government shall be notified at least 48 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.2 Capability Recheck

If the selected laboratory fails the capability check, the Contractor will be responsible for the cost of each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

3.7.3 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials shall be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the Corps of

Engineers Division Laboratory, f.o.b., at the following address:

Engineering Research and Development Center
Material Testing Center
3909 Halls Ferry Rd
Vicksburg, MS 39188-6199
Phone: (601) 634-3737
Fax: (601) 634-4656

Coordination for each specific test, exact delivery location, and dates will be made through the NYD Office.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include

the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility.

b. Operating plant/equipment with hours worked, idle, or down for repair.

c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.

e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

g. Offsite surveillance activities, including actions taken.

h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

i. Instructions given/received and conflicts in plans and/or specifications.

j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall

be furnished to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --

RECORD OF PREPARATORY AND INITIAL INSPECTIONS

DATE OF INSP	TYPE OF INSP	DEFINABLE FEATURE OF WORK (DESCRIBE)	REPORT NOS		PERSONS ATTENDING INSP	WAS MATL&/OR EQUIPMENT PHYSICALLY INSPECTED ?
			QA	QC		

NAD FORM 826
22 JULY 86

NOTE:THIS FORM SHALL BE USED BY THE CONTRACTOR TO TRACK PREP/INIT INSP'S
ATTACH ADDITIONAL RESULTS OR COMMENTS AS REQUIRED

LIST OF OUTSTANDING DEFICIENCIES

SH_____ OF _____ DATE:_____

PROJECT TITLE:_____ CONTRACTOR:_____

LOCATION:_____ CQC REPORT#_____ CONTRACT #:_____

SPEC REF OR DWG#	LOCATION ON PROJECT	DESCRIPTION OF DEFICIENCY	DATE FOUND	DATE TO BE CORRECTED	DATE CORRECTED	REMARKS

NOTE: THIS FORM SHALL BE USED BY THE CONTRACTOR TO TRACK OUTSTANDING CONSTRUCTION DEFICIENCIES

CQC TEST REPORT LIST

CQC REPORT#_____ SH_____ OF _____ DATE:_____

CONTRACTOR:_____ CONTRACT #:_____

PROJECT TITLE:_____ LOCATION:_____

SPEC REF OR DWG#	TYPE OF TEST	DATE PERFORMED	RESULTS	REMARKS

NOTE: THIS FORM SHALL BE USED BY THE CONTRACTOR TO TRACK CQC TESTING.PROVIDE ATTACHMENTS AS REQUIRED.

CQC REPORT #_____ Date_____

1. Project Title:_____

Location: _____ Contract No.:_____

2. List Contractors and Subs Working This Day and Areas of responsibility of each

_____

_____

_____

_____

3. Weather:

_____

_____

4.Description and Location of Work of the Project (Also indicate days of no work and reasons for delay)

_____

_____

_____

_____

_____

_____

5. Labor and Equipment Breakdown by Trade (Attach Continuation)

_____

_____

_____

_____

6. Preparatory Phase Inspections Held (See Attached Minutes)

_____

_____

_____

_____

_____

7. Initial Phase Inspections Held (See attached minutes)

_____

_____

_____

_____

_____

_____

8. Follow-Up Phase Inspections Performed, Results and Corrective Actions Taken

9. Job Safety. Indicate What Was Checked, Results,Instructions Received and Corrective Actions:

10. Additional Activities and Remarks (Check Appropriate Box)

[ ] a. Testing Performed. Attach Results.
[ ] b. Verbal Instructions Received.
[ ] c. Submittal Actions.
[ ] d. Outstanding Deficiencies. See Attached List
[ ] e. Delivery of Equipment and Materials.
[ ] f. Misc/Remarks.

(Use Space Below To Discribe Checked Items)

11. Contractor's Verification: "The above report and attachments are complete and all supplies, Materials, Equipment and Workmanship incorporated into the work are in full compliance with the contract except as noted".

Signed_____ Date_____
CQC Representative

CENAN-CO 5/99

SECTION 01500A

TEMPORARY CONSTRUCTION FACILITIES
02/97

PART 1 GENERAL

1.1 SCOPE OF WORK

Under this section, the work shall consist of the installation, maintenance, and removal of temporary construction facilities, in accordance with the plans and specifications, and as directed by the Contracting Officer.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by the work under this section. Any damages to property or to vegetation within preserved areas shall be restored to the original conditions to the satisfaction of the Contracting Officer.

See Section 00800 SPECIAL CONTRACT REQUIREMENTS for the specific projectrequirements for trailers.

1.2 AVAILABILITY AND USE OF UTILITY SERVICES

The Contractor shall make arrangements to establish and pay the costs of all required utilities.

1.2.1 Sanitation

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

1.2.2 Telephone

The Contractor shall make arrangements and pay all costs for telephone facilities desired.

1.3 BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.3.1 Bulletin Board

Immediately upon beginning of work, the Contractor shall provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. The bulletin board shall be located at the Project Site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Legible copies of the aforementioned data shall be displayed until work is completed. Upon completion of work the bulletin board shall be removed by and remain the property of the Contractor.

1.3.2 Project and Safety Signs

The requirements for the signs, their content, and location shall be as shown on the drawings. The signs shall be erected within 15 days after receipt of the notice to proceed. The data required by the safety sign shall be corrected daily, with light colored metallic or non-metallic numerals. Upon completion of the project, the signs shall be removed from the Project Site. Sign details are located in Section 00800 Special Contract Requirements.

1.4 PROTECTION AND MAINTENANCE OF TRAFFIC

During construction, the Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the state and local authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling and/or transporting material and equipment to and from the Project Site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

1.5 CONTRACTOR'S TEMPORARY FACILITIES

1.5.1 Administrative Field Offices

The Contractor shall provide and maintain administrative field office facilities within the Staging Area, as shown on the plans. The Contractor shall provide two designated spaces within the field office for use by the Contracting Officer and other Government representatives.

1.5.2 Staging Area

The Contractor shall construct a Chain Link Security Fence around the Staging Area, as specified in Section 02821A FENCING. Trailers, materials or equipment shall not be placed or stored outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer. Materials shall not be stockpiled outside the fence in preparation for the next day's work.

1.5.3 Supplemental Storage Area

Upon Contractor's request, the Contracting Officer will designate another or supplemental area for the Contractor's use and storage of trailers, equipment, and materials. Fencing of materials or equipment will not be required at this site; however, the Contractor shall be responsible for cleanliness and orderliness of the area used and for the security of any material or equipment stored in this area. Utilities will not be provided

to this area by the Government.

1.5.4 Maintenance of Staging Area

Fencing shall be kept in a state of good repair and proper alignment. Should the Contractor elect to traverse, with construction equipment or other vehicles, vegetated or unpaved areas which are not established roadways, such areas shall be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways; gravel gradation shall be at the Contractor's discretion.

1.5.5 Security Provisions

Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own equipment; in addition, the Contractor shall notify the appropriate law enforcement agency requesting periodic security checks of the temporary project field office.

1.5.6 Employee Parking

Contractor employees shall park privately owned vehicles in an area designated by the Contracting Officer. This area will be within reasonable walking distance of the Project Site.

1.6 CLEANUP

Construction debris, waste materials, packaging material, and the like shall be removed from the construction areas daily. Any dirt or mud which is tracked onto paved or surfaced roadways shall be cleaned away. Stored material not in trailers shall be neatly stacked when stored.

1.7 RESTORATION OF STAGING AREA

Upon completion of the project and after removal of trailers, materials, and equipment from within the Staging Area, the fence shall be removed and will become the property of the Contractor. Areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to the original or better condition. Gravel used to traverse grassed areas shall be removed and the area restored to its original condition, including topsoil and seeding as necessary.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01525

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS
08/04

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.32	Personal Fall Protection - Safety Requirements for Construction and Demolition Operations
ANSI/ASSE A10.34	(2001) Protection of the Public on or Adjacent to Construction Sites
ANSI Z359.1	(1992; R 1999) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety -- Safety and Health Requirements

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

29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.500	Fall Protection

1.2 SUBMITTALS

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

Government acceptance is required for submittals with a "G, A" designation.

SD-01 Preconstruction Submittals

Accident Prevention Plan (APP); G, RO

Activity Hazard Analysis (AHA); G, RO

SD-06 Test Reports

Reports
Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."

Accident Reports

Monthly Exposure Reports

1.3 DEFINITIONS

a. High Visibility Accident. Any mishap which may generate publicity and/or high visibility.

b. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

c. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:

(1) Death, regardless of the time between the injury and death, or the length of the illness;

(2) Days away from work (any time lost after day of injury/illness onset);

(3) Restricted work;

(4) Transfer to another job;

(5) Medical treatment beyond first aid;

(6) Loss of consciousness; or

(7) A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.

d. "USACE" property and equipment specified in USACE EM 385-1-1 should be interpreted as Government property and equipment.

e. Weight Handling Equipment (WHE) Accident. A WHE accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; and/or collision, including unplanned contact between the load and other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth

failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over, etc.).

1.4 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with USACE EM 385-1-1, and applicable federal, state, and local, laws, ordinances, criteria, rules and regulations, including project permits as included in Section 00901 PERMITS AND CERTIFICATIONS. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.5 SITE QUALIFICATIONS, DUTIES AND MEETINGS

1.5.1 Personnel Qualifications

1.5.1.1 Site Safety and Health Officer (SSHO)

Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The Contractor Quality Control (QC) person can be the SSHO on this project. The SSHO shall meet the following requirements:

Level 4:

A minimum of 10 years safety work of a progressive nature with at least 5 years of experience on similar projects.
30-hour OSHA construction safety class or equivalent within the last 5 years.
An average of at least 24 hours of formal safety training each year for the past 5 years with training for competent person status for at least the following areas of competency: Excavation and personal protective equipment and clothing to include selection, use and maintenance.

1.5.2 Personnel Duties

1.5.2.1 Site Safety and Health Officer (SSHO)/Superintendent

a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' daily quality control report.

b. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub-contractors.

c. Maintain applicable safety reference material on the job site.

d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.

e. Implement and enforce accepted APPS and AHAs.

f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.

g. Ensure sub-contractor compliance with safety and health requirements.

Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

1.5.3 Meetings

1.5.3.1 Preconstruction Conference

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

b. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.

c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.

d. The functions of a Preconstruction conference may take place at the Post-Award Kickoff meeting for Design Build Contracts.

1.6 ACCIDENT PREVENTION PLAN (APP)

The Contractor shall use a qualified person to prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of USACE EM 385-1-1 and as supplemented herein. Cover all

paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum Basic Outline for Accident Prevention Plan". Specific requirements for some of the APP elements are described below. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent and the designated site safety and health officer.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP.

Once accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and quality control manager. Should any hazard become evident, stop work in the area, secure the area, and develop a plan to remove the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate/remove the hazard. In the interim, all necessary action shall be taken to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ANSI/ASSE A10.34,) and the environment.

Copies of the accepted plan will be maintained at the Contracting Officer's office and at the job site. The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

1.6.1 EM 385-1-1 Contents

In addition to the requirements outlines in Appendix A of USACE EM 385-1-1, and Excavation Plan is required, with safety and health aspects prepared in accordance with Section 02300 EARTHWORK.

1.7 ACTIVITY HAZARD ANALYSIS (AHA)

The Activity Hazard Analysis (AHA) format shall be in accordance with USACE EM 385-1-1. Submit the AHA for review at least 15 calendar days prior to

the start of each phase. Format subsequent AHAs as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

The activity hazard analyses shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.8 DISPLAY OF SAFETY INFORMATION

Within 1 calendar days after commencement of work, erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by EM 385-1-1, section 01.A.06.

1.9 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturer's manuals.

1.10 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.11 REPORTS

1.11.1 Accident Reports

a. For recordable injuries and illnesses, and property damage accidents resulting in at least $2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the USACE Accident Report Form 3394 and provide the report to the Contracting Officer within 5 calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

b. For any weight handling equipment accident (including rigging gear accidents) the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete an accident report form and provide the report to the Contracting Officer within 30 calendar days of the accident. The Contracting Officer will provide a blank copy of the accident report form.

1.11.2 Accident Notification

Notify the Contracting Officer as soon as practical, but not later than

four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than $2,000, or any weight handling equipment accident. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

1.11.3 Monthly Exposure Reports

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK

3.1.1 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocynates, lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

3.1.2 Unforeseen Hazardous Material

The design should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If additional material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

3.2 PRE-OUTAGE COORDINATION MEETING

Contractors are required to apply for utility outages at least 15 days in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the Contracting Officer to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

3.3 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

3.3.1 Training

The Contractor shall institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, the Contractor shall provide training for each employee who might be exposed to fall hazards. A competent person for fall protection shall provide the training. Training requirements shall be in accordance with USACE EM 385-1-1, section 21.A.16.

3.3.2 Fall Protection Equipment and Systems

The Contractor shall enforce use of the fall protection equipment and systems designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is exposed to a fall hazard. Employees shall be protected from fall hazards as specified in EM 385-1-1, section 21. In addition to the required fall protection systems, safety skiff, personal floatation devices, life rings etc., are required when working above or next to water in accordance with USACE EM 385-1-1, paragraphs 05.H. and 05.I. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems are required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, or travel. Fall protection must comply with 29 CFR 1926.500, Subpart M, USACE EM 385-1-1 and ANSI A10.32.

3.3.2.1 Personal Fall Arrest Equipment

Personal fall arrest equipment, systems, subsystems, and components shall meet ANSI Z359.1. Only a full-body harness with a shock-absorbing lanyard

or self-retracting lanyard is an acceptable personal fall arrest body support device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment shall not exceed 1.8 m (6 feet). The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken into consideration when attaching a person to a fall arrest system.

3.3.3 Fall Protection for Roofing Work

Fall protection controls shall be implemented based on the type of roof being constructed and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

(1) For work within 1.8 m (6 feet) of an edge, on low-slope roofs, personnel shall be protected from falling by use of personal fall arrest systems, guardrails, or safety nets.

(2) For work greater than 1.8 m (6 feet) from an edge, warning lines shall be erected and installed in accordance with 29 CFR 1926.500 and USACE EM 385-1-1.

b. Steep-Sloped Roofs: Work on steep-sloped roofs requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

3.3.4 Existing Anchorage

Existing anchorages, to be used for attachment of personal fall arrest equipment, shall be certified (or re-certified) by a qualified person for fall protection in accordance with ANSI Z359.1. Exiting horizontal lifeline anchorages shall be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

3.3.5 Horizontal Lifelines

Horizontal lifelines shall be designed, installed, certified and used under the supervision of a qualified person for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (29 CFR 1926.500).

3.3.6 Guardrails and Safety Nets

Guardrails and safety nets shall be designed, installed and used in accordance with EM 385-1-1 and 29 CFR 1926 Subpart M.

3.3.7 Rescue and Evacuation Procedures

When personal fall arrest systems are used, the contractor must ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. A Rescue and Evacuation Plan shall be prepared by the contractor and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. The Rescue and Evacuation Plan shall be included in the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP).

3.4 STILTS

The use of stilts for gaining additional height in construction, renovation, repair or maintenance work is prohibited.

3.5 EQUIPMENT

3.5.1 Material Handling Equipment

a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.

c. Operators of forklifts or power industrial trucks shall be licensed in accordance with OSHA.

3.6 EXCAVATIONS

The competent person shall perform soil classification in accordance with 29 CFR 1926.

3.6.1 Utilities

Prior to digging, the appropriate digging permit must be obtained and utilies shall be located as described in Section 01110 SUMMARY OF WORK.

-- End of Section --

SECTION 01540

MOBILIZATION
12/04

Work Item No. 0002 Mobilization and Demobilization

PART 1 GENERAL

1.1 SCOPE OF WORK

Under this section, mobilization shall consist of preparatory work and operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site, and other work performed. The Contractor shall furnish and set up all necessary general facilities, as are required by borough, county, state or federal laws, regulations or codes. The cost of required insurance and bonds and/or any other similar significant initial expense required for the initiation of the Contract work shall be included in this item. The determination of the adequacy of the Contractor's facilities, except as required by borough, county, state or federal laws or regulations, shall be made by the Contractor.

1.2 PAYMENT SCHEDULE

Mobilization and demobilization shall include furnishing and maintenance of services, equipment or facilities, to the extent and at the time the Contractor deems them necessary for operations consistent with the requirements of the work and this Contract. No payment will be made additional to the lump sum for the Contract regardless of the fact that the Contractor may have to shut down his work on the project or move equipment away form the project and back again, for any reason. The price of mobilization and demobilization shall not exceed 6 percent of the total Contract price excluding the bid for mobilization and demobilization.

Payment schedule will be as follows:

- When 5% of the work is completed - 25% of the amount bid for mobilization or 2.5% of the total Contract price, whichever is less, will be paid.
- When 10% of the work is completed - 50% of the amount bid for mobilization or 5% of the total Contract price, which is less, will be paid.
- When 15% of the work is completed - 75% of the amount bid for mobilization or 7.5% of the total Contract price, which is less, will be paid.
- When 20% of the work is completed - 100% of the amount bid for mobilization or 10% of the total Contract price, which is less, will be paid.
- Upon completion of all work on the project, payment for the amount bid for mobilization in excess of 10% of the total Contract price will be made, if applicable.

- The percentage of work completed shall be the total of payments earned compared to the total Contract price. The total of payments earned excludes the amount paid for this item and the amount paid for materials furnished but not incorporated into the work.

PART 2 PRODUCTS

2.1 MATERIALS

Such materials as are required that are not to be a part of the completed Contract shall be as determined by the Contractor, except that they shall conform to any pertinent borough, county, state or federal laws, regulations or codes.

PART 3 EXECUTION

Such work as is done in providing the facilities and services under this section shall be done in safe and workman-like manner, and shall conform with any pertinent borough, county, state or federal laws, regulations or codes. Good housekeeping, consistent with Section 01525 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS, shall be maintained.

-- End of Section --

SECTION 01570

ACCESS ROADS AND STAGING AREA
5/05

Work Item No. 0003 Access Roads and Staging Area

PART 1 GENERAL

1.1 SCOPE OF WORK

Under this section, the Contractor shall create a Construction Access Road, Recreational Access Road and Parking Lots, and Staging Area. The Construction Access Road and Staging Area shall be located as shown on the plans. The Recreational Access Road and Parking Lots shall traverse the precast arch culvert and remain in place subsequent to completion of construction as shown on the plans.

All construction vehicles shall access the project site using the entrance to the Construction Access Road. Once vehicles have entered the site, they may use the Recreational Access Road for access around the site, but may not enter or exit the site at the Recreational Access Road entrance.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by the work under this section. Any damages to property or to vegetation within preserved areas shall be restored to the original conditions to the satisfaction of the Contracting Officer.

Work shall including all grading, compacting, excavation, filling, fill materials, aggregate, geotextile (including repairs if necessary), and removal of vegetation that may be necessary to complete the work to the satisfaction of the Contracting Officer, as well as the restoration of disturbed vegetation after completion of the project.

PART 2 PRODUCTS

2.1 MATERIALS

Silt Fence shall conform to the materials requirements described in Section 02369 SILT FENCE.

Separation Geotextile shall conform to the materials requirements described in Section 02378 GEOTEXTILES USED AS FILTERS.

Aggregate for Access shall conform to the materials requirements described in Section 02731 AGGREGATE SURFACE COURSE.

Chain Link Security Fence shall conform to the materials requirements described in Section 02821A FENCING.

The Gates shall conform to the materials requirements described in Section 02821A FENCING.

PART 3 EXECUTION

3.1 METHOD

Prior to construction of the Access Roads, Parking Lot, and Staging Area, the Contractor shall install all SESC measures (e.g. Anti-tracking Pad, Silt Fence), Chain Link Security Fence, and Gates in accordance with the plans and specifications. Silt Fence will not be installed along the length of the precast arch culvert.

Access Roads shall be a minimum of 15 feet in width.

Subsequent to pad, fence, and gate installation, the Contractor shall excavate and/or fill the footprint areas of the Recreational Access Road and Parking Lots to create a level surface that is 12 inches deeper than the grade shown on the plans. The top surface of the precast arch culvert will also be set 12 inches below existing grade. Similarly, the footprints areas of the Construction Access Road and Staging Area shall be made 18 inches deeper than the grade shown on the plans. Separation Geotextile shall be installed along the footprint of these areas, including the top of the precast arch culvert, as shown the plans.

In accordance with Section 02731 AGGREGATE SURFACE COURSE, the Contractor shall install a 12-inch thick course of Aggregate for Access atop the Separation Geotextile for the Recreational Access Road and Parking Lots, as well as the top of the precast arch culvert. The finished grade atop the culvert shall match that of the Recreational Access Road on either side. Similarly, the Contractor shall install an 18-inch thick course of Aggregate for Access atop the Separation Geotextile for the Construction Access Road and Staging Area.

All materials used to create the Recreational Access Road and Parking Lots shall be remain in place for use for the site's recreation facilities. All materials used to create the Construction Access Road and Staging Area shall be removed and disposed of off-site in accordance with the plans and to the satisfaction of the Contracting Officer. If necessary, fill shall be placed and graded within the footprint areas of the Construction Access Road Staging Area to blend in with the surrounding grades and vegetation shall be reestablished to the satisfaction of the Contracting Officer.

Any vegetation within preserved areas damaged by the work under this section, as determined by the Contracting Officer, shall be replaced immediately after the completion of the work at no additional cost to the Government.

-- End of Section --

SECTION 02231

CLEARING AND GRUBBING
12/04

Work Item No. 0004 Clearing and Grubbing

PART 1 GENERAL

1.1 SCOPE OF WORK

The Contractor shall perform work as indicated under this section prior to beginning earthwork, as described under Section 02300 EARTHWORK.

Under this section, the Contractor shall apply an herbicide to all herbaceous plants within planting zones F and G as shown on the plans and as directed by the Contracting Officer. The Contractor shall also obtain any required permits required for the herbicide application, and is responsible for the cost of the herbicide and any fees associated with acquiring permits.

At least 30 days prior to the herbicide application, the Contractor shall mow all herbaceous vegetation within the areas to be treated.

The Contractor shall clear, grub, and remove all objectionable material including trees, shrubs, brush, vines, roots, stumps of all sizes, weeds, stones, boulders, and trash from planting zones C and F and portions of planting zone A as shown on the plans. The Contractor shall clear and remove all trash from planting zone G as shown on the plans - this zone shall not be grubbed. All cleared and grubbed material shall be removed from within the limits of these zones in accordance with the plans and specifications, and the direction of the Contracting Officer.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by the work under this section. Any damages to property or to vegetation within preserved areas shall be restored to the original conditions to the satisfaction of the Contracting Officer.

All material cleared under this section shall be disposed of at the appropriate off-site facilities to be approved by the Contracting Officer.

1.2 SUBMITTALS

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

SD-03 Product Data

Herbicide; G, AE.
Submit product information 30 days prior to starting work.

SD-04 Samples

Herbicide; G, AE.
Submit samples in cans with manufacturer's label.

1.3 DELIVERY, STORAGE, AND HANDLING

Herbicide shall be delivered in the original, unopened containers bearing the manufacturer's chemical analysis, and stored in accordance with the manufacturer's instructions and the New Jersey Department of Envirnmental Protection (NJFDEP)regulations.

PART 2 PRODUCTS

2.1 HERBICIDE

Herbicide shall contain 5.4 pounds glyphosate per gallon, in the form of isopropylamine salt, and an approved non-ionic surfactant which forms less than 2 percent of the mixture. The Contractor shall comply with Federal Insecticide, Fungicide, and Rodenticide Act (Title 7 U.S.C. Section 136) for requirements on contractor's licensing, certification, and record keeping.

PART 3 EXECUTION

3.1 PROTECTION

3.1.1 Roads and Walks

Keep roads and walks free of dirt and debris at all times.

3.1.2 Trees

Trees to be left standing shall be protected as described in Section 01355A ENVIRONMENTAL PROTECTION from damage incident to clearing, grubbing, herbicide applications, and construction operations.

3.1.3 Utility Lines

Protect existing utility lines that are indicated to remain from damage. Notify the Contracting Officer immediately of damage to or an encounter with an unknown existing utility line. The Contractor shall be responsible for the repairs of damage to existing utility lines that are indicated or made known to the Contractor prior to start of clearing and grubbing operations. When utility lines which are to be removed are encountered within the area of operations, the Contractor shall notify the Contracting Officer in ample time to minimize interruption of the service. Refer to Section 02300 EARTHWORK for additional utility protection information.

3.2 HERBICIDE APPLICATION

3.2.1 Permits

The Contractor will be responsible for preparing, submitting, and obtaining any permits from federal, state or local agencies that are required due to the spraying of herbicide. Copies of the permits shall be available for review by the Contracting Officer upon request.

3.2.2 Mowing

At least 30 days prior to herbicide application, all herbaceous vegetation within planting zones F and G shall be mowed to a height of six to eight inches.

Care shall be taken to avoid mowing vegetation within areas to be preserved as shown on the plans.

3.2.3 Application

The Contractor shall apply herbicide over the entire planting zones F and G as shown on the plans. The herbicide shall be ground sprayed at a rate of 6 pints per acre. The herbicide shall be applied in accordance with the manufacturer's instructions and the NJDEP regulations. Application shall occur between August 15 and October 15, and construction may not be initiated until 45 days after the application. Application shall not occur in wind speeds greater than 5 miles per hour.

Care shall be taken to avoid spraying any herbicide on vegetation within areas to be preserved as shown on the plans.

3.3 CLEARING

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within the areas to be cleared. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Clearing shall occur in planting zones, C, F, and G, as well as portions of zone A as shown on the plans.

3.4 GRUBBING

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas. Material to be grubbed, together with logs and other organic or metallic debris not suitable for reuse for topsoil, shall be removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract. Depressions made by grubbing shall be filled with suitable material as approved by the Contracting Officer and compacted to make the surface conform with the original adjacent surface of

the ground. Grubbing shall occur in planting zones C and F, as well as portions of zone A.

3.5 REMOVAL OF MATERIALS

3.5.1 Structures

Structures shall be removed as shown on the plans. Where filling of structures is required, excavated on-site soils shall be used, as approved by the Contracting Officer. The top surfaces of fills shall be at the elevations as shown on the plans.

3.6 DISPOSAL OF MATERIALS

All materials generated from clearing and grubbing operations shall be disposed of outside the limits of Government-controlled land at the Contractor's responsibility, except when otherwise directed in writing. Such directive will state the conditions covering the disposal of such products and will also state the areas in which they may be placed.

-- End of Section --

SECTION 02300

EARTHWORK
07/04

Work Item No. 0005 Unclassified Excavation

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO T 180	(2001) Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and an 457-mm (18-in) Drop
AASHTO T 224	(2001) Correction for Coarse Particles in the Soil Compaction Test

ASTM INTERNATIONAL (ASTM)

ASTM D 1556	(2000) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(2002) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 2487	(2000) Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(2001) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(2001) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 422	(1963; R 2002) Particle-Size Analysis of Soils

1.2 SCOPE OF WORK

Under this section, the Contractor shall perform excavation and fill activities, not included under other sections, required for grading the

site to the proposed grades. Work may include rough grading; excavation, onsite hauling, and placement of excavated material; offsite hauling and disposal; any necessary pumping, diversions, sheeting, and/or bracing; stripping, hauling, stockpiling, and replacement of onsite topsoil and stream bed material; and other incidental work and expenses necessary. Excavated and fill materials shall be placed and compacted, where necessary, in accordance with the plans, specifications, and directions of the Contracting Officer.

No additional payment shall be made for re-handling of excavated materials for any other purposes necessary to complete the work as shown on the plans.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by the work under this section. Any damages to property or to vegetation within preserved areas shall be restored to the original conditions to the satisfaction of the Contracting Officer.

1.3 RE-HANDLING OF EXCAVATED MATERIALS

Re-handling of excavated materials may only be paid for separate from the lump sum price of this Contract when re-handling is made necessary by changes of plans and is ordered in writing by the Contracting Officer. The unit of measurement for re-handling of excavated materials would be the cubic yard, computed by the average end area method from cross-sections taken before and after the additional excavation operations. The measurements would not include any volume excavated without authorization or the volume of any material used for purposes other than directed.

1.4 DEFINITIONS

1.4.1 Satisfactory Materials

Satisfactory materials shall comprise any materials classified by ASTM D 2487 as CL, ML, CL-ML, CH, or MH. Satisfactory materials for grading shall be comprised of stones less than 8 inches

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 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.1.4.4 Topsoil

Material suitable for topsoils obtained from excavations is defined as: Natural, friable soil representative of productive, well-drained soils in the area, free of subsoil, stumps, rocks larger than one inch diameter, brush, weeds, toxic substances, and other material detrimental to plant growth. Amend topsoil pH range to obtain a pH of 5.5 to 7.

1.4.5 Stream Bed Material

Material suitable for stream bed material obtained from the stream channel bed as shown on the plans is defined as: natural, graded silts, sands, gravel, and small stones less than five (5) inches in diameter, representative of channel bed materials, free of subsoil, stumps, noxious weeds, toxic substances, trash, and other material detrimental to stream function as determined by the Contracting Officer.

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-06 Test Reports

Testing; G, AE.

Within 24 hours of conclusion of physical tests, 2 copies of test results, including calibration curves and results of calibration tests.

SD-07 Certificates

Testing; G, RO.

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

1.6 SUBSURFACE DATA

Subsurface soil boring logs are shown on the plans. 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.

1.8 CRITERIA FOR BIDDING

Base bids on the following criteria:

a. Surface elevations are as indicated.

b. Material character is indicated by the boring logs.

c. Hard materials and rock will not be encountered.

1.9 DEFINITIONS

In this section, topsoil refers to the top 18" of soil on the site.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Any excavation or other construction activities shall not commence until all soil erosion and sediment control measures and Construction Fence have been installed.

Any vegetation within preserved areas damaged by the work under this section, as determined by the Contracting Officer, shall be replaced immediately after the completion of the work at no additional cost to the Government.

3.1 UTILITIES

Prior to commencement of construction, the contractor shall locate utilities as described in Section 01110 SUMMARY OF WORK.

3.2 STRIPPING OF TOPSOIL

Where indicated or directed, topsoil shall be stripped to a depth of 18 inches. Topsoil shall be transported and deposited in stockpiles at the locations shown on the plans. 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 seeding operations.

3.3 STRIPPING OF STREAM BED MATERIAL

Where indicated on the plans or as directed, stream bed material shall be stripped from the bottom of the existing channel to a depth of 12 inches. Stream bed material shall be deposited in stockpiles as shown on the plans. Stream bed material shall be kept separate from other excavated materials, brush, litter, objectionable weeds, roots, and other materials that would interfere with its reuse.

3.4 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 on the plans. Grading shall be in conformity with the typical sections shown on the plans 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 at a site to be within 20 miles of the project site designated by the Contracting Officer. Unsatisfactory excavated material shall be disposed of as directed by the Contracting Officer. During construction, excavation and fill shall be performed in a manner and sequence that will provide proper drainage at all times.

3.4.1 Ditches, Gutters, and Channel Changes

Excavation of ditches, gutters, and channel changes shall be accomplished by cutting accurately to the cross sections, grades, and elevations shown on the plans. 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.

3.4.2 Drainage

Provide for the collection and disposal of surface and subsurface water encountered during construction. Completely drain construction site during periods of construction to keep soil materials sufficiently dry. The Contractor shall establish/construct storm drainage features (ponds/basins) at the earliest stages of site development, and throughout construction grade the construction area to provide positive surface water runoff away from the construction activity and/or provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified herein. It is the responsibility of the Contractor to assess the soil, stream, and ground water conditions presented by the plans and specifications and to employ necessary measures to permit construction to proceed.

Any materials used to support construction features that are not suitable to remain at the project site shall be removed at the completion of construction as directed by the Contracting Officer.

3.4.3 Dewatering

Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. French drains, sumps, ditches or trenches will not be permitted within 3 feet of the foundation of any structure, except with specific written approval, and after specific contractual provisions for restoration of the foundation area have been made. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in situ material. Any drainage activity must be in compliance with Section 01355A ENVIRONMENTAL PROTECTION and the SESC Plan.

Material shall not be dewatered on site. Excavated material shall be stockpiled as specified in paragraph STOCKPILES and allowed to dry before hauling to the disposal area. Any wet material shall be carted in a watertight truck bed.

3.5 STOCKPILES

Stockpiles shall be kept in a neat and well drained condition, giving due consideration to drainage at all times. The ground surface at stockpile locations shall be cleared, grubbed, and sealed by rubber-tired equipment. Stockpiles shall be surrounded with Silt Fence for soil erosion and sediment control. Silt Fence shall be installed in accordance with Section 02369 SILT FENCE.

Excavated onsite topsoil and stream bed material shall be stockpiled separately from other excavated materials. Stockpiles of onsite topsoil and stream bed material shall be protected from contamination that may destroy the quality and fitness. If the Contractor fails to protect the topsoild and stream bed material stockpiles and the material becomes unsatisfactory, such material shall be removed and replaced with satisfactory topsoil and stream bed material from approved sources at no cost to the Government.

3.6 SUBGRADE PREPARATION

3.6.1 General Requirements

Unsatisfactory material in surfaces to receive fill or in excavated areas shall be removed and replaced with satisfactory mateirals as directed by the Contracting Officer. The surface shall be sacrificed to a depth of 6 inches before the fill is started. Sloped surfaces steeper than 1 vertical to 4 horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When subgrades are less than the specified density, the ground surface shall be broken up to a minimum depth of 6 inches, pulverized, and compacted as specified under the sub paragraph Compaction. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be sacrificed to a depth of 12 inches and compacted as specified for the adjacent fill. Minimum subgrade density shall be as specified in paragraph IN-PLACE DENSITIES TESTING.

3.6.2 Frozen Material

Material shall not be placed on surfaces that are muddy, frozen, or contain frost. Stockpiled material shall not be placed when frozen.

3.6.3 Compaction

Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment well suited to the soil being compacted. Material to be compacted shall be moistened and/or aerated as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used; thoroughly mixed; then compacted to a depth of 6 inches, except for the recreational access road and parking lots, which shall be compacted to a depth of 12 inches. For the access roads, parking lots, and vernal pools, compaction shall be to at least 90 percent laboratory maximum density. For the recreational fields, compaction shall be to at least 80 percent laboratory maximum density.

3.6.4 Construction

Subgrade shall be shaped to line, grade, and cross section, and compacted as specified in the subparagraph Compaction. This operation shall include plowing, disking, and any moistening or aerating required to obtain specified compaction. If unsatisfactory materials are encountered, they shall be excavated up to 6 inches below proposed grade and replaced with 8 inches satisfactory excavated material. Areas where unsatisfactory material is removed and replaced with satisfactory materials shall be shaped to line, grade, and cross section and compacted as specified in the subparagraph Compaction. The elevation of the finish subgrade shall not vary more than 0.1 foot fromt he established grade and cross section.

3.7 UTILIZATION OF EXCAVATED MATERIALS

Unsatisfactory materials removed from excavations shall be disposed of as directed by the Contracting Officer. No satisfactory excavated material shall be wasted without specific written authorization. Satisfactory material authorized to be wasted shall be hauled offsite and disposed of at a site within 20 miles of the Project Site to be designated by the Contracting Officer. 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.

3.8 FINISHING

The surface of 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. Gutters and ditches shall be finished in a manner that will result in effective drainage. Settlement or washing that occurs in gradedor topsoiled areas prior to acceptance of the work, shall be repaired and grades re-established to the required elevations and

slopes.

3.8.1 Subgrade

During construction, 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 topsoil is placed. The storage or stockpiling of materials on the finished subgrade will not be permitted. No topsoil shall be laid until the subgrade has been checked and approved.3.9 PLACING TOPSOIL

Topsoil from onsite stockpile shall be spread evenly and graded to the elevations and slopes shown. For Planting Zones F and H, topsoil thickness shall be eight (8) inches, for all other areas, thickness of eighteen (18) inches shall be used. Topsoil shall not be spread when frozen or excessively wet or dry.3.10 PLACING STREAM BED MATERIAL

Stream bed material from the onsite stockpile shall be spread evenly across the stream channel bottom as shown on the plans. Stream bed material shall be placed to a thickness of 12 inches. Following placement, stream bed material shall be tamed by mechanical methods to provide suitable contact with the subgrade. Stream bed material shall not be placed when frozen.

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 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 2922results 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. 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 operatio3.11.1 Subgrade Gradation Tests

The Contractor shall perform one test per 1,500 cubic yards in-place of the excavated material. Gradation (sieve and hydrometer analysis) shall be determined in accordance with ASTM D 422.

3.11.2 In-Place Densities

One test per 10,000 square feet, or fraction thereof, of each lift of fill or backfill areas compacted by other than hand-operated machines, to assure compaction at 90 percent of the maximum laboratory density for the access roads, parking lots, and vernal pools, and 80 percent of the maximum laboratory density for the recreational fields, as determined by ASTM D 1557.

3.11.3 Check Tests on In-Place Densities

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

a. One check test per lift for each 40,000 square feet, or fraction thereof, of each lift of fill or backfill compacted by other than hand-operated machines.3.11.4 Tolerance Tests for Subgrades

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

-- End of Section --

SECTION 02301

ESTABLISHING MICROTOPOGRAPHY
12/04

Work Item No. 0006 Establishing Microtopography

PART 1 GENERAL

1.1 SCOPE OF WORK

This work shall consist of the construction of raised planting beds and planting mounds (bedding) for tree and shrub planting as designated on the plans, accompanying details, or as directed by the Contracting Officer.

1.2 SUBMITTALS

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

SD-03 Product Data

Bedding Harrow; G, RO.
Tractor; G, RO.
The Contractor shall supply the Contracting Officer with the name and model number of the bedding harrow and tractor, the width of the hourglass roller, and the overall width of the tractor, as measured from outside track to outside track, at least 30 days prior to starting work.

Finished Grade; G, RO.
The Contractor shall submit verification that finished grades are as indicated on the plans. The Contracting Officer shall approve this submittal prior to completion of bedding operations.

SD-08 Manufacturer's Instructions

Bedding Harrow; G, RO.
Tractor; G, RO.
The harrow and tractor manufacturer's guidelines related to equipment size, power, and drawbar pull shall be submitted to the Contracting Officer at least 30 days prior to starting work.

PART 2 PRODUCTS

2.1 EQUIPMENT

2.1.1 Bedding Harrow

The bedding harrow shall have a minimum net weight of 3,500 pounds. Unless specified on the plans, the bedding harrow shall have a maximum disc cut width of no more than 8 feet and a minimum disc cut width of 6 feet. The bedding harrow shall have an hourglass roller with a maximum width of no more than 7.9 feet and a minimum width of 6.5 feet. Whenever possible, the widest allowable roller should be utilized.

The discing tool shall possess a minimum of six disc blades each with a minimum diameter of 30 inches and a minimum disc thickness of 0.5 inches. Each disc blade shall be a cutout (notched) blade. It is the Contractor's responsibility to insure that the discing operation, discing width, and disc sizes employed provides sufficient soil for the mounding operation, and that the resulting mounds are compacted by the hourglass roller. It is the Contractor's responsibility to ensure that the equipment possesses sufficient power and is of appropriate design and weight distribution to work in wet soils.

2.1.2 Tractor

A crawler-tracked tractor shall be utilized for the bedding operations. The tractor shall conform to the bedding harrow and tractor manufacturer's recommendations as to minimum size, power, and drawbar pull at the bedding harrow's full weight (roller water filled) for the on-site soil conditions. The width of the tractor utilized shall not exceed the width of the hourglass roller. The tractor shall have the hydraulic lines and characteristics necessary for proper operation of the bedding harrow as designed and recommended by the manufacturer of the bedding harrow. It shall be the Contractor's responsibility to ensure that all equipment possess sufficient power and is of appropriate design and weight distribution to complete the construction of the mounds.

PART 3 EXECUTION

3.1 FINISHED GRADE

The Contractor shall verify that finished grades are as indicated on the plans. After grading is complete, heavy equipment is prohibited from entering the area where the microtopography was estabilished.

3.2 CONSTRUCTION DETAILS

Depending on field conditions and the presence of clayey soils, as solely determined by the Contracting Officer, the Contracting Officer may direct the Contractor to disc/plow the area to be bedded with a heavy-duty disc or deep tillage subsoiler prior to the actual bedding operations.

The planting beds shall be constructed utilizing a heavy-duty bedding harrow. The harrow shall be operated at a speed directed by the

Contracting Officer, which shall be between 2 and 6 miles per hour. During mounding operations, the hourglass roller shall be filled with water to the maximum capacity of the roller. The use and operation of a heavy-duty disc or subsoiler shall be incidental to this item and no additional compensation shall be made.

The bedding shall be performed within the areas shown on the plans. The bedding pattern shall be random over the entire area shown on the plans. This random bedding pattern requirement mandates that the harrow repeatedly crosses over newly made beds. The Contracting Officer will approve bedding runs performed only in a random pattern. The Contractor shall pass the bedding harrow over the entire area designated for bedding at least twice prior to the final bedding runs.

3.3 REBEDDING

The Contractor shall rebed any rejected areas at his/her own expense to the satisfaction of the Contracting Officer. The tractor equipment shall have sufficient power to conduct these crossing operations efficiently, as solely determined by the Contracting Officer. The final bedding configuration shall be an irregular pattern and as shown on the plans and as directed by the Contracting Officer. (The bed height developed shall be a minimum of 12 inches as measured from the top of the mound to the bottom of the adjacent side furrows.)

-- End of Section --

SECTION 02367

ANTI-TRACKING PAD
12/04

Work Item No. 0007 Anti-Tracking Pad

PART 1 GENERAL

1.1 SCOPE OF WORK

Under this section, the Contractor shall install a temporary Anti-tracking Pad for use as a soil erosion and sediment control measure during the life of the Contract in accordance with the plans and specifications, and as directed by the Contracting Officer. The pad shall be located at the temporary work entrance, as as shown on the plans.

Work shall include all grading, compacting, excavation, filling, fill materials, stone, geotextile (including fabric repair if necessary), cleaning the pad of accumulated sediment, and removal of vegetation that may be necessary to complete the work to the satisfaction of the Contracting Officer.

During construction, use, and maintenance of Anti-tracking Pad, care shall be taken to avoid damage to vegetation surrounding the pad. Any damages to vegetation surrounding the pad shall be replaced or restored to the original conditions to the satisfaction of the Contracting Officer. Work shall also include the cost of removing any materials used in constructing the pad after completion of the Project.

PART 2 PRODUCTS

2.1 MATERIALS

Aggregate For Anti-tracking Pad shall conform to the materials requirements described in Section 02731 AGGREGATE SURFACE COURSE.

Stabilization Geotextile shall conform to the materials requirements described in Section 02378 GEOTEXTILES USED AS FILTERS.

PART 3 EXECUTION

3.1 METHODS

Prior to construction of the Anti-tracking Pad, the Contractor shall install all protection as required under Section 01355A Environmental Protection.

The Anti-tracking Pad shall be constructed and maintained to adequately support loads and withstand exposure to traffic during the entire

construction period. The Anti-tracking Pad shall be located and installed in accordance with the plans and specifications.

The Contractor shall excavate and/or fill the footprint areas of the Anti-tracking Pad as shown on the plans. Stabilization Geotextile shall be installed along the footprint of these areas as shown the plans and in accordance with the requirements under Section 02378 GEOTEXTILES USED AS FILTERS. Aggregate For Anti-tracking Pad shall then be placed on top of the geotextile and graded to create a flat surface, in accordance with Section 02731 AGGREGATE SURFACE COURSE.

The Contractor shall adequately maintain the Anti-tracking Pad, including but not limited to cleaning out accumulated sediment from the pad and replacing or resetting stone as deemed necessary by the Contracting Officer. The Contractor shall be responsible for maintaining legal roads free of soil debris and sediment as a result of the transferring and hauling operation.

All materials used to create the Anti-tracking Pad shall be removed and disposed of off-site in accordance with the plans and to the satisfaction of the Contracting Officer. If necessary, fill shall be placed and graded within the footprint area of the Anti-tracking Pad to blend in with the surrounding grades.

During construction, use, and maintenance of Anti-tracking Pad, care shall be taken by the Contractor to avoid damage to vegetation surrounding the pad. Any vegetation damaged by the installation, use or maintenance of the pad, as determined by the Contracting Officer, shall be replaced immediately after the completion of the work.

-- End of Section --

SECTION 02378

GEOTEXTILES USED AS FILTERS
08/04

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 288	(2000) Geotextile Specifications for Highway Applications

ASTM INTERNATIONAL (ASTM)

ASTM D 4354	(1999) Sampling of Geosynthetics for Testing
ASTM D 4491	(1999a) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4595	(1986; R 2001) Tensile Properties of Geotextiles by the Wide-Width Strip Method
ASTM D 4632	(1991; R 1996) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1999a) Determining Apparent Opening Size of a Geotextile
ASTM D 4833	(2000e1) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873	(2002) Identification, Storage, and Handling of Geosynthetic Rolls and Samples
ASTM D 4884	(1996) Strength of Sewn or Thermally Bonded Seams of Geotextiles

1.2 SCOPE OF WORK

Work shall include all labor, material, equipment, and operations necessary

for the complete and satisfactory installation of the geotextile for the work items in which it is used. The following items are included in the work and no payment will be made additional to the lump sum for the Contract for these items: Material and associated equipment and operation used in laps or extra length, as well as geotextile replaced because of waste, contamination, damage, repair or due to Contractor fault or negligence.

1.3 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

Separation Geotextile; G, RO.
Stabilization Geotextile; G, RO.
Submit product information, including physical properties of the fabric, 30 days prior to starting work.

SD-04 Samples

Separation Geotextile; G, RO.
Stabilization Geotextile; G, RO.
Submit geotextile samples for testing to determine compliance with the requirements in this specification. Submit samples a minimum of 30 days prior to the beginning of installation of the same textile. Upon delivery of the geotextile, submit duplicate copies of the written certificate of compliance signed by a legally authorized official of the manufacturer. The certificate shall state that the geotextile shipped to the site meets the chemical requirements and exceeds the minimum average roll value listed in subparagraphs Separation Geotextile and Stabilization Geotextile. Upon request, supply quality control and quality assurance tests for the geotextile. All samples provided shall be from the same production lot as will be supplied for the contract, and shall be the full manufactured width of the geotextile by at least 10 feet long, except that samples for seam strength may be a full width sample folded over and the edges stitched for a length of at least 5 feet. Samples submitted for testing shall be identified by manufacturers lot designation. For needle punched geotextile, the manufacturer shall certify that the geotextile has been inspected using permanent on-line metal detectors and does not contain any needles.

SD-07 Certificates

Separation Geotextile; G, RO.
Stabilization Geotextile; G, RO.
Submit the manufacturer's certification of the geotextile materials.

1.4 SHIPMENT, HANDLING, AND STORAGE

1.4.1 Shipment and Storage

Only approved geotextile rolls shall be delivered to the project site. All geotextile shall be labeled, shipped, stored, and handled in accordance with ASTM D 4873. No hooks, tongs, or other sharp instruments shall be used for handling geotextile.

PART 2 PRODUCTS

2.1 MATERIALS

All geotextile shall be synthetic and rot proof. The Contractor shall submit data sheets showing the physical properties of geotextiles to ensure that the fabrics meet the material requirements of this section.

2.1.1 Geotextile

Fibers used in the manufacturing of the geotextile shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of polyolefins, polyesters or polamides. Stabilizers and/or inhibitors shall be added to the base polymer if necessary to make the filaments resistant to deterioration caused by ultraviolet light and heat exposure. Reclaimed or recycled fibers or polymer shall not be added to the formulation. Geotextile shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including the edges. The edges of the geotextile shall be finished to prevent the outer fiber from pulling away from the geotextile.

2.1.1.1 Separation Geotextile

Separation: Geotextile used in separation applications shall conform to the following AASHTO M 288 properties for separation geotextiles:

	ASTM TEST		
Structure		Non Woven	Woven
Elongation	ASTM D 4595	>=50%	>=50%
Grab Strength	ASTM D 4632	700N (157LBF)	1100N (247LBF)
Tear Strength	ASTM D 4533	250N (56LBF)	400N (90LBF)
Puncture Strength	ASTM D 4833	250N (56LBF)	400N (90LBF)
Permitivity	ASTM D 4491	0.02/second min.	
Apparent Opening Size	ASTM D 4751	0.6 millimeter max..	

2.1.1.2 Stabilization Geotextile

Stabilization: Geotextile used in stabilization applications shall conform to the following AASHTO M 288 properties for stabilization geotextiles:

	ASTM TEST		
Structure		Woven	Non Woven
Elongation	ASTM D 4595	<50%	50%
Grab Strength	ASTM D 4632	1400N (315LBF)	900N (205LBF)

Tear Strength	ASTM D 4533	500N (112LBF)	360N (80LBF)
Puncture Strength	ASTM D 4833	350N (79LBF)	580N (130LBF)
Permitivity	ASTM D 4491	0.05/second min.	0.05/second min.
Apparent Opening Size	ASTM D 4751	0.43 mm max.	0.43 mm max.

2.2 INSPECTIONS, VERIFICATIONS, AND TESTING

2.2.1 Manufacturing and Sampling

Geotextiles and factory seams shall meet the requirements specified within subparagraphs Separation Geotextile and Stabilization Geotextile. Geotextiles shall be randomly sampled in accordance with ASTM D 4354 (Procedure Method A). Factory seams shall be sampled at the frequency specified in ASTM D 4884.

2.2.2 Site Verification and Testing

Samples shall be collected at approved locations upon delivery to the site in accordance with ASTM D 4354 (Procedure Method B) at a frequency of once per 100,000 square feet. Samples shall be tested to verify that the geotextile meets the requirements specified in within subparagraphs Separation Geotextile and Stabilization Geotextile. Samples shall be identified by manufacturers name, type of geotextile, lot number, roll number, and machine direction. Testing shall be performed at an approved laboratory. Test results from the lot under review shall be submitted and approved prior to deployment of that lot of geotextile. Rolls which are sampled shall be immediately rewrapped in their protective covering.

PART 3 EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

During shipment and storage, geotextile shall be wrapped in burlap or similar heavy duty protective covering. The storage area shall protect the fabric from mud, soil, dust, and debris. Geotextile materials that are not to be installed immediately shall not be stored in direct sunlight.

3.2 SURFACE PREPARATION

Surface on which the geotextile will be placed shall be prepared to a relatively smooth surface condition, in accordance with the applicable portion of this specification and shall be free from obstruction, debris, large boulders, depressions, erosion feature, vegetation or sharp objects which may tear or damage the fabric. Any irregularities will be removed so as to insure continuous, intimate contact of the geotextile with all the surface. Any loose material, soft or low density pockets of material, will be removed; erosion features such as rills, gullies etc. must be graded out of the surface before geotextile placement.

3.3 INSTALLATION OF THE GEOTEXTILE

3.3.1 General

The geotextile shall be placed in the manner and at the locations shown on

the plans. At the time of installation, the geotextile shall be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation or storage.

3.3.2 Placement

The geotextile shall be placed smooth and free of tension, stress, folds, wrinkles, or creases. The strips shall be placed to provide a minimum width of 24 inches of overlap for each joint. The placement procedure requires that the length of the geotextile be approximately 10 percent greater than the slope length. The Contractor shall adjust the actual length of the geotextile used based on initial installation experience. Temporary pinning of the geotextile to help hold it in place until the riprap or aggragate is placed shall be allowed. The temporary pins shall be removed as the riprap or aggregate is placed to relieve high tensile stress which may occur during placement of material on the geotextile. Trimming shall be performed in such a manner that the geotextile shall not be damaged in any way.

3.4 PROTECTION

The geotextile shall be protected at all times during construction from contamination by surface runoff and any geotextile so contaminated shall be removed and replaced with uncontaminated geotextile. Any damage to the geotextile during its installation or during placement of riprap or aggregate shall be replaced by the Contractor at no cost to the Government. The work shall be scheduled so that the covering of the geotextile with a layer of the specified material is accomplished directly after placement of the geotextile. Failure to comply shall require replacement of geotextile. The geotextile shall be protected from damage prior to and during the placement of riprap or aggregate. This may be accomplished by limiting the height of drop to less than 1 foot, by placing a cushioning layer of sand or gravel on top of the geotextile before placing the material, or other methods deemed necessary. Before placement of riprap or aggregate, the Contractor shall demonstrate that the placement technique will not cause damage to the geotextile. In no case shall any type of equipment be allowed on the unprotected geotextile.

3.5 OVERLAPPING

3.5.1 Overlapping

The overlap of geotextile shall be 24 inches.

3.6 FIELD TESTING

Geotextile shall be field tested.

-- End of Section --

SECTION 02722

GRADED CRUSHED AGGREGATE BASE COURSE
08/04

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM C 88	(1999a) Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C 117	(2003) Materials Finer Than 75 micrometer (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 127	(2001) Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
ASTM C 128	(2001e1) Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
ASTM C 131	(2003) Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	(2001) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 75	(2003) Sampling Aggregates
ASTM D 1557	(2002) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 2487	(2000) Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(2001) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(2001) Water Content of Soil and Rock in

	Place by Nuclear Methods (Shallow Depth)
ASTM D 3740	(2001) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM D 4318	(2000) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM E 11	(2001) Wire Cloth and Sieves for Testing Purposes

1.2 SCOPE OF WORK

Work under this section shall consist of furnishing and installing any base course required for the base course for the Nature Trail, as shown on the plans and as directed by the Contracting Officer. Maintenance during construction is also included.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by the work under this section. Any damages to property or to vegetation within preserved areas shall be restored to the original conditions to the satisfaction of the Contracting Officer.

1.3 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

Graded-Crushed Aggregate Base Course; G, RO.
Submit product data 30 days before start of work.

Equipment and Tools; G, RO.
Submit a list of proposed equipment to be used, including descriptive data, at least 3 days prior to starting work.

SD-06 Test Reports

Sampling and Testing; G, AE.
Submit calibration curves and related test results prior to using the device or equipment being calibrated. Submit copies of all field test results within 24 hours after the tests are performed. Submit certified copies of test results not less than 30 days before material is required for the work.

1.4 DEFINITIONS

For the purposes of this specification, the following definitions apply.

1.4.1 Graded-crushed Aggregate Base Course

Graded-crushed aggregate (GCA)is a well-graded, crushed, durable aggregate uniformly moistened and mechanically stabilized by compaction. GCA is similar to a regular aggregate base course, but it has more stringent requirements and it produces a base course with higher strength and stability.

1.4.2 Degree of Compaction

Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557. This will be abbreviated herein-after as percentage of laboratory maximum density.

1.5 DELIVERY AND STORAGE

Inspect materials delivered to site for damage and store as to prevent segregation and contamination.

1.6 APPROVAL OF MATERIAL

The source of the material shall be selected 30 days prior to the time the material will be required in the work. Tentative approval of material will be based on initial test results. Final approval of the materials will be based on sieve analysis, liquid limit, and plasticity index tests performed on samples taken from the completed and fully compacted aggregate base course.

1.7 WEATHER LIMITATIONS

Do not construct base course when atmospheric temperature is below 35 degrees F or when rainfall or other weather conditions detrimentally affect the quality of the finished course.When the temperature falls below 35 degrees Fahrenheit, the Contractor shall protect all completed areas by approved methods against detrimental effects of freezing. Completed areas damaged by freezing, rainfall or other weather conditions shall be corrected to meet specified requirements.

1.8 EQUIPMENT AND TOOLS

All equipment, and tools used in the performance of the work will be subject to approval before the work is started and shall be maintained in satisfactory and safe working condition at all times. The equipment shall be dependable and adequate and shall have the capability of producing the required compaction, meeting grade controls, thickness control, and smoothness requirements as set forth herein.

PART 2 PRODUCTS

2.1 GRADED-CRUSHED AGGREGATE BASE COURSE

Aggregate Base Course for Trail shall be GCA. The GCA shall consist of clean, sound, durable particles of crushed stone, crushed gravel, angular sand or other approved material. The GCA shall be free of silt and clay as defined by ASTM D 2487, organic matter, and other objectionable materials or coatings. The portion retained on the No. 4 sieve shall be known as coarse aggregate; that portion passing the No. 4 sieve shall be known as fine aggregate.

2.1.1 Coarse Aggregate

Coarse aggregates shall be angular particles of uniform density. When the coarse aggregate is supplied from more than one source, aggregate from each source shall meet the specified requirements and shall be stockpiled separately.

a. Crushed Gravel: Crushed gravel shall be manufactured by crushing gravels, and shall meet all the requirements specified below.

b. Crushed Stone: Crushed stone shall consist of freshly mined quarry rock, and shall meet all the requirements specified below.

2.1.1.1 GCA Course Aggregate

GCA coarse aggregate shall not show more than 50 percent loss when subjected to the Los Angeles abrasion test in accordance with ASTM C 131. GCA coarse aggregate shall not exhibit a loss greater than 50 percent weighted average, at five cycles, when tested for soundness in magnesium sulfate in accordance with ASTM C 88. The amount of flat and elongated particles shall not exceed 20 percent for the fraction retained on the 1/2 inch sieve nor 20 percent for the fraction passing the 1/2 inch sieve. A flat particle is one having a ratio of width to thickness greater than 3; an elongated particle is one having a ratio of length to width greater than 3. In the portion retained on each sieve specified, the crushed aggregate shall contain at least 90 percent by weight of crushed pieces having two or more freshly fractured faces with the area of each face being at least equal to 75 percent of the smallest midsectional area of the piece. When two fractures are contiguous, the angle between planes of the fractures must be at least 30 degrees in order to count as two fractured faces. Crushed gravel shall be manufactured from gravel particles 90 percent of which by weight are retained on the maximum size sieve listed in TABLE 1 below.

2.1.2 Fine Aggregate

Fine aggregate shall be angular particles of uniform density. When the fine aggregate is supplied from more than one source, aggregate from each source shall meet the specified requirements.

2.1.2.1 GCA Fine Aggregate

GCA fine aggregate shall consist of angular particles produced by crushing stone, slag, recycled concrete, or gravel that meets the requirements for wear and soundness specified for GCA fine aggregate.

2.1.3 Gradation Requirements

The specified gradation requirements shall apply to the completed base course. The aggregates shall be continuously well graded within the limits specified in TABLE 1. Sieves shall conform to ASTM E 11.

TABLE I. GRADATION FOR AGGREGATE BASE COURSES

Percentage by Weight Passing Square-Mesh Sieve

Sieve Designation	Nature Trail
1 1/2 inch	100
3/4 inch	55-90
No. 4	25-60
No. 50	5-25
No. 200	3-12

NOTE 1: Particles having diameters less than 0.0008 inch shall not be in excess of 3 percent by weight of the total sample tested.

NOTE 2: The values are based on aggregates of uniform specific gravity. If materials from different sources are used for the coarse and fine aggregates, they shall be tested in accordance with ASTM C 127 and ASTM C 128 to determine their specific gravities. If the specific gravities vary by more than 10 percent, the percentages passing the various sieves shall be corrected as directed by the Contracting Officer.

2.1.4 Liquid Limit and Plasticity Index

Liquid limit and plasticity index requirements shall apply to the completed course and shall also apply to any component that is blended to meet the required gradation. The portion of any component or of the completed course passing the No. 50 sieve shall be either non-plastic or have a liquid limit not greater than 25 and a plasticity index not greater than 5.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

When the base course is constructed in more than one layer, the previously constructed layer shall be cleaned of loose and foreign matter. Adequate drainage shall be provided during the entire period of construction to prevent water from collecting or standing on the working area. Line and grade stakes shall be provided as necessary for control. Grade stakes shall be in lines parallel to the centerline of the area under construction and suitably spaced for string lining.

Any specific requirements of the sections in which base courses are constructed shall supercede the following requirements.

3.2 PREPARATION OF UNDERLYING COURSE

Prior to constructing the base course, the underlying course or subgrade shall be cleaned of all foreign substances. At the time of construction, the underlying subgrade shall contain no frozen material. The surface of the underlying subgrade shall meet specified compaction and surface tolerances. The underlying course shall conform to Section 02300 EARTHWORK. Ruts or soft yielding spots in the subgrade, areas having inadequate compaction, and deviations of the surface from the requirements set forth herein shall be corrected by loosening and removing soft or unsatisfactory material and by adding approved material, reshaping to line and grade, and recompacting to specified density requirements.

3.3 MIXING OF MATERIALS

Mix aggregates in a stationary or traveling plant. Proportion aggregates by weight or volume in such quantities that specified gradation, liquid limit, and plasticity index requirements are met after the base course has been placed and compacted. Incorporate, during the mixing operation, water in quantities sufficient to provide the necessary moisture content for the specified compaction. Mixing operations shall produce satisfactory uniform blending and the method of discharging into trucks shall not produce segregation.

3.4 PLACING

Do not dump mixed materials in piles, but place on prepared subgrade or subbase in layers of uniform thickness with a spreader. When a compacted course 6 inches in thickness is required, place material in a single layer. When a compacted course in excess of 6 inches is required, place material in layers of equal thickness. Do not exceed 6 inches or have less than 2 inches in thickness for any compacted layer. Place layers so that when compacted, they will be true to grades or levels required with the least possible surface disturbance. Where the base course is constructed in more than one layer, clean previously constructed layers of loose and foreign matter. Maintain material water content during the placing period to obtain the compaction specified. Make adjustments in placing procedures or equipment to obtain true grades, to minimize segregation and degradation, to reduce or increase water content, and to insure a satisfactory base course.

3.4.1 Grade Control

The finished and completed base course shall conform to the lines, grades, and cross sections shown. Underlying material(s) shall be excavated and prepared at sufficient depth for the required thickness so that the finished base course with the subsequent surface course will meet the designated grades.

3.4.2 Stationary-Plant Method

Mix aggregates, binder material and water until a uniform homogeneous mixture is obtained. Do not dump materials in piles; place in layers of essentially uniform thickness, not to exceed 6 inches after compaction, by an approved spreader. Tail gate spreading will be acceptable only with permission, under conditions such as where space limitations prohibit use of the spreader.

3.4.3 Windrow Traveling-Plant Method

Place aggregates and binder materials in windrows of such cross section and proportions that, when picked up, mixed, and redeposited in windrows, the finished mixture shall conform to the specified requirements. Do not exceed the rated capacity of the traveling plant with the size of the windrow of the combined materials. Add water, in quantity sufficient to provide the necessary moisture content for compacting, to the aggregates at the time of mixing. Mix materials uniformly by the traveling plant, deposit in windrows of uniform cross section, and spread in a layer of uniform thickness to the required contour and grades.

3.5 COMPACTING AND FINISHING

Immediately following placing, spread the finished mixture uniformly in a layer and bring to optimum moisture content. The loose thickness and the surface of the layer shall be such that the specified density and the required thickness shall be obtained after compaction. Compact the layer with with approved compaction equipment. Rolling shall begin at the outside edge of the surface and proceed to the center, overlapping on successive trips at least one-half the width of the roller. Alternate trips of the roller shall be slightly different lengths. Speed of the roller shall be such that displacement of the aggregate does not occur. In areas not accessible to rollers or compactors, compact the mixture with mechanical hand tampers. Continue compacting until the layer is compacted through the full depth to a field density of at least 95 percent of the maximum density at optimum moisture content tested in accordance with ASTM D 2922 and ASTM D 3017. If the mixture is excessively moistened by rain, aerate by blade graders, or other suitable equipment. Aerate until the moisture content of the material is that needed to obtain the required density.

Finish the surface of the layer by rolling. The Contractor shall make such adjustments in compacting or finishing procedures as may be directed to obtain true grades, to minimize segregation and degradation, to reduce or increase water content, and to ensure a satisfactory base course. Any materials that are found to be unsatisfactory shall be removed and replaced with satisfactory material or reworked, as directed, to meet the requirements of this specification. Final surface shall be smooth and free from waves, irregularities, and ruts or soft yielding spots.

Traffic shall not be allowed on the completed base course. Heavy equipment shall not be permitted except when necessary for construction, and then the area shall be protected against marring or damage to the completed work.

3.6 FINISHING AT EDGES OF BASE COURSE

For the Nature Trail, the base course shall be placed so that the completed section will be contained within the timber curb along the trail as shown on the plans. Timber curbing shall conform to material requirements of Section 06100 ROUGH CARPENTRY.

3.7 SAMPLING AND TESTING

Sampling and testing shall be the responsibility of the Contractor. Sampling and testing shall be performed by an approved commercial testing laboratory or by the Contractor, subject to approval. If the Contractor elects to establish its own testing facilities, approval of such facilities will be based on compliance with ASTM D 3740. No work requiring testing will be permitted until the Contractor's facilities have been inspected and approved. Materials and material sources shall be approved in advance of the use of such materials in the work.

3.7.1 Sampling

3.7.1.1 Aggregates at the Source

Prior to production and delivery of aggregates, take at least one initial sample in accordance with ASTM D 75. Collect each sample by taking three incremental samples at random from the source material to make a composite sample of not less than 50 pounds. Repeat above sampling when source of material is changed or when unacceptable deficiencies or variations from specified grading of materials are found in testing. When deemed necessary, the sampling will be observed by the Contracting Officer.

3.7.1.2 During Construction

Take one random sample from each 500 tons of completed course material, but not less than one random sample per day's run. Take samples in accordance with ASTM D 75.

3.7.1.3 Sample Identification

Place each sample in a clean container, securely fastened to prevent loss of material. Tag each sample for identification and with the following information:

Contract No._____
Sample No._____ Quality _____
Date of Sample_____
Sampler_____
Source_____
Intended Use_____
For Testing_____

3.7.2 Testing

3.7.2.1 Gradation

Test each sample of base course material without delay. Make gradation tests from each sample in accordance with ASTM C 136. Make sieve analysis on material passing the No. 200 sieve in accordance with ASTM C 117Sieve analysis shall be performed for every 500 tons, or portion thereof, of material placed..

3.7.2.2 Liquid Limit and Plasticity Index

Liquid limit and plasticity index shall be determined in accordance with ASTM D 4318. The index tests shall be performed for every 500 tons, or portion thereof, of material placed.

3.7.2.3 Density Tests

ASTM D 2922 and ASTM D 3017. Take one test for each 250 square yards of each layer of base course. Density shall be field measured in accordance with ASTM D 2922. For the method presented in ASTM D 2922 the calibration curves shall be checked and adjusted if necessary using only the sand cone method as described in paragraph Calibration, of the ASTM publication. Tests performed in accordance with ASTM D 2922 result 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 by the prepared containers of material method, as described in paragraph Calibration of ASTM D 2922, on each different type of material being tested at the beginning of a job and at intervals as directed.

3.7.2.4 Smoothness Tests

Test with a 10 foot straightedge, applied parallel with and at right angles to the center line of the paved area. Correct deviations in the surface in excess of 3/8 inch by loosening, adding or removing material, reshaping, watering, and compacting. The smoothness requirements specified herein apply only to the top layer when base course is constructed in more than one layer.

3.7.2.5 Thickness Tests

Compacted thickness of the aggregate course shall be as indicated on the plans. No individual layer shall exceed 6 inches nor be less than 3 inches in compacted thickness. Measure thickness of base course at intervals such that there will be a depth measurement for at least each 500 square yards of complete base course. Make depth measurements by test holes, at least 3 inches in diameter, through the base course. Where base course deficiency is more than 1/2 inch, correct by scarifying, adding mixture of proper gradation, reblading, and recompacting. Where the measured thickness is more than 1/2 inch thicker than indicated, consider it as the indicated thickness plus 1/2 inch for determining the average. The average thickness

is the average of the depth measurements and shall not underrun the thickness indicated.

3.7.2.6 Wear Test

Wear tests shall be made on aggregate base course material in conformance with ASTM C 131.

3.7.2.7 Soundness

Soundness tests shall be made on aggregate base course in accordance with ASTM C 88.

3.8 MAINTENANCE

Maintenance shall include immediate repairs to any defects and shall be repeated as often as necessary to keep the area intact. Any area of the base course that is damaged shall be reworked or replaced as necessary to comply with this specification. For Aggregate Subbase for Pavement, the base course shall be maintained in a satisfactory condition until the full pavement section is completed and accepted.

Any vegetation within preserved areas damaged by the work under this section, as determined by the Contracting Officer, shall be replaced immediately after the completion of the work at no additional cost to the Government.

3.9 RESTORATION AND CLEAN UP

When aggregate base course operations have been completed, the Contractor shall restore any damaged areas to their original conditions.

Work areas shall also be cleaned up, including the removal of any excess materials. The Contractor shall remove damaged, excess, and waste materials from the Project Site and dispose of the materials off Government property.

-- End of Section --

SECTION 02731

AGGREGATE SURFACE COURSE
08/04

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM C 117	(2003) Materials Finer Than 75 micrometer (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 131	(2003) Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	(2001) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 1557	(2002) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 2922	(2001) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(2001) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 3740	(2001) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM D 422	(1963; R 2002) Particle-Size Analysis of Soils
ASTM D 4318	(2000) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 75	(2003) Sampling Aggregates
ASTM E 11	(2001) Wire Cloth and Sieves for Testing

Purposes

1.2 SCOPE OF WORK

Work under this section shall consist of furnishing and installing surface course the Access Roads, Parking Lots, Anti-Tracking Pad, and Nature Trail, as shown on the plans and as directed by the Contracting Officer. Maintenance during construction is also included.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by the work under this section. Any damages to property or to vegetation within preserved areas shall be restored to the original conditions to the satisfaction of the Contracting Officer.

1.3 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

Aggregate Surface Course; G, RO.
Submit product data 30 days before start of work.

Equipment and Tools; G, RO.
Submit a list of proposed equipment to be used, including descriptive data, at least 3 days prior to starting work.

SD-06 Test Reports

Sampling and Testing; G, AE.
Submit calibration curves and related test results prior to using the device or equipment being calibrated. Submit copies of field test results within 24 hours after the tests are performed. Submit test results from samples not less than 30 days before material is required for the work. Submit results of laboratory tests for quality control purposes prior to using the material.

1.3 DEGREE OF COMPACTION

Degree of compaction is a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 abbreviated herein as present laboratory maximum density.

1.4 DELIVERY AND STORAGE

Inspect materials delivered to site for damage and store as to prevent segregation and contamination.

1.5 APPROVAL OF MATERIALS

The source of the material to be used for producing aggregates shall be selected 60 days prior to the time the material will be required in the work. Approval of sources not already approved by the Corps of Engineers will be based on an inspection by the Contracting Officer. Tentative approval of materials will be based on appropriate test results on the aggregate source. Final approval of the materials will be based on tests for gradation, liquid limit, and plasticity index performed on samples taken from the completed and compacted surface course.

1.6 WEATHER LIMITATIONS

Aggregate surface courses shall not be constructed when the ambient temperatures is below 35 degrees F and on subgrades that are frozen or contain frost. It shall be the responsibility of the Contractor to protect, by approved method or methods, all areas of surfacing that have not been accepted by the Contracting Officer. Surfaces damaged by freeze, rainfall or other weather conditions shall be brought to a satisfactory condition by the Contractor.

1.7 EQUIPMENT AND TOOLS

All equipment and tools used in the performance of the work covered by this section will be subject to approval by the Contracting Officer before the work is started and shall be maintained in satisfactory working condition at all times. The equipment shall be adequate and shall have the capability of producing the required compaction, and meeting the grade controls and thickness controls set forth herein.

PART 2 PRODUCTS

2.1 AGGREGATE SURFACE COURSE

Aggregate for Access, Aggregate for Anti-Tracking Pad, and Aggregate for Trail shall consist of clean, sound, durable particles of limestone or traprock. Aggregates shall be free from lumps and balls of clay, organic matter, objectionable coatings, and other foreign materials. The Contractor shall be responsible for obtaining materials that meet the specification and can be used to meet the grade requirements specified herein after all compaction and proof rolling operations have been completed.

2.1.1 Coarse Aggregates

The material retained on the No. 4 sieve shall be known as coarse aggregate. Coarse aggregates shall be reasonably uniform in density and quality. The coarse aggregate shall have a percentage of wear not to exceed 50 percent after 500 revolutions as determined by ASTM C 131. The amount of flat and/or elongated particles shall not exceed 20 percent. A flat particle is one having a ratio of width to thickness greater than three; an elongated particle is one having a ratio of length to width greater than three. When the coarse aggregate is supplied from more than one source, aggregate from each source shall meet the requirements set

forth herein.

2.1.2 Fine Aggregates

The material passing the No. 4 sieve shall be known as fine aggregate. Fine aggregate shall consist of screenings, sand, soil or other finely divided mineral matter that is processed or naturally combined with the coarse aggregate.

2.1.3 Gradation Requirements

Gradation requirements specified in TABLE I shall apply to the completed aggregate surfaces. It shall be the responsibility of the Contractor to obtain materials that will meet the gradation requirements after mixing, placing, compacting, and other operations. TABLE I shows permissible gradings for granular material used in aggregate surface roads and airfields. Sieves shall conform to ASTM E 11.

TABLE I. GRADATION FOR AGGREGATE SURFACE COURSES

Designation	Trail	Access	Anti-Tracking Pad
3 in.	--	--	100
2 1/2 in.	--	--	90-100
2 inch	--	--	35-70
1 1/2 in.	--	100	0-15
1 in.	--	--	--
3/4 in.	--	55-90	--
1/2 in.	--	--	--
3/8 in.	--	--	--
1/4 in.	100	--	--
1/8 in.	75-90	--	--
No. 4	90-100	25-60	--
No. 8	--	--	--
No. 16	--	--	--
No. 20	30-50	--	--
No. 30	--	--	--
No. 50	--	5-25	--
No. 100	--	--	--
No. 200	--	3-12	--

2.2 LIQUID LIMIT AND PLASTICITY INDEX REQUIREMENTS

The portion of the completed aggregate surface course passing the No. 40 sieve shall have a maximum liquid limit of 35 and a plasticity index of 4 to 9.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

When the surface course is constructed using more than one layer, the previously constructed layer shall be cleaned of loose and foreign matter. Adequate drainage shall be provided during the entire period of

construction to prevent water from collecting or standing on the working area. Line and grade stakes shall be provided as necessary for control. Grade stakes shall be in lines parallel to the centerline of the area under construction and suitably spaced for string lining.

Any specific requirements of the sections in which surface courses are constructed shall supercede the following requirements.

3.2 PREPARATION OF UNDERLYING COURSE SUBGRADE

The subgrade shall be cleaned of all foreign substances. At the time of surface course construction, the subgrade shall contain no frozen material. Ruts or soft yielding spots in the subgrade areas having inadequate compaction and deviations of the surface from the requirements set forth herein shall be corrected by loosening and removing soft or unsatisfactory material and by adding approved material, reshaping to line and grade and recompacting to density requirements as specified in Section 02722 GRADED CRUSHED AGGREGATE BASE COURSE. The completed subgrade shall not be disturbed by traffic or other operations and shall be maintained by the Contractor in a satisfactory condition until the surface course is placed.

3.3 GRADE CONTROL

During construction, the lines and grades including crown and cross slope indicated for the aggregate surface course shall be maintained by means of line and grade stakes placed by the Contractor in accordance with the Section 00800 SPECIAL CONTRACT REQUIREMENTS. The finished and completed surface course shall conform to the lines, grades, and cross sections shown on the plans.

3.4 MIXING AND PLACING MATERIALS

The materials shall be mixed and placed to obtain uniformity of the material and a uniform optimum water content for compaction. The Contractor shall make adjustments in mixing, placing procedures, or in equipment to obtain the true grades, to minimize segregation and degradation, to obtain the desired water content, and to ensure a satisfactory surface course.

3.5 LAYER THICKNESS

The aggregate material shall be placed on the subgrade in layers of uniform thickness. For Aggregrate for Trail, layers of no more than 2 inches shall be placed. For Aggregate for Access and Aggregate for Anti-tracking Pad, where a compacted thickness of more than 6 inches is required, no layer shall exceed 6 inches nor be less than 3 inches when compacted.

3.6 COMPACTION AND FINISHING

Each layer of the aggregate surface course shall be compacted with approved compaction equipment. The water content during the compaction procedure shall be maintained at optimum or at the percentage specified by the Contracting Officer. In locations not accessible to the rollers, the mixture shall be compacted with mechanical tampers. Compaction shall

continue until each layer through the full depth is compacted to at least 95 percent of laboratory maximum density. Any materials that are found to be unsatisfactory shall be removed and replaced with satisfactory material or reworked to produce a satisfactory material.

Construction traffic shall not be allowed on the completed surface course for the Recreational Access Road and Parking Lots or Nature Trail.

3.7 PROOF ROLLING

Proof rolling of the areas designated shall be in addition to compaction specified above and shall consist of application of 30 coverages with a heavy rubber-tired roller having four tires abreast with each tire loaded to 30,000 pounds and tires inflated to 150 pounds per square inch. In the areas designated, proof rolling shall be applied to the top lift of layer on which surface course is laid and to each layer of the base course. Water content of the lift of the layer on which the surface course is placed and each layer of the aggregate surface course shall be maintained at optimum or at the percentage directed from the start of compaction to the completion of a proof rolling. Materials in the aggregate surface course or underlying materials indicated unacceptable by the proof rolling shall be removed and replaced, as directed, with acceptable materials.

3.8 EDGES OF AGGREGATE SURFACE

For the Nature Trail, surface course shall be placed so that the completed section will be contained within the timber curb along the trail as shown on the plans. Timber curbing shall conform to material requirements of Section 06100A ROUGH CARPENTRY.

3.9 SAMPLING AND TESTING

Sampling and testing shall be the responsibility of the Contractor. Sampling and testing shall be performed by an approved commercial testing laboratory or by the Contractor, subject to approval. If the Contractor elects to establish its own testing facilities, approval of such facilities will be based on compliance with ASTM D 3740. No work requiring testing will be permitted until the Contractor's facilities have been inspected and approved.

3.9.1 Sampling

Sampling for material gradation, liquid limit, and plastic limit tests shall be taken in conformance with ASTM D 75. When deemed necessary, the sampling will be observed by the Contracting Officer.

3.9.1.1 Sample Identification

Place each sample in a clean container, securely fastened to prevent loss of material. Tag each sample for identification and with the following information:

Contract No._____
Sample No._____ Quality _____

Date of Sample_____
Sampler_____
Source_____
Intended Use_____
For Testing_____

3.9.2 Testing

3.9.2.1 Gradation

Aggregate gradation shall be made in conformance with ASTM C 117, ASTM C 136, and ASTM D 422. Sieves shall conform to ASTM E 11. Sieve Analysis shall be performed for every 500 tons, or portion thereof, of material placed.

3.9.2.2 Liquid Limit and Plasticity Index

Liquid limit and plasticity index shall be determined in accordance with ASTM D 4318. Liquid limit and plasticity index tests shall be performed at the same frequency as the sieve analysis.

3.9.2.3 Density Tests

Density shall be measured in the field in accordance with ASTM D 2922. For the method presented in ASTM D 2922 the calibration curves shall be checked and adjusted, if necessary, using only the sand cone method as described in paragraph Calibration of the ASTM publication. Tests performed in accordance with ASTM D 2922 result 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 by the prepared containers of material method, as described in paragraph Calibration of ASTM D 2922, on each different type of material being tested at the beginning of a job and at intervals, as directed.

Density tests shall be performed on every lift of material placed and at a frequency of one set of tests for every 250 square yards, or portion thereof, of completed area.

3.9.2.4 Wear Test

Wear tests shall be made in conformance with ASTM C 131.

3.9.2.5 Smoothness Test

The surface of each layer shall not show any deviations in excess of 3/8 inch when tested with a 10 foot straightedge applied both parallel with and at right angles to the centerline of the area to be paved. Deviations exceeding this amount shall be corrected by the Contractor by removing material, replacing with new material, or reworking existing material and compacting, as directed.

3.9.2.6 Thickness Control Test

The completed thickness of the aggregate surface course shall be within 1/2 inch, plus or minus, of the thickness indicated on plans. The thickness of the aggregate surface course shall be measured at intervals in such manner that there will be a thickness measurement for at least each 500 square yards of the aggregate surface course. The thickness measurement shall be made by test holes at least 3 inches in diameter through the aggregate surface course. When the measured thickness of the aggregate surface course is more than 1/2 inch deficient in thickness, the Contractor, at no additional expense to the Government, shall correct such areas by scarifying, adding mixture of proper gradation, reblading, and recompacting, as directed. Where the measured thickness of the aggregate surface course is more than 1/2 inch) thicker than that indicated, it shall be considered as conforming with the specified thickness requirements plus 1/2 inch. The average job thickness shall be the average of the job measurements determined as specified above, but shall be within 1/4 inch of the thickness indicated. When the average job thickness fails to meet this criterion, the Contractor shall, at no additional expense to the Government, make corrections by scarifying, adding or removing mixture of proper gradation, and reblading and recompacting, as directed.

3.10 MAINTENANCE

Maintenance shall include immediate repairs to any defects and shall be repeated as often as necessary to keep the area intact. Any area of aggregate surface course that is damaged shall be reworked or replaced as necessary to comply with this specification.

Any vegetation within preserved areas damaged by the work under this section, as determined by the Contracting Officer, shall be replaced immediately after the completion of the work at no additional cost to the Government.

3.11 RESTORATION AND CLEAN UP

When aggregate surface course operations have been completed, the Contractor shall restore any damaged areas to their original conditions.

Work areas shall also be cleaned up, including the removal of any excess materials. The Contractor shall remove damaged, excess, and waste materials from the Project Site and dispose of the materials off Government property.

-- End of Section --

SECTION 02772

NATURE TRAIL
12/04

Work Item No. 0009 Nature Trail

PART 1 GENERAL

1.1 SCOPE OF WORK

Under this section, the Contractor shall create a Nature Trail in the locations as shown on the plans and as directed by the Contracting Officer. Work shall include all grading, compacting, excavation, filling, fill materials, aggregate, subbase, filter fabric, filter fabric repairs (if necessary), and timber curbing that may be necessary to complete the work to the satisfaction of the Contracting Officer.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by the work under this section. Any damages to property or to vegetation within preserved areas shall be restored to the original conditions to the satisfaction of the Contracting Officer.

PART 2 PRODUCTS

2.1 MATERIALS

Aggregate for Trail shall conform to the materials requirements described in Section 02731 AGGREGATE SURFACE COURSE.

Aggregate Base Course for Trail shall conform to the materials requirements described in Section 02722 GRADED CRUSHED AGGREGATE BASE COURSE FOR FLEXIBLE PAVEMENT.

Timber Curbing shall conform to the materials requirements described in Section 06100A ROUGH CARPENTRY.

Separation geotextile shall conform to the materials requirements described in Section 02378 GEOTEXTILES USED AS FILTERS.

PART 3 EXECUTION

The installation requirements below supercede the directions under Section 02722 GRADED CRUSHED AGGREGATE BASE COURSE and Section 02731 AGGREGATE SURFACE COURSE.

Any vegetation within preserved areas damaged by the work under this section, as determined by the Contracting Officer, shall be replaced immediately after the completion of the work at no additional cost to the Government.

3.1 PREPARATION OF SUBGRADE

Prior to placement of the Nature Trail materials, the subgrade shall be prepared by grading to the proper line and grade as shown on the plans, and compacting the subgrade to 95 percent of the laboratory density of the subgrade soils. All depressions developed during compaction shall be filled with suitable material. Any unstable material shall be removed from the subgrade, replaced with suitable material from the Project Site, and the subgrade recompacted to meet the specified density.

All debris, foreign material, and any other undesirable material shall be removed from the subgrade prior to fine grading and compacting. The fine grade shall be pitched to drain and shall not be muddy or otherwise unsatisfactory when the trail materials are placed upon it. After fine grading and compacting, the subgrade shall be protected from construction traffic, prior to the placement of Nature Trail materials. Should the subgrade become rutted or otherwise displaced, the fine grade shall be reestablished and recompacted prior to placing Nature Trail materials.

3.2 TIMBER CURBING

Timber curbing shall be installed along the edges of the Nature Trail as shown on the plans. All forms shall be straight, free from bends and warps at all times, and shall be cleaned thoroughly and oiled before trail material is placed against them. The forms shall rest firmly upon the thoroughly compacted subgrade throughout their entire length, shall be joined neatly and tightly, and staked securely to line and grade at least 200 feet in advance of the point of placing materials by using at least three bracing pins or stakes to each 10-foot length of side form. The form shall be properly located with tops flush to the top of the pavement surface and shall remain in place after pavement installation. The forms shall remain in place after trail installation.

3.3 INSTALLATION OF BASE COURSE

Separation geotextile shall be installed along the footprint of the Nature Trail as shown the plans and as described in Section 02378 GEOTEXTILES USED AS FILTERS. Aggregate Base Course for Trail shall then be placed on top of the fabric, spread, and compacted as described below.

3.3.1 SPREADING

Spreading of the aggregate base course will be accomplished with a self-propelled stone spreader box. Care shall be taken to assure that the thickness shown on the plans, after compaction, is achieved. Placement of aggregate base course shall be made in maximum lifts of 4 inches. The aggregate base course shall be placed without segregation of large and fine particles to assure a well-graded base course.

3.3.2 COMPACTION

Each 4 inch lift of aggregate base course shall have its moisture content adjusted, as necessary, by the direct application of water to the surface.

The aggregate base course shall be thoroughly compacted by a smooth drum compactor with a static weight of 12 tons. Should the material become set to an extent that the pavement becomes unstable and waves under the compactor, the compactor shall removed from the aggregate base course and the unstable area allowed to dry out before compaction is resumed. Re-compaction of unacceptable areas may be necessary.

3.4 INSTALLATION OF SURFACE COURSE

Subsequent to the approval by the Contracting Officer of the Nature Trail base course, Aggregate for Trail shall be placed on top of the base course, and spread and compacted. The aggregate material shall be placed on the subgrade in layers of uniform thickness. Aggregrate layers of no more than 2 inches shall be installed.

3.4.1 SPREADING

Spreading of Aggregate for Trail will be accomplished with a self-propelled stone spreader box. Care shall be taken to assure that the thickness shown on the plans, after compaction, is achieved. Placement of aggregate surface course shall be accomplished without segregation of large and fine particles to assure a well-graded surface absent pockets of fine material. Additional aggregate surface course shall be added where necessary to produce a smooth surface absent of depressions.

3.4.2 COMPACTION

Immediately after placement of the Aggregate for Trail, the moisture content of the aggregate shall be adjusted by the direct application of water to the surface. The aggregate surface course shall be thoroughly compacted by a smooth drum compactor with a static weight of 10 tons. Compaction will immediately follow the application of water. Should the material become set to an extent that the pavement becomes unstable and waves under the compactor, the compactor shall removed from the aggregate surface course and the unstable area allowed to dry out before compaction is resumed. Re-compaction of unacceptable areas may be necessary.

-- End of Section --

SECTION 02821A

FENCING
04/04

Work Item No. 0010 Chain Link Security Fence
Work Item No. 0011 Herbivory Fence
Work Item No. 0012 Construction Fence
Work Item No. 0013 Gates, Chain Link
Work Item No. 0014 Gates, Single Leaf 14 Feet

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM A 392	(2003) Zinc-Coated Steel Chain-Link Fence Fabric
ASTM A 491	(2003) Aluminum-Coated Steel Chain-Link Fence Fabric
ASTM A 780	(2001) Repair of Damaged and Uncoated Areas of Hot-Dipped Galvanized Coatings
ASTM A 824	(2001) Metallic-Coated Steel Marcelled Tension Wire for Use With Chain Link Fence
ASTM D 648	(2001) Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
ASTM F 1083	(1997; R 2003) Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
ASTM F 900	(2003) Industrial and Commercial Swing Gates

1.2 SCOPE OF WORK

Under this section, the work shall consist of the installation, maintenance, and removal, where applicable, of all types of fence (except Silt Fence) and gates for the Work Site Access Road, Staging Area, and

Project Site in accordance with the plans and specifications, and as directed by the Contracting Officer.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by the work under this section. Any damages to property or to vegetation within preserved areas shall be restored to the original conditions to the satisfaction of the Contracting Officer.

1.3 PAYMENT SCHEDULE

For each separate fence type, the payment schedule will be as follows: After the Contracting Officer determines that the Chain Link Security Fence has been satisfactorily installed, 50 percent of the price of the fence shall be paid. The remaining 50 percent shall be paid after the fence has been satisfactorily removed. However, any unit or length not properly maintained to the satisfaction of the Contracting Officer during the life of the Contract, will be deducted from the final payment on a pro-rated basis.

1.4 SUBMITTALS

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

SD-03 Product Data

Chain Link Security Fence; G, RO.
Submit product information 30 days prior to starting work.

Construction Fence; G, RO.
Submit product information 30 days prior to starting work.

Herbivory Fence; G, AE.
Submit product information 30 days prior to starting work.

Gates; G, RO.
Submit product information 30 days prior to starting work.

SD-07 Certificates

Chain Link Security Fence

Statement, signed by an official authorized to certify on behalf of the manufacturer, attesting that the chain link fence and component materials meet the specified requirements.

PART 2 PRODUCTS

Concrete shall conform to the material requirements of Section 03301 CAST-IN-PLACE STRUCTURAL CONCRETE.

2.1 CHAIN LINK SECURITY FENCE

Chain Link Security Fence shall be made of the following materials, as shown on the plans:

Fabric: ASTM A 392, Class 1, zinc-coated steel wire with minimum coating weight of 1.2 ounces of zinc per square foot of coated surface, or ASTM A 491, Type I, aluminum-coated steel wire. Fabric shall be fabricated of 9 gauge wire woven in 2 inch mesh. Fabric height shall be as shown on the plans. Fabric shall be twisted and barbed on the top selvage and knuckled on the bottom selvage.

Line Posts: Line posts shall be 2 1/2 inch O.D. galvanized steel, standard weight pipe conforming to ASTM F 1083, schedule 40, weighing 3.65 pounds per linear foot. Line posts selected shall be of the same designation throughout the fence.

Terminal Posts: Terminal posts shall be 3 inch outside diameter, galvanized steel, standard weight pipe conforming to ASTM F 1083 schedule 40, weighing 5.79 pounds per linear foot. Terminal posts selected shall be of the same designation throughout the fence.

Braces: Braces shall be 1 5/8 inch outside diameter, galvanized steel, standard weight pipe conforming to ASTM F 1083, schedule 40, weighing 2.27 pounds per linear foot. Trusses shall be 5/16 inch diameter adjustable truss rods.

Top and Bottom Tension Wires: Tension wire shall be No. 6 gauge galvanized wire. Tension wire shall be Type I or Type II, Class 4 coating, in accordance with ASTM A 824.

Fittings and Hardware: Hardware, fittings and post caps shall be ductile iron, cast steel or pressed steel, all hot dipped galvanized.

2.2 CONSTRUCTION FENCE

Construction Fence shall be made of the following materials, as shown on the plans:

Fence Fabric: Fabric shall be made from high-density polyethylene, with a minimum tensile strength of 34.5 megapascals when tested in accordance with ASTM D 648. The fabric shall have 2 inch x 2.75 inch mesh openings, be bright orange in color, and be ultraviolet stabilized.

Posts: Steel posts, u-shaped with a minimum weight of 1 pound 6 ounces per foot.

Plastic zip ties: 6 inch long plastic zip ties.

2.3 HERBIVORY FENCE

Herbivory Fence shall be made of the following materials, as shown on the plans:

Stakes: Wood stakes shall be untreated hardwood lumber cut from sound and solid trees free from short or reverse bends in more than one plane. Stake tips shall be pointed. Posts shall be free of ring shake, season cracks more than 1/4 inch wide, splits in the end, and unsound knots. Size and shape of posts shall be as indicated on the plans.

Fence Fabric: Fabric shall be made from high-density polyethylene, with a minimum tensile strength of 34.5 megapascals when tested in accordance with ASTM D 648. The fabric shall have 2 inch x 2.75 inch mesh openings, be bright orange in color, and be ultraviolet stabilized.

Plastic zip ties: 6 inch long plastic zip ties.

U-Nails: 1½ inch hot dipped galvanized u-nails.

Nylon twine: Braided nylon mason's line #18 gauge cord with tensile strength of 150 pounds. Acceptable colors are white or yellow.

Flagging: Mylar tape 1-inch wide with a red front and silver backing that reflects sunlight.

2.4 GATES

Gates shall conform to the requirements under ASTM F 900.

For Gates, Chain Link, the frame shall conform to the material requirements of line and terminal posts for Chain Link Security Fence, except that the nominal pipe size shall be 1 1/2 inches.

For the Gates, Single Leaf 14 feet, the frame shall be as specified for line posts and terminal posts for the Chain Link Security Fence.

Gate leaves more than 8 feet wide shall have either intermediate members and diagonal truss rods or shall have tubular members as necessary to provide rigid construction, free from sag or twist. Gate leaves less than 8 feet wide shall have truss rods or intermediate braces.

For the Gates, Chain Link, fabric shall be as specified for Chain Link Security Fence fabric. Gate fabric shall be attached to the frame by method standard with the manufacturer except that welding shall not be permitted.

Latches, hinges, stops, keepers, rollers, and other hardware items shall be furnished as required for the operation of the gates. Stops shall be provided for holding the gates in the open position. Gates shall be provided with locks, and the Contracting Officer shall be supplied with a set of keys, 1 key for every lock.

2.5 PADLOCKS

All padlocks shall be keyed alike and approved by the Contracting Officer.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Chain Link Security Fence Installation

The Chain Link Security Fence shall be installed prior to the commencement of construction on the Project Site, except for construction of the Anti-tracking Pad. The fence shall be installed at the locations and grades indicated on the plans. The area on either side of the fence line shall be cleared to the extent indicated on the plans. Any damage to galvanized surfaces, including welding, shall be repaired with paint containing zinc dust in accordance with ASTM A 780.

3.1.1.1 Post Installation

The posts shall be set directly in the ground to a minimum depth of 3 feet and anchored in position with drive anchors driven diagonally through shoes attached to the post below ground level. The posts shall be set true to line and grade, spaced equidistant at intervals not exceeding 8 feet on center, in accordance with the plans and specifications. Terminal (corner, gate, and pull) posts shall be set at any abrupt changes in vertical and horizontal alignment. If rock is encountered, the Contractor shall submit details for adequately securing the posts in place. Corner posts shall be set in concrete footings to a minimum depth of 3 feet. Concrete shall be thoroughly consolidated around each post, shall be free of voids and finished to form a dome. Concrete shall be allowed to cure for 72 hours prior to attachment of any item to the posts. Post caps shall be installed on all posts.

3.1.1.2 Brace and Truss Rod Installation

Braces and truss rods shall be installed as indicated and in conformance with the standard practice for the fence furnished. Horizontal (compression) braces and diagonal truss (tension) rods shall be installed on fences over 6 feet in height. A center brace or 2 diagonal truss rods shall be installed on 12 foot fences. Braces and truss rods shall extend from terminal posts to line posts. Diagonal braces shall form an angle of approximately 40 to 50 degrees with the horizontal. No bracing is required on fences 6 feet high or less if a top rail is installed.

3.1.1.3 Tension Wire Installation

Tension wires shall be installed along the top and bottom of the fence line and attached to the terminal posts of each stretch of the fence. Top tension wires shall be installed within the top 4 inches of the installed fabric. Bottom tension wire shall be installed within the bottom 6 inches of the installed fabric. Tension wire shall be pulled taut and shall be

free of sag.

3.1.1.4 Chain Link Fence Fabic Installation

Chain link fence fabric shall be installed on the outside of the post. The fabric shall be installed and pulled taut to provide a smooth and uniform appearance free from sag, without permanently distorting the fabric diamond or reducing the fabric height. Fabric shall be cut by untwisting and removing pickets. Splicing shall be accomplished by weaving a single picket into the ends of the rolls to be joined.

The fabric shall be secured to line posts with 3/16-inch aluminum tie-wire spaced 18 inches apart on posts. The fabric shall be secured to terminal posts with tension bars and bands spaced at approximately 15 inch intervals, and to top and bottom tension wires with 9 gauge hot rings spaced 24 inches apart. The fabric shall be continuous between terminal posts; however, runs between terminal posts shall not exceed 500 feet. The bottom of the installed fabric shall be 1 plus or minus 1/2 inch above the ground.

3.1.2 Construction Fence Installation

Construction Fence shall be installed prior to the commencement of construction on the Project Site, except for construction of the Anti-tracking Pad. The fence shall be installed at the locations and grades indicated on the plans. After a 50-foot section of posts have been installed, a panel of fence fabric, 50 feet long, shall be securely and permanently fastened to the top, middle, and bottom of the stakes with plastic ties. All fence shall be placed so that the bottom of the fence lies entirely on the ground surface.

3.1.3 Herbivory Fence Installation

Herbivory Fence shall be installed after final grades are completed and approved by the Contracting Officer. Herbivory Fence shall be installed prior to or concurrently with installation of plants. Under no circumstances are these plants to be planted outside the containment of a satisfactorily installed Herbivory Fence.

The planting area shall be divided into cells by single rows of vertical stakes along the cell perimeter as shown on the plans. Stakes shall be pounded vertically into the substrate. Herbivory Fence shall be installed a minimum of 18 inches away from the first row of wetland planting. At least one stake shall be also be installed in the interior of each cell as depicted on the plans.

To install the wood stakes, the Contractor shall excavate to depth indicated and brace post until backfill is completed. Backfill shall be placed in layers of 9 inches or less, moistened to optimum condition, and compacted with hand tampers or other approved method. Posts shall be set plumb and in proper alignment.

After a 50-foot section of stakes have been installed, a panel of fence fabric, 50 feet long, shall be securely and permanently fastened to the

top, middle, and bottom of the stakes with plastic ties. All fence shall be placed so that the bottom of the fence lies entirely on the substrate.

Upon completion of the outer perimeter of each cell and the installation of interior stakes, nylon twine shall be strung across the tops of the planting areas from the perimeter stakes to the interior stakes in a pattern as shown on the plans. The nylon twine shall be nailed into the top of a stake with a u-nail, then wrapped around the top of the stake several times. The twine shall be strung to the next stake and nailed and wrapped again before continuing on to the next stake. It is critical that there be no gaps greater than 5 feet between strands of nylon twine.

Mylar tape shall be 1-inch wide with a red front and silver backing that reflects sunlight and shall trail at least 12 inches from the tie. Mylar tape shall be tied to the top of each hardwood stake, as depicted on the plans. The flagging shall also be tied along the top of the fence fabric and along the interior nylon twine as shown on the plans.

Stringing of the interior twine and tying of mylar flagging may be done after planting in a cell is completed; however, no planted area is to be left exposed without interior lines and flagging at the end of any workday.

No unused strands of nylon twine, fence fabric, packaging materials, wood stakes or any other construction debris shall be left on the Project Site after fence installation and maintenance has been completed.

3.1.4 Gate Installation

Gate latches shall be arranged for padlocking so that the padlock will be accessible from both sides of the gate. Gate posts shall be set in concrete footings to a minimum depth of 3 feet. Concrete shall be thoroughly consolidated around each post, shall be free of voids and finished to form a dome. Concrete shall be allowed to cure for 72 hours prior to attachment of any item to the posts. Post caps shall be installed on all posts.

3.1.4.1 Gates, Chain Link

Gates, Chain Link shall be installed prior to the commencement of construction on the Project Site, except for construction of the Anti-tracking Pad. The gates shall be installed at the locations shown on the plans. Hinged gates shall be mounted to swing as indicated. Locks shall be attached to gates or gate posts with chains. Hinge pins and hardware shall be welded or otherwise secured to prevent removal.

3.1.4.2 Gates, Single Leaf 14 Feet

Gates, Single Leaf 14 Feet shall be installed as shown on the plans.

3.2 EXCAVATION FOR CHAIN LINK SECURITY FENCE

Post holes for the Chain Link Security Fence shall be cleared of loose material. Waste material shall be spread where directed. The ground surface irregularities along the chain link fence line shall be eliminated

to the extent necessary to maintain a 1 inch clearance between the bottom of the fence fabric and the finished grade.

3.3 MAINTENANCE

3.3.1 Chain Link Security Fence Maintenance

The Contractor shall maintain the Chain Link Security Fence during the life of this Contract and shall repair or replace all members that are disturbed, damaged, destroyed or vandalized at no cost to the U.S. Army Corps of Engineers - New York District (USACE-NYD). Upon completion of the work the fence shall be removed and shall become the property of the Contractor.

3.3.2 Construction Fence Maintenance

The Contractor shall maintain the Construction Fence during the life of this Contract and shall repair or replace all members that are disturbed, damaged, destroyed or vandalized at no cost to the USACE-NYD. Upon completion of the work the fence shall be removed and shall become the property of the Contractor.

3.3.3 Herbivory Fence Maintenance

During the 1-year maintenance period of the planted areas, the Herbivory Fence shall be inspected on a weekly basis to maintain the integrity of the fence. All damaged fence shall be repaired immediately. In particular, the fence fabric shall be maintained such that geese cannot trample the fence or walk into the planting area under the fence.

The Contractor shall maintain the fence until the end of the first full growing season (December 1). To minimize disturbance, the Contractor shall remove and dispose of the Herbivory Fence at this time (during the winter months). At the conclusion of the maintenance period, the fence and all associated materials shall be completely removed and disposed of off-site by the Contractor.

Loss or damage to vegetation planted within the Herbivory Fence cells that results from inadequate or unsatisfactory maintenance shall be replaced at the expense of the Contractor.

3.3.4 Gate Maintenance

The Contractor shall maintain the gates during the life of this Contract and shall repair or replace all members that are disturbed, damaged, destroyed or vandalized at no cost to the Government. Upon completion of the work, all gates shall be removed and shall become the property of the Contractor.

-- End of Section --

SECTION 02921

SEEDING
05/04

Work Item No. 0015 Warm Season Native Seed Mix, Type N
Work Item No. 0016 Wet Meadow Seed Mix, Type W
Work Item No. 0017 Temporary Seed Mix
Work Item No. 0018 Recreational Field Seed Mix

PART 1 GENERAL

1.1 REFERENCES

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

U.S. DEPARTMENT OF AGRICULTURE (USDA)

AMS Seed Act (1940; R 1988; R 1998) Federal Seed Act

1.2 SCOPE OF WORK

Work under this section shall consist of furnishing and installing seed, fertilizer, mulch, and mulch binder to obtain optimal germination and long term success in accordance with the plans and specifications, and as directed by the Contracting Officer.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by seeding operations. Any damages to vegetation within preserved areas or property shall be replaced or restored to the original conditions to the satisfaction of the Contracting Officer.

If seeding areas are ready to be seeded outside of the specified seeding periods, a quick cover is required to prevent surface erosion or if required by Contract delays, a temporary seeding and/or temporary mulching shall be applied as described under Section 01355A ENVIRONMENTAL PROTECTION.

All labor, materials, equipment, and incidentals necessary to complete any replanting work associated with the One-Year Plant Guarantee - Seeding shall be at no additional cost to the Government.

1.3 PAYMENT SCHEDULE

For each separate seed mix type, the payment schedule will be as follows: The first payment will be for 75 percent of the total price after installation has been completed in accordance with the specifications and accepted by the Contracting Officer. The second payment of the remaining 25 percent shall be payable at the end of the One-Year Plant Guarantee -

Seeding, after the Contracting Officer has determined that the seeded plants have met the conditions of the One-Year Plant Guarantee - Seeding.

1.4 SUBMITTALS

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

SD-03 Product Data

Warm Season Native Seed Mix, Type N; G, AE.
Wet Meadow Seed Mix, Type W; G, AE.
Recreational Field Seed Mix; G, AE.
Temporary Seed Mix; G, AE.
Fertilizer; G, AE.
Mulch; G, AE.
Submit product information 30 days prior to starting work. Data sheets shall show that materials meet the requirements specified herein. Data sheets shall include the following:

a. Seed. Classification, botanical name, common name, percent pure live seed, minimum percent germination and hard seed, maximum percent weed seed content, and date tested.
b. Fertilizer: Chemical analysis and composition percent.
c. Mulch: Composition and source.

Delivery Schedule; G, AE.
Submit a delivery schedule at least 10 calendar days prior to the first day of delivery.

Equipment; G, AE.
Submit a listing of equipment to be used for the seed bed preparation and seeding operations 3 days prior to starting work.

Finished Grade; G, AE.
At least 24 hours prior to the commencement of the seeding operation, the Contractor shall submit verification that finished grades are as indicated on the plans. The Contracting Officer shall approve this submittal prior to commencement of seeding operations.

Quantity Check; G, AE.
Submit bag count and/or bulk weight measurements of material used compared with area covered to verify the application rate and quantity installed.

SD-04 Samples

Mulch; G, AE.
Submit a 10 pound sample at least 15 calendar days prior to scheduled mulch delivery.

SD-06 Test Reports

Germination and Purity Test for Seed; G, AE.
Submit germination and purity test for the seed mixes 3 months prior to the start of seeding operations.

Soil Test; G, AE.

Equipment Calibration; G, AE.
Within 1 week of testing, submit a certification of calibration tests conducted on the equipment used during the seeding operations.

SD-07 Certificates

Warm Season Native Seed Mix, Type N; G, AE.
Wet Meadow Seed Mix, Type W; G, AE.
Recreational Field Seed Mix; G, AE.
Temporary Seed Mix; G, AE.
State certification and approval for seed

One-year Plant Guarantee - Seeding; G, AE.
Submit a signed one-year plant guarantee at least 30 calendar days prior to commencement of seeding operations.

1.5 WATER

The Contractor shall make arrangements necessary to ensure an adequate supply of water to meet the needs of this Contract. The Contractor shall furnish all necessary hose, equipment, attachments and accessories for the adequate irrigation of all seeding areas as shall be required to complete the work specified under this section. No payment additional to the lump sum price of the Contract will be made from water coming from the Contractor's own source.

1.6 ONE-YEAR PLANT GUARANTEE - SEEDING

The Contractor shall submit to the Contracting Officer, a written and signed one-year plant guarantee - seeding, which is conditional of: 1) at least 85 percent of the seeding areas are covered by vegetation and 2) at least 80 percent of the species of established vegetation are the plant species specified herein for the seed mix. Seeding areas or portions thereof for which 85 percent survival/80 percent establishment is not reached shall be reseeded once during the subsequent seeding season, to achieve the 85 percent survival/80 percent establishment described above.

The one-year plant guarantee - seeding period shall commence on the date of the completion of construction, and shall end 365 calendar days later. The Contractor shall provide the commencement and ending dates as part of the Periodic Schedule Updates and Progress Curves submitted under Section 01320A PROJECT SCHEDULE. Following are the terms and conditions of the one-year plant guarantee - seeding:

a. The substrates of the seeding areas will possess a pH greater than

4.5.

b. Seeding will be carried out as stipulated herein.

Under the terms and conditions of the one-year plant guarantee - seeding, the Contractor shall be solely responsible for plant survival in seeded areas. Losses attributed to herbivores, disease, eutrophication, inappropriate hydrological regimes, drought, insect damage, fire, wind, or wave energies, ice scouring or vandalism shall not lower the minimum survival or coverage requirements.

At the end of the one-year plant guarantee - seeding, the Contracting Officer shall make a determination as to whether the seeded vegetation meets the conditions of the guarantee. Any seeding areas or portions thereof not meeting the requirements of the guarantee shall be reseeded in accordance with the paragraph "RE-SEEDING."

1.7 DELIVERY, STORAGE, AND HANDLING

1.7.1 Delivery

A Delivery Schedule shall be submitted to the Contracting Officer specifying the dates and approximate times of all deliveries of seeding materials.

1.7.1.1 Seed Protection

Protect from drying out and from contamination during delivery, onsite storage, and handling.

1.7.1.2 Seed Delivery

Seed shall be delivered to the Project Site in the original, unopened bags showing the net weight, composition of mix, suppliers name, and guarantee of analysis. Damaged or faulty packages shall not be used and will be rejected. Labels shall be in conformance with AMS Seed Act and applicable state seed laws.

1.7.1.3 Fertilizer Delivery

Deliver to the Project Site in original, unopened containers bearing manufacturer's chemical analysis, name, trade name, trademark, and indication of conformance to state and federal laws.

1.7.2 Materials Inspection

Seed shall be inspected upon arrival at the Project Site for conformity to species, quality, and quantity in accordance with the specifications. Seed that is wet, moldy or bears a test date five months or older shall be rejected. Other seeding materials shall be inspected for compliance with the requirements herein. Open or wet fertilizer containers shall be rejected. The Contractor shall be responsible for removing unacceptable materials from the Project Site.

1.7.3 Storage

1.7.3.1 Seed and Fertilizer Storage

Store in cool, dry locations away from contaminants. Seed shall be stored in original unopened packages and not opened until ready for use.

1.7.3.2 Handling

Except for bulk deliveries, do not drop or dump materials from vehicles.

PART 2 PRODUCTS

2.1 SEED

2.1.1 Germination and Purity Test for Seed

Prior to ordering the seed mixes, a germination and purity test shall be submitted so that the Contracting Officer can approve the seed and supplier. Seed shall conform to all applicable state and federal regulations and to test provisions of the Association of Official Seed Analysts. There shall be no exceptions. The Contractor is advised that these tests can run two months or more and should be prepared to have these tests completed in sufficient time for the forthcoming seeding season.

2.1.2 Classification

Seed shall be clean and fresh and harvested from the previous growing season. Weed seed shall be a maximum 1 percent by weight of the total mixture. Seed mixtures shall not contain millet or any other large-seed producing grass. Seed shall be mixed by the seed supplier prior to delivery to the Project Site.

For Seed Mix Types N and W, seed shall be provided on the basis of pounds of Pure Live Seed (PLS). PLS is calculated as:

PLS = (% Purity x % Viable Seed) / 100

2.1.3 Seeding Periods

Seeding periods shall be as follows:

Seed Type	Dates
Warm Season Native Seed Mix, Type N	March 15 to June 1
Wet Meadow Seed Mix, Type W	March 15 to May 15
Recreational Field Seed Mix	March 15 to May 15

2.1.4 Warm Season Native Seed Mix, Type N

Proportion seed mixtures by weight.

Botanical Name (Common Name)	Percent (by Weight)	PLS Seeding Rate
GRASSES		
Andropogon gerardii (big bluestem)	12%	5 lbs/acre
Schizocharium scoparium (little blue stem)	12%	5 lbs/acre
Elymus riparius (riverbank wild rye)	3%	3 lbs/acre
Panicum virgatum (switchgrass)	7%	5 lbs/acre
Sorghastrum nutans (indiangrass)	20%	5 lbs/acre
Avena sativa (oats)	6%	10 lbs/acre
PERENNIAL WILDFLOWERS		
Asclepias tuberosa (butterfly weed)	1%	1 lbs/acre
Aster prenanthoides (zig zag aster)	2%	1 lbs/acre
Aster novae-angliae (New England aster)	3%	1 lbs/acre
Aster novi-belgii (New York aster)	3%	1 lbs/acre
Castilleja coccinea (indian paintbrush)	2%	1 lbs/acre
Chrysanthemum leucanth (oxeye daisy)	4%	1 lbs/acre
Coreopsis lanceolata (lance-leaved coreopsis)	2%	1 lbs/acre
Eupatorium coelestinum (hardy ageratum)	1%	1 lbs/acre
Gaillardia aristata (blanket flower)	3%	1 lbs/acre
Heliopsis helianthoides (ox-eyed sunflower)	2%	1 lbs/acre
Lupinus perennis (perennial lupine)	3%	1 lbs/acre
Oenothera speciosa (showy evening primrose)	1%	1 lbs/acre
Penstemon digitalis (beardtongue)	2%	1 lbs/acre
Phlox paniculata (summer phlox)	1%	1 lbs/acre
Rudbeckia hirta (black-eyed susan)	4%	1 lbs/acre
Rudbeckia triloba (brown-eyed susan)	4%	1 lbs/acre
Solidago juncea (early goldenrod)	2%	1 lbs/acre

2.1.5 Wet Meadow Seed Mix, Type W

Proportion seed mixtures by weight.

Botanical Name (Common Name)	Percent (by Weight)	PLS Seeding Rate
GRASSES		
Agrotis alba (red top)	5%	3 lbs/acre
Echinocloa muricata (barnyard grass)	10%	5 lbs/acre
Elymus riparius (riverbank wild rye)	10%	5 lbs/acre
Panicum virgatum var. Shelter (switchgrass)	10%	5 lbs/acre
Leersia oryzoides (rice cut grass)	5%	2 lbs/acre
PERENNIALS		
Carex lurida (lurid sedge)	4%	2 lbs/acre
Carex lupulina (Hop sedge)	8%	2 lbs/acre
Carex crinita (fringed sedge)	3%	1 lbs/acre
Carex vulpinoidea (fox sedge)	4%	1 lbs/acre
Asclepias incarnata (swamp milkweed)	4%	1 lbs/acre
Aster novi-belgii (New York aster)	3%	1 lbs/acre
Aster novae-angliae (New England aster)	3%	1 lbs/acre
Eupatorium maculatum (spotted joe-pye-weed)	2%	1 lbs/acre
Penstemon digitalis (beardtongue)	3%	1 lbs/acre
Juncus effusus (soft rush)	3%	1 lbs/acre
Juncus canadensis (Canada rush)	3%	1 lbs/acre
Scirpus cyperinus (woolgrass)	4%	1 lbs/acre
Onoclea sensibilis (sensitive fern)	5%	1 lbs/acre
Scirpus validus (soft stemmed bulrush)	3%	1 lbs/acre
Verbena hastata (blue vervain)	5%	1 lbs/acre
Veronia noveboracensis (New York ironweed)	3%	1 lbs/acre

2.1.6 Recreational Field Seed Mix

Common Name (Variety)	Percent (by Weight)	Separate Seeding Rate
Tall Fescue (Rebel Sewtray)	30%	75 lbs/acre
Tall Fescue (Turf Type)	50%	125 lbs/acre
Perennial Ryegrass (Preclude III)	10%	25 lbs/acre
Kentucky Bluegrass (Famous)	10%	25 lbs/acre

2.1.7 Temporary Seed Mix

Botanical Name (Common Name)	Min. Percent Pure Seed	Min. Percent Germination and Hard Seed	Max. Percent Weed Seed
Lolium multiflorum (annual rye)	98%	90%	0.1%

2.1.8 Substitutions

Seed material substitutions will not be allowed without written request and approval from the Contracting Officer.

2.2 FERTILIZER

For all planting zones except Recreational Fields (Zone H), the nutrients ratio for fertilizer shall be 0 percent nitrogen, 10 percent phosphorus, and 20 percent potassium. Nitrogen fertilizer shall not be used. For planting Zone H, Recreational Fields, the nutrient ratio for fertilizer shall be 5 percent nitrogen, 10 percent phosphorous, and 20 percent potassium.

Fertilizer shall be controlled release commercial grade, free flowing, and uniform in composition, conforming to CID A-A-1909. The fertilizer shall be derived from sulphur coated urea, urea formaldehyde, plastic or polymer coated pills, or isobutylenediurea. Fertilizer shall be balanced with the inclusion of trace minerals and micro-nutrients.

2.2.1 Granular Fertilizer

For all planting zones except Recreational Fields (Zone H), organic or synthetic, granular controlled release fertilizer shall contain the following minimum percentages, by weight, of plant food nutrients:

0 percent available nitrogen
10 percent available phosphorus

20 percent available potassium
0 percent sulfur
0 percent iron

For planting Zone H, Recreational Fields, the nutrient ratio for fertilizer shall be 5 percent nitrogen, 10 percent phosphorous, and 20 percent potassium.

2.2.2 Hydroseeding Fertilizer

For all planting zones except Recreational Fields (Zone H), controlled release fertilizer, to use with hydroseeding shall be composed of pills coated with plastic resin to provide a continuous release of nutrients for at least 6 months and containing the following minimum percentages, by weight, of plant food nutrients.

0 percent available nitrogen
10 percent available phosphorus
20 percent available potassium
0 percent sulfur
0 percent iron

For planting Zone H, Recreational Fields, the nutrient ratio for controlled release fertilizer shall be 5 percent nitrogen, 10 percent phosphorous, and 20 percent potassium.

2.3 MULCH

Mulch shall be free from noxious weeds, mold, and other deleterious materials. Due to its high weed content, hay will not be accepted.

2.3.1 Straw

Straw shall be stalks of oat or wheat, free from noxious weeds and other material. Shall be well cured to less than 20% moisture by weight, and furnished in air-dry condition and of proper consistency for placing with commercial mulch blowing equipment. Straw shall contain no fertile seed.

2.3.2 Wood Cellulose Fiber Mulch

Use recovered materials of either paper-based (100 percent) or wood-based (100 percent) hydraulic mulch. Processed to contain no growth or germination-inhibiting factors and dyed an appropriate color to facilitate visual metering of materials application. Composition on air-dry weight basis: 9 to 15 percent moisture, pH range from 5.5 to 8.2. The application of wood cellulose mulch shall be conducted in two separate hydraulic applications.

2.4 MULCH BINDER

The mulch binder shall be a cellulose or non-asphaltic emulsion, natural gum binder blended with gelling or hardening agents.

2.5 WATER

Source of water shall be approved by Contracting Officer and of suitable quality for irrigation, containing no elements toxic to plant life.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 EXTENT OF WORK

Provide soil preparation , fertilizing, seeding, and mulching of specified planting zones, and at all areas inside or outside the limits of construction that are disturbed by the Contractor's operations.

3.1.1.1 Topsoil

For Planting Zone C, provide 18 inches of onsite topsoil to meet indicated finish grade. For Planting Zones H and F, provide 8 inches of onsite topsoil to meet indicated finish grade. After areas have been brought to indicated finish grade, incorporate fertilizer into soil a minimum depth of 4 inches by disking, harrowing, tilling or other method approved by the Contracting Officer. Remove debris and stones larger than 3/4 inch in any dimension remaining on the surface after finish grading. Except for establishing microtopography, protect finished topsoil areas from damage by vehicular or pedestrian traffic.

3.1.1.2 Site Preparation

Prior to seeding, the seedbed shall be prepared by mowing and disking as specified below.

For Planting Zones A and portions of C that are not specified to be regraded, the seed bed shall be mowed to a height of 4 inches prior to disking. Following approval by the Contracting Officer, the seedbed shall be disked to a depth of 4 inches using a minimum of three passes in different directions.

For Planting Zone G, the seedbed shall be mowed to a height of 4 inches and accumulated plant matter removed and disposed of by the Contractor at the Contractor's expense. Planting Zone G shall not be disked or tilled.

Soil on slopes up to a maximum 3-horizontal-to-1-vertical shall be tilled to a minimum 4 inch depth by scarifying with heavy rakes, or other method approved by the Contracting Officer. Rototillers shall be used where soil conditions and length of slope permit. On slopes 1-horizontal-to-1 vertical and steeper, no tillage is required. Drainage patterns shall be maintained as indicated on drawings. Areas compacted by construction operations shall be completely pulverized by tillage to a depth of 8 inches. Soil used for repair of surface erosion or grade deficiencies shall conform to topsoil requirements.

3.1.1.3 Fertilizer Application Rates

Apply fertilizer at rates as determined by laboratory soil analysis of the soils at the Project Site. Soil test results shall provide analysis of pH, macro, and micro nutrients. For bidding purposes only apply at rates for the following:

Organic Granular Fertilizer 200 pounds per acre

Synthetic Fertilizer 200 pounds per acre

Hydroseeding Fertilizer 200 pounds per acre

3.2 SEEDING

Prior to commencement of seeding, the Contractor shall examine the seeding areas and conditions and notify the Contracting Officer, in writing, of conditions detrimental to the proper and timely completion of the work. The Contractor shall not proceed with seeding until unsatisfactory conditions have been corrected in an acceptable manner, as approved by the the Contracting Officer The Contractor shall notify the Contracting Officer of the proposed seeding methods a minimum of 60 days prior to commencing seeding operations. The proposed seeding operations are subject to approval by the Contracting Officer.

3.2.1 Seed Application Seasons and Conditions

Seeding operations shall be performed only during periods when beneficial results can be obtained. Do not seed when ground is muddy, frozen, snow covered, when air temperature exceeds 90 degrees Fahrenheit, or when the wind velocity will prevent uniform seed distribution. If drought, excessive moisture or any other unsatisfactory conditions for seeding exist, the work shall be stopped as directed by the Contracting Officer. If special conditions exist that may warrant a variance in the above seeding dates or conditions, submit a written request to the Contracting Officer stating the special conditions and proposed variance. Apply seed within twenty four hours after seed bed preparation. Sow seed by approved sowing equipment. Sow one-half the seed in one direction, and sow remainder at right angles to the first sowing. For Planting Zone G, seeding shall not be performed before April 15.

3.2.2 Seeding Substrate

Seeding substrates shall be free from debris, noxious weeds, toxic substances or other materials harmful to plant growth.

If temporary seeding or mulching is necessary, the Contractor shall thoroughly till the temporary growth or mulch into the seeding substrate prior to permanent seeding.

3.2.3 Finished Grade

Prior to commencement of seeding operations, the Contractor shall verify that finished grades are as indicated on the plans, and the finishing,

compaction, and microtopography requirements have been completed in accordance with Section 02300 EARTHWORK and Section 02301 Establishing Microtopography. After grading and establishing microtopography are complete, heavy equipment is prohibited from entering seeding areas.

3.2.4 Equipment Calibration

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

3.2.5 Seed Application Method

Seeding method shall be broadcast, drop seeding or hydroseeding for all Planting Zones except Zone G. Planting Zone G shall be drill seeded. Seeding operations shall be kept as close as possible to the contours and not up and down slopes.

3.2.5.1 Broadcast and Drop Seeding

Seed shall be uniformly broadcast at the rate of 1.15 pounds per 1000 square feet for Warm Season Native Seed Mix Type N, 0.87 pounds per 1,000 square feet for Wet Meadow Seed Type W, and 5.7 pounds per 1000 square feet for Recreational Field Seed Mix. Use broadcast or drop seeders. Sow one-half the seed in one direction, and sow remainder at right angles to the first sowing. Cover seed uniformly to a maximum depth of 1/4 inch in clay soils and 1/2 inch in sandy soils by means of spike-tooth harrow, cultipacker, raking or other approved devices.

3.2.5.2 Drill Seeding

Seed shall be drilled at the rate of 1.15 pounds per 1000 square feet for Warm Season Native Seed Mix Type N, 0.87 pounds per 1000 square feet for Wet Meadow Seed Mix Type W, and 5.7 pounds per 1000 square feet for Recreational Field Seed Mix. The drill shall be specifically designed for use with warm season grasses. The drill shall be capable of supporting three different seed box types, including fluffy seeds and chaffy seeds, as described by the drill manufacturer. Drill seed uniformly to average depth of 1/4 inch.

3.2.5.3 Hydroseeding

For Warm Season Native Seed Mix, and Recreational Field Seed Mix, first mix water and fiber. Wood cellulose fiber, paper fiber, or recycled paper shall be applied as part of the hydroseeding operation. Fiber shall be added at 200 pounds, dry weight, per acre. Then add and mix seed and fertilizer to produce a homogeneous slurry. Seed shall be mixed to ensure broadcasting at the rate of 1.15 pounds per 1000 square feet for Warm Season Native Seed Mix Type N, 0.87 pounds per 1000 square feet for Wet Meadow Seed Mix Type W and 5.7 pounds per 1000 square feet for Recreational Field Seed Mix. When hydraulically sprayed on the ground, material shall form a blotter like cover impregnated uniformly with grass seed.

Hydroseeding shall not be used for seeding in Planting Zone G.

3.2.6 Mulching

Within 48 hours of seeding, all seeded areas must be adequately covered with mulch according to the specifications contained herein. Seeding is not permitted when mulch cannot be applied within 48 hours. Furthermore, in the event of anticipated rainfall (within 24 hours), seeding will not be permitted when mulch cannot be immediately applied.

3.2.6.1 Straw Mulch

Straw mulch shall be spread uniformly at the rate of 2 tons per acre. Mulch shall be spread by hand, blower-type mulch spreader or other approved method. No low ground pressure equipment will be allowed. Mulching shall be started on the windward side of relatively flat areas or on the upper part of steep slopes, and continued uniformly until the area is covered. The mulch shall not be bunched or clumped. Sunlight shall not be completely excluded from penetrating to the ground surface. All areas installed with seed shall be mulched within 24 hours of seeding.

After mulch application, a mulch binder shall be applied within 12 hours after placement of mulch. Application of binder shall be heavier at all edges where the wind may catch the mulch. Mixing and application rates shall be in accordance with the manufacturer's instructions and as directed by the Contracting Officer.

3.2.6.2 Wood Cellulose Fiber Mulch

Wood cellulose fiber mulch shall be applied separately from seed and fertilizer and within four hours of hydraulic application of seed and fertilizer, as described in subparagraph "Hydroseeding."

3.2.7 Rolling

Immediately after seeding and before mulching, firm entire area except for slopes in excess of 3 to 1 with a roller not exceeding 90 pounds for each foot of roller width. If seeding is performed with cultipacker-type seeder or by hydroseeding, rolling may be eliminated.

3.2.8 Watering

If planting in any seeded area will commence more than 30 days after completion of seeding operations, then watering of these areas shall be started immediately after seed/mulch application. Clean, freshwater shall be applied at a rate sufficient to insure thorough wetting of soil to a depth of 1 inch without run off or puddling. During the germination process, seed is to be kept actively growing and not allowed to dry out. Watering trucks shall not be driven over existing turf or seeded areas, unless otherwise directed. Watering of other adjacent areas or vegetation shall be prevented.

3.3 TEMPORARY SEEDING AND MULCHING

If any of the planting zones are ready to be seeded or planted outside of the specified seasons, a quick cover is required to prevent surface erosion or if required by Contract delays, a temporary seeding or temporary mulching shall be applied as part of the Project's Environmental Protection Plan described in Section 01355A ENVIRONMENT PROTECTION. Temporary seeding shall be performed if construction is completed between June 2 and August 15. Temporary mulching shall be performed if construction is completed between October 16 and March 15.

The Temporary Seed Mix shall be applied at the rate of 15 pounds per acre.

3.4 QUANTITY CHECK

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

3.5 RESTORATION AND CLEAN UP

When seeding has been completed, the Contractor shall restore any areas damaged during seeding operations to their original conditions.

Seeding work areas shall also be cleaned up, including the removal of any excess materials. The Contractor shall remove damaged, excess, and waste materials from the Project Site and dispose of the materials off Government property.

3.6 PROTECTION OF SEEDED AREAS

Immediately upon completion of the seeding operations in an area, the area shall be protected against traffic or other use by erecting barricades and/or providing signage as directed by the Contracting Officer. The Contractor shall only enter seeded areas when absolutely necessary for the completion of the Project. There shall be no exceptions.

3.7 MAINTENANCE DURING CONSTRUCTION

Maintenance of seeded areas during the construction shall include protecting embankments and ditches from surface erosion, maintaining mulch, protecting installed areas from traffic, and watering.

Any seeded areas disturbed prior to completion of construction, as determined by the Contracting Officer, shall be repaired or reinstalled in accordance with the paragraphs "PREPARATION" and "SEEDING."

3.8 FIRST YEAR MAINTENANCE

The Contractor shall provide for maintenance of the seeded areas until acceptance by the Contracting Officer. As part of the maintenance, the

Contractor shall mow Planting Zone G using a rotary or flail type mower to a height of 6 to 8 inches. The mowing operation shall be performed only after vegetation attains a height of 12 to 18 inches.

3.9 RE-SEEDING

At the end of the one-year plant guarantee, the Contracting Officer shall make a determination as to whether the vegetation seeded in the seeding areas meet the conditions of the guarantee. For areas designated to be re-seeded, the Contracting Officer shall designate the seed mix to be used. The new seed mix shall comply with the original Contract quantities as shown on the plans, as solely determined by the Contracting Officer. Materials and installation shall be in accordance with the materials specifications and the with the paragraphs "PREPARATION" and "SEEDING.", respectively. Replacement seed shall be guaranteed for an additional 6 months starting from date of reseeding.

-- End of Section --

SECTION 02930

EXTERIOR PLANTS
05/04

Work Item No. 0019 Riparian Forest Plants
Work Item No. 0020 Upland Forest Plants
Work Item No. 0021 Wetland Forest Plants
Work Item No. 0022 Upland Scrub/Shrub Plants
Work Item No. 0023 Emergent Wetland Plants
Work Item No. 0024 Streambank Plants

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (ANLA)

ANLA Z60.1	(1996) Nursery Stock

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A300	(1995) Tree Care Operations - Trees, Shrubs and Other Woody Plant Maintenance
ANSI Z133.1	(2001) Arboricultural Operations -- Safety Requirements for Pruning, Repairing, Maintaining, and Removing Trees, and Cutting Brush
ANSI Z60.1	(1996) Nursery Stock

L.H. BAILEY HORTORIUM (LHBH)

LHBH	(1976) Hortus Third

1.2 SCOPE OF WORK

Work under this section shall consist of transporting and installing plants and soil amendments (if necessary) in accordance with the plans and specifications, and as directed by the Contracting Officer.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by the work under this section. Any damages to property or to vegetation within preserved areas shall be restored to the original conditions to the satisfaction of the Contracting Officer.

All labor, materials, equipment, and incidentals necessary to complete any replanting work associated with the One-Year Plant Guarantee shall be at no additional cost to the Government.

1.3 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-01 Preconstruction Submittals

Plant Material Order; G, AE.
Submit 3 months prior to commencement of planting operations. Order shall follow planting tables as shown on the plans.

Quality Control Record; G, AE.
When planting operations are complete, the Contractor shall submit a Quality Control Record.

SD-03 Product Data

Riparian Forest Plants; G, AE.
Upland Forest Plants; G, AE.
Wetland Forest Plants; G, AE.
Upland Scrub/Shrub Plants; G, AE.
Emergent Wetland Plants; G, AE.
Streambank Plants; G, AE.
Emergent Plant Fertilizer; G, AE.
Shrub/Tree Fertilizer; G, AE.
Mycorrhizal Fungi Inoculum; G, AE.
Submit data sheets and catalog cuts 30 calendar days prior to starting work. The data sheets shall show that materials meet the requirements specified herein. Data sheets shall include the following:

a. Plants and live stakes. Classification, botanical name, common name, size, root type, quantity by species, and growing location.

b. Emergent plant fertilizer: Chemical analysis and composition percent.

c. Shrub/tree fertilizer: Chemical analysis and composition percent.

d. Mycorrhizal fungi inoculum: Plants to be treated.

Delivery Schedule; G, AE.
Submit a delivery schedule at least 10 calendar days prior to the first day of delivery.

Equipment; G, AE.
Submit a list of equipment to be used for the planting operation 3 days prior to starting work.

Finished Grade; G, AE.
At least 24 hours prior to the commencement of the planting operation, the Contractor shall submit verification that finished grades are as indicated on the plans. The Contracting Officer shall approve this submittal prior to commencement of planting operations.

SD-06 Test Reports

Equipment Calibration; G, AE.
Within 1 week of testing, submit a certification of calibration tests conducted on the equipment used during the planting operations.

SD-07 Certificates

One-Year Plant Guarantee; G, AE.
Submit a signed one-year plant guarantee at least 30 calendar days prior to commencement of planting operations.

Nursery Certifications; G, AE.
Indicate names of plants in accordance with the LHBH, including type, quality, and size.

If mycorrhizal fungi inoculation is performed at the nursery, indicate the date, method and inoculum type used to inoculate trees and shrubs.

State Landscape Contractor's License; G, AE.
Submit a copy of the landscape contractor's license in the state where the work is performed and three references for similar work completed in the last five years.

SD-11 Closeout Submittals

As-Planted Plan; G, AE.
Submit as-built plan of plant material used, as well as a list of plant material quantities used, within two weeks following completion of planting operations.

1.4 QUALITY ASSURANCE

1.4.1 Nursery Certifications

a. Indicate on nursery letterhead the name of plants in accordance with the LHBH, including botanical common names, quality, and size.

b. Inspection certificate.

c. Mycorrhizal fungi inoculum for plant material treated

1.4.2 Nurseries

A list of nurseries that specialize in growing wetland plant stock is provided in Section 00800 SPECIAL CONTRACT REQUIREMENTS.

1.4.3 State Landscape Contractor's License

Construction company shall hold a landscape contractors license in the state where the work is performed and have a minimum of five years landscape construction experience. Submit copy of license and three references for similar work completed in the last five years.

1.5 DELIVERY, STORAGE, AND HANDLING

1.5.1 Shipping and Delivery

A Delivery Schedule shall be submitted to the Contracting Officer specifying the dates and approximate times of all deliveries of planting materials.

1.5.1.1 Branched Plants

Deliver with branches tied and exposed branches covered with material which allows air circulation. Prevent damage to branches, trunks, root systems, and root balls and desiccation of leaves.

Bareroot trees shall be packed in sealed three (3)-ply Kraft-polyethylene bags, or sealed polyethylene bags inside wax-impregnated cardboard boxes. The shipping containers shall be marked with the species and quantity of plants. Bareroot trees shall be lifted at the nursery, packaged and shipped to the site within a two (2)-day period. Transport of bareroot trees shall be conducted in refrigerated trucks with proper ventilation. The temperature within the shipping compartment shall be maintained between 34 and 36 degrees Fahrenheit.

1.5.1.2 Emergent Wetland Plants, Tree Tublings, and Containerized Shrubs

Peat pot and container size shall be in accordance with ANLA Z60.1. Peat pots in trays and tree tublings shrubs grown in containers shall be grown over a duration of time for new fibrous roots to have developed and for the root mass to retain its shape and hold together when removed from the trays and containers. The trays and containers shall be sufficiently rigid to hold the root mass shape and protect the root mass during shipping. Tree tubling containers shall have a minimum size of 2.5 inches by 2.5 inches.

1.5.1.3 Plant Labels

Deliver plants with durable waterproof labels in weather-resistant ink. Provide labels stating the correct botanical plant name and variety as applicable and size as specified in the list of required plants. Attach to plants, bundles, and containers of plants. Groups of plants may be labeled by tagging one plant. Labels shall be legible for a minimum of 60 days after delivery to the planting site.

1.5.2 Plant Inspection

The Contracting Officer will inspect all plants upon delivery and determine if they meet the requirements of the paragraph QUALITY. Any plants not meeting these requirements shall be rejected. Unauthorized substitutions will also be rejected.

Other planting materials shall be inspected for compliance with the requirements herein. Open soil amendment containers or wet soil amendments shall be rejected. Unacceptable materials shall be removed from the Project Site by the Contractor.

The Contractor shall be responsible for all certificates of inspection of plant materials that may be required by federal, state or other authorities to accompany each shipment of plants and on arrival; the certificate(s) shall be filed with the Contracting Officer.

1.5.3 Storage

All areas used for temporary storage of plants must be enclosed with perimeter Herbivory Fence to prevent grazing by waterfowl and deer.

1.5.3.1 Plant Storage and Protection

Bare root trees shall not be stored on site for more than 48 hours before planting. Upon delivery to the site, bareroot tree shipping containers shall be stockpiled in a location free of standing water, protected from wind and in shade. Thermal reflective tarps shall then be placed over the shipping containers in a manner that covers the top and sides of all of the shipping containers. Containerized plants must not be stored on-site for more than 5 days before planting. Plants stored on-site for more than 5 days will be rejected and shall be replaced at no cost to the Government. Store and protect plants not planted on the day of arrival at the site as follows:

a. Shade and protect plants in outside storage areas from the wind and direct sunlight until planted.

b. Heel-in bare root plants.

c. Keep plants in a moist condition until planted by watering with a fine mist spray.

d. Do not store plant material directly on concrete or bituminous surfaces.

e. Plants not installed on the day of arrival at the Project Site shall be stored and protected in designated areas from direct exposure to wind and sun.

1.5.4 Handling

Do not drop or dump plants or shipping containers from vehicles. Avoid damaging plants being moved from nursery or storage area to planting site.

Handle bare root and container plants carefully to avoid damaging or breaking the earth ball or root structure. Do not handle plants by the trunk or stem. Puddle bare-root plants after removal from the heeling-in bed to protect roots from drying out. Remove damaged plants from the site.

1.5.5 Time Limitation

Except for container-grown plant material, the time limitation from lifting or digging plants at the nursery to installing plant material at the project site shall be a maximum of 90 days.

1.6 TIME RESTRICTIONS AND PLANTING CONDITIONS

1.6.1 Planting Dates

EMERGENT WETLAND PLANTS

Spring Season	April 15 to June 1

SHRUBS

Spring Season	March 15 to April 15

TREES

Spring Season	March 15 to April 15

LIVE STAKES

Spring Season	March 1 to April 15

1.6.2 Restrictions

Planting operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, frozen ground, temperatures above 80 degrees Fahrenheit or below 34 degrees Fahrenheit or other unsatisfactory conditions prevail, the work shall be stopped as directed by the Contracting Officer. When special conditions warrant a variance to the planting operations, and proposed planting times shall be submitted for approval.

1.6.3 Timing

Seeding operations in the applicable zones shall be completed prior to the commencement of any planting operations in those zones.

1.7 WATER

The Contractor shall make arrangements necessary to ensure an adequate supply of water to meet the needs of this Contract. The Contractor shall furnish all necessary hose, equipment, attachments, and accessories for the adequate irrigation of all planting areas as shall be required to complete the work specified under this section. No payment additional to the lump sum price of the Contract will be made from water coming from the

Contractor's own source.

1.8 ONE-YEAR PLANT GUARANTEE

The Contractor shall submit to the Contracting Officer, a written and signed one-year plant guarantee, which is conditional of 90 percent survival of the planted Contract quantity as detailed on the plans. Planting areas or portions thereof for which 90 percent survival is not reached shall be replanted once during the appropriate planting season for the planting area, to achieve a minimum of 90 percent of the planted Contract quantity.

The one-year plant guarantee period shall commence on the date of the completion of construction, and shall end 365 calendar days later. The Contractor shall provide the commencement and ending dates as part of the Periodic Schedule Updates and Progress Curves submitted under Section 01320A PROJECT SCHEDULE. Following are the terms and conditions of the one-year plant guarantee:

a. Herbivory Fence will be installed as described in Section 02821A FENCING.
b. Plants will meet the requirements listed in PART 2 PRODUCTS.
c. Planting operations will be carried out as stipulated herein.

Under the terms and conditions of the one-year plant guarantee, the Contractor shall be solely responsible for plant survival. Losses attributed to herbivores, disease, eutrophication, inappropriate hydrological regimes, drought, wind, wave energies or ice scouring shall not lower the minimum survival or coverage requirements.

At the end of the one-year plant guarantee, the Contracting Officer shall make a determination as to whether the plants planted in the planting areas meet the conditions of the guarantee. Any planting areas or portions thereof not meeting the requirements of the guarantee shall be replanted in accordance with the paragraph REPLANTING.

PART 2 PRODUCTS

2.1 PLANTS

The Contractor shall submit verification that a Plant Material Order has been submitted to the nursery at least 3 months prior to the commencement of planting operations. The order shall follow the Planting Tables as shown on the plans. Should the nursery state that any of the specified plants will be unavailable or unsuitable in terms of size and quality of condition, the Contractor will immediately notify the Contracting Officer and provide a written list of potential substitutions. Upon approval, the Contracting Officer will supply the substitution list to the Contractor, at which time the revised plant order will be placed to the nursery.

2.1.1 Plant Species

Plants shall be first quality, nursery grown stock conforming to ANSI Z60.1. Plants listed on the Planting Tables on the plans shall be planted in the

planting zones as shown on the plans: Zone A - Riparian Forest Plants, Zone B - Upland Forest Plants, Zone C - Wetland Forest Plants, Zone D - Upland Scrub/Shrub Plants, Zone E - Emergent Wetland Plants, and Zone F - Streambank Plants. The Contractor shall follow the root, height, caliper, spacing, and quanitity requirements listed on the tables, and the planting pattern as described in the planting notes.

2.1.2 Substitutions

Plant substitutions will not be permitted without written request and approval from the Contracting Officer. Any changes to the planting plan must be submitted at least 3 months prior to the commencement of planting operations.

2.1.3 Regulations and Varieties

Furnish nursery stock in accordance with ANSI Z60.1, except as otherwise specified or indicated. Furnish plants grown under climatic conditions similar to those in the locality of the project. Spray plants budding into leaf or having soft growth with an antidesiccant before digging. Plants of the same specified size shall be of uniform size and character of growth. All plants shall comply with all federal and state laws requiring inspection for plant diseases and infestation.

2.1.4 Shape and Condition

Plants shall be well-shaped, well-grown, vigorous plants having healthy and well branched root systems in accordance with ANSI Z60.1. Plants shall be free from disease, harmful insects and insect eggs, sun-scald injury, disfigurement, and abrasion. Plants shall be free of shock or damage to branches, trunks or root systems that may during digging and preparation for shipment, method of shipment or actual shipment. Plant quality is determined by the growing conditions, method of shipment to maintain health of the root system, and growth of the plant as follows. Plants not conforming to these requirements will be rejected by the Contracting Officer and shall be replaced by the Contractor at no cost to the Government.

2.1.4.1 Emergent Wetland Plants

Peat pots shall be in accordance with ANSI Z60.1. Plants shall have a well-developed root system and shall be furnished in trays.

2.1.4.2 Deciduous Trees and Shrubs

Symmetrically developed and of uniform habit of growth, with straight boles or stems, and free from objectionable disfigurements.

2.1.4.3 Live Stakes

Live stakes shall consist of dormant cuttings of specified shrubs as indicated on the plans. Cuttings shall be 0.5 to 1.5 inches in diameter and 3 feet in length. Cuttings should be no more than 24 hours old prior to installation.

2.1.5 Plant Size

Minimum sizes measured after pruning and with branches in normal position, shall conform to measurements indicated, based on the average width or height of the plant for the species as specified in ANSI Z60.1. Plants larger in size than specified may be provided with approval of the Contracting Officer. When larger plants are provided, increase the ball of earth or spread of roots in accordance with ANSI Z60.1.

2.1.6 Root Ball Size

All bare root and container grown root balls shall conform to ANSI Z60.1. All wrappings and ties shall be biodegradable. Root growth in container grown plants shall be sufficient to hold earth intact when removed from containers. Root bound plants will not be accepted.

2.1.7 Growth of Trunk and Crown

2.1.7.1 Deciduous Trees

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

a. Single stem: The trunk shall be reasonably straight and symmetrical with crown and have a persistent main leader.

b. Multi-stem: All countable stems, in aggregate, shall average the size specified. To be considered a stem, there shall be no division of the trunk which branches more than 6 inches from ground level.

2.1.7.2 Deciduous Shrubs

Deciduous shrubs shall have the height and number of primary stems recommended by ANSI Z60.1. Acceptable plant material shall be well shaped, with sufficient well-spaced side branches, and recognized by the trade as typical for the species grown in the region of the project.

2.2 FERTILIZER

2.2.1 Emergent Plant Fertilizer

Organic or synthetic tablets composed of tightly compressed fertilizer chips forming a tablet that is insoluble in water, is designed to provide a continuous release of nutrients for at least 24 months and contains the following minimum percentages, by weight, of plant food nutrients:

18 percent available nitrogen
6 percent available phosphorus
12 percent available potassium

2.2.2 Shrub/Tree Fertilizer

Organic or synthetic tablets composed of tightly compressed fertilizer chips forming a tablet that is insoluble in water, is designed to provide a continuous release of nutrients for at least 24 months and contains the following minimum percentages, by weight, of plant food nutrients:

20 percent available nitrogen
10 percent available phosphorus
5 percent available potassium

2.3 WATER

Water shall be the responsibility of the Contractor. Source of water to be approved by Contracting Officer and suitable quality for irrigation and shall not contain elements toxic to plant life.

2.4 MYCORRHIZAL FUNGI INOCULUM

Mycorrhizal fungi inoculum shall be composed of multiple-fungus inoculum as recommended by the manufacturer for the plant material specified. It shall be applied by means of a 3 ounce premeasured dry formulation packet. Packets shall contain, as a minimum: one thousand (1000) live spores of Vesicular-Arbuscular fungi, including: *Entrephosphora columbiana*, *Glomus clarum*, *Glomus etunicatum*, and *Glomus sp.*; seventeen million five hundred thousand (17,500,000) live spores of Ectomycorrhizal fungi (*Pisolithus tinctorius*); Biostimulant ingredients including *Yucca schidigera* extract; soluble sea kelp extract derived from *Ascophylum nodosum*; humic acids; and acrylamide copolymer gel as a water absorbent medium. Mycorrhizal fungi inoculant shall be added to the top 6 to 8 inches of backfill soil in each planting pit and thoroughly mixed to distribute the inoculant. The material shall be applied according to the following chart:

Size of rootball or container	Ounces per plant
1 gallon	1 ounce
2 gallon	2 ounces
3 gallon	3 ounces
5 gallon	3 ounces
7 gallon	3 ounces
10 gallon	3 ounces
15 gallon	3 ounces
20 inch B&B	6 ounces
24 inch B&B	9 ounces
30 inch B&B	9 ounces
36 inch B&B	12 ounces
12 inch B&B	12 ounces

PART 3 EXECUTION

Any vegetation within preserved areas damaged by the work under this section, as determined by the Contracting Officer, shall be replaced immediately after the completion of the work at no additional cost to the Government.

3.1 PREPARATION

3.1.1 Planting Substrates

Planting substrates shall be free from debris, noxious weeds, toxic substances or other materials harmful to plant growth.

3.1.2 Finished Grade

Prior to the commencement of the planting operations, the Contractor shall verify that finished grades are as indicated on the plans, and the finishing and compaction requirements have been completed in accordance with Section 02300 EARTHWORK. After grading is complete, heavy equipment is prohibited from entering planting areas.

3.1.3 Equipment Calibration

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

3.2 Herbivory Fence

Herbivory Fence shall be installed as shown on the plans after final grades are completed and approved by the Contracting Officer. Herbivory Fence shall be installed prior to or concurrently with installation of plants. Under no circumstances are plants to be planted outside the containment of a satisfactorily installed Herbivory Fence.

3.3 PLANT INSTALLATION

Prior to commencement of planting, the Contractor shall examine the planting areas and conditions and notify the Contracting Officer, in writing, of conditions detrimental to the proper and timely completion of the work. The Contractor shall not proceed with planting until unsatisfactory conditions have been corrected in an acceptable manner, as approved by the the Contracting Officer. Prior to plant installation, any previously prepared surface compacted or damaged shall be reworked to meet the requirements of paragraph PREPARATION.

Installation of coir fiber matting shall be complete prior to the commencement of planting as described in Section 02940 COIR FIBER MATTING. In areas where matting is placed, all plants shall be installed through the coir fiber matting. The Contractor shall take care to cut the smallest possible holes in the matting for plant installation.

Subsequent to completion of planting, the Contractor shall only enter planted areas when absolutely necessary for the completion of the Project. There shall be no exceptions.

3.3.1 Obstructions Below Ground

When obstructions below finished grades prevent planting operations, the Contractor shall submit a plan showing proposed adjustments to location, type of plant, and/or planting method to the Contracting Officer.

3.3.2 Peat Pots

For Emergent Wetland Plants only, marsh fertilizer shall be placed in the bottom of each planting hole prior to placing a peat pot. Fertilizer dispenser shall be calibrated daily for the dose specified. At no time shall fertilizer be placed in the water column or on top of the soil surface. Soluble fertilizers should not be placed in direct contact with the rootstocks.

Peat pots shall be planted at a depth of no more than 1 inch deeper than grown in the nursery. The top of the rootstock mass shall be a minimum of 1 inch below the soil surface. Plants shall be set plumb, with the root system oriented downward, and held in position until sufficient soil has been firmly placed by hand around the root mass. The plant shall be set even with or slightly higher than the surrounding grade. It shall be unacceptable to step on or around planting holes for the purpose of placing backfill.

3.3.3 Shrubs and Trees

Bare root plants shall be inoculated with mycorrhizal fungi either before shipment at the nursery or in the field. Inoculation shall consist of dipping the root system in gel containing mycorrhizal fungi inoculum as recommended by the manufacturer for the plants specified.

Bare root plants shall be installed in accordance with the planting notes and planting details. Planting crews shall use vinyl coated planting bags for transport of trees during planting. Transfer of bareroot trees from shipping containers to planting bags shall occur in the shade and out of the wind. Shipping containers shall remain closed and beneath the thermal reflective tarp when not being transferred to planting bags. Planting bags shall not be over packed with bareroot trees, as determined solely by the Contracting Officer. During planting, only one bareroot tree shall be removed from the planting bag at a time. Once removed, the bareroot tree shall be planted immediately. Based on weather conditions, the Contracting Officer may limit the number of bare trees within a planting bag to the amount that can be planted within one (1) hour. Plant so roots are arranged in a natural position.

For cans and tublings, remove from container and prevent damage to plant or root system.

Plant pits shall be dug approximately 4 inches wider than the stock size. To encourage well-aerated soil to be available to the root system for favorable root growth, plant pits shall be constructed with sides sloping towards the base; vertical sides shall not be used.

Prior to placing a shrub or tree, a shrub/tree fertilizer tablet shall be

placed in the bottom of each plant pit. At no time shall fertilizer be placed in the water column or on top of the soil surface. Soluble fertilizers should not be placed in direct contact with the rootstocks.

The tops of the rootstock mass of all the shrubs and trees shall be a minimum of 1 inch below the soil surface. Shrubs and trees shall be set plumb, with the root system oriented downward, and held in position until sufficient soil has been firmly placed around the root mass.

Improper planting that results in air pockets, J-roots, shallow planting, exposed roots or leaning plants is unacceptable and shall be corrected at Contractor's expense.

3.3.4 Live Stakes

Live stakes shall be installed as shown in the plans. Material shall be installed within 24 hours of preparation.

3.3.5 Watering

A watering truck shall be on site prior to plant installation initiation. At the time of planting, the soil around each plant shall be thoroughly saturated with water, and as many times later as seasonable conditions require, until final acceptance of the plant materials. If local sources are not available, the Contractor shall provide a water source. Adequate water supply during maintenance is estimated to be the equivalent of 1 inch absorbed water per week, delivered in the form of rain or augmented by watering. Run-off and puddling shall be prevented. Watering trucks shall not be driven over planted areas.

3.3.6 As-Planted Plan

The Contractor shall submit two copies of an As-Planted Plan to the Contracting Officer. Unless directed differently by the Contracting Officer, these plans shall be drawn to a scale of 1 inch = 50 feet and shall show as-built locations for the plant material used. A list of the quantities of each species installed in each of the planting blocks or areas shall also be submitted with the plans. Any deviations from the original planting plans, including approved substitutions, shall be clearly marked and documented.

3.3.7 Pruning

Prune in accordance with safety requirement of ANSI Z133.1.

3.3.7.1 Trees and Shrubs

Remove dead and broken branches. Prune to correct structural defects only. Retain typical growth shape of individual plants with as much height and spread as practical. Do not cut central leader on trees. Make cuts with sharp instruments. Do not flush cut with trunk or adjacent branches. Collars shall remain in place. Pruning shall be accomplished by trained and experienced personnel and shall be accordance with ANSI A300.

3.3.7.2 Wound Dressing

Do not apply tree wound dressing to cuts.

3.4 QUALITY CONTROL RECORD

When all planting operations are complete, the Contractor shall submit a Quality Control Record, which should include at a minimum:

1. Inspection/Rejection of Plant Material;
2. Results of all soil testing and resulting soil amendment activities;
3. All replacements or substitutions of plant materials;
4. Record of watering and mulching activities; and
5. Record of herbivory measures.

3.5 RESTORATION AND CLEAN UP

When planting operations have been completed, the Contractor shall restore any damaged areas to their original conditions.

Planting work areas shall also be cleaned up, including the removal of any excess materials. The Contractor shall remove damaged, excess, and waste materials from the Project Site and dispose of the materials off County property.

3.6 PROTECTION OF INSTALLED AREAS

Immediately upon completion of the planting operations in an area, the area shall be protected against traffic or other use by erecting barricades and/or providing signage as directed by the Contracting Officer.

3.7 MAINTENANCE DURING CONSTRUCTION

Installed plants shall be maintained in a healthy growing condition. Maintenance of planting areas during construction shall include preventing the intrusion of weeds, grass, and other undesired vegetation, watering, and adjusting grades for settling. Grass, weeds, and other undesired vegetation shall be removed before reaching a maximum height of 3 inches including the root system. When settling occurs, additional backfill soil shall be added to the plant pit until the backfill level is equal to the surrounding grade. Serious settling that changes the setting of the plant in relation to the maximum depth at which it was grown requires replanting in accordance with paragraph PLANT INSTALLATION.

Any planted areas disturbed prior to completion of construction, as determined by the Contracting Officer, shall be repaired or reinstalled in accordance with the paragraph PLANT INSTALLATION.

The Contractor shall maintain the Herbivory Fence for one full growing season, as determined by the Contracting Officer. The Contractor shall complete repairs to Herbivory Fencing within one week of notification from the Contracting Officer. Within two weeks of notification from the Contracting Officer, the Contractor shall remove and dispose of all

Herbivory Fence materials off site at no additional cost to the Government.

3.8 REPLANTING

At the end of the one-year plant guarantee, the Contracting Officer shall make a determination as to whether the plants planted in the planting areas meet the conditions of the guarantee. For non-surviving plants, the Contracting Officer shall select the species to be replanted. The new plantings shall comply with the original Contract quantities as shown on the plans, as solely determined by the Contracting Officer. Materials and installation shall be in accordance with the materials specifications and the paragraph PLANT INSTALLATION, respectively. Replacement plants shall be guaranteed for an additional 6 months starting from date of replanting.

At the direction of the Contracting Officer, the Contractor shall install and maintain additional Herbivory Fence around the replanted areas in accordance with Section 02821A FENCING.

All labor, materials, equipment, and incidentals necessary to complete any replanting work associated with the one-year plant guarantee shall be at no additional cost to the Government.

-- End of Section --

SECTION 02940

COIR FIBER MATTING

Work Item No. 0025 Coir Fiber Matting

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM D 1777	(1996) Measuring Thickness of Textile Materials
ASTM D 5035	(1995) Breaking Force and Elongation of Textile Fabrics (Strip Method)
ASTM D 5261	(1992; R 1996) Measuring Mass per Unit Area of Geotextiles

1.2 SCOPE OF WORK

Work under this section shall include the labor, materials, equipment, tools, and incidentals necessary to furnish, install, and secure Coir Fiber Matting in accordance with the plans and specifications and as directed by the Contracting Officer.

1.3 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

Coir Fiber Matting; G, AE.
Submit product information 30 days prior to starting work.

Finished Grade; G, AE.
At least 8 hours prior to the installation of the Coir Fiber Matting, the Contractor shall submit verification that finished grades are as indicated on the plans. The Contracting Officer shall approve this submittal prior to installation of the Coir

Fiber Matting.

SD-04 Samples

Coir Fiber Matting; G, AE.
Submit a 12 inch x 12 inch sample of the matting at least 15 calendar days prior to start of work.

PART 2 PRODUCTS

2.1 COIR FIBER MATTING

The installation of Coir Fiber Matting shall require the following materials:

Matting: Matting shall be rolls of machine spun bristle coconut fiber woven into a high strength matrix. Matting shall conform to the properties listed below:

Property	Test Value	Test Method
Mass Per Unit Area	20.6 ounces/square yard	ASTM D 5261
Thickness	0.30 inch	ASTM D 1777
Tensile Strength	1348 x 626 pounds/foot	ASTM D 5035
Elongation	34 percent x 38 percent	ASTM D 5035

Staples: Staples shall be made of 0.125-inch diameter new steel wire formed into a "u" shape not less than 12 inches in length with a throat of 1 inch in width.

Coir Twine: Coir twine shall be made of freshwater cured brown bristle coir machine twisted to a uniform diameter of 0.28 inch.

PART 3 INSTALLATION

3.1 FINISHED GRADE

The Contractor shall verify that finished grades are as indicated on the plans prior to installation of the Coir Fiber Matting. After grading is complete, heavy equipment is prohibited from entering areas where matting is to be installed.

3.2 TIMING

Installation shall not proceed in areas which are inundated by flowing waters. Work shall proceed in only those areas during a time at which the areas are drained of flood waters.

Coir Fiber Matting shall be installed immediately after final grading and seeding and prior to planting.

3.3 INSTALLATION

Coir Fiber Matting shall be installed in Planting Zone F as shown on the

plans. Matting shall be placed on a smooth soil surface free from stones, clods or debris that may prevent the contact of the matting with the soil. The Contractor shall take care to preserve the required line, grade, and cross sections of the area covered. Matting shall be unrolled perpendicular to the site contours and shall be applied without stretching so that it will lie smoothly but loosely on the soil surface.

Coir Fiber Matting shall be installed from downstream to upstream following the steps outlined below and as directed by the Contracting Officer:

1. Initial (top of slope) and terminal (bottom of slope) anchor trenches shall be dug parallel to the site contours of the matting area as detailed on the plans. Soil dug from the trenches shall be stockpiled along the length of the trench for use as backfill in a later step. The Contracting Officer shall approve the location of the anchor trenches prior to digging.

2. Trenches for intermittent check slots shall be dug parallel to the contours at 50 foot intervals that extend the entire width of the mat, as detailed on the plans. Soil dug from the trenches shall be stockpiled along the length of the trench for use as backfill in a later step. The Contracting Officer shall approve the location of the check slot trenches prior to digging.

3. Outside anchor trenches shall be dug perpendicular to contours at the end of the matting areas, as indicated on the plans or as directed by the Contracting Officer. Soil dug from the trenches shall be stockpiled along the length of the trench for use as backfill in a later step. The Contracting Officer shall approve the location of the anchor trenches prior to digging.

4. Beginning at the top of slope at the downstream end of the matting area, the end of the first roll shall be placed in the initial anchor trench and secured with staples as shown on the plans. Adjacent rolls shall be placed in the initial anchor trench, overlapping the preceding roll a minimum of 3 inches, and secured with staples. The trench shall be backfilled with the stockpiled soil, and tamped firmly in place with a hand-tamper.

5. Matting shall be rolled over the tamped anchor trench, perpendicular to the site contours, to the next check slot trench and secured with staples. Adjacent rolls shall be rolled up to the check slot and secured concurrently to maintain the 3 inch overlap.

6. Matting shall be folded and secured snugly into the check slots. The matting shall be laid in the bottom of the check slot trench and fold back against itself as detailed on the plans. Staples shall be secured through both layers of the matting. The trench shall be backfilled with the stockpiled soil and tamped firmly in place with a hand-tamper. Matting shall continue to be unrolled perpendicular to the contours to the next check slot or terminal anchor trench.

7. Where one roll of matting ends and a second roll begins, the end of the first matting shall be buried in a narrow trench at least 5 inches deep and tamped firmly in place with a hand-tamper. The end of the next roll shall be brought over the buried end of the first roll so that there will be a 6 inch overlap. The new roll shall be folded and secured into a check slot.

8. Steps 5, 6, and 7 shall be repeated until the upstream terminal anchor trench is reached. The matting shall be shall be buried in the terminal anchor trenches as in step 4, backfilled with the stockpiled soil, tamped firmly in place with a hand-tamper, and secured with staples. Matting may be cut to fit in the terminal anchor trench.

9. After an adjacent roll (top of slope and bottom of slope) have been secured in the terminal anchor trench, the outside ends of the matting shall be shall be buried in the outside anchor trenches as in step 4, backfilled with the stockpiled soil, tamped firmly in place with a hand-tamper, and secured with staples. Matting may be cut to fit in the outside anchor trenches.

Staples around matting perimeter, junctions, and check slots shall be spaced approximately 10 inches apart. The remaining areas of the matting shall be spaced at approximately 1 staple per square yard.

The Contracting Officer may require adjustments in the trenching or stapling requirements to fit individual slope conditions.

3.4 MAINTENANCE

The Contractor shall continuously maintain the integrity of the Coir Fiber Matting, including providing all necessary labor, equipment, and materials, until all construction activities have been completed. The Contractor shall inspect the Coir Fiber Matting immediately after each storm that occurs throughout the life of the Contract. Any deficiencies shall be corrected immediately to the satisfaction of the Contracting Officer. Should the Coir Fiber Matting become damaged or otherwise ineffective, the Contractor shall immediately repair or replace defective or damaged portions. Torn or punctured sections of the matting shall be repaired by the installation of a patch conisting of an additional layer of coir twine over the damaged area.

The Coir Fiber Matting will naturally degrade and will not require removal.

-- End of Section --

SECTION 03101A

FORMWORK FOR CONCRETE
09/01

PART 1 GENERAL

1.1 REFERENCES

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

ACI INTERNATIONAL (ACI)

ACI 347	(2001) Guide to Formwork for Concrete

ASTM INTERNATIONAL (ASTM)

ASTM C 1077	(2003) Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
ASTM C 31/C 31M	(2003a) Making and Curing Concrete Test Specimens in the Field
ASTM C 39/C 39M	(2003) Compressive Strength of Cylindrical Concrete Specimens

U.S. DEPARTMENT OF COMMERCE (DOC)

PS1	(1995) Construction and Industrial Plywood (APA V995)

1.2 DESIGN REQUIREMENTS

The design, engineering, and construction of the formwork shall be the responsibility of the Contractor. The formwork shall be designed for anticipated live and dead loads and shall comply with the tolerances specified in Section 03301 CAST-IN-PLACE STRUCTURAL CONCRETE, paragraph CONSTRUCTION TOLERANCES. However, for surfaces with an ACI Class A surface designation, the allowable deflection for facing material between studs, for studs between walers and walers between bracing shall be limited to 0.0025 times the span. The formwork shall be designed as a complete system with consideration given to the effects of cementitious materials and mixture additives such as fly ash, cement type, plasticizers, accelerators, retarders, air entrainment, and others. The adequacy of formwork design and construction shall be monitored prior to and during concrete placement as part of the Contractor's approved Quality Control Plan.

1.3 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-02 Shop Drawings

Shop Drawings; G, AE.

Drawings and design computations for all formwork required shall be submitted at least 30 days either before fabrication on site or before delivery of prefabricated forms. If reshoring is permitted, the method, including location, order, and time of erection and removal shall also be submitted for review.

SD-03 Product Data

Materials; G, AE.

Manufacturer's literature shall be submitted for plywood, concrete form hard board, form accessories, prefabricated forms, and form coating.

SD-06 Test Reports

Inspection

The Contractor shall submit field inspection reports for concrete forms and embedded items.

1.4 SHOP DRAWINGS

The shop drawings and data submitted shall include the type, size, quantity, and strength of all materials of which the forms are made, the plan for jointing of facing panels, details affecting the appearance, and the assumed design values and loading conditions.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Forms and Form Liners

Forms and form liners shall be fabricated with facing materials that will produce a finish meeting the specified irregularities in formed surface requirements as defined in ACI 347. Forms and form liners shall be fabricated with facing materials as specified below.

2.1.1.1 Class "A" Finish

This class of finish shall apply to concrete footings. The form facing

material shall be composed of new, well-matched tongue-and-groove lumber or new plywood panels conforming to PS1, Grade B-B concrete form, Class I.

2.1.2 Form Coating

Form coating shall be commercial formulation that will not bond with, stain, cause deterioration, or any other damage to concrete surfaces. The coating shall not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water or curing compounds. If special form liners are to be used, the Contractor shall follow the recommendation of the form coating manufacturer.

2.2 ACCESSORIES

Ties and other similar form accessories to be partially or wholly embedded in the concrete shall be of a commercially manufactured type. After the ends or end fasteners have been removed, the embedded portion of metal ties shall terminate not less than 2 inches from any concrete surface either exposed to view or exposed to water. Plastic snap ties may be used in locations where the surface will not be exposed to view. Form ties shall be constructed so that the ends or end fasteners can be removed without spalling the concrete.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Form Construction

Forms shall be constructed true to the structural design and required alignment. The form surface and joints shall be mortar tight and supported to achieve safe performance during construction, concrete placement, and form removal. The Contractor shall continuously monitor the alignment and stability of the forms during all phases to assure the finished product will meet the required surface class specified in paragraph FORMS AND FORM LINERS and tolerances specified in paragraph DESIGN REQUIREMENTS. Failure of any supporting surface either due to surface texture, deflection or form collapse shall be the responsibility of the Contractor as will the replacement or correction of unsatisfactory surfaces. When forms for continuous surfaces are placed in successive units, care shall be taken to fit the forms over the completed surface to obtain accurate alignment of the surface and to prevent leakage of mortar. Forms shall not be re-used if there is any evidence of defects which would impair the quality of the resulting concrete surface. All surfaces of used forms shall be cleaned of mortar and any other foreign material before reuse.

3.1.2 Chamfering

All exposed joints, edges and external corners shall be chamfered by molding placed in the forms unless the drawings specifically state that chamfering is to be omitted or as otherwise specified. Chamfered joints shall not be permitted where earth or rockfill is placed in contact with concrete surfaces. Chamfered joints shall be terminated twelve inches

outside the limit of the earth or rockfill so that the end of the chamfers will be clearly visible.

3.1.3 Coating

Forms for exposed or painted surfaces shall be coated with form oil or a form-release agent before the form or reinforcement is placed in final position. The coating shall be used as recommended in the manufacturer's instructions. Forms for unexposed surfaces may be wet with water in lieu of coating immediately before placing concrete, except that, in cold weather when freezing temperatures are anticipated, coating shall be mandatory. Surplus coating on form surfaces and coating on reinforcing steel and construction joints shall be removed before placing concrete.

3.2 FORM REMOVAL

Forms shall not be removed without approval. The minimal time required for concrete to reach a strength adequate for removal of formwork without risking the safety of workers or the quality of the concrete depends on a number of factors including, but not limited to, ambient temperature, concrete lift heights, type and amount of concrete admixture, and type and amount of cementitious material in the concrete. It is the responsibility of the Contractor to consider all applicable factors and leave the forms in place until it is safe to remove them. In any case forms shall not be removed unless the minimum time, minimum ambient temperature, and minimum compressive strength requirements below are met, except as otherwise directed or specifically authorized. When conditions are such as to justify the requirement, forms will be required to remain in place for a longer period. All removal shall be accomplished in a manner which will prevent damage to the concrete and ensure the complete safety of the structure. Where forms support more than one element, the forms shall not be removed until the form removal criteria are met by all supported elements. Form removal shall be scheduled so that all necessary repairs can be performed. Evidence that concrete has gained sufficient strength to permit removal of forms shall be determined by tests on control cylinders. All control cylinders shall be stored in the structure or as near the structure as possible so they receive the same curing conditions and protection methods as given those portions of the structure they represent. Control cylinders shall be removed from the molds at an age of no more than 24 hours. All control cylinders shall be prepared and tested in accordance with ASTM C 31/C 31M and ASTM C 39/C 39M at the expense of the Contractor by an independent laboratory that complies with ASTM C 1077 and shall be tested within 4 hours after removal from the site.

3.3 INSPECTION

Forms and embedded items shall be inspected in sufficient time prior to each concrete placement by the Contractor in order to certify to the Contracting Officer that they are ready to receive concrete. The results of each inspection shall be reported in writing.

-- End of Section --

SECTION 03301

CAST-IN-PLACE STRUCTURAL CONCRETE

Work Item No. 0026 Concrete for Signs

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 211.1	(1991) Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 214R	(2002) Recommended Practice for Evaluation of Strength Test Results of Concrete
ACI 305R	(1999) Hot Weather Concreting
ACI 318/318R	(2002) Building Code Requirements for Structural Concrete and Commentary

ASTM INTERNATIONAL (ASTM)

ASTM C 31/C 31M	(2003a) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(2003) Concrete Aggregates
ASTM C 39/C 39M	(2003) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 40	(1999) Organic Impurities in Fine Aggregates for Concrete
ASTM C 42/C 42M	(1999) Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C 94/C 94M	(2003a) Ready-Mixed Concrete
ASTM C 87	(2003) Effect of Organic Impurities in Fine Aggregate on Strength of Mortar
ASTM C 117	(2003) Materials Finer Than 75 micrometer

	(No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 123	(2003) Lightweight Particles in Aggregate
ASTM C 127	(2001) Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
ASTM C 128	(2001e1) Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
ASTM C 131	(2003) Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	(2001) Sieve Analysis of Fine and Coarse Aggregates
ASTM C 142	(1978; R 1997) Clay Lumps and Friable Particles in Aggregates
ASTM C 143/C 143M	(2003) Slump of Hydraulic Cement Concrete
ASTM C 150	(2002ae1) Portland Cement
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 192/C 192M	(2000) Making and Curing Concrete Test Specimens in the Laboratory
ASTM C 231	(2003) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 295	(2003) Petrographic Examination of Aggregates for Concrete
ASTM C 535	(1996e1) Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 566	(1997) Total Evaporable Moisture Content of Aggregate by Drying
ASTM C 597	(1997) Pulse Velocity Through Concrete
ASTM C 666	(1997) Resistance of Concrete to Rapid Freezing and Thawing
ASTM C 803/C 803M	(1997e1) Penetration Resistance of Hardened Concrete
ASTM C 805	(1997) Rebound Number of Hardened Concrete

ASTM C 1064/C 1064M	(1999) Temperature of Freshly Mixed Portland Cement Concrete
ASTM C 1077	(2003) Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
ASTM D 75	(2003) Sampling Aggregates

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 100	(1975) Method of Sampling Concrete Aggregate and Aggregate Sources, and Selection of Material for Testing
COE CRD-C 104	(1980) Method of Calculation of the Fineness Modulus of Aggregate
COE CRD-C 114	(1997) Test Method for Soundness of Aggregates by Freezing and Thawing of Concrete Specimens
COE CRD-C 130	(1989) Scratch Hardness of Coarse Aggregate Particles
COE CRD-C 521	(1981) Standard Test Method for Frequency and Amplitude of Vibrators for Concrete

NATIONAL READY-MIXED CONCRETE ASSOCIATION (NRMCA)

NRMCA CPMB 100	(1996) Concrete Plant Standards

1.2 SCOPE OF WORK

Work under this section shall consist of furnishing and installing concrete for the sign footings and footings for the precast arch culvert in accordance with the plans and specifications, and as directed by the Contracting Officer. Any installation requirements detailed in the notes assoicated with the precast arch culvert plan sheets shall supercede the requirements of this specification.

1.3 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
Portland Cement; G, AE.
Aggregates; G, AE.

Submit product information at least 30 days prior to starting work.

Concrete Mixture Proportioning; G, AE.
Submit concrete mixture proportions at least 30 calendar days prior to the start of work. The concrete mixture quantities of all ingredients per cubic yard and nominal maximum coarse aggregate size that will be used in the manufacture of each quality of concrete shall be stated. Proportions shall indicate the mass of cement and water; the mass of aggregates in a saturated surface-dry condition; and the quantities of admixtures. The submission shall be accompanied by test reports from a laboratory complying with ASTM C 1077 which show that proportions thus selected will produce concrete of the qualities indicated. No substitution shall be made in the source or type of materials used in the work without additional tests to show that the quality of the new materials and concrete are satisfactory.

Equipment; G, AE.
Submit a list of equipment and methods to be used for transporting, handling, batching, and depositing, including capacity information, at least 3 calendar days prior to the start of work.

Cold-Weather Placing; G, AE.
Hot-Weather Placing; G, AE.
Finishing; G, AE.
Submit a list of the proposed materials and methods to be used at least 3 calendar days prior to the start of work.

Curing and Protection; G, AE.
Submit a list of the curing medium and methods to be used at least 3 calendar days prior to the start of work.

SD-04 Samples

Government Testing and Sampling.
Submit samples of materials for government testing and approval at least 15 days prior to delivery.

SD-06 Test Reports

Government Testing and Sampling.
At least 60 days in advance of concrete placement, notify the Contracting Officer of the material sources, along with sampling location, brand name, type, and quantity to be used in the manufacture and/or curing of the concrete.

Tests and Inspections; G, AE.
Submit test results and inspection reports no later than 1 day after test is completed and weekly as required.

SD-07 Certificates

Portland Cement; G, AE.
Submit manufacturer's certification of compliance, accompanied by mill test reports that materials meet the requirements of the specification under which they are furnished. Certification and mill test reports shall be from samples taken from the particular lot furnished. No materials shall be used until notice of acceptance has been given by the Contracting Officer. Materials will be subject to check testing from samples obtained at the source, at transfer points, or at the Project Site, as scheduled by the Contracting Officer, and such sampling will be by or under the supervision of the Government at its expense. Material not meeting specifications shall be promptly removed from the Project Site.

Concrete Field Testing Technicians; G, AE.
Concrete Transportation Construction Inspector; G, AE.
Submit statements that the testing technicians and the concrete transportation construction inspectors meet the specified requirements.

1.4 DESIGN REQUIREMENTS

1.4.1 Concrete Strength Design

Specified compressive strength f'c shall be as follows:

COMPRESSIVE STRENGTH	STRUCTURE OR PORTION OF STRUCTURE
3,000 pounds per square inch @ 28 days	Sign Footing

1.4.2 Maximum Water-Cement (W/C) Ratio Design

Maximum W/C shall be as follows:

WATER-CEMENT RATIO, BY MASS	STRUCTURE OR PORTION OF STRUCTURE
0.45	Sign Footing

These Maximum W/C's may cause higher strengths than that required by those under subparagraph Concrete Strength Design.

PART 2 PRODUCTS

2.1 Portland Cement

Portland cement shall conform to the requirements of ASTM C 150, Type II.

2.2 Aggregates

2.2.1 General

Concrete aggregates may be furnished from any source capable of meeting the quality requirements as stated in subparagraph Aggregate Quality. Fine and

coarse aggregates shall conform to the grading requirements of ASTM C 33. The nominal maximum size shall be as listed in subparagraph Nominal Maximum-Size Coarse Aggregate. Where the use of highway department gradations are permitted, proposed gradations shall be submitted for approval.

2.2.2 Concrete Aggregate Sources

After the award of this Contract, the Contractor shall designate in writing only one source or combination of sources from which aggregates will be furnished. Selected samples for acceptance testing shall be provided as required by paragraph GOVERNMENT TESTING AND SAMPLING. If a source for coarse or fine aggregates so designated by the Contractor does not meet the quality requirements stated in subparagraph Aggregate Quality, the Contractor may not submit for approval other non-listed sources but shall furnish the coarse or fine aggregate, as the case may be, from another source approved by the Contracting Officer at no additional cost to the Government.

2.2.3 Aggregate Quality

Aggregates delivered to the mixer shall meet the following requirements:

TEST LIMITS

PROPERTY	FINE AGGREGATE	COARSE AGGREGATE	TEST
Specific Gravity	2.5-2.8	2.4-3.0	ASTM C 127 ASTM C 128
Absorption	2 percent	0-1.7 percent	ASTM C 127 ASTM C 128
Clay Lumps and Friable Particles	0-0.2 percent	0-0.2 percent	ASTM C 142
Material Finer than 75-µm (No. 200) Sieve	0-1 percent	0-1 percent	ASTM C 117
Organic Impurities	Not darker than No. 3		ASTM C 40
	Not less than 95 percent		ASTM C 87

TEST LIMITS

L.A. Abrasion	40-50 percent	40-50 percent	ASTM C 131 ASTM C 535
Soft Particles	0-1 percent	0-1 percent	COE CRD-C 130
Chert, less than 2.40 specific gravity	0-1 percent	0-1 percent	ASTM C 123

TEST LIMITS

PROPERTY	FINE AGGREGATE	COARSE AGGREGATE	TEST
Coal and Lignite, less than 2.00 specific gravity	0-1 percent	0-1 percent	ASTM C 123

2.3 CONCRETE MIXTURE PROPORTIONING

2.3.1 Quality of Mixture

For each portion of the structure, mixture proportions shall be selected so that the strength and W/C requirements listed in paragraph DESIGN REQUIREMENTS are met.

2.3.2 Nominal Maximum-Size Coarse Aggregate

Nominal maximum-size coarse aggregate shall be 1 inch, except 3/4 inch nominal maximum-size coarse aggregate shall be used when any of the following conditions exist: the narrowest dimension between sides of forms is less than 7 1/2 inches, the depth of the slab is less than 4 inches or the minimum clear spacing between reinforcing is less than 2 1/4 inches.

2.3.3 Air Content

Air content as delivered to the forms and as determined by ASTM C 231 shall be between 4 and 7 percent except that when the nominal maximum-size coarse aggregate is 3/4 inch, it shall be between 4 1/2 and 7 1/2 percent.

2.3.4 Slump

The slump shall be determined in accordance with ASTM C 143/C 143M and shall be within the range of 1 inch to 4 inches. Where placement by pump is approved, the slump shall not exceed 6 inches.

2.3.5 Concrete Proportioning

Trial batches and testing requirements for various qualities of concrete specified shall be the responsibility of the Contractor. Samples of aggregates shall be obtained in accordance with the requirements of ASTM D 75. Samples of materials other than aggregate shall be representative of those proposed for the Project and shall be accompanied by the manufacturer's test reports indicating compliance with applicable specified requirements. Trial mixtures having proportions, consistencies, and air content suitable for the work shall be made based on methodology described in ACI 211.1, using at least 3 different water-cement ratios, which will produce a range of strength encompassing those required for the work. The maximum water-cement ratios required in subparagraph Maximum Water-Cement (W/C) Ratio Design will be converted to a weight ratio of water to cement by mass, described in ACI 211.1. The temperature of concrete in each trial batch shall be reported. For each water-cement ratio, at least three test cylinders for each test age shall be made and cured in accordance with ASTM C 192/C 192M. They shall be tested at 7 days and at the design age

specified in paragraph DESIGN REQUIREMENTS in accordance with ASTM C 39/C 39M. From these test results, a curve will be plotted showing the relationship between water-cement ratio and strength.

2.3.6 Required Average Compressive Strength

In meeting the strength requirements specified in subparagraph Concrete Strength Design, the selected mixture proportion shall produce a required average compressive strength f'cr exceeding the specified strength f'c by the amount indicated below.

2.3.6.1 Average Compressive Strength from Test Records

Where a concrete production facility has test records, a standard deviation shall be established in accordance with the applicable provisions of ACI 214R. Test records from which a standard deviation is calculated shall represent materials, quality control procedures, and conditions similar to those expected, shall represent concrete produced to meet a specified strength or strengths (f'c) within 1,000 pounds per square inch of that specified for proposed work, and shall consist of at least 30 consecutive tests. A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days or at another test age designated for determination of f'c.

Required average compressive strength f'cr used as the basis for selection of concrete proportions shall be the larger of the equations that follow using the standard deviation as determined above:

$$f'cr = f'c + 1.34S$$
$$f'cr = f'c + 2.33S - 500$$

Where S = standard deviation

Where a concrete production facility does not have test records meeting the requirements above but does have a record based on 15 to 29 consecutive tests, a standard deviation shall be established as the product of the calculated standard deviation and a modification factor from the following table:

NUMBER OF TESTS* less than 15	MODIFICATION FACTOR FOR STANDARD DEVIATION Use tabulation in paragraph DETERMINING REQUIRED AVERAGE STRENGTH
15	1.16
20	1.08
25	1.03
30 or more	1.00

*Interpolate for intermediate numbers of tests.

2.3.6.2 Average Compressive Strength without Previous Test Records

When a concrete production facility does not have sufficient field strength

test records for calculation of the standard deviation, the required average strength fcr shall be determined as follows:

If the specified compressive strength f'c is less than 3,000 pounds per square inch,

f'cr = f'c + 1,000 pounds per square inch.

If the specified compressive strength f'c is 3,000 to 5,000 pounds per square inch,

f'cr = f'c + 1,200 pounds per square inch.

If the specified compressive strength f'c is over 5,000 pounds per square inch,

f'cr = f'c + 1,400 pounds per square inch.

PART 3 EXECUTION

3.1 GOVERNMENT TESTING AND SAMPLING

The Government will sample and test 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.

3.1.1 Preconstruction Sampling and Testing of Aggregates

Samples from any source of coarse aggregate and any source of fine aggregate selected by the Contractor, consisting of not less than 150 pounds of each size coarse aggregate and 100 pounds of fine aggregate, taken under the supervision of the Contracting Officer in accordance with COE CRD-C 100 shall be delivered to the U.S. Army Corps of Engineers-New York District within 15 days after Notice To Proceed. Sampling and shipment of samples shall be at the Contractor's expense. 30 days will be required to complete evaluation of the aggregates. Testing will be performed by and at the expense of the Government in accordance with the applicable COE CRD-C or ASTM test methods. The cost of testing one source for each size of aggregate will be borne by the Government. If the Contractor selects more than one source for each aggregate size or selects a substitute source for any size aggregate after the original source was tested, the cost of that additional testing will be borne by the Contractor. Tests to which aggregate may be subjected are listed in subparagraph Aggregate Quality; the material from the proposed source shall meet these quality requirements. Testing of aggregates by the Government does not relieve the Contractor of the requirements outlined in paragraph TESTS AND INSPECTIONS.

3.1.2 Construction Testing

Sampling and testing will be performed by and at the expense of the Government, except as otherwise specified. No material shall be used until

notice has been given by the Contracting Officer that test results are satisfactory.

3.1.2.1 Cement

If cement is to be obtained from more than one source, the initial notification shall state the estimated amount to be obtained from each source and the proposed schedule of shipments.

a. Prequalified Cement Sources: Cement shall be delivered and used directly from a mill of a producer designated as a qualified source. Samples of cement for check testing will be taken at the Project Site or concrete-producing plant by a representative of the Contracting Officer for testing at the expense of the Government. A list of prequalified cement sources is available from Director, U.S. Army Corps of Engineers, Engineer Research and Development Center - Structures Laboratory, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, Attention: CEERD-SC.

b. Non-prequalified Cement Sources: Cement, if not from a prequalified source, will be sampled at the source and stored in sealed bins pending completion of testing. Sampling, testing, and the shipping inspection from the point of sampling, when the point is other than at the Project Site, will be made by or under the supervision of the Government and at its expense. No cement shall be used until notice has been given by the Contracting Officer that test results are satisfactory. In the event of failure, the cement may be resampled and tested at the request of the Contractor, at the Contractor's expense. When the point of sampling is other than at the Project Site, the fill gates of the sampled bin and conveyances used in shipment will be sealed under Government supervision and kept sealed until shipment from the bin has been completed.

3.1.2.2 Concrete Strength

Compressive strength test specimens will be made by the Government and cured in accordance with ASTM C 31/C 31M and tested in accordance with ASTM C 39/C 39M. The strength of the concrete will be considered satisfactory so long as the average of all sets of three consecutive test results equals or exceeds the specified compressive strength f'c and no individual test result falls below the specified strength f'c by more than 500 pounds per square inch. A "test" is defined as the average of two companion cylinders, or if only one cylinder is tested, the results of the single cylinder test. Additional analysis or testing, including nondestructive testing, taking cores and/or load tests may be required at the Contractor's expense when the strength of the concrete in the structure is considered potentially deficient.

a. Investigation of Low-Strength Test Results: When any strength test of standard-cured test cylinders falls below the specified strength requirement by more than 500 pounds per square inch or if tests of field-cured cylinders indicate deficiencies in protection and curing, steps shall be taken to assure that the load-carrying

capacity of the structure is not jeopardized. Nondestructive testing in accordance with ASTM C 597, ASTM C 803/C 803M or ASTM C 805 may be permitted by the Contracting Officer to estimate the relative strengths at various locations in the structure as an aid in evaluating concrete strength in place or for selecting areas to be cored. Such tests shall not be used as a basis for acceptance or rejection.

b. Testing of Cores: When the strength of concrete in place is considered potentially deficient, cores shall be obtained and tested in accordance with ASTM C 42/C 42M. At least 3 representative cores shall be taken from each member or area of concrete in place that is considered potentially deficient. The location of cores will be determined by the Contracting Officer to least impair the performance of the structure. Concrete in the area represented by the core testing will be considered adequate if the average strength of the cores is equal to at least 85 percent of the specified strength requirement and if no single core is less than 75 percent of the specified strength requirement.

c. Load Tests: If the core tests are inconclusive or impractical to obtain or if structural analysis does not confirm the safety of the structure, load tests may be directed by the Contracting Officer in accordance with the requirements of ACI 318/318R. Concrete work evaluated by structural analysis or by results of a load test shall be corrected in a manner satisfactory to the Contacting Officer. All investigations, testing, load tests, and correction of deficiencies will be performed and approved by the Contracting Officer at the expense of the Contractor, except that if all concrete is in compliance with the plans and specifications, the cost of investigations, testing, and load tests will be at the expense of the Government.

3.2 EQUIPMENT

3.2.1 Capacity

The batching, mixing, conveying, and placing equipment shall have a capacity of at least 100 cubic yards per hour.

3.2.2 Batch Plant

The batch plant shall conform to the requirements of NRMCA CPMB 100 and as specified; however, rating plates attached to batch plant equipment are not required.

3.2.3 Conveying Equipment

The conveying equipment shall conform to the following requirements.

3.2.3.1 Trucks

Truck mixers operating at agitating speed or truck agitators used for transporting plant-mixed concrete shall conform to the requirements of ASTM

C 94/C 94M. Nonagitating equipment may be used for transporting plant-mixed concrete over a smooth road when the hauling time is less than 15 minutes. Bodies of nonagitating equipment shall be smooth, watertight, metal containers specifically designed to transport concrete, shaped with rounded corners to minimize segregation, and equipped with gates that will permit positive control of the discharge of the concrete.

3.2.3.2 Chutes

When concrete can be placed directly from a truck mixer, agitator, or nonagitating equipment, the chutes attached to this equipment by the manufacturer may be used. A discharge deflector shall be used when required by the Contracting Officer. Separate chutes and other similar equipment will not be permitted for conveying concrete.

3.2.3.3 Concrete Pumps

Concrete may be conveyed by positive displacement pump when approved. The pumping equipment shall be piston or squeeze pressure. The pipeline shall be rigid steel pipe or heavy-duty flexible hose. The inside diameter of the pipe shall be at least 3 times the nominal maximum-size coarse aggregate in the concrete mixture to be pumped but not less than 4 inches. Aluminum pipe shall not be used.

3.2.4 Vibrators

Vibrators of the proper size, frequency, and amplitude shall be used for the type of work being performed in conformance with the following requirements:

APPLICATION	HEAD DIAMETER INCHES	FREQUENCY VPM	AMPLITUDE INCHES
Thin walls, beams, etc.	1 1/4 - 2 1/2	9,000 - 13,500	0.02 - 0.04
General construction	2 - 3 1/2	8,000 - 12,000	0.025 - 0.05

The frequency and amplitude shall be determined in accordance with COE CRD-C 521.

3.3 PREPARATION FOR PLACING

3.3.1 Embedded Items

Before placement of concrete, care shall be taken to determine that all embedded items are firmly and securely fastened in place as indicated on the drawings, or required. Embedded items shall be free of oil and other foreign matter such as loose coatings or rust, paint, and scale. The embedding of wood in concrete shall be permitted only when specifically authorized or directed. Voids in sleeves, inserts, and anchor slots shall be filled temporarily with readily removable materials to prevent the entry of concrete into voids. Welding, including tack welding, shall not be permitted on embedded metals within 2 feet of the surface of the concrete.

3.3.2 Concrete on Earth Foundations

Earth surfaces upon which concrete is to be placed shall be clean, damp, and free from debris, frost, ice, and standing or running water. Prior to placement of concrete, the earth foundation shall have been satisfactorily compacted in accordance with Section 02300 EARTHWORK.

3.4 PLACING

3.4.1 Placing Procedures

The surfaces of horizontal construction joints shall be kept continuously wet for the first 12 hours during the 24-hour period prior to placing concrete. Surfaces may be dampened immediately before placement if necessary. Concrete placement will not be permitted when, in the opinion of the Contracting Officer, weather conditions prevent proper placement and consolidation. Concrete shall be deposited as close as possible to its final position in the forms and, in so depositing, there shall be no vertical drop greater than 5 feet except where suitable equipment is provided to prevent segregation and where specifically authorized. Depositing of the concrete shall be so regulated that it may be effectively consolidated in horizontal layers 2.0 feet or less in thickness with a minimum of lateral movement. The amount deposited in each location shall be that which can be readily and thoroughly consolidated. Sufficient placing capacity shall be provided so that concrete placement can be kept plastic and free of cold joints while concrete is being placed. Concrete shall be placed by methods that will prevent segregation or loss of ingredients. Any concrete transferred from one conveying device to another shall be passed through a hopper that is conical in shape. The concrete shall not be dropped vertically more than 5 feet, except where a properly designed and sized elephant truck with rigid drop chute bottom section is provided to prevent segregation and where specifically authorized. In no case will concrete be discharged to free-fall through reinforcing bars.

3.4.2 Placement by Pump

When concrete is to be placed by pump, the nominal maximum-size coarse aggregate shall not be reduced to accommodate the pumps. The distance to be pumped shall not exceed limits recommended by the pump manufacturer. The concrete shall be supplied to the concrete pump continuously. When pumping is completed, concrete remaining in the pipeline shall be ejected without contamination of concrete in place. After each operation, equipment shall be thoroughly cleaned, and flushing water shall be wasted outside of the forms. Grout used to lubricate the pumping equipment at the beginning of the placement will not be incorporated into the placement.

3.4.3 Time Interval Between Mixing and Placing

Concrete shall be placed within 30 minutes after discharge into nonagitating equipment. When concrete is truck-mixed or when a truck mixer or agitator is used for transporting concrete mixed by a concrete plant mixer, the concrete shall be delivered to the Project Site, and discharge shall be completed within 1 1/2 hours after introduction of the cement to the aggregates. When the length of haul makes it impossible to deliver

truck-mixed concrete within these time limits, batching of cement and a portion of the mixing water shall be delayed until the truck mixer is at or near the Project Site.

3.4.4 Cold-Weather Placing

When cold-weather placing of concrete is likely to be subjected to freezing temperatures before the expiration of the curing period, it shall be placed in accordance with the following procedures.

a. The ambient temperature of the space adjacent to the concrete placement and surfaces to receive concrete shall be above 32 degrees Fahrenheit.

b. The placing temperature of the concrete having a minimum dimension less than 12 inches shall be between 55 degrees Fahrenheit and 75 degrees Fahrenheit when measured in accordance with ASTM C 1064/C 1064M. The placing temperature of the concrete having a minimum dimension greater than 12 inches shall be between 50 degrees Fahrenheit and 70 degrees Fahrenheit.

c. Heating of the mixing water or aggregates will be required to regulate the concrete-placing temperatures. Materials entering the mixer shall be free from ice, snow, or frozen lumps. Salt, chemicals, or other materials shall not be mixed with the concrete to prevent freezing.

3.4.5 Hot-Weather Placing

Hot-weather placing of concrete shall be in accordance with the following procedures.

a. The concrete-placing temperature shall not exceed 60 degrees Fahrenheit when measured in accordance with ASTM C 1064/C 1064M.

b. Cooling of the mixing water and aggregates, or both, may be required to obtain an adequate placing temperature.

c. A retarder meeting the requirements of subparagraph Water-Reducing or Retarding Admixtures may be used to facilitate placing and finishing.

d. Steel forms and reinforcement shall be cooled prior to concrete placement when steel temperatures are greater than 120 degrees F ahrenheit.

e. Conveying and placing equipment shall be cooled if necessary to maintain proper concrete-placing temperature.

3.4.6 Consolidation

Immediately after placement, each layer of concrete, including flowing concrete, shall be consolidated by internal vibrating equipment. Vibrators shall not be used to transport concrete within the forms. Hand spading may

be required, if necessary, with internal vibrating along formed surfaces permanently exposed to view. Form or surface vibrators shall not be used unless specifically approved. The vibrator shall be inserted vertically at uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1 1/2 times the radius of action of the vibrator. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the preceding unhardened layer if such exists. It shall be held stationary until the concrete is consolidated and then withdrawn slowly.

3.5 FINISHING

The ambient temperature of spaces adjacent to surfaces being finished shall be not less than 40 degrees Fahrenheit. In hot weather when the rate of evaporation of surface moisture, as determined by use of Figure 2.1.5 of ACI 305R, may reasonably be expected to exceed 0.2 pounds per square foot per hour. Provisions for windbreaks, shading, fog spraying, or wet 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. All unformed surfaces that are not to be covered by additional concrete or backfill shall have a float finish. Additional finishing shall be as specified below and shall be true to the elevation shown in the drawings. Surfaces to receive additional concrete or backfill shall be brought to the elevation shown on the drawings and left true and regular. Exterior surfaces shall be sloped for drainage unless otherwise shown in the drawing or as directed. Joints shall be carefully made with a jointing or edging tool. The finished surfaces shall be protected from stains or abrasions. Grate tampers or jitterbugs shall not be used.

3.5.1 Unformed Surfaces

3.5.1.1 Float Finish

Surfaces shall be screeded and darbied or bullfloated to bring the surface to the required finish level with no coarse aggregate visible. No water, cement, or mortar shall be added to the surface during the finishing operation. The concrete, while still green but sufficiently hardened to bear a man's weight without deep imprint, shall be floated to a true and even plane. Floating may be performed by use of suitable hand floats or power-driven equipment. Hand floats shall be made of magnesium or aluminum.

3.5.1.2 Trowel Finish

A trowel finish shall be applied to all exposed surfaces. Concrete surfaces shall be finished with a float finish, and after surface moisture has disappeared, the surface shall be troweled to a smooth, even, dense finish free from blemishes including trowel marks.

3.5.2 Formed Surfaces

Unless another finish is specified, surfaces shall be left with the texture imparted by the forms.

Unless painting of surfaces is required, uniform color of the concrete shall be maintained by use of only one mixture without changes in materials or proportions for any structure or portion of structure that is exposed to view or on which a special finish is required. The form panels used to produce the finish shall be orderly in arrangement, with joints between panels planned in approved relation to openings, building corners, and other architectural features.

3.5.3 Formed Surface Repair

After removal of forms, all ridges, lips, and bulges on surfaces permanently exposed shall be removed. All repairs shall be completed within 48 hours after form removal.

3.5.3.1 Classes A, AHV, & B Finishes

Surfaces listed in Section 03101A FORMWORK FOR CONCRETE and as shown to have classes A, AHV, and B finishes shall have surface defects repaired as follows: defective areas, voids, and honeycombs smaller than 16 square inches in area and less than 1/2 inch deep and bug holes exceeding 1/2 inch in diameter shall be chipped and filled with dry-packed mortar. Holes left by removal of tie rods shall be reamed and filled with dry-packed mortar as specified in subparagraph Material and Procedure for Repairs. Defective and unsound concrete areas larger than described shall be defined by 1/2 inch deep dovetailed saw cuts in a rectangular pattern with lines parallel to the formwork, the defective concrete removed by chipping, and the void repaired with replacement concrete. The prepared area shall be brush-coated with an epoxy resin, a latex bonding agent or a neat cement grout after dampening the area with water. The void shall be filled with replacement concrete in accordance with subparagraph Material and Procedure for Repairs.

3.5.3.2 Class C Finish

Surfaces listed in Section 03101A FORMWORK FOR CONCRETE and as shown shall have defects repaired as follows: defective areas, voids, and honeycombs smaller than 24 square inches and less than 2 inches deep; bug holes exceeding 1 1/2 inches in diameter shall be chipped and filled with dry-packed mortar; and holes left by removal of the tie rods shall be chipped and filled with dry-packed mortar. Defective and unsound concrete areas larger than 24 square inches and deeper than 1 1/2 inches shall be defined by 1/2 inch deep dovetailed saw cuts in a rectangular pattern, the defective concrete removed by chipping, and the void repaired with replacement concrete. The prepared area shall be brush-coated with an epoxy resin, a latex bonding agent or a neat cement grout after dampening the area with water. The void shall be filled with replacement concrete in accordance with subparagraph Material and Procedure for Repairs.

3.5.3.3 Class D Finish

Surfaces listed in Section 03101A FORMWORK FOR CONCRETE and as shown to have class D finish shall have surface defects repaired as follows: defective areas, voids, and honeycombs greater than 48 square inches in area or more than 2 inches deep shall be defined by 1/2 inch deep

dovetailed saw cuts in a rectangular pattern, the defective concrete removed by chipping and the void repaired with replacement concrete. The prepared area shall be brush-coated with an epoxy resin, a latex bonding agent or a neat cement grout after dampening the area with water. The void shall be filled with replacement concrete in accordance with subparagraph Material and Procedure for Repairs.

3.5.3.4 Material and Procedure for Repairs

The cement used in the dry-packed mortar or replacement concrete shall be a blend of the cement used for production of Project concrete and white portland cement properly proportioned so that the final color of the mortar or concrete will match adjacent concrete. Trial batches shall be used to determine the proportions required to match colors. Dry-packed mortar shall consist of one part cement to two and one-half parts fine aggregate. The fine aggregate shall be that used for production of Project concrete. The mortar shall be remixed over a period of at least 30 minutes without addition of water until it obtains the stiffest consistency that will permit placing. Mortar shall be thoroughly compacted into the prepared void by tamping, rodding, ramming, etc. and struck off to match adjacent concrete. Replacement concrete shall be produced using Project materials and shall be proportioned by the Contracting Officer. It shall be thoroughly compacted into the prepared void by internal vibration, tamping, rodding, ramming, etc. and shall be struck off and finished to match adjacent concrete. Forms shall be used to confine the concrete. If an expanding agent is used in the repair concrete, the repair shall be thoroughly confined on all sides including the top surface. Metal tools shall not be used to finish permanently exposed surfaces. The repaired areas shall be cured for 7 days. The temperature of the in situ concrete, adjacent air, and replacement mortar or concrete shall be above 40 degrees F ahrenheit during placement, finishing, and curing. Other methods and materials for repair may be used only when approved in writing by the Contracting Officer. Repairs of the so called "plaster-type" will not be permitted.

3.6 CURING AND PROTECTION

3.6.1 Duration

The length of the curing period for Type III portland cement shall be d3 days. Concrete shall be cured by an approved method.

Immediately after placement, concrete shall be protected from premature drying, extremes in temperatures, rapid temperature change, and mechanical damage. All materials and equipment needed for adequate curing and protection shall be available and Project Site prior to the start of concrete placement. Concrete shall be protected from the damaging effects of rain for 12 hours and from flowing water for 14 days. No fire or excessive heat including welding shall be permitted near or in direct contact with concrete or concrete embedments at any time.

3.6.2 Moist Curing

Moist-cured concrete shall be maintained continuously, not periodically,

wet for the entire curing period. If water or curing materials stain or discolor concrete surfaces that are to be permanently exposed, they shall be cleaned as required in subparagraph Appearance. Where wooden form sheathing is left in place during curing, the sheathing shall be kept wet at all times. Where steel forms are left in place during curing, the forms shall be carefully broken loose from the hardened concrete and curing water continuously applied into the void so as to continuously saturate the entire concrete surface. Horizontal surfaces may be moist cured by ponding, by covering with a minimum uniform thickness of 2 inches of continuously saturated sand, or by covering with saturated non-staining burlap or cotton mats. Horizontal construction joints may be allowed to dry for 12 hours immediately prior to the placing of the following lift. Silica fume concrete, if used, shall be moist-cured. Curing of silica fume concrete shall start immediately after placement.

3.6.3 Membrane-Forming Curing Compound

Concrete may be cured with an approved membrane-forming curing compound in lieu of moist curing except that membrane curing will not be permitted on any surface to which a grout-cleaned finish is to be applied or other concrete is to be bonded, on any surface containing protruding steel reinforcement, on an abrasive aggregate finish, or any surface maintained at curing temperature by use of free steam. A styrene acrylate or chlorinated rubber compound may be used for surfaces that are to be painted or are to receive bituminous roofing or waterproofing, or for floors that are to receive adhesive applications of resilient flooring. The curing compound selected shall be compatible with any subsequent paint, roofing, waterproofing, or flooring specified.

3.6.3.1 Pigmented Curing Compound

A pigmented curing compound meeting the requirements of the above sub paragraph Membrane-Forming Curing Compound may be used on surfaces that will not be exposed to view when the Project is completed.

3.6.3.2 Non-pigmented Curing Compound

A non-pigmented curing compound containing a fugitive dye may be used on surfaces that will be exposed to view when the Project is completed. Concrete cured with non-pigmented curing compound must be shaded from the sun for the first 3 days when the ambient temperature is 90 degrees F ahrenheit or higher.

3.6.3.3 Application

The curing compound shall be applied to formed surfaces immediately after the forms are removed and prior to any patching or other surface treatment except the cleaning of loose sand, mortar, and debris from the surface. The surfaces shall be thoroughly moistened with water, and the curing compound applied as soon as free water disappears. The curing compound shall be applied to unformed surfaces as soon as free water has disappeared and bleeding has stopped. The curing compound shall be applied in a two-coat continuous operation by approved motorized power-spraying equipment operating at a minimum pressure of 75 pounds per square inch, at

a uniform coverage of not more than 400 square feet per gallon for each coat, and the second coat shall be applied perpendicular to the first coat. Concrete surfaces that have been subjected to rainfall within 3 hours after curing compound has been applied shall be resprayed by the method and at the coverage specified. All concrete surfaces on which the curing compound has been applied shall be adequately protected for the duration of the entire curing period from pedestrian and vehicular traffic and from any other cause that will disrupt the continuity of the curing membrane.

3.6.4 Cold-Weather Curing and Protection

When the daily outdoor low temperature is less than 32 degrees Fahrenheit, the temperature of the concrete shall be maintained above 40 degrees F ahrenheit for the first 7 days after placing. In addition, during the period of protection removal, the air temperature adjacent to the concrete surfaces shall be controlled so that concrete near the surface will not be subjected to a temperature differential of more than 25 degrees Fahrenheit as determined by observation of ambient and concrete temperatures indicated by suitable temperatures measuring devices furnished by the Government as required and installed adjacent to the concrete surface and 2 inches inside the surface of the concrete. The installation of the thermometers shall be made by the Contractor at such locations as may be directed.

3.7 Appearance

Permanently exposed surfaces shall be cleaned, if stained or otherwise discolored, by a method that does not harm the concrete and that is approved by the Contracting Officer.

3.8 TESTS AND INSPECTIONS

Tests and inspections shall conform to the following requirements.

The Contractor shall perform the inspections and tests described below, and, based upon the results of these inspections and tests, shall take the action required and submit reports as required. When, in the opinion of the Contracting Officer, the concreting operation is out of control, concrete placement shall cease.

The laboratory performing the tests shall be on the Project Site and shall conform with ASTM C 1077. The individuals who sample and test concrete or the constituents of concrete as required in this specification shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade I. The individuals who perform the inspection of concrete construction shall have demonstrated a knowledge and ability equivalent to the ACI minimum guidelines for certification of Concrete Transportation Construction Inspector. The Government will inspect the laboratory, equipment, and test procedures prior to start of concreting operations and at least once per year thereafter for conformance with ASTM C 1077.

3.8.1 Fine Aggregate

Testing for fine aggregate shall meet the following requirements.

a. Grading:At least once during each shift when the concrete plant is operating, there shall be one sieve analysis and fineness modulus determination in accordance with ASTM C 136 and COE CRD-C 104 for the fine aggregate or for each size range of fine aggregate if it is batched in more than one size or classification. The location at which samples are taken may be selected by the Contractor as the most advantageous for control. However, the Contractor is responsible for delivering fine aggregate to the mixer within specification limits.

b. Corrective Action for Fine Aggregate Grading: When the amount passing on any sieve is outside the specification limits, the fine aggregate shall be immediately resampled and retested. If there is another failure on any sieve, the fact shall immediately be reported to the Contracting Officer.

c. Moisture Content Testing: When in the opinion of the Contracting Officer the electric moisture meter is not operating satisfactorily, there shall be at least four tests for moisture content in accordance with ASTM C 566 during each 8-hour period of mixing plant operation. The times for the tests shall be selected randomly within the 8-hour period. An additional test shall be made whenever the slump is shown to be out of control or excessive variation in workability is reported by the placing foreman. When the electric moisture meter is operating satisfactorily, at least two direct measurements of moisture content shall be made per week to check the calibration of the meter. The results of tests for moisture content shall be used to adjust the added water in the control of the batch plant.

d. Moisture Content Corrective Action: Whenever the moisture content of the fine aggregate changes by 0.5 percent or more, the scale settings for the fine-aggregate batcher and water batcher shall be adjusted (directly or by means of a moisture compensation device) if necessary to maintain the specified slump.

3.8.2 Coarse Aggregate

Testing for coarse aggregate shall meet the following requirements.

a. Grading: At least once during each shift in which the concrete plant is operating, there shall be a sieve analysis in accordance with ASTM C 136 for each size of coarse aggregate. The location at which samples are taken may be selected by the Contractor as the most advantageous for production control. However, the Contractor shall be responsible for delivering the aggregate to the mixer within specification limits. A test record of samples of aggregate taken at the same locations shall show the results of the current test as well as the average results of the five most recent tests including the current test. The Contractor may adopt

limits for control which are coarser than the specification limits for samples taken at locations other than as delivered to the mixer to allow for degradation during handling.

b. Corrective Action for Grading: When the amount passing any sieve is outside the specification limits, the coarse aggregate shall be immediately resampled and retested. If the second sample fails on any sieve, that fact shall be reported to the Contracting Officer. Where two consecutive averages of five tests are outside specification limits, the operation shall be considered out of control and shall be reported to the Contracting Officer. Concreting shall be stopped and immediate steps shall be taken to correct the grading.

c. Coarse Aggregate Moisture Content: A test for moisture content of each size group of coarse aggregate shall be made at least twice per week. When two consecutive readings for smallest size coarse aggregate differ by more than 1.0 percent, frequency of testing shall be increased to that specified above for fine aggregate, until the difference falls below 1.0 percent.

d. Coarse Aggregate Moisture Corrective Action: Whenever the moisture content of any size of coarse aggregate changes by 0.5 percent or more, the scale setting for the coarse aggregate batcher and the water batcher shall be adjusted if necessary to maintain the specified slump.

3.8.3 Quality of Aggregates

30 days prior to the start of concrete placement, the Contractor shall perform all tests for aggregate quality listed below. In addition, after the start of concrete placement, the Contractor shall perform tests for aggregate quality in accordance with the frequency schedule shown below. Samples tested after the start of concrete placement shall be taken immediately prior to entering the concrete mixer.

	FREQUENCY		
PROPERTY	FINE AGGREGATE	COARSE AGGREGATE	TEST
Specific Gravity	Every 3 months	Every 3 months	ASTM C 127 ASTM C 128
Absorption	Every 3 months	Every 3 months	ASTM C 127 ASTM C 128
Durability Factor Using, (Procedure A)	Every 12 months	Every 12 months	COE CRD-C 114 ASTM C 666
Clay Lumps and Friable Particles	Every 3 months	Every 3 months	ASTM C 142

PROPERTY	FREQUENCY FINE AGGREGATE	FREQUENCY COARSE AGGREGATE	TEST
Material Finer than the 75-µm (No. 200) Sieve	Not applicable	Every 3 months	ASTM C 117
Impurities	Every 3 months	Not applicable	ASTM C 40 ASTM C 87
A.L. Abrasion	Not applicable	Every 6 months	ASTM C 131 ASTM C 535
Soft and Friable (Scratch Hardness)	Not applicable	Every 6 months	COE CRD-C 130
Petrographic Examination	Every 6 months	Every 6 months	ASTM C 295
Chert, less than 2.40 specific gravity	Every 6 months	Every 6 months	ASTM C 123
Coal and Lignite, less than 2.00 gravity	Every 6 months	Every 6 months	ASTM C 123

3.8.3.1 Corrective Action for Aggregate Quality

If the result of a quality test fails to meet the requirements for quality immediately prior to start of concrete placement, production procedures or materials shall be changed and additional tests shall be performed until the material meets the quality requirements prior to proceeding with either mixture proportioning studies or starting concrete placement. After concrete placement commences, whenever the result of a test for quality fails the requirements, the test shall be rerun immediately. If the second test fails the quality requirement, the fact shall be reported to the Contracting Officer and immediate steps taken to rectify the situation.

3.8.4 Scales

a. Weighing Accuracy: The accuracy of the scales shall be checked by test weights prior to start of concrete operations and at least once every 3 months for conformance with the applicable capacity requirements for batching equipment. Such tests shall also be made as directed whenever there are variations in properties of the fresh concrete that could result from batching errors.

b. Batching and Recording Accuracy: Once a week the accuracy of each

batching and recording device shall be checked during a weighing operation by noting and recording the required weight, recorded weight, and the actual weight batched. The Contractor shall confirm that the calibration devices described in subparagraph Batch Plant for checking the accuracy of dispensed admixtures are operating properly.

c. Scales Corrective Action: When either the weighing accuracy or batching accuracy does not comply with specification requirements, the plant shall not be operated until necessary adjustments or repairs have been made. Discrepancies in recording accuracies shall be corrected immediately.

3.8.5 Batch-Plant Control

The measurement of all constituent materials including cementitious materials, each size of aggregate, water, and admixtures shall be continuously controlled. The aggregate weights and amount of added water shall be adjusted as necessary to compensate for free moisture in the aggregates. The amount of air-entraining agent shall be adjusted to control air content within specified limits. A report shall be prepared indicating type and source of cement used, amount and source of admixtures used, aggregate source, the required aggregate and water weights per cubic yard, amount of water as free moisture in each size of aggregate, and the batch aggregate and water weights per cubic yard for each class of concrete batched during plant operation.

3.8.6 Concrete Mixture

a. Air Content Testing: Air content tests shall be made when test specimens are fabricated. In addition, at least two tests for air content shall be made on randomly selected batches of each separate concrete mixture produced during each 8-hour period of concrete production. Additional tests shall be made when excessive variation in workability is reported by the placing foreman or Government quality assurance representative. Tests shall be made in accordance with ASTM C 231. Test results shall be plotted on control charts which shall at all times be readily available to the Government. Copies of the current control charts shall be kept in the field by the Contractor's quality control representatives and results plotted as tests are made. When a single test result reaches either the upper or lower action limit a second test shall immediately be made. The results of the two tests shall be averaged and this average used as the air content of the batch to plot on both the control chart for air content and the control chart for range, and for determining the need for any remedial action. The result of each test, or average as noted in the previous sentence, shall be plotted on a separate chart for each mixture on which an "average line" is set at the midpoint of the specified air content range from paragraph AIR CONTENT. An upper warning limit and a lower warning limit line shall be set 1.0 percentage point above and below the average line. An upper action limit and a lower action limit line shall be set 1.5 percentage points above and below the average line, respectively.

The range between each two consecutive tests shall be plotted on a control chart for range where an upper warning limit is set at 2.0 percentage points and up upper action limit is set at 3.0 percentage points. Samples for air content may be taken at the mixer, however, the Contractor is responsible for delivering the concrete to the Project Site at the stipulated air content. If the Contractor's materials or transportation methods cause air content loss between the mixer and the placement, correlation samples shall be taken at the Project Site as required by the Contracting Officer and the air content at the mixer controlled as directed.

b. Air Content Corrective Action: Whenever points on the control chart for percent air reach either warning limit, an adjustment shall immediately be made in the amount of air-entraining admixture batched. As soon as is practical after each adjustment, another test shall be made to verify the result of the adjustment. Whenever a point on the control chart range reaches the warning limit, the admixture dispenser shall be recalibrated to ensure that it is operating accurately and with good reproducibility. Whenever a point on either control chart reaches an action limit line, the air content shall be considered out of control and the concreting operation shall immediately be halted until the air content is under control. Additional air content tests shall be made when concreting is restarted. All this shall be at no extra cost to the Government.

c. Slump Testing: In addition to slump tests which shall be made when test specimens are fabricated, at least four slump tests shall be made on randomly selected batches in accordance with ASTM C 143/C 143M for each separate concrete mixture produced during each 8-hour or less period of concrete production each day. Also, additional tests shall be made when excessive variation in workability is reported by the placing foreman or Government's quality assurance representative. Test results shall be plotted on control charts which shall at all times be readily available to the Government. Copies of the current control charts shall be kept in the field by the Contractor's quality control representatives and results plotted as tests are made. When a single slump test reaches or goes beyond either the upper or lower action limit, a second test shall immediately be made on the same batch of concrete. The results of the two tests shall be averaged and this average used as the slump of the batch to plot on both the control chart for percent air and the chart for range, and for determining the need for any remedial action. An upper warning limit shall be set at 1/2 inch below the maximum allowable slump on separate control charts for percent air used for each type of mixture as specified in paragraph SLUMP, and an upper action limit line and lower action limit line shall be set at the maximum and minimum allowable slumps, respectively, as specified in the same paragraph. The range between each consecutive slump test for each type of mixture shall be plotted on a single control chart for range on which an upper action limit is set at 2 inches. Samples for slump shall be taken at the mixer, however, the Contractor is

responsible for delivering the concrete to the Project Site at the stipulated slump. If the Contractor's materials or transportation methods cause slump loss between mixer and the placement, correlation samples shall be taken at the Project Site as required by the Contracting Officer and the slump at the mixer controlled as directed.

d. Slump Corrective Action: Whenever points on the control chart for slump reach the upper warning limit, an adjustment shall be immediately made in the batch weights of water and fine aggregate. The adjustments are to be made so that the total water content does not exceed that amount allowed by the maximum W/C specified, based upon aggregates which are in a saturated surface-dry condition. When a single slump reaches the upper or lower action limit, no further concrete shall be delivered to the Project Site until proper adjustments have been made. Immediately after each adjustment, another test shall be made to verify the correctness of the adjustment. Whenever two consecutive slump tests, made during a period when there was no adjustment of batch weights, produce a point on the control chart for range at or above the upper action limit, the concreting operation shall immediately be halted and the Contractor shall take appropriate steps to bring the slump under control. Also, additional slump tests shall be made as directed. All this shall be at no additional cost to the Government.

e. Temperature: The temperature of the concrete shall be measured when compressive strength specimens are fabricated. Measurement shall be in accordance with ASTM C 1064/C 1064M. The temperature shall be reported along with the compressive strength data.

f. Compressive-Strength Specimens: At least one set of test specimens shall be made each day on each different concrete mixture placed during the day. Additional sets of test cylinders shall be made, as directed by the Contracting Officer, when the mixture proportions are changed or when low strengths have been detected. A random sampling plan shall be developed by the Contractor and approved by the Contracting Officer prior to the start of construction. The plan shall assure that sampling is done in a completely random and unbiased manner. A set of test specimens for concrete with a 28-day specified strength per paragraph DESIGN REQUIREMENTS shall consist of four cylinders, two to be tested at 7 days and two at 28 days. A set of test specimens for concrete with a 90-day strength per specified paragraph DESIGN REQUIREMENTS shall consist of six cylinders, two tested at 7 days, two at 28 days, and two at 90 days. Test specimens shall be molded and cured in accordance with ASTM C 31/C 31M and tested in accordance with ASTM C 39/C 39M. All compressive-strength tests shall be reported immediately to the Contracting Officer. Quality control charts shall be kept for individual strength tests, moving average for strength, and moving average for range for each mixture. The charts shall be similar to those found in ACI 214R.

3.8.7 Inspection Before Placing

Foundation or construction joints, forms, and embedded items shall be inspected for quality by the Contractor in sufficient time prior to each concrete placement to certify to the Contracting Officer that they are ready to receive concrete. The results of each inspection shall be reported in writing.

3.8.8 Placing

a. Placing Inspection: The placing foreman shall supervise all placing operations, shall determine that the correct quality of concrete or grout is placed in each location as directed and shall be responsible for measuring and recording concrete temperatures and ambient temperature hourly during placing operations, weather conditions, time of placement, yardage placed, and method of placement.

b. Placing Corrective Action: The placing foreman shall not permit batching and placing to begin until he has verified that an adequate number of vibrators in working order and with competent operators are available. Placing shall not be continued if any pile of concrete is inadequately consolidated. If any batch of concrete fails to meet the temperature requirements, immediate steps shall be taken to improve temperature controls.

3.8.9 Vibrators

a. Vibrator Testing and Use: The frequency and amplitude of each vibrator shall be determined in accordance with COE CRD-C 521prior to initial use and at least once a month when concrete is being placed. Additional tests shall be made as directed when a vibrator does not appear to be adequately consolidating the concrete. The frequency shall be determined at the same time the vibrator is operating in concrete with the tachometer held against the upper end of the vibrator head while almost submerged and just before the vibrator is withdrawn from the concrete. The amplitude shall be determined with the head vibrating in air. Two measurements shall be taken, one near the tip and another near the upper end of the vibrator head and these results averaged. The make, model, type, and size of the vibrator and frequency and amplitude results shall be reported in writing.

b. Vibrator Corrective Action: Any vibrator not meeting the requirements of subparagraph Vibrators shall be immediately removed from service and repaired or replaced.

3.8.10 Curing

a. Moist-Curing Inspections: At least once each shift, and once per day on non-work days an inspection shall be made of all areas subject to moist curing. The surface moisture condition shall be noted and recorded.

b. Moist-Curing Corrective Action: When a daily inspection report lists an area of inadequate curing, immediate corrective action shall be taken, and the required curing period for such areas shall be extended by 1 day.

c. Membrane-Curing Inspection: No curing compound shall be applied until the Contractor's authorized representative has verified that the compound is properly mixed and ready for spraying. At the end of each operation, the quantity of compound used shall be estimated by measurement of the container and the area of concrete surface covered and compute the rate of coverage in square feet per gallon. The Contractor shall note whether or not coverage is uniform.

d. Membrane-Curing Corrective Action: When the coverage rate of the curing compound is less than that specified or when the coverage is not uniform, the entire surface shall be sprayed again.

e. Sheet-Curing Inspection: At least once each shift and once per day on non-work days, an inspection shall be made of all areas being cured using material sheets. The condition of the covering and the tightness of the laps and tapes shall be noted and recorded.

f. Sheet-Curing Corrective Action: When a daily inspection report lists any tears, holes, or laps or joints that are not completely closed, the tears and holes shall promptly be repaired or the sheets replaced, the joints closed, and the required curing period for those areas shall be extended by 1 day.

3.8.11 Cold-Weather Protection and Sealed Insulation Curing

At least once each shift and once per day on non-work days, an inspection shall be made of all areas subject to cold-weather protection. The protection system shall be inspected for holes, tears, unsealed joints, or other deficiencies that could result in damage to the concrete. Special attention shall be taken at edges, corners, and thin sections. Any deficiencies shall be noted, corrected, and reported.

3.8.12 Cold-Weather Protection Corrective Action

When a daily inspection report lists any holes, tears, unsealed joints, or other deficiencies, the deficiency shall be corrected immediately and the period of protection extended 1 day.

3.8.13 Mixer Uniformity

a. Stationary Mixers: Prior to the start of concrete placing and once every 6 months when concrete is being placed, or once for every 75,000 cubic yards of concrete placed, whichever results in the longest time interval, uniformity of concrete mixing shall be determined in accordance with ASTM C 94/C 94M.

b. Truck Mixers: Prior to the start of concrete placing and at least once every 6 months when concrete is being placed, uniformity of

concrete shall be determined in accordance with ASTM C 94/C 94M. The truck mixers shall be selected randomly for testing. When satisfactory performance is found in one truck mixer, the performance of mixers of substantially the same design and condition of the blades may be regarded as satisfactory.

3.8.13.1 Mixer Uniformity Corrective Action

When a mixer fails to meet mixer uniformity requirements, either the mixer shall be removed from service on the work, the mixing time shall be increased, batching sequence changed, batch size reduced, or adjustments shall be made to the mixer until compliance is achieved.

3.8.14 Test and Inspection Reports

All results of tests or inspections conducted shall be reported informally as they are completed and in writing daily. A weekly report shall be prepared for the updating of control charts covering the entire period from the start of the construction season through the current week. During periods of cold-weather protection, reports of pertinent temperatures shall be made daily. These requirements do not relieve the Contractor of the obligation to report certain failures immediately as required in preceding paragraphs. Such reports of failures and the action taken shall be confirmed in writing in the routine reports. The Contracting Officer has the right to examine all test and inspection records.

-- End of Section --

SECTION 03410

PLANT-PRECAST STRUCTURAL CONCRETE
03/00

Work Item No. 27 Precast Arch Culvert Units

PART 1 GENERAL

1.1 SCOPE OF WORK

Work under this section shall be the fabrication and installation of the Precast Arch Culvert Units for the precast arch culvert, including all materials and other work required for the associated precast wingwalls and headwalls, and cast-in-place footings.

Please note that the specific manufacture, material, and installation requirements for the precast arch culvert are located on the plans.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by the work under this section. Any damages to property or to vegetation within preserved areas shall be restored to the original conditions to the satisfaction of the Contracting Officer.

1.2 SUBMITTALS

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

SD-02 Shop Drawings

Drawings of the Precast Arch Culvert; G, AE.

SD-05 Design Data

Design calculations; G, AE.

SD-06 Test Reports

Air Content Test Reports; G, AE.
Compressive Strength Test Reports; G, AE.
Submit test results in accordance with the ASTM standards indicated on the precast arch culvert plan notes.

SD-07 Certificates

Precaster Certifications; G, AE.

Precaster Qualifications; G, AE.

PART 2 PRODUCTS

See the plan sheets associated with the Precast Arch Culvert for material requirements.

PART 3 EXECUTION

See the plan sheets associated with the Precast Arch Culvert for installation and construction requirements.

-- End of Section --

SECTION 05055A

METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS
09/03

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

The work includes furnishing, delivering, handling, and installing (as applicable) all material, labor, equipment, tools and incidentals necessary to complete the work specified herein including bulkhead fabrications and connections and interpretive signs. This Section is included to supplement the fabrication and installation of the various steel and other metal items required. Work described herein shall be considered incidental to work described elsewhere in the Contract.

1.2 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.

ALUMINUM ASSOCIATION (AA)

AA 30	(1986) Aluminum Structures, Construction Manual Series Section 1

ASME INTERNATIONAL (ASME)

ASME B4.1	(1967; R 1999) Preferred Limits and Fits for Cylindrical Parts

ASTM INTERNATIONAL (ASTM)

ASTM A 193/A 193M	(2003) Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
ASTM A 325	(2002) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A 514/A 514M	(2000; Rev A) High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding
ASTM E 165	(2002) Liquid Penetrant Examination Inspection Method
ASTM E 709	(2001) Magnetic Particle Examination

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1	(2000) Structural Welding Code - Steel
AWS D1.2	(2003) Structural Welding Code Aluminum

1.3 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Detail Drawings; G, AE.
Detail drawings for metalwork and machine work shall be submitted and approved prior to fabrication.

SD-03 Product Data

Materials Orders
Copies of purchase orders, mill orders, shop orders and work orders for materials shall be submitted prior to the use of the materials in the work.

Materials List
Materials list for fabricated items shall be submitted at the time of submittal of detail drawings.

Shipping Bill
Shipping bill shall be submitted with the delivery of finished pieces to the site.

SD-05 Design Data

Welding Procedures for Structural Steel
Schedules of welding procedures for steel structures shall be submitted and approved prior to commencing fabrication.

Welding Procedures for Aluminum
Schedules of welding procedures for aluminum structures shall be submitted and approved prior to commencing fabrication.

SD-07 Certificates

Qualification of Welders and Welding Operators
Certifications for welders and welding operators shall be submitted prior to commencing fabrication.

SD-09 Manufacturer's Field Reports

Tests, Inspections, and Verifications
Certified test reports for materials shall be submitted with all

materials delivered to the site.

1.4 QUALIFICATION OF WELDERS AND WELDING OPERATORS

The Contractor shall certify that the qualification of welders and welding operators and tack welders who will perform structural steel welding have been qualified for the particular type of work to be done in accordance with the requirements of AWS D1.1, Section 5, prior to commencing fabrication. The certificate shall list the qualified welders by name and shall specify the code and procedures under which qualified and the date of qualification. Prior qualification will be accepted if welders have performed satisfactory work under the code for which qualified within the preceding three months. The Contractor shall require welders to repeat the qualifying tests when their work indicates a reasonable doubt as to proficiency. Those passing the requalification tests will be recertified. Those not passing will be disqualified until passing. All expenses in connection with qualification and requalification shall be borne by the Contractor.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Materials Orders

The Contractor shall furnish 5 copies of purchase orders, mill orders, shop orders and work orders for all materials orders and items used in the work. Where mill tests are required purchase orders shall contain the test site address and the name of the testing agency.

2.1.2 Materials List

The Contractor shall furnish a materials list of the materials to be used in the fabrication of each item.

2.1.3 Shipping Bill

The Contractor shall furnish a shipping bill or memorandum of each shipment of finished pieces or members to the project site giving the designation mark and weight of each item, the number of items, the total weight, and the car initial and number if shipped by rail in carload lots.

2.2 FABRICATION

2.2.1 Structural Fabrication

Material must be straight before being laid off or worked. If straightening is necessary it shall be done by methods that will not impair the metal. Sharp kinks or bends shall be cause for rejection of the material. Material with welds will not be accepted except where welding is definitely specified, indicated or otherwise approved. Bends shall be made by approved dies, press brakes or bending rolls. Where heating is required, precautions shall be taken to avoid overheating the metal and it shall be allowed to cool in a manner that will not impair the original

properties of the metal. Proposed flame cutting of material other than structural steel shall be subject to approval and shall be indicated on detail drawings. Shearing shall be accurate and all portions of the work shall be neatly finished. Corners shall be square and true unless otherwise shown. Re-entrant cuts shall be filleted to a minimum radius of 3/4 inch unless otherwise approved. Finished members shall be free of twists, bends and open joints. Bolts, nuts and screws shall be tight.

2.2.1.1 Dimensional Tolerances for Structural Work

Dimensions shall be measured by an approved calibrated steel tape of approximately the same temperature as the material being measured. The overall dimensions of an assembled structural unit shall be within the tolerances indicated on the drawings or as specified in the particular section of these specifications for the item of work. Where tolerances are not specified in other sections of these specifications or shown, an allowable variation of 1/32 inch is permissible in the overall length of component members with both ends milled and component members without milled ends shall not deviate from the dimensions shown by not more than 1/16 inch for members 30 feet or less in length and by more than 1/8 inch for members over 30 feet in length.

2.2.1.2 Structural Steel Fabrication

Structural steel may be cut by mechanically guided or hand-guided torches, provided an accurate profile with a surface that is smooth and free from cracks and notches is obtained. Surfaces and edges to be welded shall be prepared in accordance with AWS D1.1, Subsection 3.2. Where structural steel is not to be welded, chipping or grinding will not be required except as necessary to remove slag and sharp edges of mechanically guided or hand-guided cuts not exposed to view. Hand-guided cuts which are to be exposed or visible shall be chipped, ground or machined to sound metal.

2.2.1.3 Structural Aluminum Fabrication

Laying out and cutting of aluminum shall be in accordance with the AA 30, Section 6.

2.2.2 Welding

2.2.2.1 Welding of Structural Steel

a. Welding Procedures for Structural Steel shall be prequalified as described in AWS D1.1,Subsection 5.1 or shall be qualified by tests as prescribed in AWS D1.1, Section 5. Properly documented evidence of compliance with all requirements of these specifications for previous qualification tests shall establish a welding procedure as prequalified. For welding procedures qualified by tests, the test welding and specimen testing must be witnessed and the test report document signed by the Contracting Officer. Approval of any welding procedure will not relieve the Contractor of the responsibility for producing a finished structure meeting all requirements of these specifications. The Contractor will be directed or authorized to make any changes in previously approved welding procedures that are deemed

necessary or desirable by the Contractor Officer. The Contractor shall submit a complete schedule of welding procedures for each steel structure to be welded. The schedule shall conform to the requirements specified in the provisions AWS D1.1, Sections 2, 3, 4, 7 and 9 and applicable provisions of Section 10. The schedule shall provide detailed procedure specifications and tables or diagrams showing the procedures to be used for each required joint. Welding procedures must include filler metal, preheat, interpass temperature and stress-relief heat treatment requirements. Each welding procedure shall be clearly identified as being prequalified or required to be qualified by tests. Welding procedures must show types and locations of welds designated or in the specifications to receive nondestructive examination.

b. Welding Process - Welding of structural steel shall be by an electric arc welding process using a method which excludes the atmosphere from the molten metal and shall conform to the applicable provisions of AWS D1.1, Sections 1 thru 7, 9, 10 and 11. Welding shall be such as to minimize residual stresses, distortion and shrinkage.

c. Welding Technique

(1) Filler Metal - The electrode, electrode-flux combination and grade of weld metal shall conform to the appropriate AWS specification for the base metal and welding process being used or shall be as shown where a specific choice of AWS specification allowables is required. The AWS designation of the electrodes to be used shall be included in the schedule of welding procedures. Only low hydrogen electrodes shall be used for manual shielded metal-arc welding regardless of the thickness of the steel. A controlled temperature storage oven shall be used at the job site as prescribed by AWS D1.1, Subsection 4.5 to maintain low moisture of low hydrogen electrodes.

(2) Preheat and Interpass Temperature - Preheating shall be performed as required by AWS D1.1, Subsection 4.2 and 4.3 or as otherwise specified except that the temperature of the base metal shall be at least 70 degrees F. The weldments to be preheated shall be slowly and uniformly heated by approved means to the prescribed temperature, held at that temperature until the welding is completed and then permitted to cool slowly in still air.

(3) Stress-Relief Heat Treatment - Where stress relief heat treatment is specified or shown, it shall be in accordance with the requirements of AWS D1.1, Subsection 4.4 unless otherwise authorized or directed.

d. Workmanship - Workmanship for welding shall be in accordance with AWS D1.1, Section 3 and other applicable requirements of these specifications.

(1) Preparation of Base Metal - Prior to welding the Contractor shall inspect surfaces to be welded to assure compliance with AWS D1.1, Subsection 3.2.

(2) Temporary Welds - Temporary welds required for fabrication and erection shall be made under the controlled conditions prescribed for permanent work. Temporary welds shall be made using low-hydrogen welding electrodes and by welders qualified for permanent work as specified in these specifications. Preheating for temporary welds shall be as required by AWS D1.1 for permanent welds except that the minimum temperature shall be 120 degrees F in any case. In making temporary welds arcs shall not be struck in other than weld locations. Each temporary weld shall be removed and ground flush with adjacent surfaces after serving its purpose.

(3) Tack Welds - Tacks welds that are to be incorporated into the permanent work shall be subject to the same quality requirements as the permanent welds and shall be cleaned and thoroughly fused with permanent welds. Preheating shall be performed as specified above for temporary welds. Multiple-pass tack welds shall have cascaded ends. Defective tack welds shall be removed before permanent welding.

2.2.2.2 Welding of Aluminum

Welding Procedures for Aluminum shall be prequalified as described in AWS D1.2.

2.2.3 Bolted Connections

2.2.3.1 Bolted Structural Steel Connections

Bolts, nuts and washers shall be of the type specified or indicated. All nuts shall be equipped with washers except for high strength bolts. Beveled washers shall be used where bearing faces have a slope of more than 1:20 with respect to a plane normal to the bolt axis. Where the use of high strength bolts is specified or indicated the materials, workmanship and installation shall conform to the applicable provisions of ASTM A 325

a. Bolt Holes - Bolt holes shall be accurately located, smooth, perpendicular to the member and cylindrical.

(1) Holes for regular bolts shall be drilled or subdrilled and reamed in the shop and shall not be more than 1/16 inch larger than the diameter of the bolt.

(2) Holes for fitted bolts shall be match-reamed or drilled in the shop. Burrs resulting from reaming shall be removed. The threads of bolts shall be entirely outside of the holes. The body diameter of bolts shall have tolerances as recommended by ASME B4.1 for the class of fit specified. Fitted bolts shall be fitted in reamed holes by selective assembly to provide an LN-2 fit.

(3) Holes for high strength bolts shall have diameters of not more than 1/16 inch larger than bolt diameters. If the thickness of the material is not greater than the diameter of the bolts the holes may be punched. If the thickness of the material is greater

than the diameter of the bolts the holes may be drilled full size or subpunched or subdrilled at least 1/8 inch smaller than the diameter of the bolts and then reamed to full size. Poor matching of holes will be cause for rejection. Drifting occurring during assembly shall not distort the metal or enlarge the holes. Reaming to a larger diameter of the next standard size bolt will be allowed for slight mismatching.

2.2.4 Rivets

Drive rivets shall conform to the requirements of ASTM A 193/A 193M.

2.3 TESTS, INSPECTIONS, AND VERIFICATIONS

The Contractor shall have required material tests and analyses performed and certified by an approved laboratory to demonstrate that materials are in conformity with the specifications. These tests and analyses shall be performed and certified at the Contractor's expense. Tests, inspections, and verifications shall conform to the requirements of the particular sections of these specifications for the respective items of work unless otherwise specified or authorized. Tests shall be conducted in the presence of the Contracting Officer if so required. The Contractor shall furnish specimens and samples for additional independent tests and analyses upon request by the Contracting Officer. Specimens and samples shall be properly labeled and prepared for shipment.

2.3.1 Nondestructive Testing

When doubt exists as to the soundness of any material part such part may be subjected to any form of nondestructive testing determined by the Contracting Officer. This may include ultrasonic, magnaflux, dye penetrant, x-ray, gamma ray or any other test that will thoroughly investigate the part in question. The cost of such investigation will be borne by the Government. Any defects will be cause for rejection and rejected parts shall be replaced and retested at the Contractor's expense.

2.3.2 Inspection of Structural Welding

The Contractor shall maintain an approved inspection system and perform required inspections in accordance with Contract Clause CONTRACTOR INSPECTION SYSTEM. Welding shall be subject to inspection to determine conformance with the requirements of AWS D1.1 for steel and AWS D1.2 for aluminum, the approved welding procedures and provisions stated in other sections of these specifications. Nondestructive examination of designated welds will be required. Supplemental examination of any joint or coupon cut from any location in any joint may be required.

2.3.2.1 Visual Examination

All visual examination of completed welds shall be cleaned and carefully examined for insufficient throat or leg sizes, cracks, undercutting, overlap, excessive convexity or reinforcement and other surface defects to ensure compliance with the requirements of AWS D1.1, Section 3 and Section 9, Part D for steel and AWS D1.2 for aluminum.

2.3.2.2 Nondestructive Examination

The nondestructive examination of shop and field welds shall be performed as designated or described in the sections of these specifications covering the particular items of work.

a. Testing Agency - The nondestructive examination of welds and the evaluation of examination tests as to the acceptability of the welds shall be performed by a testing agency adequately equipped and competent to perform such services or by the Contractor using suitable equipment and qualified personnel. In either case written approval of the examination procedures is required and the examination tests shall be made in the presence of the Contracting Officer. The evaluation of examination tests shall be subject to the approval and all records shall become the property of the Government.

b. Examination Procedures - Examination procedures shall conform to the following requirements.

(1) Ultrasonic Testing - Making, evaluating and reporting ultrasonic testing of welds shall conform to the requirements of AWS D1.1, Section 6, Part C. The ultrasonic equipment shall be capable of making a permanent record of the test indications. A record shall be made of each weld tested.

(2) Radiographic Testing - Making, evaluating and reporting radiographic testing of welds shall conform to the requirements of AWS D1.1, Section 6, Part B.

(3) Magnetic Particle Inspection - Magnetic particle inspection of welds shall conform to the applicable provisions of ASTM E 709.

(4) Dye Penetrant Inspection - Dye penetrant inspection of welds shall conform to the applicable provisions of ASTM E 165.

c. Acceptability of Welds - Welds shall be unacceptable if shown to have defects prohibited by AWS D1.1, Subsection 9.25 for steel and AWS D1.2 for aluminum or possess any degree of incomplete fusion, inadequate penetration or undercutting.

d. Welds to be Subject to Nondestructive Examination

Fillet Welds (Shop and Field) - 10 percent of length of each fillet weld shall be tested as stated below:
Magnetic particle inspection may be used for the detection of cracks and other discontinuities at or near the surface of root and surface passes and intermediate layers not exceeding 1/4 inch thickness. Dye penetrant inspection should be used only for detection of discontinuities that are open to the surface in single pass fillet welds.

2.3.2.3 Test Coupons

The Government reserves the right to require the Contractor to remove coupons from completed work when doubt as to soundness cannot be resolved by nondestructive examination. Should tests of any two coupons cut from the work of any welder show strengths less than that specified for the base metal it will be considered evidence of negligence or incompetence and such welder shall be removed from the work. When coupons are removed from any part of a structure the members cut shall be repaired in a neat manner with joints of the proper type to develop the full strength of the members. Repaired joints shall be peened as approved or directed to relieve residual stress. The expense for removing and testing coupons, repairing cut members and the nondestructive examination of repairs shall be borne by the Government or the Contractor in accordance with the Contract Clauses INSPECTION AND ACCEPTANCE.

2.3.2.4 Supplemental Examination

When the soundness of any weld is suspected of being deficient due to faulty welding or stresses that might occur during shipment or erection the Government reserves the right to perform nondestructive supplemental examinations before final acceptance. The cost of such inspection will be borne by the Government.

2.3.3 Structural Welding Repairs

Defective welds in the structural steel welding repairs shall be repaired in accordance with AWS D1.1, Subsection 3.7 or AWS D1.2 for aluminum. Defective weld metal shall be removed to sound metal by use of air carbon-arc or oxygen gouging. Oxygen gouging shall not be used on ASTM A 514/A 514M steel. The surfaces shall be thoroughly cleaned before welding. Welds that have been repaired shall be retested by the same methods used in the original inspection. Except for the repair of members cut to remove test coupons and found to have acceptable welds costs of repairs and retesting shall be borne by the Contractor.

PART 3 EXECUTION

3.1 INSTALLATION

All parts to be installed shall be thoroughly cleaned. Packing compounds, rust, dirt, grit and other foreign matter shall be removed. Holes and grooves for lubrication shall be cleaned. Pipe wrenches, cold chisels or other tools likely to cause damage to the surfaces of rods, nuts or other parts shall not be used for assembling and tightening parts. Bolts and screws shall be tightened firmly and uniformly but care shall be taken not to overstress the threads. When a half nut is used for locking a full nut the half nut shall be placed first and followed by the full nut. Threads of all bolts except high strength bolts, nuts and screws shall be lubricated with an approved lubricant before assembly. Driving and drifting bolts or keys will not be permitted.

3.2 TESTS

3.2.1 Workmanship

Workmanship shall be of the highest grade and in accordance with the best modern practices to conform with the specifications for the item of work being furnished.

-- End of Section --

SECTION 05502A

METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS
09/03

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

The work includes furnishing, delivering, handling, and installing (as applicable) all material, labor, equipment, tools and incidentals necessary to complete the work specified herein. Work associated with this Section shall be considered incidental to work described elsewhere in the Contract.

1.2 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 M 111	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ALUMINUM ASSOCIATION (AA)

AA ASD1	(1997) Aluminum Standards and Data

ASTM INTERNATIONAL (ASTM)

ASTM A 36	(1992) Structural Steel
ASTM A 53	(2002) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 307	(2002) Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength
ASTM A 709/A 709M	(2003) Carbon and High-Strength Low-Alloy Structural Steel Shapes, Plates, and Bars and Quenched-and-Tempered Alloy Structural Steel Plates for Bridges

1.3 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Shop Fabricated Metal Items; G, AE
Detail drawings shall be submitted for approval as specified and in Section 05055A METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

SD-03 Product Data

Miscellaneous Metals and Standard Metal Articles
Shop Fabricated Metal Items
Lists of materials shall be submitted for approval as specified and in Section 05055A METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

SD-04 Samples

Miscellaneous Metals and Standard Metal Articles
Shop Fabricated Metal Items
Samples shall be submitted for approval as specified and in Section 05055A METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS. Samples of standard or fabricated items shall be full size and complete as required for installation in the work, and may be installed in the work, provided each sample is clearly identified and its location recorded.

SD-06 Test Reports

Miscellaneous Metals and Standard Metal Articles
Shop Fabricated Metal Items
Certified test reports for materials tests and analyses shall be submitted for approval as specified and in Section 05055A METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

SD-07 Certificates

Miscellaneous Metals and Standard Metal Articles
Shop Fabricated Metal Items
Records which identify the disposition of approved material and fabricated items in the work must be submitted for approval as specified and in Section 05055A METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

1.4 FABRICATION AND WORKMANSHIP REQUIREMENTS

Fabrication requirements and workmanship provisions for items specified in this section shall conform with the requirements of Section 05055A METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

PART 2 PRODUCTS

2.1 MISCELLANEOUS METALS AND STANDARD METAL ARTICLES

Miscellaneous metal materials and standard metal articles shall conform to

the respective specifications and other designated requirements. Sizes shall be as specified or shown. Where material requirements are not specified, materials furnished shall be suitable for the intended use and shall be subject to approval.

2.1.1 Structural Steel

ASTM A 709/A 709M, Grade 36/A 709M, Grade 36.

2.1.2 Steel Pipes and Pipe Fittings

2.1.2.1 Pipes

ASTM A 53, Type E or S, Grade B, seamless or electric-resistance welded, nominal size and weight class or outside diameter and nominal wall thickness as shown.

2.1.3 Steel Guide Rails

2.1.3.1 Posts and Spacers

Steel spacers shall conform to ASTM A 36 and shall be galvanized according to AASHTO M 111. Steel pipe spacers shall be 152MM I.D. schedule 40 galvanized pipe.

Steel posts shall be structural steel conforming to ASTM A 36 and shall be galvanized according to AASHTO M 111.

2.1.3.2 Miscellaneous Hardware

ALl hardware shall be hot-dipped galvanized and shall include bolts with necessary nuts and washers, timber connectors, nails, and other metal fastenings. Bolts and nuts shall conform to ASTM A 307

2.2 SHOP FABRICATED METAL ITEMS

Shop fabricated metal items shall conform to the requirements and details as specified or shown and to the workmanship provisions and other applicable fabrication requirements as specified in Section 05055A METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.2.1 Gratings

Gratings shall be of the material and size shown, and shall be fabricated in sectional panels of the width and length shown, or as appropriate, to accurately fit within the supporting recess frames.

2.2.2 Support Structure for Interpretive Signs

Aluminum tubing material shall be aluminum alloy 6061-T6, and aluminum plates shall be aluminum alloy 5052-H32, both conforming to the requirements of AA ASD1.

PART 3 EXECUTION (Not Applicable)

3.1 STEEL GUIDE RAILS

All railing posts shall be vertical. Timber railing shall not be placed on a span until the centering or falsework is removed and the span is self-supporting.

The base plates of the posts shall be attached to top of parapet by anchor bolts set in the concrete. Bolts set before concreting shall be held securely in place by a nut above the form template and a threaded aluminum alloy washer in conformance with ASTM F 901, Alloy 6061-T6 below the form template. The lower fastening shall prevent passage of mortar onto the exposed bolt threads.

Where posts are set in aluminum sleeves that have been previously installed in the concrete, the annular space between the posts and sleeves shall be filled with aluminum-impregnated caulking compound. Surfaces receiving the caulking compound shall be dry and free from dirt, oil, paint, and other deleterious material. Care shall be taken to secure a dense and complete seal. The top of the compound shall be beveled sufficiently to drain freely.

Where necessary for vertical alignment of the railing, lead strips for steel railings and aluminum shims for aluminum railings shall be placed under the perimeter of base plates. The strips shall be 1-1/4 inch wide and of the required thickness. The strips, when placed, shall project 1/8 inch from the base plates. When the railing has been aligned, the nuts shall be tightened on the anchor bolts and the lead or aluminum shims caulked to form a watertight seal between the base plates and the concrete of the parapet or other foundation. The anchor bolts shall be tightened again, where necessary, and all bolts shall not project more than 1/4 inch above the nut and shall be staked to prevent the loosening of the nut due to vibration or vandalism. Care shall be taken to prevent injury to the concrete and impairment of the bond between the bolt and the concrete.

-- End of Section --

SECTION 06100A

ROUGH CARPENTRY
02/04

Work Item No. 0028 Guide Rails

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN FOREST & PAPER ASSOCIATION (AF&PA)

AF&PA T10	(2001) Wood Frame Construction Manual for One- and Two-Family Dwellings
AF&PA T101	(2001) National Design Specification (NDS)for Wood Construction

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C2	(2001) Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes
AWPA P5	(2002) Standard for Waterborne Preservatives

ASTM INTERNATIONAL (ASTM)

ASTM F 547	(2001) Nails for Use with Wood and Wood-Base Materials

SOUTHERN PINE INSPECTION BUREAU (SPIB)

SPIB 1003	(2002) Standard Grading Rules for Southern Pine Lumber

WEST COAST LUMBER INSPECTION BUREAU (WCLIB)

WCLIB 17	(2000) Standard Grading Rules

WESTERN WOOD PRODUCTS ASSOCIATION (WWPA)

WWPA G-5	(1998) Western Lumber Grading Rules

1.2 SCOPE OF WORK

Under this section, the work shall consist of the installation of timber curbing and anchor posts associated with the Nature Trail and installation of Guide Rails in accordance with the plans and specifications, and as directed by the Contracting Officer.

The Contractor shall carefully protect all preserved areas as shown on the plans, and shall also be liable for any and all damages to property caused by the work under this section. Any damages to property or to vegetation within preserved areas shall be restored to the original conditions to the satisfaction of the Contracting Officer.

1.3 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-02 Shop Drawings

Timber Curbing and Anchor Posts; G, AE.
Timber Railing; G, AE.
Submit shop drawings indicating materials, shop fabrication, and field erection details; including methods of fastening, at least 15 calendar days prior to starting work.

SD-04 Samples

Timber Curbing and Anchor Posts; G, AE.
Timber Railing; G, AE.
At least 7 days prior to start of construction of the associated Nature Trail or Guide Rails, submit sample of assembly.

SD-07 Certificates

Timber Curbing and Anchor Posts Grading and Marking; G, AE.
Timber Railing; G, AE.
Prior to installation, submit manufacturer's certificates (approved by an American Lumber Standards approved agency) attesting that lumber and material not normally grade marked meet the specified requirements. Submit a Certificate of Inspection for grade marked material by an American Lumber Standards Committee (ALSC) recognized inspection agency prior to shipment. Submit a certificate of compliance from the treating plant.

1.4 GRADING AND MARKING

Solid sawn and finger-jointed lumber shall bear an authorized gradestamp or grademark recognized by ALSC, or an ALSC recognized certification stamp, mark or hammerbrand. Surfaces that are to be exposed to view shall not bear grademarks, stamps, or any type of identifying mark. Hammer marking

will be permitted on timbers when all surfaces will be exposed to view.

1.5 DELIVERY AND STORAGE

Materials shall be delivered to the site in undamaged condition, stored off the ground in fully covered, well ventilated areas, and protected from extreme changes in temperature and humidity.

PART 2 PRODUCTS

2.1 TIMBER CURBING AND ANCHOR POSTS AND TIMBER RAILING

2.1.1 Sizes

Lumber and material sizes, as shown on the plans, shall conform to requirements of the rules or standards under which produced. Unless otherwise specified, lumber shall be surfaced on four sides. Unless otherwise specified, sizes indicated are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced.

2.1.2 Treatment

Lumber and timbers shall be treated in accordance with AWPA C2 with waterborne preservatives listed in AWPA P5 to a retention level of 0.40 pcf (intended for ground contact). The preservative shall penetrate 2.5 inches or 85% of the sapwood. CCA (chrimated copper arsenate) treatment is prohibited as a wood preservative treatment material.

2.1.3 Moisture Content

At the time lumber and other materials are delivered, and when installed, their moisture content shall be 4 inches or less, nominal thickness, 19 percent maximum; 5 inches or more, nominal thickness, 23 percent maximum in a 3 inch perimeter of the timber cross-section.

2.1.4 Wood

For Timber Curbs and Anchor Posts, species shall be Southern Yellow Pine; grade shall be in accordance with SPIB 1003. For Timber Railing, species shall be Southern Yellow Pine with grade in accordance with SPIB 1003 or Douglas Fir with grade in accordance with WCLIB 17 and/or WWPA G-5.

All exposed corners and faces shall be free from damage, dog holes, and pike or cant holes.

2.2 NAILS

Nails shall conform to ASTM F 547. Twelve penny nails galvanized steel shall be used. Nailing shall be in accordance with the recommended nailing schedule contained in AF&PA T10. Where detailed nailing requirements are not specified, nail size and spacing shall be sufficient to develop an adequate strength for the connection. The connection's strength shall be verified against the nail capacity tables in AF&PA T101. Reasonable

judgment backed by experience shall ensure that the designed connection will not cause the wood to split. If a load situation exceeds a reasonable limit for nails, a specialized connector shall be used.

PART 3 EXECUTION

3.1 FABRICATION

All fabrication shall be performed prior to treatment. Where field cuts have been made, the cut ends shall received two coats of concentrated preservative. Tight connections shall be made between members and fasters shall be installed without splitting wood. Deep tool marks shall be considered evidence of poor workmanship and cause for rejection of the pieces affected. All bolts shall be cut and peened to the satisfaction of the Contracting Officer.

3.2 DELIVERY AND STORAGE

Materials shall be delivered to the Project Site in undamaged condition, stored off of the ground in fully covered, well-ventilated areas, and protected from extreme changes in temperature and humidity. Damaged materials shall be replaced by the Contractor at no additional cost to the Government.

3.3 INSTALLATION

Timber Curbing and Anchor Posts shall be installed as shown on the plans. Nails shall be used to attach timber curbing to anchor posts.

All fabrication shall be performed prior to treatment. Where field cuts have been made, the cut ends shall received two coats of concentrated preservative.

-- End of Section --

SECTION 10430

EXTERIOR SIGNAGE
11/03

Work Item No. 0029 Interpretive Signs

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 the designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 3841	(1997; R 2001) Glass-Fiber-Reinforced Polyester Plastic Panels

AMERICAN WELDING SOCIETY (AWS)

AWS D1.2	(2003) Structural Welding Code Aluminum

1.2 SCOPE OF WORK

Work under this section shall include furnishing all labor, materials, equipment, and incidentals, necessary to fabricate and install interpretive signs in accordance with the plans, specifications, and the directions of the Contracting Officer, including sign supports.

The cost of developing the graphics for the interpretive signs shall not be included in the lump sum cost of the Contract. Graphics will be provided to the Contractor by the Contracting Officer.

1.3 SUBMITTALS

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

SD-02 Shop Drawings

Drawings for Interpretive Signs; G, AE.

Submit drawings showing scaled details of interpretive signs, including elevations of each type of sign; dimensions, details,

and methods of mounting; shape and thickness of materials; and details of construction. A schedule showing the location, sign type, and message shall be included. Drawings shall be submitted at least 30 days prior to start of construction.

Support System for Interpretive Signs; G, AE

Submit drawings showing scaled details of aluminum support systems for interpretive signs, including dimensions, details, shape and thickness of materials, and details of construction. Drawings shall be submitted at least 30 days prior to start of construction.

SD-03 Product Data

Interpretive Signs.

Submit manufacturer's descriptive data and catalog cuts at least 30 days prior to starting work. Manufacturer's installation instructions and cleaning instructions shall be included.

Graphics For Interpretive Signs; G, AE.

Submit hard copy and electronic copy of graphic layout of interpretive signs at least 60 days prior to starting work. Graphic layout shall be based on message content and design plans provided by the Contracting Officer.

Wind Load Requirements.

Submit design analysis and supporting calculations performed in support of signs at least 30 days prior to starting work.

SD-06 Test Reports

Testing.
Submit a report of post-installation test results for each interpretive sign within 3 days of installation.

SD-07 Certificates

Testing Laboratory Qualifications.
Submit qualifications of the commercial testing laboratory when test reports are submitted.

1.4 GENERAL

All interpretive signs as shown on the plans, shall be provided by a single manufacturer. Signs shall be of the detail, sizes, and types shown on the drawings, shall conform to the requirements specified herein, and shall be provided at the locations indicated. Message content and design shall be provided to the Contractor by the Contracting Officer. Signs shall be complete with support system as detailed, as well as related components, for a complete installation.

1.5 WIND LOAD REQUIREMENTS

Interpretive signs shall be designed to withstand 60 mph windload.

1.6 QUALIFICATIONS

Signs shall be the standard product of a manufacturer regularly engaged in the manufacture of the products. Items of equipment shall essentially duplicate equipment that has been in satisfactory use at least 2 years prior to bid opening.

1.7 DELIVERY AND STORAGE

Materials shall be wrapped for shipment and storage, delivered to the jobsite in manufacturer's original packaging, and stored in a clean, dry area in accordance with manufacturer's instructions.

1.8 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a one year period shall be provided.

PART 2 PRODUCTS

2.1 INTERPRETIVE SIGNS

Dimensions, details, and materials for interpretive signs, shall be in accordance with the plans and specifications. The Contractor shall provide 3 signs.

2.1.1 Support System for Interpretive Signs

Aluminum materials for support for the interpretive signs shall be in accordance with Section 05502A METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS.

Interior framing shall consist of an aluminum plate welded to aluminum molding and riveted to side supports as shown on the plans. Side supports shall consist of tubular aluminum panel supports welded to the post. Framing members shall be designed to permit fiberglass image embedded graphic panel removal as shown on the plans. Posts shall be one-piece tubular aluminum legs designed to accept panel framing system as shown on the plans. Openings shall be sealed from moisture and made tamper-proof.

2.1.1.1 Finishes

Framing members shall be finished with two coats of a two-component low-gloss polyurethane enamel; color charcoal. All surfaces to receive the coating shall be sandblasted.

2.1.2 Fiberglass Image Embedded Graphic Panels

Fiberglass image embedded graphic panels shall be provided in sizes shown

on drawings. Panels shall be fabricated a minimum of 0.125 inch fiberglass reinforced plastic (FRP). FRP shall be in accordance with ASTM D 3841, Type II, Grade 1, Class 124, as approved by the Contracting Officer. Panels shall be designed to be interchangeable. A total of 5 panels shall be provided for each sign as shown on the plans.

2.2 GRAPHICS FOR INTERPRETIVE SIGNS

2.2.1 Graphics

Sign graphics shall be fabricated using one of the following processes:

a. Digitally Imaged Embedment: A digitally imaged copy of the sign m essage shall be embedded in the FRP sheet and completely covered with thermosetting polyester resin. Message shall be embedded minimum 1/32 inch. Sheets shall be processed in one piece, in one process, to prevent delamination.

2.2.2 Message Content

Message content and design plans for interpretive signs, including colors, and font type and size, shall be provided to the Contractor by the Contracting Officer.

2.3 SHOP FABRICATION AND MANUFACTURE

2.3.1 Factory Workmanship

Work shall be assembled in the shop, as far as practical, ready for installation at the site. Work that cannot be shop assembled shall be given a trial fit in the shop to ensure proper field assembly. Holes for bolts and screws shall be drilled or punched. Drilling and punching shall produce clean, true lines and surfaces. Welding to or on structural aluminum shall be in accordance with AWS D1.2. Welding shall be continuous along the entire area of contact. Exposed welds shall be ground smooth. Exposed surfaces of work shall have a smooth finish and exposed riveting shall be flush. Fastenings shall be concealed where practical. Joints exposed to the weather shall be formed to exclude water. Drainage and weep holes shall be included as required to prevent condensation buildup.

2.3.2 Dissimilar Materials

Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wet or pressure-treated wood, or absorptive materials subject to wetting, the surfaces shall be protected with a coat of asphalt varnish or a coat of zinc-molybdate primer to prevent galvanic or corrosive action.

2.4 Concrete Footing

Materials for concrete footings shall conform to Section 03301 CAST-IN-PLACE STRUCTURAL CONCRETE.

PART 3 EXECUTION

3.1 INSTALLATION

Items shall be shipped knocked-down ready for site assembly. Packaged components shall be complete, including all accessories and hardware. New parts shall be acquired from the manufacturer; substitute parts will not be accepted unless approved by the manufacturer. Prior to installation, the Contracting Officer will inspect all parts.

The Contractor shall verify that finished grades and other operations affecting mounting surfaces have been completed prior to the installation of signs. Signs shall be installed plumb and true at mounting heights and locations indicated on the plans, and in accordance with approved manufacturer's instructions and at the direction of the Contracting Officer.

The Contractor shall excavate and compact for each interpretive sign and set the signs as shown on the plans. Excavation and formwork shall be approved by the Contracting Officer prior to pouring concrete.

Any vegetation within preserved areas damaged by the work under this section, as determined by the Contracting Officer, shall be replaced immediately after the completion of the work at no additional cost to the Government.

3.2 TESTING

Each interpretive sign shall be tested to determine a secure and correct installation. The Contractor shall determine that the installation is correct by measuring the physical dimensions and clearance of each installed sign for compliance with manufacturer's recommendations and/or as shown on the plans. Signs which do not comply shall be reinstalled. Written reports describing the results of the testing for the signs shall be submitted.

Where re-installation is required, the following shall be accomplished:

a. Re-install the product as specified. Material acquisition of replacement parts is the responsibility of the Contractor. Replacement materials that are new and supplied by the original manufacturer to match original materials are required.

b. Repair damage caused by the failed installation.

3.3 RESTORATION, CLEAN UP, AND PROTECTION

3.3.1 RESTORATION AND CLEAN UP

When installation of interpretive signs have been completed, the Contractor shall restore any areas damaged during installation operations to their original conditions.

Installation work areas shall also be cleaned up, including the removal of any excess materials. The Contractor shall remove damaged, excess, and

waste materials from the Project Site and dispose of the materials off Government property.

Newly installed signs shall be cleaned of dirt, stains, filings, excess materials, and other blemishes occurring from shipment and reinstallation or installation to the satisfaction of the Contracting Officer. Cleaning methods and agents shall be according to manufacturer's instructions or as indicated.

3.3.2 PROTECTION

Interpretive signs shall be protected against damage during construction. Hardware shall be adjusted for proper operation. Fiberglass, support systems, and other sign surfaces shall be cleaned in accordance with manufacturer's instructions. After signs are completed and inspected, the Contractor shall cover the signs and maintain the cover until it is instructed to be removed by the Contracting Officer or until the facility is to be opened to the public. Signs shall be cleaned, as required, at time of cover removal.

-- End of Section --