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**FACILITIES ENGINEERING DEPARTMENT
FACILITIES DIRECTORATE
Marine Corps Air Station
Cherry Point, North Carolina 28533-0006**

11000/LE
WR 4483112
17 MAR 2009

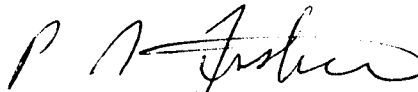
MEMORANDUM

From: Head, Civil Division
To: Environmental Affairs Officer

Subj: PROJECT WR4483112, Modify Transfer Station No.4185

Encl: (1) Drawings (3 sets, full size; 1 set half size)
(2) Specifications (3 sets)
(3) Electronic Copy (1 CD with pdf's of drawings and specifications)

1. Enclosures (1) through (3) provide the final drawings and specifications for the subject project.
2. Please prepare the request for permit to construct and submit to NCDENR.
3. Please inform this office when the permit has been received. We may solicit bids for this work prior to receiving the final permits, so any changes will require an amendment or modification.
4. If additional information is needed, contact Joe Meadows at 466-4717.


P. G. Fisher, P.E.

ec: Reading File

FACILITIES ENGINEERING DEPARTMENT
FACILITIES DIRECTORATE
Marine Corps Air Station
Cherry Point, North Carolina 28533-0006

4330/LE
WR 4483112
17 MAR 2009

MEMORANDUM

From: Head, Civil Division
To: Facilities Maintenance Department

Subj: PROJECT WR4483112, Modify Transfer Station No.4185

Encl: (1) NAVFAC Drawings #12522581-#12522587 (half size hard
copy and electronic)
(2) Specifications and Attachments (electronic copy)
(3) Cost Estimate (electronic copy)

1. Enclosures (1) - (3) contain the final design information for the subject project.
2. If acceptable, please return the signed CD to this office.
3. If additional information is required, please contact Project Manager, Joe Meadows at 466-4717.


P.G. FISHER, P.E.

ec: Reading File

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION, NAVAL FACILITIES ENGINEERING COMMAND
MARINE CORPS AIR STATION, CHERRY POINT, NORTH CAROLINA

MODIFY TRANSFER STATION FACILITY NO. 4185

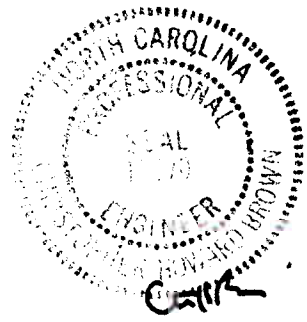
AT THE
MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA

DESIGNED BY:

NRW ENGINEERING, P.C.
748 LORD DUNMORE DRIVE
SUITE 101
VIRGINIA BEACH, VA 23464

DEWBERRY & DAVIS, INC.
2301 REXWOODS DRIVE
SUITE 200
RALEIGH, NORTH CAROLINA 27607

SPECIFICATION PREPARED BY:
CIVIL: CHRISTOPHER H. BROWN, P.E.



03.06.09

SPECIFICATION APPROVED BY:

Design Director:

J.E. FLEMING, P.E.

Date:

3/19/09

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DOCUMENT 00 01 15

LIST OF DRAWINGS

04/06

PART 1 GENERAL

1.1 SUMMARY

This document lists the drawings for the project pursuant to contract clause "DFARS 252.236-7001, Contract Drawings, Maps and Specifications."

1.2 DFARS 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.

Contract drawings are as follows:

DRAWING NO.	REVISION NO.	NAVFAC DWG NO.	TITLE
G-01	-	12522581	Cover Sheet
C-01	-	12522582	Site Plan

DRAWING NO.	REVISION NO.	NAVFAC DWG NO.	TITLE
C-02	-	12522583	Civil Details
S-01	-	12522584	Structural - General Notes and Plans
S-02	-	12522585	Structural - Overall Hopper Sections
S-03	-	12522586	Structural - Sections and Details
S-04	-	12522587	Structural - Sections and Details

1.3 SUPPLEMENTARY DRAWINGS

Not Used.

1.3.1 Reference Drawings

Not Used.

-- End of Document --

SECTION 01 11 00

SUMMARY OF WORK

07/06

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

1.1.1 Project Description

The work includes reconfiguration of a transfer station, demolition of a legacy transfer station, and demolition of existing utilities. New work includes steel framing and sheet metal, fencing, railing, and incidental related work.

1.1.2 Location

The work shall be located at the Marine Corps Air Station, Cherry Point, approximately as indicated. The exact location will be shown by the Contracting Officer.

1.2 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.

1.3 PHASED CONSTRUCTION SCHEDULE

Not Used.

1.4 LOCATION OF UNDERGROUND FACILITIES

It shall be the responsibility of the contractor to locate all existing underground utilities that are within the limits of work, prior to any excavation activities. These include but are not limited to the following buried utilities: water lines, sanitary and storm sewers, steam condensate, fuel lines, gas lines, electrical ducts and direct buried conductors, commercial telephone, Base telephone, commercial cable TV, Base instructional cable TV, EMCS and fire alarm. The contractor shall employ the services of a qualified Utility locating company to locate, identify, and mark all underground utilities. The entire construction limits shall be thoroughly scanned and researched to determine existing utility locations. Any existing utilities that are indicated on the project drawings shall be considered for reference use by the locating company and shall be verified. All underground utilities shall be clearly marked with flags, paint or stakes prior to any digging operation except that required to determine exact utility location and depth. CAUTION shall be used when trenching or excavating around or near buried utilities. The contractor

shall be responsible for the timely repair and/or replacement of direct and collateral damage on any and all underground utilities that are severed, crushed, broken, displaced or otherwise disturbed by the construction operation. The Government shall not incur any additional cost for such repair or replacement. The contractor shall notify the ROICC a minimum of three working days prior to utility location. Do not continue with excavation or installation of new work without resolving elevation discrepancies and conflicts.

1.5 Notification Prior to Excavation

Notify the Contracting Officer at least 48 hours prior to starting excavation work.

1.6 GOVERNMENT-FURNISHED MATERIAL AND EQUIPMENT

Not Used.

1.7 GOVERNMENT-INSTALLED WORK

Not Used.

1.8 Navy and Marine Corps (NMCI) Coordination Requirements

Not Used.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

-- End of Section --

SECTION 01 14 00

WORK RESTRICTIONS

07/06

PART 1 GENERAL

1.1 SPECIAL SCHEDULING REQUIREMENTS

The Legacy Transfer Hopper on the east side shall remain in operation during the modification of the Transfer Station on the west side. The Contractor shall conduct his operations so as to cause the least possible interference with normal operations of the activity. After acceptance and start-up of the west side transfer station, legacy hopper and associated demolition can be completed.

1.2 CONTRACTOR ACCESS AND USE OF PREMISES

1.3 Regulations

Ensure that Contractor personnel employed on the Activity become familiar with and obey Activity regulations. Keep within the limits of the work and avenues of ingress and egress. Wear hard hats in designated areas. Do not enter any restricted areas unless required to do so and until cleared for such entry. The Contractor's equipment shall be conspicuously marked for identification.

1.4 Working Hours

Regular working hours shall consist of an 8 1/2 hour period normally between the hours of 7:00 am to 4:30 pm, Monday through Friday, excluding Government holidays.

1.5 Work Outside Regular Hours

Work outside regular working hours requires Contracting Officer approval. Make application 15 calendar days prior to such work to allow arrangements to be made by the Government for inspecting the work in progress. During periods of darkness, the different parts of the work shall be lighted in a manner approved by the Contracting Officer.

1.6 Occupied Facilities

The Contractor shall be working around existing facilities which are occupied. Do not enter the facilities without prior approval of the Contracting Officer.

The existing facilities and their contents shall be kept secure at all times.

1.7 Utility Cutovers and Interruptions

- a. Permission to interrupt any Activity utility service shall be requested in writing a minimum of 15 calendar days prior to desired date of interruption.
- b. Make utility cutovers and interruptions after normal working hours or on Saturdays, Sundays, and Government holidays. Conform to

procedures required in the paragraph "Work Outside Regular Hours."

- c. Ensure that new utility lines are complete, except for the connection, before interrupting existing service.
- d. Interruption to water, sanitary sewer, storm sewer, telephone service, electric service, air conditioning, heating, fire alarm, and compressed air shall be considered utility cutovers pursuant to the paragraph entitled "Work Outside Regular Hours."
- e. Operation of Station Utilities: The Contractor shall not operate nor disturb the setting of control devices in the station utilities system, including water, sewer, electrical, and steam services. The Government will operate the control devices as required for normal conduct of the work. The Contractor shall notify the Contracting Officer giving reasonable advance notice when such operation is required.

1.8 SECURITY REQUIREMENTS

1.8.1 Station Regulations

No employee or representative of the contractor will be admitted to the work site without an Identification Badge or is specifically authorized admittance to the work site by the OIC, NAVFAC Contracts.

1.8.2 Contractor Access to MCAS Cherry Point and Outlying Areas.

DOCUMENTATION REQUIRED TO GRANT ACCESS TO COMMERCIAL AND CONTRACT EMPLOYEES
(THIS DOCUMENT IS AN AID IN MEETING AIR STATION ORDER 5500.14B REQUIREMENTS
AND IS NOT A SUBSTITUTE FOR THE ORDER)

1. Commercial and contract employees may be issued access to MCAS Cherry Point on an individual basis.
2. Commercial and contract employees must possess a picture identification card from a state or federal agency.
3. Commercial and contract employees must provide full name, social security number, date of birth, and mailing address.
4. Commercial and contract employees must provide a complete 50 state criminal records check on an annual basis. This records check may be obtained from any of the following Internet investigative services: Kroll (former Infolink Screening Services), Castle Branch, Accurate Background Investigations, Inc., or any other investigative services company that provides records checks of all 50 states. These services also validate social security card numbers.

All criminal history checks must be completed no more than 30 days prior to start date of contract. (Note: These Internet screening services are listed as possible sources for obtaining a criminal background check. The United States government and the United States Marine Corps do not endorse nor are they affiliated with any of these services.)

5. Commercial and contract employees must provide proof of citizenship/immigration status. Acceptable and Naturalization Service (INS) forms, and passports.

6. Commercial and contract employees must provide proof of employment and a list of all their employees requiring access.
7. Commercial and contract employees must provide an approved contract and sponsorship letter from the MCAS Cherry Point employer/contracting officer identifying the following:
 - a. The name of the company/business awarded the contract.
 - b. Contract number (if applicable)
 - c. Contract expiration/termination date
 - d. Flight line access with specific location (if required)
8. In accordance with ASO 5500.14b (not an inclusive list), access will be denied if it is determined that an individual:
 - a. Is on the National Terrorist Watch List
 - b. Is illegally present in the United States
 - c. Any reason the Installation Commander deems reasonable for the good order and discipline.
 - d. Is subject to an outstanding warrant.
 - e. Has knowingly submitted an employment questionnaire with false or fraudulent information.
 - f. Has been issued a debarment order and is currently banned from military installations.
 - g. Is a registered sex offender.
 - h. Has been convicted of a felony or a drug crime within the past five years
 - i. Individuals who have received a DUI/DWI in the last year will be allowed access to the installation, but will not be permitted to drive on the installation.
9. Commercial and contract employees will be issued a contractor's badge good for one year. Commercial and contract employees are required to resubmit a complete 50 state criminal records check in order to renew their badge.
10. All appeals shall be directed to the Installation Commander (Attn: Inspector's Office) for any individual that has been denied access to the installation.

Note: ID Cards issued to contractors at Camp Lejeune are valid at Cherry Point. Likewise the contractor badges issued at Cherry Point are valid at Camp Lejeune.

(*) Social Security numbers are required on all company letters and we will be doing periodic checks through the Social Security Administration in ensure accuracy and validity. SSNs are an intricate

part of the law enforcement identification system for personnel on board the Air Station and as required the privacy act is strictly adhered to in this regard.

(**) The United States Government and the United States Marine Corps does not endorse nor are they affiliated with any of the screening services. However we must be able to verify/validate the information contained in the CRC via telephone or the clearance information may not be accepted..

1.8.3 FLIGHTLINE SECURITY REQUIREMENTS

Not Used.

1.5 CELLULAR TELEPHONE RESTRICTIONS

Not Used

1.6 TRANSPORTATION TO AND FROM PINEY ISLAND

Not Used.

PART 2 EXECUTION

Not Used

-- End of Section --

SECTION 01 20 00.00 20

PRICE AND PAYMENT PROCEDURES

07/06

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)

EP-1110-1-8 (2003) Construction Equipment Ownership
and Operating Expense Schedule, Vol 1-12

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00
SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Schedule of prices; G

1.3 SCHEDULE OF PRICES

1.3.1 Data Required

Within 15 calendar days of notice of award, prepare and deliver to the Contracting Officer a schedule of prices (construction contract) on the forms furnished by the Government. Provide a detailed breakdown of the contract price, giving quantities for each of the various kinds of work, unit prices, and extended prices therefore.

1.3.2 Schedule Instructions

Payments will not be made until the Schedule of Prices has been submitted to and accepted by the Contracting Officer.

1.4 CONTRACT MODIFICATIONS

In conjunction with the Contract Clause "DFARS 252.236-7000, Modification Proposals-Price Breakdown," and where actual ownership and operating costs of construction equipment cannot be determined from Contractor accounting records, equipment use rates shall be based upon the applicable provisions of the EP-1110-1-8.

1.5 CONTRACTOR'S INVOICE

1.5.1 Content of Invoice

Requests for payment in accordance with the terms of the contract shall consist of the following:

- a. Contractor's Invoice on NAVFAC Form 7300/30, which shall show, in

summary form, the basis for arriving at the amount of the invoice.

- b. Contractor's Monthly Estimate for Voucher (LANTNAVFACENGCOM Form 4-4330/110 (New 7/84)), with subcontractor and supplier payment certification.
- c. Affidavit to accompany invoice (LANTDIV NORVA Form 4-4235/4 (Rev. 5/81)).
- d. Updated copy of submittal register.
- e. Updated copy of progress schedule. Furnish as specified in "FAR 52.236-15, Schedules for Construction Contracts."

1.5.2 Monthly Invoices and Supporting Forms

Forms will be furnished by the Contracting Officer. Requests for payment shall be processed in accordance with "FAR 52.232-5, Payments Under Fixed-Price Construction Contracts." Monthly invoices and supporting forms for work performed through the anniversary award date of the contract shall be submitted to the Contracting Officer between the 1st - 7th if contract's last digit is 0, 1, 2; 8th - 14th if contract's last digit is 3 or 4; 15th - 21st if contract's last digit is 5, 6, or 7; 22nd and last if the contract's last digit is 8th or 9th day of the month. Payments will be using Wide Area Workflow (WAWF). Submit the following documents with invoice WAWF:

- a. Contractor's invoice - original
- b. Contractor's monthly estimate for voucher
- c. Affidavit - original
- d. Progress schedule
- e. Certificate of Progress Payments - original
- f. Contractor Safety Self Evaluation Checklist

1.6 PAYMENTS TO THE CONTRACTOR

Payments will be made on submission of itemized requests by the Contractor which comply with the requirements of this section, and will be subject to reduction for overpayments or increase for underpayments made on previous payments to the Contractor.

1.6.1 Obligation of Government Payments

The obligation of the Government to make payments required under the provisions of this contract will, at the discretion of the Contracting Officer, be subject to reductions and/or suspensions permitted under the FAR and agency regulations including the following in accordance with "FAR 32.503-6:

- a. Reasonable deductions due to defects in material or workmanship;
- b. Claims which the Government may have against the Contractor under or in connection with this contract;

- c. Unless otherwise adjusted, repayment to the Government upon demand for overpayments made to the Contractor; and
- d. Failure to provide up to date record drawings not current as stated in Contract Clause "FAC 5252.236-9310, Record Drawings."

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

07/06

PART 1 GENERAL

1.1 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00
SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

List of contact personnel; G

1.2 MINIMUM INSURANCE REQUIREMENTS

Procure and maintain during the entire period of performance under this contract the following minimum insurance coverage:

- a. Comprehensive general liability: \$500,000 per occurrence
- b. Automobile liability: \$200,000 per person, \$500,000 per occurrence for bodily injury, \$20,000 per occurrence for property damage
- c. Workmen's compensation as required by Federal and State workers' compensation and occupational disease laws.
- d. Employer's liability coverage of \$100,000, except in States where workers compensation may not be written by private carriers,
- e. Others as required by North Carolina State law
- f. The Cancellation clause on the insurance certificate should read:

"Cancellation or any material change in the policies adversely affecting the interest of the Government in such insurance shall not be effective for such 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."

1.3 CONTRACTOR PERSONNEL REQUIREMENTS

1.3.1 Subcontractors and Personnel

Furnish a list of contact personnel of the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

1.3.2 Identification Badges

Identification badges will be furnished without charge. Application for use of badges will be as directed. Immediately report instances of lost or stolen badges to the Contracting Officer.

Within five (5) days of contract award, the contractor shall provide the following information on all personnel that will be providing services aboard the US Marine Corps Air Station, Cherry Point, NC.

(1) A list of all employees including name, social security number, date of birth and mailing address.

(2) In order to obtain access to the US Marine Corps Air Station, Cherry Point, NC and obtain an identification badge, per Air Station Order 5500.14 dated 15MAR2002, each contractor employee shall be required to present the following information to the Pass and Identification Office:

- a. Documentation less than 30 days old of a criminal records check from the state or county covering the previous two years. Criminal records checks may be obtained from, but is not limited to the following sources: County Courthouse, defense Security Service (www.dss.mil) and /or Infolink Screening Services, Inc. (www.infolinkscreening.com). Infolink Screening Services is listed as another possible sources to obtain a criminal background check. The Government does not endorse nor is it affiliated with Infolink Screening Services.
- b. Picture Identification Card from a state or federal agency.
- c. Proof of immigration status. Acceptable documents include birth certificate, Immigration and Naturalization Service (INS) forms, and passports.
- d. Identification card (badge) shall be worn and visible at all times while on the job site.
- e. Proof of employment.
- f. Letter from contractor reflecting the contract number and term of the contract.

(3). If an employee is terminated prior to end of the contract, the contractor shall return the base identification card to the Contracting Officer. This requirement also applies to all sub-contract employees.

(4) In no event will a contractor employee be permitted access to the US Marine Corps Air Station for the purpose of on-site performance without the documentation listed above. Failure to obtain this information will not result in extensions to contract start, delivery, or completion dates.

1.3.3 Contractor Personnel Requirements

Failure to obtain entry approval will not affect the contract price or time of completion.

1.4 SUPERVISION

Have at least one qualified supervisor capable of reading, writing, and conversing fluently in the English language on the job site during working hours. In addition, if a Quality Control (QC) representative is required on the contract, then that individual shall also have fluent English communication skills.

1.4.1 PRECONSTRUCTION CONFERENCE

After award of the contract but prior to commencement of any work at the site, meet with the Contracting Officer to discuss and develop a mutual understanding relative to the administration of the value engineering and safety program, preparation of the schedule prices, shop drawings, and other submittals, scheduling programming, and prosecution of the work.

1.5 PARTNERING

LEVEL C PARTNERING: To most effectively accomplish this contract, the Government requires the formation of a cohesive partnership with the Contractor and its subcontractors. The partnership will draw on the strength of each organization in an effort to achieve a quality project done right the first time, within budget, on schedule, and without any safety mishaps. This level of partnering discusses partnering concepts and benefits and should become a part of the preconstruction conference. The senior Government representative and senior Contractor representative present will jointly host the partnering sessions. The partners will determine the frequency of the follow-on sessions. Partnering sessions should be held at or near the location of the activity contracting office. The participants shall bear their own costs for meals, lodging, and transportation associated with partnering.

1.6 ELECTRONIC MAIL (E-MAIL) ADDRESS

The Contractor shall establish and maintain electronic mail (e-mail) capability along with the capability to open various electronic attachments in Microsoft, Adobe Acrobat, and other similar formats. Within 10 days after contract award, the Contractor shall provide the Contracting Officer a single (only one) e-mail address for electronic communications from the Contracting Officer related to this contract including, but not limited to contract documents, invoice information, request for proposals, and other correspondence. The Contracting Officer may also use email to notify the Contractor of base access conditions when emergency conditions warrant, such as hurricanes, terrorist threats, etc. Multiple email address will not allowed.

It is the Contractor's responsibility to make timely distribution of all Contracting Officer initiated e-mail with its own organization including field office(s). The Contractor shall promptly notify the Contracting Officer, in writing, of any changes to this email address.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 33 00

SUBMITTAL PROCEDURES

04/06

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, systems or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-05 Design Data

Design 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 logs and 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 manufacturer, 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-11 Closeout Submittals

1.1.3 Approving Authority

Office or designated person 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

The following shall be submitted in accordance with Section 01 33 00
SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Submittal register; G

1.3 USE OF SUBMITTAL REGISTER

Submittal register will be delivered to the Contractor. will have the following fields completed, to the extent that will be required by the Government during subsequent usage.

Column (c): Lists specification section in which submittal is required.

Column (d): Lists each submittal description (SD No. and type, e.g. SD-04 Drawings) required in each specification section.

Column (e): Lists one principal paragraph in specification section where a material or product is specified. This listing is only to facilitate locating submitted requirements. Do not consider entries in column (e) as limiting project requirements.

Column (f): Indicate approving authority for each submittal. A "G" indicates approval by Contracting Officer; a blank indicates approval by QC manager.

Prepare and maintain submittal register, as the work progresses. Use electronic submittal register program furnished by the Government or any other format. Do not change data which is output in columns (c), (d), (e), and (f) as delivered by Government; retain data which is output in columns (a), (g), (h), and (i) as approved.

1.3.1 Submittal Register

Submit submittal register with quality control plan and project schedule required by Section 01 45 00.00 20 CONSTRUCTION QUALITY CONTROL. Verify that all submittals required for project are listed and add missing submittals. Complete the following on the register:

Column (a) Activity Number: Activity number from the project schedule.

Column (g) Contractor Submit Date: Scheduled date for approving authority to receive submittals.

Column (h) Contractor Approval Date: Date Contractor needs approval of submittal.

Column (i) Contractor Material: Date that Contractor needs material delivered to Contractor control.

1.3.2 Contractor Use of Submittal Register

Update the following fields in the Government-furnished submittal register

program. .

Column (b) Transmittal Number: Contractor assigned list of consecutive numbers.

Column (j) Action Code (k): Date of action used to record Contractor's review when forwarding submittals to QC.

Column (l) List date of submittal transmission.

Column (q) List date approval received.

1.3.3 Approving Authority Use of Submittal Register

Update the following fields in the Government-furnished submittal register program. .

Column (b).

Column (l) List date of submittal receipt.

Column (m) through (p).

Column (q) List date returned to Contractor.

1.3.4 Contractor Action Code and Action Code

Entries used shall be as follows (others may be prescribed by Transmittal Form):

NR - Not Received

AN - Approved as noted

A - Approved

RR - Disapproved, Revise, and Resubmit

1.3.5 Copies Delivered to the Government

Deliver one copy of submittal register updated by Contractor to Government with each invoice request. Deliver in electronic format, unless a paper copy is requested by Contracting Officer.

1.4 PROCEDURES FOR SUBMITTALS

1.4.1 Reviewing, Certifying, Approving Authority

QC organization shall be responsible for reviewing and certifying that submittals are in compliance with contract requirements. At each "Submittal" paragraph in individual specification sections, a notation "G," following a submittal item, indicates Contracting Officer is approving authority for that submittal item. a blank indicates the Architect-Engineer of Record is the approving authority.

1.4.2 Constraints

- a. Submittals listed or specified in this contract shall conform to provisions of this section, unless explicitly stated otherwise.

- b. Submittals shall be complete for each definable feature of work; components of definable feature interrelated as a system shall be submitted at same time.
- c. When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, submittal will be returned without review.
- d. Approval of a separate material, product, or component does not imply approval of assembly in which item functions.

1.4.3 Scheduling

- a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential requirements to resubmit.
- b. Except as specified otherwise, allow review period, beginning with receipt by approving authority, that includes at least 15 working days for submittals for QC Manager approval and 20 working days for submittals for Contracting Officer approval. Period of review for submittals with Contracting Officer approval begins when Government receives submittal from QC organization. Period of review for each resubmittal is the same as for initial submittal.

1.4.4 Variations

Variations from contract requirements require Government approval pursuant to contract Clause entitled "FAR 52.236-21, Specifications and Drawings for Construction" and will be considered where advantageous to Government.

1.4.4.1 Considering Variations

Discussion with Contracting Officer prior to submission, will help ensure functional and quality requirements are met and minimize rejections and resubmittals. When contemplating a variation which results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

1.4.4.2 Proposing Variations

When proposing variation, deliver written request to the Contracting Officer, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to Government. If lower cost is a benefit, also include an estimate of the cost saving. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

1.4.4.3 Warranting That Variations Are Compatible

When delivering a variation for approval, Contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

1.4.4.4 Review Schedule Is Modified

In addition to normal submittal review period, a period of 10 working days

will be allowed for consideration by the Government of submittals with variations.

1.4.5 Contractor's Responsibilities

- a. Determine and verify field measurements, materials, field construction criteria; review each submittal; and check and coordinate each submittal with requirements of the work and contract documents.
- b. Transmit submittals to QC organization in accordance with schedule on approved Submittal Register, and to prevent delays in the work, delays to Government, or delays to separate Contractors.
- c. Advise Contracting Officer of variation, as required by paragraph entitled "Variations."
- d. Correct and resubmit submittal as directed by approving authority. When resubmitting disapproved transmittals or transmittals noted for resubmittal, the Contractor shall provide copy of that previously submitted transmittal including all reviewer comments for use by approving authority. Direct specific attention in writing or on resubmitted submittal, to revisions not requested by approving authority on previous submissions.
- e. Furnish additional copies of submittal when requested by Contracting Officer, to a limit of 20 copies per submittal.
- f. Complete work which must be accomplished as basis of a submittal in time to allow submittal to occur as scheduled.
- g. Ensure no work has begun until submittals for that work have been returned as "approved," or "approved as noted", except to the extent that a portion of work must be accomplished as basis of submittal.

1.4.6 QC Organization Responsibilities

- a. Note date on which submittal was received from Contractor on each submittal.
- b. Review each submittal; and check and coordinate each submittal with requirements of work and contract documents.
- c. Review submittals for conformance with project design concepts and compliance with contract documents.
- d. Act on submittals, determining appropriate action based on QC organization's review of submittal.

(1) When Architect-Engineer of Record is approving authority, forward the submittal to the A&E with the certifying statement or return submittal marked "not reviewed" or "revise and resubmit" as appropriate.

(2) When Contracting Officer is approving authority or when variation has been proposed, forward submittal to Government with certifying statement or return submittal marked "not reviewed" or "revise and resubmit" as appropriate.

- e. Ensure that material is clearly legible.
- f. Stamp each sheet of each submittal with QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

(1) When approving authority is Contracting Officer, QC organization will certify submittals forwarded to Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract Number XXXXXXXX, is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is submitted for Government approval.

Certified by Submittal Reviewer _____, Date _____
(Signature when applicable)

Certified by QC Manager _____, Date _____"
(Signature)

- g. Sign certifying statement or approval statement. The person signing certifying statements shall be QC organization member designated in the approved QC plan. The signatures shall be in original ink. Stamped signatures are not acceptable.
- h. Update submittal register as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by Contracting Officer.
- i. Retain a copy of approved submittals at project site, including Contractor's copy of approved samples.

1.4.7 Government's Responsibilities

When approving authority is Contracting Officer or Architect-Engineer, , the approving authority will:

- a. Note date on which submittal was received from QC manager, on each submittal for which the Contracting Officer is approving authority.
- b. Review submittals for approval within scheduling period specified and only for conformance with project design concepts and compliance with contract documents.
- c. Identify returned submittals with one of the actions defined in paragraph entitled "Actions Possible" and with markings appropriate for action indicated.

1.4.8 Actions Possible

Submittals will be returned with one of the following notations:

- a. Submittals marked "not reviewed" will indicate submittal has been previously reviewed and approved, is not required , does not have

evidence of being reviewed and approved by Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.

- b. Submittals marked "approved" "approved as submitted" authorize Contractor to proceed with work covered.
- c. Submittals marked "approved as noted" or "approval except as noted; resubmission not required" authorize Contractor to proceed with work as noted provided Contractor takes no exception to the notations.
- d. Submittals marked "revise and resubmit" or "disapproved" indicate submittal is incomplete or does not comply with design concept or requirements of the contract documents and shall be resubmitted with appropriate changes. No work shall proceed for this item until resubmittal is approved.

1.5 FORMAT OF SUBMITTALS

1.5.1 Transmittal Form

Transmit each submittal, except sample installations and sample panels, to office of approving authority. Transmit submittals with transmittal form prescribed by Contracting Officer and standard for project. The transmittal form shall identify Contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding sample panels and sample installations.

1.5.2 Identifying Submittals

Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

- a. Project title and location.
- b. Construction contract number.
- c. Section number of the specification section by which submittal is required.
- d. Submittal description (SD) number of each component of submittal.
- e. When a resubmission, add alphabetic suffix on submittal description, for example, SD-10A, to indicate resubmission.
- f. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other second tier Contractor associated with submittal.
- g. Product identification and location in project.

1.5.3 Format for SD-02 Shop Drawings

- a. Shop drawings shall not be less than 8 1/2 by 11 inches nor more than 30 by 42 inches.
- b. Present 8 1/2 by 11 inches sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.
- c. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph entitled "Identifying Submittals."
- d. Dimension drawings, except diagrams and schematic drawings; prepare drawings demonstrating interface with other trades to scale. Shop drawing dimensions shall be the same unit of measure as indicated on the contract drawings. Identify materials and products for work shown.
- e. Drawings shall include the nameplate data, size and capacity. Also include applicable federal, military, industry and technical society publication references.

1.5.4 Format of SD-03 Product Data and SD-08 Manufacturer's Instruction

- a. Present product data submittals for each section as a complete, bound volume. Include table of contents, listing page and catalog item numbers for product data.
- b. Indicate, by prominent notation, each product which is being submitted; indicate specification section number and paragraph number to which it pertains.
- c. Supplement product data with material prepared for project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for project.
- e. Product data shall include the manufacturer's name, trade name, place of manufacture, and catalog model or number. Submittals shall also include applicable federal, military, industry and technical society publication references. Should manufacturer's data require supplemental information for clarification, the supplemental information shall be submitted as specified for SD-07 Certificates.
- f. Where equipment or materials are specified to conform to industry and technical society reference standards of the organizations such as American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), and Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contracting Officer. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item complies with the

specified organization's reference standard.

- g. Submit manufacturer's instruction prior to installation.

1.5.5 Format of SD-04 Samples

- a. Furnish samples in sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately same size as specified:
 - (1) Sample of Equipment or Device: Full size.
 - (2) Sample of Materials Less Than 2 by 3 inches: Built up to 8 1/2 by 11 inches.
 - (3) Sample of Materials Exceeding 8 1/2 by 11 inches: Cut down to 8 1/2 by 11 inches and adequate to indicate color, texture, and material variations.
 - (4) Sample of Linear Devices or Materials: 10 inch length or length to be supplied, if less than 10 inches. Examples of linear devices or materials are conduit and handrails.
 - (5) Sample of Non-Solid Materials: Pint. Examples of non-solid materials are sand and paint.
 - (6) Color Selection Samples: 2 by 4 inches.
 - (7) Sample Panel: 4 by 4 feet.
 - (8) Sample Installation: 100 square feet.
- b. Samples Showing Range of Variation: Where variations are unavoidable due to nature of the materials, submit sets of samples of not less than three units showing extremes and middle of range.
- c. Reusable Samples: Incorporate returned samples into work only if so specified or indicated. Incorporated samples shall be in undamaged condition at time of use.
- d. Recording of Sample Installation: Note and preserve the notation of area constituting sample installation but remove notation at final clean up of project.
- e. When color, texture or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.

1.5.6 Format of SD-05 Design Data and SD-07 Certificates

- a. Provide design data and certificates on 8 1/2 by 11 inches paper. Provide a bound volume for submittals containing numerous pages.

1.5.7 Format of SD-06 Test Reports and SD-09 Manufacturer's Field Reports

- a. Provide reports on 8 1/2 by 11 inches paper in a complete bound volume.
- b. Indicate by prominent notation, each report in the submittal.

Indicate specification number and paragraph number to which it pertains.

1.5.8 Format of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals

- a. When submittal includes a document which is to be used in project or become part of project record, other than as a submittal, do not apply Contractor's approval stamp to document, but to a separate sheet accompanying document.

1.6 QUANTITY OF SUBMITTALS

1.6.1 Number of Copies of SD-02 Shop Drawings

- a. Submit six copies of submittals of shop drawings requiring review and approval only by QC organization and seven copies of shop drawings requiring review and approval by Contracting Officer.

1.6.2 Number of Copies of SD-03 Product Data and SD-08 Manufacturer's Instructions

Submit in compliance with quantity requirements specified for shop drawings.

1.6.3 Number of Samples SD-04 Samples

- a. Submit one sampleshowing range of variation, of each required item. One approved sample or set of samples will be retained by approving authority and one will be returned to Contractor.
- b. Submit one sample panel. Include components listed in technical section or as directed.
- c. Submit one sample installation, where directed.
- d. Submit one sample of non-solid materials.

1.6.4 Number of Copies SD-05 Design Data and SD-07 Certificates

- a. Submit in compliance with quantity requirements specified for shop drawings.

1.6.5 Number of Copies SD-06 Test Reports and SD-09 Manufacturer's Field Reports

- b. Submit in compliance with quantity with quality requirements specified for shop drawings.

1.6.6 Number of Copies of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals

- a. Unless otherwise specified, submit administrative submittals compliance with quantity requirements specified for shop drawings.

1.7 FORWARDING SUBMITTALS

1.7.1 Submittals Required from the Contractor

As soon as practicable after award of contract, and before procurement of

fabrication, forward to Dewberry & Davis, Inc.; 2301 Rexwoods Drive, Suite 200, Raleigh, NC 27607, submittals required in the technical sections of this specification, including shop drawings, product data and samples. One copy of the transmittal form for all submittals shall be forwarded to the Resident Officer in Charge of Construction, NAVFAC MIDLANT, PSC Box 8006, Cherry Point, North Carolina 28533-0006. Submit to the Resident Officer in Charge of Construction, NAVFAC MIDLANT Contracts, at the above address, for review and approval, the following:.

All submittals required by Division 01 - General Requirements.
All Submittals with "G" designations.

1.8 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.9 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."

1.10 Information Only

All submittals not requiring Government or Architect-Engineer of Record approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.10.1 APPROVED SUBMITTALS

The Contracting Officer's and Architect-Engineer'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 approving authority, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.10.1.1 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.

1.11 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.12 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 details 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 report; 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.

1.13 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. 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 track all submittals.

1.14 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 14 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.

1.15 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each time submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.16 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.16.1 Procedures

The Government will further discuss detailed submittal procedures with the contractor at the Preconstruction Conference.

1.16.1.1 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.

1.17 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".

1.18 GOVERNMENT AND ARCHITECT-ENGINEER

Upon completion of review of submittals requiring Government approval, the submittal will be identified as having received approval by being so stamped and dated. One copy of the submittal will be retained by the Architect-Engineer, three copies will be retained by the Contracting Officer and three copies will be returned to the Contractor.

1.19 INFORMATION ONLY

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 incorporate 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.

1.20 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 --

SUBMITTAL REGISTER												CONTRACT NO.					
TITLE AND LOCATION						CONTRACTOR											
Transfer Station																	
ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION OR REVIEW	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION		DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01 20 00.00 20	SD-01 Preconstruction Submittals														
			Schedule of prices	1.3	G												
		01 30 00	SD-01 Preconstruction Submittals														
			List of contact personnel	1.3.1	G												
		01 33 00	SD-01 Preconstruction Submittals														
			Submittal register	1.4.1	G												
		01 35 29	SD-01 Preconstruction Submittals														
			Accident Prevention Plan (APP)	1.7	G												
			Activity Hazard Analysis (AHA)	1.8	G												
			SD-06 Test Reports														
			Accident Reports	1.12.1	G												
			Monthly Exposure Reports	1.12.3	G												
			Crane Reports	1.12.4	G												
			SD-07 Certificates														
			Hot work permit	1.9	G												
			Contractor Safety Self-Evaluation	1.4	G												
			Checklist														
			Certificate of Compliance	1.12.5	G												
		01 45 00.00 20	SD-01 Preconstruction Submittals														
			Construction Quality Control (QC)	1.6.1	G												
			Plan														
		01 50 00.00 20	SD-01 Preconstruction Submittals														
			Traffic control plan	1.7	G												
		01 57 19.00 20	SD-01 Preconstruction Submittals														
			Preconstruction Survey	1.5.1	G												

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION Transfer Station						CONTRACTOR											
ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	GOVT OR CLASSIFICATION REVIEWER	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION		DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01 57 19.00 20	Solid Waste Management Plan and Permit	3.4	G												
			Regulatory Notification	1.5.2	G												
			Environmental Protection Plan	3.1	G												
			SD-06 Test Reports														
			Laboratory Analysis	3.5.2	G												
			SD-11 Closeout Submittals														
			Waste Determination	3.5	G												
			Documentation														
			Disposal Documentation for	3.6.1	G												
			Hazardous and Regulated Waste														
			Solid Waste Management Report	3.4.1													
			Contractor Hazardous Material	3.5.1	G												
			Inventory Log														
			Contractor Hazardous Material	3.6	G												
			Inventory Log														
			Hazardous Waste/Debris	3.13.1	G												
			Management														
		01 57 23.00 10	SD-07 Certificates														
			Mill Certificate or Affidavit	2.1.3													
		01 77 00.00 20	SD-11 Closeout Submittals														
			As-Built Drawings	1.4.1	G												
			Record Of Materials	1.4.2	G												
		03 30 00.00 20	SD-03 Product Data														
			Materials for curing concrete	2.2.7													
			Vapor retarder	2.2.6													

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION Transfer Station						CONTRACTOR											
ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	GOVT OR CLASSIFICATION REVIEWER	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION		DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		03 30 00.00 20	Vapor barrier	2.2.6													
			Epoxy bonding compound	2.2.9													
			SD-05 Design Data														
			mix design	2.1.1													
			SD-06 Test Reports														
			Concrete mix design	1.6.1.1													
			Fly ash	1.6.1.2													
			Pozzolan	1.6.1.2													
			Ground iron blast-furnace slag	1.6.1.3													
			Aggregates	1.6.1.4													
			Compressive strength tests	3.5.2.3													
		05 12 00	SD-02 Shop Drawings														
			Erection Plan	1.7.2.1													
			Fabrication drawings	1.7.1													
			SD-07 Certificates														
			Welding procedures and qualifications	1.7.2.2													
		31 00 00	SD-01 Preconstruction Submittals														
			Dewatering Work Plan	1.4.2	G												
			SD-03 Product Data														
			Utilization of Excavated Materials	3.9	G												
			Rock Excavation	1.4.1.2													
			Shoulder Construction	3.15													
			SD-06 Test Reports														
			Testing	3.18													
			Borrow Site Testing														

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION Transfer Station						CONTRACTOR											
ACTIVITY NO	TRANS MITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARA GRAPH	GOVT OR CLAS SIFIC ATION	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION		DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		31 00 00	SD-07 Certificates														
			Testing	3.18													
		32 31 13	SD-02 Shop Drawings														
			Erection/Installation Drawings	1.3													
			Fence Assembly	1.3													
			Location of Corner, End, and Pull Posts	3.17.1													
			SD-03 Product Data														
			Fence Assembly	1.3													
			SD-07 Certificates														
			Zinc Coating	2.2													
			Zinc Coating	2.13													
			Fabric	2.3													
			Fabric	2.4													
			Fabric	3.9													
			Stretcher Bars	2.14													
			Stretcher Bars	3.10													
			Concrete	2.22													
			Concrete	3.4													
			SD-08 Manufacturer's Instructions														
			Fence Assembly	1.3													
			Hardware Assembly	1.3													
			Accessories	1.3													
			Accessories	1.3													
		32 92 23	SD-03 Product Data														
			Fertilizer	2.4													

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SECTION 01 35 29

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

04/06

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 Z359.1 | (1992; R 1999) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components |
| ANSI/ASSE A10.34 | (2001) Protection of the Public on or Adjacent to Construction Sites |

ASME INTERNATIONAL (ASME)

- | | |
|-------------|--|
| ASME B30.22 | (2005) Articulating Boom Cranes |
| ASME B30.3 | (1996) Construction Tower Cranes |
| ASME B30.5 | (2004) Mobile and Locomotive Cranes |
| ASME B30.8 | (2004) Floating Cranes and Floating Derricks |

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

- | | |
|----------|---|
| NFPA 10 | (2002) Portable Fire Extinguishers |
| NFPA 241 | (2004) Safeguarding Construction, Alteration, and Demolition Operations |
| NFPA 51B | (2003) Fire Prevention During Welding, Cutting, and Other Hot Work |
| NFPA 70 | (2005) National Electrical Code |
| NFPA 70E | (2004) Electrical Safety in the Workplace |

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 1910	Occupational Safety and Health Standards
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.500	Fall Protection

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00
SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Accident Prevention Plan (APP); G

Activity Hazard Analysis (AHA); G

SD-06 Test Reports

Submit reports as their incidence occurs, in accordance with the
requirements of the paragraph entitled, "Reports."

Accident Reports; G

Monthly Exposure Reports; G

Crane Reports; G

SD-07 Certificates

Hot work permit; G; G

Contractor Safety Self-Evaluation Checklist; G

Certificate of Compliance (Crane); G

Submit one copy of each permit/certificate attached to each Daily
Production and Quality Control Report.

1.3 DEFINITIONS

a. Competent Person for Fall Protection. A person who is capable of
identifying hazardous or dangerous conditions in the personal fall
arrest system or any component thereof, as well as their application
and use with related equipment, and has the authority to take prompt
corrective measures to eliminate the hazards of falling.

b. High Visibility Accident. Any mishap which may generate publicity
and/or high visibility.

c. 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.

d. Operating Envelope. The area surrounding any crane. Inside this "envelope" is the crane, the operator, riggers and crane walkers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).

e. Qualified Person for Fall Protection. A person with a recognized degree or professional certificate, and with extensive knowledge, training and experience in the field of fall protection; who is capable of performing design, analysis, and evaluation of fall protection systems and equipment.

f. 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.

g. "USACE" property and equipment specified in USACE EM 385-1-1 should be interpreted as Government property and equipment.

h. 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, crane, and/or 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 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction conference. The checklist will be completed monthly by the Contractor and submitted with each request for payment voucher. An acceptable score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist

or achieve a score of at least 90, will result in a retention of up to 10 percent of the voucher.

1.5 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 the following federal, state, and local, laws, ordinances, criteria, rules and regulations. 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.

1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 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 SSHO shall meet the following requirements:

Level 2:

- A minimum of 3 years safety work on similar project.
- 30-hour OSHA construction safety class or equivalent within last 3 years.
- Competent person training as needed.

1.6.1.2 Crane Operators

Crane operators shall meet the requirements in USACE EM 385-1-1, Section 16 and Appendix G. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacities of 50,000 pounds or greater, crane operators shall be designated as qualified by a source that qualifies crane operators (i.e., union, a government agency, or an organization that tests and qualifies crane operators). Proof of current qualification shall be provided.

1.6.2 Personnel Duties

1.6.2.1 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.

1.6.3 Meetings

1.6.3.1 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.

1.6.3.2 Safety Meetings

Shall be conducted and documented as required by EM 385-1-1. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractors' daily quality control report.

1.7 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, the designated site safety and health officer and any designated CSP and/or CIH.

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.

1.7.1 EM 385-1-1 Contents

In addition to the requirements outlines in Appendix A of USACE EM 385-1-1, the following is required:

a. Names and qualifications (resumes including education, training, experience and certifications) of all site safety and health personnel designated to perform work on this project to include the designated site safety and health officer and other competent and qualified personnel to be used such as CSPs, CIHs, STSS, CHSTs. The duties of each position shall be specified.

b. Qualifications of competent and of qualified persons. As a minimum, competent persons shall be designated and qualifications submitted for each of the following major areas: excavation;

scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; personal protective equipment and clothing to include selection, use and maintenance.

c. Confined Space Entry Plan. Develop a confined space entry plan in accordance with USACE EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

d. Crane Critical Lift Plan. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.C.18. and the following:

(1) For lifts of personnel, the plan shall demonstrate compliance with the requirements of 29 CFR 1926.550(g).

(2) For barge mounted mobile cranes, barge stability calculations identifying barge list and trim based on anticipated loading; and load charts based on calculated list and trim. The amount of list and trim shall be within the crane manufacturer's requirements.

e. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place and during different phases of construction. It shall address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m (6 feet). A qualified person for fall protection shall prepare and sign the plan. The plan shall include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Fall Protection and Prevention Plan shall be revised every six months for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. The accepted Fall Protection and Prevention Plan shall be kept and maintained at the job site for the duration of the project. The Fall Protection and Prevention Plan shall be included in the Accident Prevention Plan (APP).

1.8 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.

1.9 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. Additional items required to be posted include:

Hot work permit.

1.10 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.

1.11 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.12 REPORTS

1.12.1 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 Navy Contractor Significant Incident Report (CSIR) form 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 the WHE Accident Report (Crane and Rigging Gear) form and provide the report to the Contracting Officer within 30 calendar days of the accident. Crane operations shall not proceed until cause is determined and corrective actions have been implemented to the satisfaction of the contracting officer. The Contracting Officer will provide a blank copy of the accident report form.

1.12.2 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.

1.12.3 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.

1.12.4 Crane Reports

Submit crane inspection reports required in accordance with USACE EM 385-1-1, Appendix H and as specified herein with Daily Reports of Inspections.

1.12.5 Certificate of Compliance

The Contractor shall provide a Certificate of Compliance for each crane entering an activity under this contract (see Contracting Officer for a blank certificate). Certificate shall state that the crane and rigging gear meet applicable OSHA regulations (with the Contractor citing which OSHA regulations are applicable, e.g., cranes used in construction, demolition, or maintenance shall comply with 29 CFR 1926 and USACE EM 385-1-1 section 16 and Appendix H. Certify on the Certificate of Compliance that the crane operator(s) is qualified and trained in the operation of the crane to be used. The Contractor shall also certify that all of its crane operators working on the DOD activity have been trained in the proper use of all safety devices (e.g., anti-two block devices). These certifications shall be posted on the crane.

1.13 HOT WORK

Prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, a written permit shall be requested from the Fire Division. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. The Contractor will provide at least two (2) twenty (20) pound 4A:20 BC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in accordance with NFPA 51B and remain on-site for a minimum of 30 minutes after completion of the task or as specified on the hot work permit.

When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Division phone number. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE FIRE DIVISION IMMEDIATELY.

PART 2 PRODUCTS

PART 3 EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK

The Contractor shall comply with USACE EM 385-1-1, NFPA 241, the APP, the AHA, Federal and/or State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard shall prevail.

3.1.1 Hazardous Material Use

Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

3.1.2 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-isocyanates, 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.

3.1.3 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 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. Existing horizontal lifeline anchorages shall be certified (or re-certified) by a registered

professional engineer with experience in designing horizontal lifeline systems.

3.3.4 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).

3.3.5 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.

3.3.6 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 SHIPYARD REQUIREMENTS

Not Used.

3.5 SCAFFOLDING

Employees shall be provided with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access to scaffold platforms greater than 6 m (20 feet) in height shall be accessed by use of a scaffold stair system. Vertical ladders commonly provided by scaffold system manufacturers shall not be used for accessing scaffold platforms greater than 6 m (20 feet) in height. The use of an adequate gate is required. Contractor shall ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward. Special care shall be given to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material is prohibited. The first tie-in shall be at the height equal to 4 times the width of the smallest dimension of the scaffold base. Work platforms shall be placed on mud sills. Scaffold or work platform erectors shall have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

3.6 EQUIPMENT

3.6.1 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.

3.6.2 Weight Handling Equipment

- a. Cranes and derricks shall be equipped as specified in EM 385-1-1, section 16.
- b. The Contractor shall notify the Contracting Officer 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Prior to cranes entering federal activities, a Crane Access Permit must be obtained from the Contracting Officer. A copy of the permitting process will be provided at the Preconstruction Conference. Contractor's operator shall remain with the crane during the spot check.
- c. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person (as defined in ASME B30.5). All testing shall be performed in accordance with the manufacturer's recommended procedures.
- d. The Contractor shall comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, and ASME B30.8 for floating cranes and floating derricks.
- e. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.
- f. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of USACE EM 385-1-1 section 11 and ASME B30.5 or ASME B30.22 as applicable.
- g. Crane suspended personnel work platforms (baskets) shall not be used unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Personnel shall not be lifted with a line hoist or friction crane.
- h. Portable fire extinguishers shall be inspected, maintained, and recharged as specified in NFPA 10, Standard for Portable Fire Extinguishers.
- i. All employees shall be kept clear of loads about to be lifted and

of suspended loads.

j. The Contractor shall use cribbing when performing lifts on outriggers.

k. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

l. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.

m. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer personnel.

n. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer personnel.

o. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

p. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations the contractor shall set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work site. This maximum wind speed determination shall be included as part of the activity hazard analysis plan for that operation.

3.6.3 Equipment and Mechanized Equipment

a. Proof of qualifications for operator shall be kept on the project site for review.

b. Manufacture specifications or owner's manual for the equipment shall be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Such additional safety precautions or requirements shall be incorporated into the AHAs.

3.7 EXCAVATIONS

The competent person shall perform soil classification in accordance with 29 CFR 1926.

3.7.1 Utility Locations

Prior to digging, the appropriate digging permit must be obtained. All underground utilities in the work area must be positively identified by a private utility locating service in addition to any station locating service and coordinated with the station utility department. Any markings made during the utility investigation must be maintained throughout the contract.

3.7.2 Utility Location Verification

The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Digging within 0.061 m (2 feet) of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility the utility shall be exposed by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.

3.8 UTILITIES WITHIN CONCRETE SLABS

Not Used.

3.9 ELECTRICAL

3.9.1 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

3.9.2 Portable Extension Cords

Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70.

3.10 WORK IN CONFINED SPACES

Not Used.

-- End of Section --

SECTION 01 42 00

SOURCES FOR REFERENCE PUBLICATIONS

07/06

PART 1 GENERAL

1.1 REFERENCES

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

1.2 ORDERING INFORMATION

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

ACI INTERNATIONAL (ACI)
P.O. Box 9094
Farmington Hills, MI 48333-9094
Ph: 248-848-3700
Fax: 248-848-3701
E-mail: bkstore@concrete.org
Internet: <http://www.aci-int.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@aaashto.org
Internet: <http://www.aashto.org>

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
One East Wacker Drive
Chicago, IL 60601-1802
Ph: 312-670-2400
Fax: 312-670-5403
Publications: 800-644-2400
E-mail: pubs@aisc.org
Internet: <http://www.aisc.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/>

--- ANSI documents beginning with the letter "S" can be ordered from:

Acoustical Society of America (ASA)
2 Huntington Quadrangle, Suite 1N01
Melville, NY 11747-4502
Ph: 516-576-2360
Fax: 516-576-2377
E-mail: asa@aip.org
Internet: <http://asa.aip.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>

ASME INTERNATIONAL (ASME)
Three Park Avenue
New York, NY 10016-5990
Ph: 212-591-7722 or 800-843-2763
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>

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
Quincy, MA 02169-7471
Ph: 617-770-3000
Fax: 617-770-0700
E-mail: webmaster@nfpa.org
Internet: <http://www.nfpa.org>

TURFGRASS PRODUCERS INTERNATIONAL (TPI)
2 East Main Street
East Dundee, IL 60118
Ph: 847-649-5555 or 800-405-8873
Fax: 847-649-5678
E-mail: info@turfgrasssod.org
Internet: <http://www.turfgrasssod.org>

U.S. ARMY CORPS OF ENGINEERS (USACE)
Order CRD-C DOCUMENTS from:
U.S. Army Engineer Waterways Experiment Station

ATTN: Technical Report Distribution Section, Services
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3909 Halls Ferry Road
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Ph: 601-634-2664
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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Internet: <http://www.usace.army.mil/publications>
or <http://www.hnd.usace.army.mil/techinfo/engpubs.htm>

U.S. DEPARTMENT OF AGRICULTURE (USDA)
Order AMS Publications from:
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Seed Regulatory and Testing Branch
801 Summit Crossing Place, Suite C
Gastonia, NC 28054-2193
Ph: 704-810-8870
Fax: 704-852-4189
Internet: <http://www.ams.usda.gov/lsg/seed.htm>
E-mail: seed.ams@usda.gov

Order Other Publications from:
U.S. Department of Agriculture, Rural Utilities Service
14th and Independence Avenue, SW, Room 4028-S
Washington, DC 20250
Ph: 202-720-2791
Fax: 202-720-2166
Internet: <http://www.usda.gov/rus>

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)
Office of Highway Safety (HHS-31)
400 Seventh Street, SW
Washington, DC 20590-0001
Ph: 202-366-0411
Fax: 202-366-2249
Internet: <http://www.fhwa.dot.gov>
Order from:

Superintendent of Documents
U. S. Government Printing Office (GPO)
732 North Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800
Fax: 202-512-2104
E-mail: contactcenter@gpo.gov
Internet: <http://www.gpoaccess.gov>

U.S. GENERAL SERVICES ADMINISTRATION (GSA)
General Services Administration

1800 F Street, NW
Washington, DC 20405
Ph: 202-501-1021
Internet: www.GSA.gov

Order from:
General Services Administration
Federal Supply Service Bureau
1941 Jefferson Davis Highway
Arlington, VA 22202
Ph: 703-605-5400
Internet: <http://apps.fss.gsa.gov/pub/fedspecs/index.cfm>

- - - - - Commercial Item Description Documents - - - - -

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Fax: 301-837-0483
Internet: <http://www.archives.gov>

Order documents from:
Superintendent of Documents
U.S. Government Printing Office (GPO)
732 North Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800
Fax: 202-512-2104
E-mail: contactcenter@gpo.gov
Internet: <http://www.gpoaccess.gov>

-- End of Section --

SECTION 01 45 00.00 20

CONSTRUCTION QUALITY CONTROL

07/06

PART 1 GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2003) Safety -- Safety and Health Requirements

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Construction Quality Control (QC) Plan; G

Submit a Construction QC Plan within 20 calendar days after receipt of Notice of Award.

The QC Plan shall include a preliminary submittal of the list of definable features of work that shall cover the first 90 days of construction.

1.3 INFORMATION FOR THE CONTRACTING OFFICER

Prior to commencing work on construction, the Contractor can obtain a single copy set of the current report forms from the Contracting Officer. The report forms will consist of the Contractor Production Report, Contractor Production Report (Continuation Sheet), Contractor Quality Control (CQC) Report, (CQC) Report (Continuation Sheet), Preparatory Phase Checklist, Initial Phase Checklist, Rework Items List, and Testing Plan and Log.

At the Preconstruction Conference, the Contractor can obtain a single copy set of the current report forms from the Contracting Officer. The report forms will consist of the Contractor Production Report, Contractor Production Report (Continuation Sheet), Contractor Quality Control Report, Contractor Quality Control Report (Continuation Sheet), Preparatory Phase Checklist, Initial Phase Checklist, Rework Items List, and Testing Plan and Log, Other reports referenced below may be in formats customarily used by the Contractor, Testing laboratories, etc. and will contain the information required by this specification.

Deliver the following to the Contracting Officer during Construction:

- a. CQC Report: Mail or hand-carry the original (wet signatures) and one copy by 10:00 AM the next working day after each day that work is

performed. and for every seven consecutive calendar days of no-work.

b. Contractor Production Report: Mail or hand-carry the original (wet signatures) and one copy by 10:00 AM the next working day after each day that work is performed. and for every seven consecutive calendar days of no-work, attached to the CQC Report.

c. Preparatory Phase Checklist: Original attached to the original CQC Report and one copy attached to each QC Report copy.

d. Initial Phase Checklist: Original attached to the original CQC Report and one copy attached to each QC Report copy.

e. Field Test Reports: Mail or hand-carry the original within two working days after the test is performed, attached to the original CQC Report and one copy attached to each QC Report copy.

f. Monthly Summary Report of Tests: Mail or hand-carry the original attached to the last QC Report of the month.

g Testing Plan and Log: Mail or hand-carry the original attached to the last CQC Report of each month and one copy attached to each CQC Report copy. A copy of the final Testing Plan and Log shall be provided to the OMSI preparer for inclusion into the OMSI documentation.

h. Rework Items List: Mail or hand-carry the original attached to the last CQC Report of each month and one copy attached to each CQC Report copy.

i. CQC Meeting Minutes: Mail or hand-carry the original within two working days after the meeting is held, attached to the original CQC Report and one copy attached to each CQC Report copy.

j. QC Certifications: As required by the paragraph entitled "QC Certifications."

1.4 QC PROGRAM REQUIREMENTS

Establish and maintain a QC program as described in this section. This QC program is a key element in meeting the objectives of NAVFAC Commissioning. The QC program consists of a QC Organization, QC Plan, QC Plan Meeting(s), a Coordination and Mutual Understanding Meeting, QC meetings, three phases of control, submittal review and approval, testing, completion inspections, and QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract. The QC program shall cover on-site and off-site work and shall be keyed to the work sequence. No construction work or testing may be performed unless the QC Manager is on the work site. The QC Manager shall report to an officer of the firm and shall not be subordinate to the Project Superintendent or the Project Manager. The QC Manager, Project Superintendent and Project Manager must work together effectively. Although the QC Manager is the primary individual responsible for quality control, all individuals will be held responsible for the quality of work on the job.

1.4.1 Preliminary Construction Work Authorized Prior to Acceptance

The only construction work that is authorized to proceed prior to the acceptance of the QC Plan is mobilization of storage and office trailers,

temporary utilities, and surveying.

1.4.1.1 Approval

Approval of the QC Plan is required prior to the start of construction. The contracting Officer reserves the right to require changes in the QC Plan and operations as necessary, including removal of personnel, to ensure the specified quality of work. The Contracting Officer reserves the right to interview any member of the QC organization at any time in order to verify the submitted qualifications. All QC organization personnel shall be subject to acceptance by the Contracting Officer. The Contracting Officer may require the removal of any individual for non-compliance with quality requirements specified in the contract.

1.4.2 Notification of Changes

Notify the Contracting Officer, in writing, of any proposed changes in the QC Plan or changes to the QC organization personnel, a minimum of 7 work days prior to a proposed change. Proposed changes shall be subject to acceptance by the Contracting Officer.

1.5 QC ORGANIZATION

1.5.1 QC Manager

1.5.1.1 Duties

Provide a QC Manager at the work site to implement and manage the QC program. In addition to implementing and managing the QC program, the QC Manager may perform the duties of Project Superintendent. The QC Manager shall not be designated as the safety competent person as defined by EM 385-1-1. The QC Manager is required to attend the partnering meetings, QC Plan Meetings, Coordination and Mutual Understanding Meeting, conduct the QC meetings, perform the three phases of control, perform submittal review and approval, ensure testing is performed and provide QC certifications and documentation required in this Contract. The QC Manager is responsible for managing and coordinating the three phases of control and documentation performed by testing laboratory personnel and any other inspection and testing personnel required by this Contract. The QC Manager is the manager of all QC activities.

1.5.1.2 Qualifications

An individual with a minimum of 10 years combined experience in the following positions: Project Superintendent, QC Manager, Project Manager, Project Engineer or Construction Manager on similar size and type construction contracts which included the major trades that are part of this Contract. The individual shall have at least two years experience as a QC Manager. The individual must be familiar with the requirements of EM 385-1-1, and have experience in the areas of hazard identification and, safety compliance or a graduate of a four year accredited college or university program in one of the following disciplines: Engineering, Architecture, Construction Management, Engineering Technology, Building Construction, or Building Science, with a minimum of 50 years experience as a Project Superintendent, QC Manager, Project Manager, Project Engineer or Construction Manager on similar size and type construction contracts which included the major trades that are part of this Contract. The individual shall have at least two years experience as a QC Manager. The individual must be familiar with the requirements of EM 385-1-1, and have experience

in the areas of hazard identification and safety compliance.

1.5.2 Construction Quality Management Training

In addition to the above experience and education requirements, the QC Manager shall have completed the course entitled "Construction Quality Management (CQM) for Contractors." If the QC Manager does not have a current certification, they shall obtain the CQM for Contractors course certification within 90 days of award. This course is periodically offered by the Naval Facilities Engineering Command and the Army Corps of Engineers. Contact the Contracting Officer for information on the next scheduled class.

1.5.3 Alternate QC Manager Duties and Qualifications

Designate an alternate for the QC Manager at the work site to serve in the event of the designated QC Manager's absence. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year. The qualification requirements for the Alternate QC Manager shall be the same as for the QC Manager.

1.6 QUALITY CONTROL (QC) PLAN

1.6.1 Construction Quality Control (QC) Plan

1.6.1.1 Requirements

Provide, for acceptance by the Contracting Officer, a Construction QC Plan submitted in a three-ring binder that includes a table of contents, with major sections identified with tabs, with pages numbered sequentially that covers both on-site and off-site work and includes the following:

I. QC ORGANIZATION: A chart showing the QC organizational structure.

II. NAMES AND QUALIFICATIONS: Names and qualifications, in resume format, for each person in the QC organization. Include the CQM for Contractors course certifications for the QC Manager and Alternate QC Manager as required by the paragraphs entitled "Construction Quality Management Training" and "Alternate QC Manager Duties and Qualifications".

III. DUTIES, RESPONSIBILITY AND AUTHORITY OF QC PERSONNEL: Duties, responsibilities, and authorities of each person in the QC organization.

IV. OUTSIDE ORGANIZATIONS: A listing of outside organizations, such as architectural and consulting engineering firms, that will be employed by the Contractor and a description of the services these firms will provide.

V. APPOINTMENT LETTERS: Letters signed by an officer of the firm appointing the QC Manager and Alternate QC Manager and stating that they are responsible for implementing and managing the QC program as described in this Contract. Include in this letter the responsibility of the QC Manager and Alternate QC Manager to implement and manage the three phases of control, and their authority to stop work which is not in compliance with the Contract. The QC Manager shall issue letters of direction to all other QC Specialists outlining their duties, authorities, and responsibilities. Copies of the letters shall be

included in the QC Plan.

VI. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER: Procedures for reviewing, approving, and managing submittals. Provide the name(s) of the person(s) in the QC organization authorized to review and certify submittals prior to approval. Provide the initial submittal of the Submittal Register as specified in section 01 33 00 SUBMITTAL PROCEDURES.

VII. TESTING LABORATORY INFORMATION: Testing laboratory information required by the paragraphs entitled "Accreditation Requirements", as applicable.

VIII. TESTING PLAN AND LOG: A Testing Plan and Log that includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.

IX. PROCEDURES TO COMPLETE REWORK ITEMS: Procedures to identify, record, track, and complete rework items. Use Government forms to record and track rework items.

X. DOCUMENTATION PROCEDURES: Use Government form.

XI. LIST OF DEFINABLE FEATURES: A Definable Feature of Work (DFOW) is a task that is separate and distinct from other tasks and has control requirements, has the same control requirements and work crews.. A DFOW is identified by different trades or disciplines and is an item or activity on the construction schedule. The list of DFOWs shall include, but not be limited to, all critical path activities on the NAS. Include all activities for which this specification requires. Each design development stage and submittal package shall have separate DFOWs in the Network Analysis Schedule.

XII. PROCEDURES FOR PERFORMING THE THREE PHASES OF CONTROL: Identify procedures you will use to ensure the three phases of control are used to manage the quality on this project. For each DFOW, a Preparatory and Initial phase checklist will be filled out during the Preparatory and Initial phase meetings. The Preparatory and Initial Phases and meetings shall be conducted with a view towards obtaining quality construction by planning ahead and identifying potential problems for each DFOW.

XIII. PERSONNEL MATRIX: A personnel matrix showing for each section of the specification who will review and approve submittals, who will perform and document the three phases of control, and who will perform and document the testing.

XIV. PROCEDURES FOR COMPLETION INSPECTION: Procedures for identifying and documenting the completion inspection process. Include in these procedures the responsible party for punch out inspection, pre-final inspection, and final acceptance inspection.

XV. ORGANIZATION AND PERSONNEL CERTIFICATIONS LOG: Procedures for coordinating, tracking and documenting all certifications on subcontractors, testing laboratories, suppliers, personnel, etc. QC Manager will ensure that certifications are current, appropriate for the work being performed, and will not lapse during any period of the contract that the work is being performed.

1.7 QC PLAN MEETINGS

Prior to submission of the QC Plan, the QC Manager will meet with the Contracting Officer to discuss the QC Plan requirements of this Contract. The purpose of this meeting is to develop a mutual understanding of the QC Plan requirements prior to plan development and submission and to agree on the Contractor's list of DFOWs.

1.8 COORDINATION AND MUTUAL UNDERSTANDING MEETING

After submission of the QC Plan, and prior to the start of construction, the QC Manager will meet with the Contracting Officer to present the QC program required by this Contract. When a new QC Manager is appointed, the coordination and mutual understanding meeting shall be repeated.

1.8.1 Purpose

The purpose of this meeting is to develop a mutual understanding of the QC details, including documentation, administration for on-site and off-site work, , coordination of activities to be performed, and the coordination of the Contractor's management, production, and QC personnel. At the meeting, the Contractor will be required to explain in detail how three phases of control will be implemented for each DFOW, as well as how each DFOW will be affected by each management plan or requirement as listed below:

1.8.2 Coordination of Activities

Activities included in various sections shall be coordinated to assure efficient and orderly installation of each component. Coordinate operations included under different sections that are dependent on each other for proper installation and operation.

1.8.3 Attendees

As a minimum, the Contractor's personnel required to attend shall include an officer of the firm, the Project Manager, Project Superintendent, QC Manager, Alternate QC Manager, and subcontractor representatives. Each subcontractor who will be assigned QC responsibilities shall have a principal of the firm at the meeting. Minutes of the meeting will be prepared by the QC Manager and signed by the Contractor and the Contracting Officer. The Contractor shall provide a copy of the signed minutes to all attendees.

1.9 QC MEETINGS

After the start of construction, the QC Manager shall conduct weekly QC meetings at the work site with the Project Superintendent and the foremen who are performing the work of the DFOWs. The QC Manager shall prepare the minutes of the meeting and provide a copy to the Contracting Officer within two working days after the meeting. The Contracting Officer may attend these meetings. As a minimum, the following shall be accomplished at each meeting:

- a. Review the minutes of the previous meeting;
- b. Review the schedule and the status of work and rework;

- c. Review the status of submittals;
- d. Review the work to be accomplished in the next two weeks and documentation required;
- e. Resolve QC and production problems (RFI, etc.);
- f. Address items that may require revising the QC Plan;
- g. Review Accident Prevention Plan (APP);
- h. Review environmental requirements and procedures;
- i. Review Waste Management Plan;
- j. Review IAQ Management Plan;
- k. Review Environmental Management Plan;
- l. Review the status of training completion; and

1.10 DESIGN REVIEW AND DOCUMENTATION

1.11 THREE PHASES OF CONTROL

The Three Phases of Control shall adequately cover both on-site and off-site work and shall include the following for each DFOV.

1.11.1 Preparatory Phase

Notify the Contracting Officer at least two work days in advance of each preparatory phase meeting. The meeting shall be conducted by the QC Manager and attended by the Project Superintendent, and the foreman responsible for the DFOV. When the DFOV will be accomplished by a subcontractor, that subcontractor's foreman shall attend the preparatory phase meeting. Document the results of the preparatory phase actions in the daily Contractor Quality Control Report and in the Preparatory Phase Checklist. Perform the following prior to beginning work on each DFOV:

- a. Review each paragraph of the applicable specification sections;
- b. Review the Contract drawings;
- c. Verify that field measurements are as indicated on construction and/or shop drawings before confirming product orders, in order to minimize waste due to excessive materials;
- d. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required;
- e. Review the testing plan and ensure that provisions have been made to provide the required QC testing;
- f. Examine the work area to ensure that the required preliminary work has been completed;
- g. Arrange for the return of shipping/packaging materials, such as

wood pallets, where economically feasible;

h. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data;

i. Discuss construction methods, construction tolerances, workmanship standards, and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each DFOW;

k. Review the APP and appropriate Activity Hazard Analysis (AHA) to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted; and

1.11.2 Initial Phase

Notify the Contracting Officer at least two work days in advance of each initial phase. When construction crews are ready to start work on a DFOW, conduct the initial phase with the Project Superintendent, and the foreman responsible for that DFOW. Observe the initial segment of the DFOW to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily CQC Report and in the Initial Phase Checklist. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each DFOW:

- a. Establish the quality of workmanship required;
- b. Resolve conflicts;
- c. Ensure that testing is performed by the approved laboratory;
- d. Check work procedures for compliance with the APP and the appropriate AHA to ensure that applicable safety requirements are met; and

1.11.3 Follow-Up Phase

Perform the following for on-going work daily, or more frequently as necessary, until the completion of each DFOW and document in the daily CQC Report:

- a. Ensure the work is in compliance with Contract requirements;
- b. Maintain the quality of workmanship required;
- c. Ensure that testing is performed by the approved laboratory;
- d. Ensure that rework items are being corrected;
- e. Perform safety inspections; and

1.11.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same DFOW if the quality of on-going work is unacceptable, if there are changes in the applicable QC organization, if there are changes in the on-site production supervision or work crew, if work on a DFOW is resumed after

substantial period of inactivity, or if other problems develop.

1.11.5 Notification of Three Phases of Control for Off-Site Work

Notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases.

1.12 SUBMITTAL REVIEW AND APPROVAL

Procedures for submission, review and approval of submittals are described in Section 01 33 00 SUBMITTAL PROCEDURES.

1.13 TESTING

Except as stated otherwise in the specification sections, perform sampling and testing required under this Contract.

1.13.1 Accreditation Requirements

Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation. The laboratory's scope of accreditation must include the appropriate ASTM standards (E 329, C 1077, D 3666, D 3740, A 880, E 543) listed in the technical sections of the specifications. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the Corporate Office.

1.13.2 Laboratory Accreditation Authorities

Laboratory Accreditation Authorities include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology at <http://ts.nist.gov/ts/htdocs/210/214/214.htm>, the American Association of State Highway and Transportation Officials (AASHTO) program at <http://www.transportation.org/aashto/home.nsf/frontpage>, International Accreditation Services, Inc. (IAS) at <http://www.iasonline.org>, U. S. Army Corps of Engineers Materials Testing Center (MTC) at <http://www.wes.army.mil/SL/MTC/>, the American Association for Laboratory Accreditation (A2LA) program at <http://www.a2la.org/>, the Washington Association of Building Officials (WABO) at <http://www.wabo.org/> (Approval authority for WABO is limited to projects within Washington State), and the Washington Area Council of Engineering Laboratories (WACEL) at <http://www.wacel.org/labaccred.html> (Approval authority by WACEL is limited to projects within Facilities Engineering Command (FEC) Washington geographical area).

1.13.3 Capability Check

The Contracting Officer retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.

1.13.4 Test Results

Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or

analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify the Contracting Officer immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results shall be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager. Furnish a summary report of field tests at the end of each month, per the paragraph entitled "INFORMATION FOR THE CONTRACTING OFFICER".

1.13.5 Test Reports and Monthly Summary Report of Tests

The QC Manager shall furnish the signed reports, certifications, and a summary report of field tests at the end of each month to the Contracting Officer. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month. A copy of the signed test reports and certifications shall be provided to the OMSI preparer for inclusion into the OMSI documentation.

1.14 QC CERTIFICATIONS

1.14.1 CQC Report Certification

Each CQC Report shall contain the following statement: "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge, except as noted in this report."

1.14.2 Invoice Certification

Furnish a certificate to the Contracting Officer with each payment request, signed by the QC Manager, attesting that as-built drawings are current, coordinated and attesting that the work for which payment is requested, including stored material, is in compliance with Contract requirements.

1.14.3 Completion Certification

Upon completion of work under this Contract, the QC Manager shall furnish a certificate to the Contracting Officer attesting that "the work has been completed, inspected, tested and is in compliance with the Contract."

1.15 COMPLETION INSPECTIONS

1.15.1 Punch-Out Inspection

Near the completion of all work or any increment thereof, established by a completion time stated in the Contract Clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the QC Manager shall conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings, specifications and Contract. Include in the punch list any remaining items on the "Rework Items List", which were not corrected prior to the Punch-Out Inspection. The punch list shall include the estimated date by which the deficiencies will be corrected. A copy of the punch list shall be provided to the Contracting Officer. The QC Manager, or staff, shall make follow-on inspections 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".

1.15.2 Pre-Final Inspection

The Government will perform this 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 QC Manager shall ensure that all items on this list are corrected prior to notifying the Government that a "Final" inspection with the Client can be scheduled. Any items noted on the "Pre-Final" inspection shall be corrected in a timely manner and shall be accomplished before the contract completion date for the work, or any particular increment thereof, if the project is divided into increments by separate completion dates.

1.15.3 Final Acceptance Inspection

The Contractor shall notify the Contracting Officer at least 14 calendar days prior to the date a final acceptance inspection can be held. The notice shall state that all items previously identified on the pre-final punch list will be corrected and acceptable, along with any other unfinished Contract work, by the date of the final acceptance inspection. The Contractor shall be represented by the QC Manager, the Project Superintendent, and others deemed necessary. Attendees for the Government will include the Contracting Officer, other ROICC personnel, and personnel representing the Client. 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 entitled "Inspection of Construction."

1.16 DOCUMENTATION

Maintain current and complete records of on-site and off-site QC program operations and activities.

1.16.1 Construction Documentation

Reports are required for each day that work is performed and shall be attached to the Contractor Quality Control Report prepared for the same day. Maintain current and complete records of on-site and off-site QC program operations and activities. The forms identified under the paragraph "INFORMATION FOR THE CONTRACTING OFFICER" shall be used. Reports are required for each day work is performed. Account for each calendar day throughout the life of the Contract. Every space on the forms must be filled in. Use N/A if nothing can be reported in one of the spaces. The Project Superintendent and the QC Manager must prepare and sign the Contractor Production and CQC Reports, respectively. The reporting of work shall be identified by terminology consistent with the construction schedule. In the "remarks" sections of the reports, enter pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site, quality control problem areas, deviations from the QC Plan, construction deficiencies encountered, meetings held. For each entry in the report(s), identify the Schedule Activity No. that is associated with the entered remark.

1.16.2 Quality Control Validation

Establish and maintain the following in a series of three ring binders. Binders shall be divided and tabbed as shown below. These binders shall be readily available to the Contracting Officer during all business hours.

- a. All completed Preparatory and Initial Phase Checklists, arranged by specification section.
- b. All milestone inspections, arranged by Activity Number.
- c. An up-to-date copy of the Testing Plan and Log with supporting field test reports, arranged by specification section.
- d. Copies of all contract modifications, arranged in numerical order. Also include documentation that modified work was accomplished.
- e. An up-to-date copy of the Rework Items List.
- f. Maintain up-to-date copies of all punch lists issued by the QC staff to the Contractor and Sub-Contractors and all punch lists issued by the Government.

1.16.3 Testing Plan and Log

As tests are performed, the QC Manager shall record on the "Testing Plan and Log" the date the test was performed and the date the test results were forwarded to the Contracting Officer. Attach a copy of the updated "Testing Plan and Log" to the last daily CQC Report of each month.

1.16.4 Rework Items List

The QC Manager shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Rework Items List" to the last daily CQC Report of each month. The Contractor shall be responsible for including those items identified by the Contracting Officer.

1.16.5 As-Built Drawings

The QC Manager is required to ensure the as-built drawings, required by Section 01 77 00.00 CLOSEOUT PROCEDURES are kept current on a daily basis and marked to show deviations which have been made from the Contract drawings. Ensure each deviation has been identified with the appropriate modifying documentation (e.g. PC No., Modification No., Request for Information No., etc.). The QC Manager shall initial each revision. Upon completion of work, the QC Manager shall furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the Contracting Officer.

1.17 NOTIFICATION ON NON-COMPLIANCE

The Contracting Officer will notify the Contractor of any detected non-compliance with the Contract. 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 for excess costs or damages by the Contractor.

1.18 CONSTRUCTION INDOOR AIR QUALITY (IAQ) MANAGEMENT PLAN

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PREPARATION

Designate receiving/storage areas for incoming material to be delivered according to installation schedule and to be placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. Store and handle materials in a manner as to prevent loss from weather and other damage. Keep materials, products, and accessories covered and off the ground, and store in a dry, secure area. Prevent contact with material that may cause corrosion, discoloration, or staining.

Protect all materials and installations from damage by the activities of other trades.

-- End of Section --

SECTION 01 50 00.00 20

TEMPORARY FACILITIES AND CONTROLS

04/06

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.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241 (2004) Safeguarding
Construction, Alteration, and Demolition
Operations

NFPA 70 (2005) National Electrical Code

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)

FHWA SA-89-006 (1988) Manual on Uniform Traffic Control
Devices for Streets and Highways

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00
SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Traffic control plan; G

1.3 BACKFLOW PREVENTERS CERTIFICATE

Not Used.

1.4 Utilities at Special Locations

Reasonable amounts of utilities will be made available to the Contractor at the prevailing Government rates. These rates may be obtained upon application to the Commanding Officer, by way of the Contracting Officer. The Contractor will be responsible for making connections, providing transformers and meters, (THE CONTRACTOR MUST CERTIFY THAT ALL TRANSFORMERS INSTALLED ARE TEMPORARY POWER DURING THIS CONTRACT ARE PCB FREE), and making disconnections; and for providing backflow preventer devices on connections to domestic water lines. Under no circumstances will taps to base fire hydrants be allowed for obtaining domestic water. Neither potable water nor sanitary facilities will be available at the main Contractor laydown area at Marine Corps Air Station (MCAS), Cherry Point, NC.

1.5 BACKFLOW TESTER CERTIFICATION

Not Used.

1.6 WEATHER PROTECTION

1.6.1 Building and Site Storm Protection

When a warning of gale force winds is issued, take precautions to minimize danger to persons, and protect the work and nearby Government property. Precautions shall include, but are not limited to, closing openings; removing loose materials, tools and equipment from exposed locations; and removing or securing scaffolding and other temporary work. Close openings in the work when storms of lesser intensity pose a threat to the work or any nearby Government property.

1.6.1.1 Hurricane Condition of Readiness

Unless directed otherwise, comply with:

- a. Condition FOUR (Sustained winds of 50 knots or greater expected within 72 hours): Normal daily jobsite cleanup and good housekeeping practices. Collect and store in piles or containers scrap lumber, waste material, and rubbish for removal and disposal at the close of each work day. Maintain the construction site including storage areas, free of accumulation of debris. Stack form lumber in neat piles less than 4 feet high. Remove all debris, trash, or objects that could become missile hazards. Contact Contracting Officer for Condition of Readiness (COR) updates and completion of required actions.
- b. Condition THREE (Sustained winds of 50 knots or greater expected within 48 hours): Maintain "Condition FOUR" requirements and commence securing operations necessary for "Condition ONE" which cannot be completed within 18 hours. Cease all routine activities which might interfere with securing operations. Commence securing and stow all gear and portable equipment. Make preparations for securing buildings. Review requirements pertaining to "Condition TWO" and continue action as necessary to attain "Condition THREE" readiness. Contact Contracting Officer for weather and COR updates and completion of required actions.
- c. Condition TWO (Sustained winds of 50 knots or greater expected within 24 hours): Curtail or cease routine activities until securing operation is complete. Reinforce or remove form work and scaffolding. Secure machinery, tools, equipment, materials, or remove from the jobsite. Expend every effort to clear all missile hazards and loose equipment from general base areas. Contact Contracting Officer for weather and Condition of Readiness (COR) updates and completion of required actions.
- d. Condition ONE. (Sustained winds of 50 knots or greater expected within 12 hours): Secure the jobsite, and leave Government premises.

1.7 Interruption of Vehicular Traffic

If during the performance of work, it becomes necessary to modify vehicular traffic patterns at any locations, notify the Contracting Officer at least 15 calendar days prior to the proposed modification date, and provide a Traffic Control Plan detailing the proposed controls to traffic movement for approval. The plan shall be in accordance with State and local

regulations and the FHWA SA-89-006, Part VI. Make all notifications and obtain any permits required for modification to traffic movements outside Station's jurisdiction. Provide cones, signs, barricades, lights, or other traffic control devices and personnel required to control traffic. Do not use foil-backed material for temporary pavement marking because of its potential to conduct electricity during accidents involving downed power lines.

1.8 TEMPORARY SANITARY FACILITIES

Provide adequate sanitary conveniences of a type approved for the use of persons employed on the work, properly secluded from public observation, and maintained in such a manner as required and approved by the Contracting Officer. Maintain these conveniences at all times without nuisance. Upon completion of the work, remove the conveniences from the premises, leaving the premises clean and free from nuisance. Dispose of sewage through connection to a municipal, district, or station sanitary sewage system. Where such systems are not available, use chemical toilets or comparably effective units, and periodically empty wastes into a municipal, district, or station sanitary sewage system, or remove waste to a commercial facility. Obtain approval from the system owner prior to discharge into any municipal, district, or commercial sanitary sewer system. Any penalties and / or fines associated with improper discharge shall be the responsibility of the Contractor. Coordinate with the Contracting Officer and follow station regulations and procedures when discharging into the station sanitary sewer system. Include provisions for pest control and elimination of odors.

1.9 TEMPORARY BUILDINGS

Trailers or storage buildings will be permitted, where space is available, subject to the approval of the Contracting Officer. The trailers or buildings shall be in good condition, free from visible damage rust and deterioration, and meet all applicable safety requirements. Trailers shall be roadworthy and comply with all appropriate state and local vehicle requirements. Failure to maintain storage trailers or buildings to these standards shall result in the removal of non-complying units at the Contractor's expense. A sign not smaller than 24 x 24 inches shall be conspicuously placed on the trailer depicting the company name, business phone number, and emergency phone number. Trailers shall be anchored to resist high winds and must meet applicable state and local standards for A laydown site will be provided as indicated for trailers, storage buildings, and/or bulk storage within five miles of the construction site.

1.9.1 Maintenance of Temporary Facilities

Suitably paint and maintain the temporary facilities. Failure to do so will be sufficient reason to require their removal.

PART 2 PRODUCTS

2.1 Backflow Preventers

Not Used.

PART 3 EXECUTION

3.1 TEMPORARY PHYSICAL CONTROLS

3.1.1 Access Controls

3.1.1.1 Temporary Barricades

Contractor shall provide for barricading around all work areas to prevent public access.

3.1.1.2 Fencing

Fencing shall be provided along the construction site for each road segment and isolated area of work to prevent access by unauthorized people (special emphasis shall be placed on preventing access by children). Fencing shall be a four feet high orange plastic grid supported at intervals sufficient to resist at least 250 pounds of force applied against the fence. Fencing shall be moved as work progresses. Place fencing on the side opposite the street side of the walkway to allow adequate work space for the Contractor's activities.

3.1.1.3 Signs

Place warning signs at the construction area perimeter designating the presence of construction hazards requiring unauthorized persons to keep out. Signs must be placed on all sides of the project, with at least one sign every 300 feet. All points of entry shall have signs designating the construction site as a hard hat area.

3.1.1.4 Traffic Work

All work around/involving roadways, to include roadway excavations and utility crossings, will be conducted in accordance with Manual of Traffic Control Devices. Contractors shall provide and ensure appropriate road closure and detour signs are established as necessary for motor traffic management. All road closures shall be coordinated with the Contracting Officer in advance. Self-illuminated (lighted) barricades shall be provided during hours of darkness. Brightly-colored (orange) vests are required for all personnel working in roadways. Road closures shall require a road closure plan showing the location of signage.

3.2 TEMPORARY WIRING

Provide temporary wiring in accordance with NFPA 241 and NFPA 70, Article 305-6(b), Assured Equipment Grounding Conductor Program. Program shall include frequent inspection of all equipment and apparatus.

3.3 REDUCED PRESSURE BACKFLOW PREVENTERS

Not Used.

3.4 GRASS CUTTING

Cut grass (or annual weeds) within construction and storage sites to a maximum 4 inch height at least once a week during the growing season unless the grass area is not visible to the public. Trim the grass around fences at time of grass cutting. Maintain grass or weeds on stockpiled earth as described above.

-- End of Section --

SECTION 01 57 19.00 20

TEMPORARY ENVIRONMENTAL CONTROLS

07/06

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. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
40 CFR 112	Oil Pollution Prevention
40 CFR 241	Guidelines for Disposal of Solid Waste
40 CFR 243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
40 CFR 258	Subtitle D Landfill Requirements
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 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 270	EPA Administered Permit Programs: The Hazardous Waste Permit Program
40 CFR 271	Requirements for Authorization of State Hazardous Waste Programs

40 CFR 272	Approved State Hazardous Waste Management Programs
40 CFR 273	Standards For Universal Waste Management
40 CFR 279	Standards for the Management of Used Oil
40 CFR 280	Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 355	Emergency Planning and Notification
40 CFR 372-SUBPART D	Specific Toxic Chemical Listings
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 173	Shippers - General Requirements for Shipments and Packaging
49 CFR 178	Specifications for Packaging

1.2 DEFINITIONS

1.2.1 Sediment

Soil and other debris that have eroded and have been transported by runoff water or wind.

1.2.2 Solid Waste

Garbage, refuse, debris, sludge, or other discharged material, including solid, liquid, semisolid, or contained gaseous materials resulting from domestic, industrial, commercial, mining, or agricultural operations. Types of solid waste typically generated at construction sites may include:

- a. Green waste: The vegetative matter from landscaping, land clearing and grubbing, including, but not limited to, grass, bushes, scrubs, small trees and saplings, tree stumps and plant roots. Marketable trees, grasses and plants that are indicated to remain, be re-located, or be re-used are not included.
- b. Surplus soil: Existing soil that is in excess of what is required for this work, including aggregates intended, but not used, for on-site mixing of concrete, mortars and paving. Contaminated soil meeting the definition of hazardous material or hazardous waste is not included.
- c. Debris: Non-hazardous solid material generated during the

construction, demolition, or renovation of a structure which exceeds 2.5 inch particle size that is: a manufactured object; plant or animal matter; or natural geologic material (e.g. cobbles and boulders), broken or removed concrete, masonry, and rock asphalt paving; ceramics; roofing paper and shingles. Inert materials may be reinforced with or contain ferrous wire, rods, accessories and weldments. A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection..

- d. Wood: Dimension and non-dimension lumber, plywood, chipboard, hardboard. Treated and/or painted wood that meets the definition of lead contaminated or lead based contaminated paint is not included.
- e. Scrap metal: Scrap and excess ferrous and non-ferrous metals such as reinforcing steel, structural shapes, pipe and wire that are recovered or collected and disposed of as scrap. Scrap metal meeting the definition of hazardous material or hazardous waste is not included.
- f. Paint cans: Metal cans that are empty of paints, solvents, thinners and adhesives. If permitted by the paint can label, a thin dry film may remain in the can.
- g. Recyclables: Materials, equipment and assemblies such as doors, windows, door and window frames, plumbing fixtures, glazing and mirrors that are recovered and sold as recyclable.
- h. Hazardous Waste: By definition, to be a hazardous waste a material must first meet the definition of a solid waste. Hazardous waste and hazardous debris are special cases of solid waste. They have additional regulatory controls and must be handled separately. They are thus defined separately in this document.

Material not regulated as solid waste are: nuclear source or byproduct materials regulated under the Federal Atomic Energy Act of 1954 as amended; suspended or dissolved materials in domestic sewage effluent or irrigation return flows, or other regulated point source discharges; regulated air emissions; and fluids or wastes associated with natural gas or crude oil exploration or production.

1.2.3 Hazardous Debris

As defined in Solid Waste paragraph, debris that contains listed hazardous waste (either on the debris surface, or in its interstices, such as pore structure) per 40 CFR 261; or debris that exhibits a characteristic of hazardous waste per 40 CFR 261.

1.2.4 Chemical Wastes

This includes salts, acids, alkalizes, herbicides, pesticides, and organic chemicals.

1.2.5 Garbage

Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.2.6 Hazardous Waste

Any discarded material, liquid, solid, or gas, which meets the definition of hazardous material or is designated hazardous waste by the Environmental Protection Agency or State Hazardous Control Authority as defined in 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, 40 CFR 268, 40 CFR 270, 40 CFR 271, 40 CFR 272, 40 CFR 273, 40 CFR 279, and 40 CFR 280.

1.2.7 Hazardous Materials

Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172.

Hazardous material is any material that:

- a. Is regulated as a hazardous material per 49 CFR 173, or
- b. Requires a Material Safety Data Sheet (MSDS) per 29 CFR 1910.120, or
- c. During end use, treatment, handling, packaging, storage, transpiration, or disposal meets or has components that meet or have potential to meet the definition of a hazardous waste as defined by 40 CFR 261 Subparts A, B, C, or D.

Designation of a material by this definition, when separately regulated or controlled by other instructions or directives, does not eliminate the need for adherence to that hazard-specific guidance which takes precedence over this instruction for "control" purposes. Such material include ammunition, weapons, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical waste and infectious materials, bulk fuels, radioactive materials, and other materials such as asbestos, mercury, and polychlorinated biphenyls (PCBs). Nonetheless, the exposure may occur incident to manufacture, storage, use and demilitarization of these items.

1.2.8 Waste Hazardous Material (WHM)

Any waste material which because of its quantity, concentration, or physical, chemical, or infectious characteristics may pose a substantial hazard to human health or the environment and which has been so designated.

Used oil not containing any hazardous waste, as defined above, falls under this definition.

1.2.9 Oily Waste

Those materials which are, or were, mixed with used oil and have become separated from that used oil. Oily wastes also means materials, including wastewaters, centrifuge solids, filter residues or sludges, bottom sediments, tank bottoms, and sorbents which have come into contact with and have been contaminated by, used oil and may be appropriately tested and discarded in a manner which is in compliance with other State and local requirements.

This definition includes materials such as oily rags, "kitty litter" sorbent clay and organic sorbent material. These materials may be land filled provided that:

- a. It is not prohibited in other State regulations or local ordinances
- b. The amount generated is "de minimus" (a small amount)
- c. It is the result of minor leaks or spills resulting from normal process operations
- d. All free-flowing oil has been removed to the practical extent possible

Large quantities of this material, generated as a result of a major spill or in lieu of proper maintenance of the processing equipment, are a solid waste. As a solid waste, a hazardous waste determination must be performed prior to disposal. As this can be an expensive process, it is recommended that this type of waste be minimized through good housekeeping practices and employee education.

1.2.10 Regulated Waste

Those solid waste that have specific additional Federal, state, or local controls for handling, storage, or disposal.

1.2.11 Class I Ozone Depleting Substance (ODS)

Class I ODS is defined in Section 602(a) of The Clean Air Act and includes the following chemicals:

chlorofluorocarbon-11 (CFC-11)	chlorofluorocarbon-213 (CFC-213)
chlorofluorocarbon-12 (CFC-12)	chlorofluorocarbon-214 (CFC-214)
chlorofluorocarbon-13 (CFC-13)	chlorofluorocarbon-215 (CFC-215)
chlorofluorocarbon-111 (CFC-111)	chlorofluorocarbon-216 (CFC-216)
chlorofluorocarbon-112 (CFC-112)	chlorofluorocarbon-217 (CFC-217)
chlorofluorocarbon-113 (CFC-113)	halon-1211
chlorofluorocarbon-114 (CFC-114)	halon-1301
chlorofluorocarbon-115 (CFC-115)	halon-2402
chlorofluorocarbon-211 (CFC-211)	carbon tetrachloride
chlorofluorocarbon-212 (CFC-212)	methyl chloroform

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Preconstruction Survey; G

Solid Waste Management Plan and Permit; G

Regulatory Notification; G

Environmental Protection Plan; G

SD-06 Test Reports

Laboratory Analysis; G

SD-11 Closeout Submittals

Some of the records listed below are also required as part of other submittals. For the "Records" submittal, maintain on-site a separate three-ring Environmental Records binder and submit at the completion of the project. Make separate parts to the binder corresponding to each of the applicable sub items listed below.

Waste Determination Documentation; G

Disposal Documentation for Hazardous and Regulated Waste; G

Solid Waste Management Report

Contractor Hazardous Material Inventory Log; G

Hazardous Waste/Debris Management; G

1.4 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Federal, State, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution.

Marine Corps Air Station, Cherry Point is listed on the National Priorities List pursuant to the Comprehensive Environmental Response, Compensation and Liabilities Act 42 USCA, Section 9601 et seq. as amended April 15, 1996 (CERCLA). Bogue Field, Oakgrove, BT-11 and Atlantic Field are not listed on the National Priorities List. The Contractor shall immediately bring to the Contracting Officer's attention any unanticipated site condition which may involve hazardous materials or hazardous waste and the Contractor shall not disturb such conditions without the Contracting Officer's prior written documentation as to whether such conditions are outside the contract requirements.

1.5 QUALITY ASSURANCE

1.5.1 Preconstruction Survey

Perform a Preconstruction Survey of the project site with the Contracting Officer, and take photographs showing existing environmental conditions in and adjacent to the site. Submit a report for the record.

1.5.2 Regulatory Notification

The Contractor is responsible for all Regulatory Notification requirements in accordance with Federal, State and local regulations. In cases where the Navy must also provide public notification (such as stormwater permitting), the Contractor must coordinate with the Contracting Officer. The Contractor shall submit copies of all regulatory notifications to the

Contracting Officer prior to commencement of work activities. Typically, regulatory notifications must be provided for the following (this listing is not all inclusive): demolition, renovation, NPDES defined site work, remediation of controlled substances (asbestos, hazardous waste, lead paint).

1.5.3 Environmental Brief

Attend an environmental brief to be included in the preconstruction meeting. Provide the following information: types, quantities, and use of hazardous materials that will be brought onto the activity; types and quantities of wastes/wastewater that may be generated during the contract. Discuss the results of the Preconstruction Survey at this time.

Prior to initiating any work on site, meet with the Contracting Officer and activity environmental staff to discuss the proposed Environmental Protection Plan. Develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural resources, required reports, required permits, permit requirements, and other measures to be taken.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 ENVIRONMENTAL PROTECTION PLAN

Prior to initiating any work on site, the Contractor will meet with the Contracting Officer to discuss the proposed Environmental Protection Plan and develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural resources, required reports, and other measures to be taken. The Environmental Protection Plan will be submitted in the following format and will, at a minimum, address the following elements:

- a. Description of the Environmental Protection Plan
 - (1) General overview and purpose
 - (2) General site information
- b. Protection of Natural Resources
 - (1) Land resources
 - (2) Tree protection
 - (3) Replacement of damaged landscape features
 - (4) Temporary construction
 - (5) Stream crossings
 - (6) Fish and wildlife resources
 - (7) Wetland areas

- c. Protection of Historical and Archaeological Resources
 - (1) Objectives
 - (2) Methods
- d. Storm Water Management and Control
 - (1) Ground cover
 - (2) Erodible soils
 - (3) Temporary measures
 - (a) Mechanical retardation and control of runoff
 - (b) Vegetation and mulch
- e. Protection of the Environment from Waste Derived from Contractor Operations
 - (1) Control and disposal of solid and sanitary waste
 - (2) Control and disposal of hazardous waste (Hazardous Waste Management Section)

This item will consist of the management procedures for all hazardous waste to be generated. The elements of those procedures will coincide with the Activity Hazardous Waste Management Plan. A copy of the Activity Hazardous Waste Management Plan will be provided by the Contracting Officer. As a minimum, include the following:

- (a) Procedures to be employed to ensure a written waste determination is made for appropriate wastes which are to be generated;
- (b) Sampling/analysis plan;
- (c) Methods of hazardous waste accumulation/storage (i.e., in tanks and/or containers);
- (d) Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted);
- (e) Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions (40 CFR 268);
- (f) Management procedures for recyclable hazardous materials such as lead-acid batteries, used oil, and the like;
- (g) Used oil management procedures in accordance with 40 CFR 279;
- (h) Pollution prevention\hazardous waste minimization procedures;

(i) Plans for the disposal of hazardous waste by permitted facilities;

(j) Procedures to be employed to ensure all required employee training records are maintained.

f. Prevention of Releases to the Environment

(1) Procedures to prevent releases to the environment

(2) Notifications in the event of a release to the environment

g. Regulatory Notification and Permits

(1) List what notifications and permit applications must be made. Include copies of all applicable, environmental permits.

3.1.1 Environmental Protection Plan Review

Fourteen days after the environmental protection meeting, submit the proposed Environmental Protection Plan for further discussion, review, and approval. Commencement of work will not begin until the environmental protection plan has been approved.

3.1.2 Licenses and Permits

Obtain licenses and permits pursuant to the "Permits and Responsibilities" FAR Clause.

The following permits will be obtained by the Contracting Officer:

1. Erosion and Sedimentation Control Plan, dated 2004 and Letter of Approval from NC-DENR dated 23 July 2004.

2. Permit to Construct from NC Division of Waste Management (to be issued).

For permits obtained by the Contracting Officer, whether or not required by the permit, the Contractor is responsible for conforming to all permit requirements and performing all quality control inspections of the work in progress, and to submit notifications and certifications to the applicable regulatory agency via the Contracting Officer.

The inspections and certifications will be provided through the services of a Professional Engineer (PE), registered in the State where the work is being performed. Where a PE is not required, the individual must be otherwise qualified by other current State licensure, specific training and prior experience (minimum 5 years). As a part of the quality control plan, which is required to be submitted for approval by the quality control section, provide a sub item containing the name, appropriate professional registration or licence number, address, and telephone number of the professionals or other qualified persons who will be performing the inspections and certifications for each permit.

3.1.2.1 Construction Dewatering Plan

Dewatering using well points is considered a well contractor activity, and must be performed or personally supervised by a North Carolina Certified Well Driller. Construction and abandonment must be performed per 15A NCAC

2C, Titled 15A, Subchapter 2C. Well construction and abandonment records are required, and the original copies shall be submitted to the Contracting Officer for review and submittal to the state. Submittal must also include the name(s) of NC Certified Well Driller and a copy of their certification.

3.2 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified. Conform to the national permitting requirements of the Clean Water Act.

Do not disturb fish and wildlife. Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as indicated or specified.

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without the Contracting Officer's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the Contracting Officer. Where such use of attached ropes, cables, or guys is authorized, the Contractor will be responsible for any resultant damage.

Protect existing trees which are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. By approved excavation, remove trees with 30 percent or more of their root systems destroyed. Remove trees and other landscape features scarred or damaged by equipment operations, and replace with equivalent, undamaged trees and landscape features. Obtain Contracting Officer's approval before replacement.

3.2.1 Erosion and Sediment Control Measures

3.2.1.1 Burnoff

Burnoff of the ground cover is not permitted.

3.2.1.2 Protection of Erodible Soils

Immediately finish the earthwork brought to a final grade, as indicated or specified. Immediately protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

3.2.1.3 Temporary Protection of Erodible Soils

Use the following methods to prevent erosion and control sedimentation:

a. Mechanical Retardation and Control of Runoff

(1) Mechanically retard and control the rate of runoff from the construction site. This includes construction of diversion ditches, benches, berms, and use of silt fences and straw bales to retard and divert runoff to protected drainage courses.

b. Sediment Basins

(1) Trap sediment in temporary sediment basins. Select a basin size to accommodate the runoff of a local 10-year storm. Pump dry and remove the accumulated sediment, after each storm. Use a paved weir or vertical overflow pipe for overflow. Remove collected sediment from the site. Institute effluent quality monitoring programs.

(2) Install, inspect, and maintain best management practices (BMPs) as required by the general permit. Prepare BMP Inspection Reports as required by the general permit. If required by the permit, include those inspection reports.

c. Vegetation and Mulch

(1) Provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Protect slopes by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.

(2) Seeding: Provide new seeding where ground is disturbed. Include topsoil or nutriment during the seeding operation necessary to reestablish a suitable stand of grass. The seeding operation will be as specified in Section 32 93 23 Sodding

3.2.2 Erosion, Sediment and Stormwater Control

Submit "Erosion and Sediment Control Reports" (E&S) (form provided at the pre-construction conference) and "Stormwater Inspections for General Permit NCG010000 - Land Disturbing Activities" (form provided at http://h2o.enr.state.nc.us/su/PDF_Files/SW_General_Permits/NCG01_Inspect_log.pdf) to the Contracting Officer once every 7 days and within 24 hours of a storm event that produces 0.5 inch or more of rain.

Comply with NCG010000, North Carolina Permit to Discharge Storm Water under the National Pollutant Discharge Elimination System. The existing permit may be obtained from:
http://h2o.enr.state.nc.us/su/PDF_Files/SW_General_Permits/NCG01_Inspect_log.pdf.

3.3 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Not Used.

3.4 SOLID WASTE MANAGEMENT PLAN and PERMIT

Provide to the contracting officer written notification of the quantity of solid waste/debris that is anticipated to be generated by construction. Include in the report the locations where various types of waste will be disposed or recycled. Include letters of acceptance or as applicable, submit one copy of a State and local permit or license showing such agencies' approval of the disposal plan before transporting wastes off Government property.

3.4.1 Solid Waste management Report

Monthly, submit a solid waste disposal report to the Contracting Officer.

For each waste, the report will state the classification (using the definitions provided in this section), amount, location, and name of the business receiving the solid waste. Include copies of the waste handling facilities' weight tickets, receipts, bills of sale, and other sales documentation. In lieu of sales documentation, the Contractor may submit a statement indicating the disposal location for the solid waste which is signed by an officer of the Contractor firm authorized to legally obligate or bind the firm. The sales documentation or Contractor certification will include the receiver's tax identification number and business, EPA or State registration number, along with the receiver's delivery and business addresses and telephone numbers. For each solid waste retained by the Contractor for his own use, the Contractor will submit on the solid waste disposal report the information previously described in this paragraph. Prices paid or received will not be reported to the Contracting Officer unless required by other provisions or specifications of this Contract or public law.

3.4.2 Control and Disposal of Solid Wastes

Pick up solid wastes, and place in covered containers which are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean. Recycling is encouraged and can be coordinated with the Contracting Officer and the activity recycling coordinator. Remove all solid waste (including non-hazardous debris) from Government property and dispose off-site at an approved landfill. Solid waste disposal off-site must comply with most stringent local, State, and Federal requirements including 40 CFR 241, 40 CFR 243, and 40 CFR 258.

3.5 WASTE DETERMINATION DOCUMENTATION

Complete a Waste Determination form (provided at the pre-construction conference) for all contractor derived wastes to be generated. Base the waste determination upon either a constituent listing from the manufacturer used in conjunction with consideration of the process by which the waste was generated, EPA approved analytical data, or laboratory analysis (Material Safety Data Sheets (MSDS) by themselves are not adequate). Attach all support documentation to the Waste Determination form. As a minimum, a Waste Determination form must be provided for the following wastes (this listing is not all inclusive): oil and latex based painting and caulking products, solvents, adhesives, aerosols, petroleum products, and all containers of the original materials.

3.5.1 Contractor Hazardous Material Inventory Log

Submit the Contractor Hazardous Material Inventory Log (found at: <http://www.wbdg.org/ccb/NAVGRAPH/01575n.pdf>), which provides information required by (EPCRA Sections 312 and 313) along with corresponding Material Safety Data Sheets (MSDS) to the Contracting Officer at the start and at the end of construction (30 days from final acceptance), and update no later than January 31 of each calendar year during the life of the contract. Documentation for any spills/releases, environmental reports or off-site transfers may be requested by the Contracting Officer.

3.5.2 Laboratory Analysis

Submit a copy of a Laboratory Analysis of solid waste and debris with the potential of becoming classified as a hazardous waste (i.e., abrasive/sand

blasting debris, etc.). Waste stream determinations are required at the point of generation and must sufficiently document whether the waste will be a solid waste, hazardous waste, or Resource Conservation and Recovery Act (RCRA) exempt waste. Determinations must use EPA approved methods and provide written rationale for whether the waste is classified as hazardous or non-hazardous. The Contractor will bear the cost of the waste stream determinations, and the Contracting Officer reserves the right to request waste stream determinations on questionable waste streams.

3.6 CONTRACTOR HAZARDOUS MATERIAL INVENTORY LOG

Submit the "Contractor Hazardous Material Inventory Log" (found at: <http://www.lantdiv.navfac.navy.mil/pls/lantdiv/docs/FOLDER/EICO/UFGS/GRAPHICS/01575.pdf>), which provides information required by (EPCRA Sections 312 and 313) along with corresponding Material Safety Data Sheets (MSDS) to the Contracting Officer at the start and at the end of construction (30 days from final acceptance), and update no later than January 31 of each calendar year during the life of the contract. Documentation for any spills/releases, environmental reports or off-site transfers may be requested by the Contracting Officer.

3.6.1 Disposal Documentation for Hazardous and Regulated Waste

Manifest, pack, ship and dispose of hazardous or toxic waste and universal waste that is generated as a result of construction in accordance with the generating facilities generator status under the Resource Conservation and Recovery Act. Contact the Contracting Officer for the facility RCRA identification number that is to be used on each manifest.

Submit a copy of the applicable EPA and State permit(s), manifest(s), or license(s) for transportation, treatment, storage, and disposal of hazardous and regulated waste by permitted facilities. Hazardous or toxic waste manifest must be reviewed, signed, and approved by the Navy before the Contractor may ship waste. To obtain specific disposal instructions the Contractor must coordinate with the Activity environmental office at 252-466-4591.

3.7 POLLUTION PREVENTION/HAZARDOUS WASTE MINIMIZATION

minimize the use of hazardous materials and the generation of hazardous waste. Include procedures for pollution prevention/ hazardous waste minimization in the Hazardous Waste Management Section of the Environmental Protection Plan. Consult with the activity Environmental Office for suggestions and to obtain a copy of the installation's pollution prevention/hazardous waste minimization plan for reference material when preparing this part of the plan. If no written plan exists, obtain information by contacting the Contracting Officer. Describe the types of the hazardous materials expected to be used in the construction when requesting information.

3.8 WHM/HW MATERIALS PROHIBITION

No waste hazardous material or hazardous waste shall be disposed of on government property. No hazardous material shall be brought onto government property that does not directly relate to requirements for the performance of this contract. The government is not responsible for disposal of Contractor's waste material brought on the job site and not required in the performance of this contract. The intent of this provision is to dispose of that waste identified as waste hazardous

material/hazardous waste as defined herein that was generated as part of this contract and existed within the boundary of the Contract limits and not brought in from offsite by the Contractor. Incidental materials used to support the contract including, but not limited to aerosol cans, waste paint, cleaning solvents, contaminated brushes, rags, clothing, etc. are the responsibility of the Contractor. The list is illustrative rather than inclusive. The Contractor is not authorized to discharge any materials to sanitary sewer, storm drain, or to the river or conduct waste treatment or disposal on government property without written approval of the Contracting Officer.

3.9 HAZARDOUS MATERIAL CONTROL

Include hazardous material control procedures in the Safety Plan. Address procedures and proper handling of hazardous materials, including the appropriate transportation requirements. Submit a MSDS and estimated quantities to be used for each hazardous material to the Contracting Officer prior to bringing the material on base. Typical materials requiring MSDS and quantity reporting include, but are not limited to, oil and latex based painting and caulking products, solvents, adhesives, aerosol, and petroleum products. At the end of the project, provide the Contracting Officer with the maximum quantity of each material that was present at the site at any one time, the dates the material was present, the amount of each material that was used during the project, and how the material was used. Ensure that hazardous materials are utilized in a manner that will minimize the amount of hazardous waste that is generated. Ensure that all containers of hazardous materials have NFPA labels or their equivalent. Keep copies of the MSDS for hazardous materials on site at all times and provide them to the Contracting Officer at the end of the project. Certify that all hazardous materials removed from the site are hazardous materials and do not meet the definition of hazardous waste per 40 CFR 261.

3.10 PETROLEUM PRODUCTS

Conduct the fueling and lubricating of equipment and motor vehicles in a manner that protects against spills and evaporation. Manage all used oil generated on site in accordance with 40 CFR 279. Determine if any used oil generated while on-site exhibits a characteristic of hazardous waste. Used oil containing 1000 parts per million of solvents will be considered a hazardous waste and disposed of at Contractor's expense. Used oil mixed with a hazardous waste will also be considered a hazardous waste.

3.10.1 Oily and Hazardous Substances

Prevent oil or hazardous substances from entering the ground, drainage areas, or navigable waters. In accordance with 40 CFR 112, surround all temporary fuel oil or petroleum storage tanks with a temporary berm or containment of sufficient size and strength to contain the contents of the tanks, plus 10 percent freeboard for precipitation. The berm will be impervious to oil for 72 hours and be constructed so that any discharge will not permeate, drain, infiltrate, or otherwise escape before cleanup occurs.

3.11 FUEL TANKS

Petroleum products and lubricants required to sustain up to 30 days of construction activity may be kept on site. Storage and refilling practices shall comply with 40 CFR Part 112. Secondary containment shall be provided

and be no less than 110 percent of the tank volume plus five inches of free-board. If a secondary berm is used for containment then the berm shall be impervious to oil for 72 hours and be constructed so that any discharge will not permeate, drain, infiltrate, or otherwise escape before cleanup occurs. Drips pans are required and the tanks must be covered during inclement weather.

3.12 RELEASES/SPILLS OF OIL AND HAZARDOUS SUBSTANCES

Exercise due diligence to prevent, contain, and respond to spills of hazardous material, hazardous substances, hazardous waste, sewage, regulated gas, petroleum, lubrication oil, and other substances regulated by environmental law. Maintain spill cleanup equipment and materials at the work site. In the event of a spill, take prompt, effective action to stop, contain, curtail, or otherwise limit the amount, duration, and severity of the spill/release. In the event of any releases of oil and hazardous substances, chemicals, or gases; immediately (within 15 minutes) notify the Base or Activity Fire Department, the activity's Command Duty Officer, and the Contracting Officer. If the contractor's response is inadequate, the Navy may respond. If this should occur, the contractor will be required to reimburse the government for spill response assistance and analysis.

The Contractor is responsible for verbal and written notifications as required by the federal 40 CFR 355, State, local regulations and Navy Instructions. Spill response will be in accordance with 40 CFR 300 and applicable State and local regulations. Contain and clean up these spills without cost to the Government. If Government assistance is requested or required, the Contractor will reimburse the Government for such assistance. Provide copies of the written notification and documentation that a verbal notification was made within 20 days.

Maintain spill cleanup equipment and materials at the work site. Clean up all hazardous and non-hazardous (WHM) waste spills. The Contractor shall reimburse the government for all material, equipment, and clothing generated during any spill cleanup. The Contractor shall reimburse the government for all costs incurred including sample analysis materials, equipment, and labor if the government must initiate its own spill cleanup procedures, for Contractor responsible spills, when:

- a. The Contractor has not begun spill cleanup procedure within one hour of spill discovery/occurrence, or
- b. If, in the government's judgment, the Contractor's spill cleanup is not adequately abating life threatening situation and/or is a threat to any body of water or environmentally sensitive areas.

3.13 CONTROL AND DISPOSAL OF HAZARDOUS WASTES

3.13.1 Hazardous Waste/Debris Management

Identify all construction activities which will generate hazardous waste/debris. Provide a documented waste determination for all resultant waste streams. Hazardous waste/debris will be identified, labeled, handled, stored, and disposed of in accordance with all Federal, State, and local regulations including 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, and 40 CFR 268. Hazardous waste will also be managed in accordance with the approved Hazardous Waste Management Section

of the Environmental Protection Plan. Store hazardous wastes in approved containers in accordance with 49 CFR 173 and 49 CFR 178. Hazardous waste generated within the confines of Government facilities will be identified as being generated by the Government. Prior to removal of any hazardous waste from Government property, all hazardous waste manifests must be signed by activity personnel from the Station Environmental Office. No hazardous waste will be brought onto Government property. Provide to the Contracting Officer a copy of waste determination documentation for any solid waste streams that have any potential to be hazardous waste or contain any chemical constituents listed in 40 CFR 372-SUBPART D. For hazardous wastes spills, verbally notify the Contracting Officer immediately.

3.13.1.1 Regulated Waste Storage/Satellite Accumulation/90 Day Storage Areas

If the work requires the temporary storage/collection of regulated or hazardous wastes, the Contractor will request the establishment of a Regulated Waste Storage Area, a Satellite Accumulation Area, or a 90 Day Storage Area at the point of generation. The Contractor must submit a request in writing to the Contracting Officer providing the following information:

<u>Contract Number</u>	_____	<u>Contractor</u>	_____
<u>Haz/Waste or</u> <u>Regulated Waste POC</u>	_____	<u>Phone Number</u>	_____
<u>Type of Waste</u>	_____	<u>Source of Waste</u>	_____
<u>Emergency POC</u>	_____	<u>Phone Number</u>	_____
<u>Location of the Site:</u> _____			
(Attach Site Plan to the Request)			

Attach a waste determination form. Allow ten working days for processing this request.

3.13.2 Class I ODS Prohibition

Class I ODS as defined and identified herein will not be used in the performance of this contract, nor be provided as part of the equipment. This prohibition will be considered to prevail over any other provision, specification, drawing, or referenced documents.

3.14 DUST CONTROL

Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not unnecessarily shake bags of cement, concrete mortar, or plaster.

3.14.1 Dirt and Dust Control Plan

Submit truck and material haul routes along with a plan for controlling dirt, debris, and dust on base roadways. As a minimum, identify in the

plan the subcontractor and equipment for cleaning along the haul route and measures to reduce dirt, dust, and debris from roadways.

3.15 ABRASIVE BLASTING

Not Used.

3.16 NOISE

Not Used.

3.17 MERCURY MATERIALS

Not Used.

3.18 Soil

Soils encountered during project activities shall be managed per Air Station soil management policies in affect for the duration of the project. If soil is encountered during construction operations that may be contaminated (as indicated by odor, color, or unusual appearance) that was not previously indicated as contaminated, stop the portion of work immediately and notify the Contracting Officer immediately.

Do not furnish or transport soils onto the MCAS Cherry Point when such act would violatc the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) or the General Statutes of North Carolina.

Provide certification that all soil furnished under the contract contains no petroleum or hazardous or toxic materials as defined in DoD Instruction 4715.6, which implements 10 U.S.C. 2692. The following methods shall be used to determine if soil meets this standard.

If the total amount of soil to be brought onto the MCAS Cherry Point for a single contract is less than 200 cubic yards, certify the soil meets the standard by inspecting for "Apparent Contamination" (visual or other indications of contamination including abnomlal or unnatural color, chemical or petroleum odors, or saturation with a chemical or petroleum). Soil which is contaminated, as determined by inspecting for "Apparent Contamination", shall not be utilized on the MCAS Cherry Point or outlying fields.

If the total amount of soil to be brought onto the MCAS Cherry Point for a single contract is greater than 200 cubic yards, provide certification that the soil meets the standard by analytical testing performed by a laboratory holding current certification from the North Carolina Department of Environment and Natural Resources, Division of Water Quality. Collect one representative sample of the soil to be used for each 200 cubic yards or fraction thereof, and analyze for Gasoline Range Organics, Diesel Range Organics, Oil and Grease, and 8 RCRA Metals (Totals). If any of the test results are greater than the Method Detection Limits for petroleum, the soil from which the sample was taken shall not be certified as meeting the standard. If any test results are greater than the following North Carolina soil-to-groundwater target concentrations for the 8 RCRA metals, the soil from which the sample was taken shall not be certified as meeting the standard. All units are mglkg (ppm): Arsenic 26.2; Barium 848; Cadmium 2.72; Chromium 27.2; Lead 270.06; Mercury 0.0154; Selenium 12.2; and Silver 0.223.

3.18.1 Quarantine for Imported Fire Ants

Onslow, Jones, and Carteret Counties and portions of Duplin and Craven Counties have been declared a generally infested area by the United States Department of Agriculture (USDA) for the imported fire ant. Compliance with the quarantine regulations established by this authority as set forth in USDA Publication 301.81 of 31 December 1992, is required for operations hereunder. Pertinent requirements of quarantine for materials originating on the Camp Lejeune reservation, the Marine Corps Air Station (Helicopter), New River and the Marine Corps Air Station, Cherry Point, which are to be transported outside Onslow County or adjacent suppression areas, include the following:

- a. Certification is required for the following articles and they shall not be moved from the reservation to any point outside Onslow County and adjacent designated areas unless accompanied by a valid inspection certificate issued by an Officer of the Plant Protection and Quarantine Program (PPQ) of the U.S. Department of Agriculture.
 - (1) Bulk soil
 - (2) Used Mechanized soil-moving equipment. (Used mechanized soil-moving equipment is exempt if cleaned of loose non compacted soil).
 - (3) Other products, articles, or means of conveyances, if it is determined by an inspector that they present a hazard of transporting spread of the imported fire ant and the person in possession thereof has been so notified.
- b. Authorization for movement of equipment outside the imported fire and regulated area shall be obtained from USDA, APHIS, PPQ, Attn: JB Perry, C/o NCSPA, 113 Arendell St. Room 216, Morehead City, NC 28557, telephone (252) 726-4358, fax (252) 726-5713. Requests for inspection shall be made sufficiently in advance of the date of movement to permit arrangement for the services of authorized inspectors. The equipment shall be prepared and assembled so that it may be readily inspected. Soil on or attached to equipment, supplies, and materials shall be removed by washing with water or such other means as necessary to accomplish complete removal. Resulting spoil shall be wasted as necessary and as directed.

-- End of Section --

SECTION 01 57 23.00 10

STORM WATER POLLUTION PREVENTION MEASURES
04/06

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 4439	(2004) Geosynthetics
ASTM D 4491	(1999; R 2004) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(2004) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 2003) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(2004) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(2002) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

1.2 GENERAL REQUIREMENTS

Contractor shall implement the storm water pollution prevention measures to prevent sediment from entering streams or water bodies as specified in this Section in conformance with the requirements of Section 01 57 20.00 10 ENVIRONMENTAL PROTECTION.

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-07 Certificates

Mill Certificate or Affidavit

Certificate attesting that the Contractor has met all specified requirements.

1.4 EROSION AND SEDIMENT CONTROLS

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

1.4.1 Stabilization Practices

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

1.4.1.1 Unsuitable Conditions

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

1.4.1.2 No Activity for Less Than 21 Days

When the total time period in which construction activity is temporarily ceased on a portion of the site is 21 days minimum, stabilization practices do not have to be initiated on that portion of the site until 14 days have elapsed after construction activity temporarily ceased.

1.4.2 Structural Practices

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

1.4.2.1 Silt Fences

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

PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

The geotextile shall comply with the requirements of ASTM D 4439, and shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers

and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE

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

2.1.2 Silt Fence Stakes and Posts

The Contractor shall use steel posts for fence construction. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds/linear foot and a minimum length of 5 feet.

2.1.3 Mill Certificate or Affidavit

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

2.1.4 Identification Storage and Handling

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

PART 3 EXECUTION

3.1 INSTALLATION OF SILT FENCES

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

3.2 MAINTENANCE

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

3.2.1 Silt Fence Maintenance

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

3.3 INSPECTIONS

3.3.1 General

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

3.3.2 Inspections Details

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

3.3.3 Inspection Reports

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

-- End of Section --

SECTION 01 62 35

RECYCLED / RECOVERED MATERIALS

07/06

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. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 247

Comprehensive Procurement Guideline for
Products Containing Recovered Materials

1.2 OBJECTIVES

Government procurement policy is to acquire, in a cost effective manner, items containing the highest percentage of recycled and recovered materials practicable consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials. The Environmental Protection Agency (EPA) has designated certain items which must contain a specified percent range of recovered or recycled materials. EPA designated products specified in this contract comply with the stated policy and with the EPA guidelines. The Contractor shall make all reasonable efforts to use recycled and recovered materials in providing the EPA designated products and in otherwise utilizing recycled and recovered materials in the execution of the work.

EPA maintains a Database of Manufacturers and Suppliers for each designated item at <http://www.epa.gov/cpg/database.htm>. Use of sources from this database is not required. It is intended as a tool to assist purchasers in locating products with recycled content.

1.3 EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

Various sections of the specifications contain requirements for materials that have been designated by EPA as being products which are or can be made with recovered or recycled materials. These items, when incorporated into the work under this contract, shall contain at least the specified percentage of recycled or recovered materials unless adequate justification for non-use is provided. The following are considered adequate justifications for non-use:

- a. The product does not meet appropriate performance standards.
- b. The product is not available within a reasonable time frame.
- c. The product is not available competitively (from two or more sources).
- d. The product is only available at an unreasonable price (compared

with a comparable non-recycled content product).

When a designated item is specified as an option to a non-designated item, the designated item requirements apply only if the designated item is used in the work.

1.4 EPA PROPOSED ITEMS INCORPORATED IN THE WORK

Products other than those designated by EPA are still being researched and are being considered for future Comprehensive Procurement Guideline (CPG) designation. It is recommended that these items, when incorporated in the work under this contract, contain the highest practicable percentage of recycled or recovered materials, provided specified requirements are also met.

1.5 EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

There are many products listed in 40 CFR 247 which have been designated or proposed by EPA to include recycled or recovered materials that may be used by the Contractor in performing the work but will not be incorporated into the work. These products include office products, temporary traffic control products, and pallets. It is recommended that these non-construction products, when used in the conduct of the work, contain the highest practicable percentage of recycled or recovered materials and that these products be recycled when no longer needed.

-- End of Section --

SECTION 01 77 00.00 20

CLOSEOUT PROCEDURES

07/06

PART 1 GENERAL

1.1 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00
SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

As-Built Drawings; G

Record Of Materials; G

1.2 CERTIFICATION OF EPA DESIGNATED ITEMS

Submit the Certification of EPA Designated Items as required by FAR 52.223-9, "Certification and Estimate of Percentage of Recovered Material Content for EPA Designated Items". The certification form shall include the following information: project name, project number, Contractor name, license number, Contractor address, and certification. The certification shall read as follows and shall be signed and dated by the Contractor. Each product used in the project that has a requirement or option of containing recycled content in accordance with Section 01 62 35 RECYCLED/RECOVERED MATERIALS shall be recorded, noting total price, total value of post-industrial recycled content, total value of post-consumer recycled content, total value of biobased content, exemptions (1, 2, 3, or 4, as indicated), and comments. Recycled and biobased content values may be determined by weight or volume percent, but must be consistent throughout.

1.3 PROJECT RECORD DOCUMENTS

1.3.1 As-Built Drawings

"NFAS 5252.236-9310, Record Drawings."

1.3.2 As-Built Record of Materials

Furnish a record of materials.

Where several manufacturers' brands, types, or classes of the item listed have been used in the project, designate specific areas where each item was used. Designations shall be keyed to the areas and spaces depicted on the contract drawing. Furnish the record of materials used in the following format:

MATERIALS DESIGNATION	SPECIFICATION	MANUFACTURER	MATERIALS USED (MANUFACTURER'S DESIGNATION)	WHERE USED
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1.4 EQUIPMENT/PRODUCT WARRANTIES

Not Used.

1.5 MECHANICAL TESTING AND BALANCING

Not Used.

1.6 CLEANUP

Not Used.

1.7 REAL PROPERTY RECORD

Not Used.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 80 00

REPORTS

07/06

PART 1 GENERAL

1.1 REPORTS INCLUDED

1.1.1 REPORT OF SUBSURFACE EXPLORATION MCAS CHERRY POINT - TRANSFER
STATION CHERRY POINT, NORTH CAROLINA

S&ME PROJECT NO. 1051-04-034
March 18, 2004

1.1.2 SOIL ISSUES

By Stan C. Kegley
30 January 2009

1.2 USE OF INFORMATION

1.2.1 Warranty

The information disclosed in the referenced reports is based on data obtained in specific locations and is assumed to be representative of conditions throughout the site. This information is furnished without warranty and is only for general information to be used by the contractor in the preparation of his bid and work schedule. It is not intended as a replacement for personal investigation and judgment, or interpretation of the information furnished, as required of the contractor in the performance of this contract.

1.2.2 Site Visit

Bidders should visit the site and acquaint themselves with all existing conditions prior to preparing their bid. This will include a review of the conditions contained in the enclosed report as they relate to the site. The contractor is responsible for including in his bid and work schedule, procedures for handling existing site conditions delineated in the included reports in accord with applicable laws and regulations as those conditions may effect the work.

1.2.3 Application of Information

Recommendations contained in the reports are to be used by the contractor only to the extent that these recommendations comply with applicable laws, regulations, and other sections of the these specifications.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 VARYING CONDITIONS

If during the course of the work, conditions are encountered which are not

covered in the included reports or are different from conditions that would be reasonably anticipated from the included reports, the contractor shall immediately notify the Officer in Charge of Construction. If such conditions are hazardous or the continuation of work would cause a hazardous condition to develop, he shall stop work and proceed as directed by the Officer in Charge of Construction as directed by provisions contained in other sections of this specification. This may include modifications to, or the development of a new, Health and Safety Plan for this project, and alternate or additional appropriate abatement procedures.

3.2 CHANGES TO THE CONTRACT

Any changes to the contract made as a result of site conditions which differ from those delineated in the report may result in an adjustment of the contract amount. The adjustment will be an increase or decrease depending on the scope and nature of the change and will be in accord with other provisions of these specifications.

-- End of Section --

**REPORT OF SUBSURFACE EXPLORATION
MCAS CHERRY POINT - TRANSFER STATION
CHERRY POINT, NORTH CAROLINA
S&ME PROJECT NO. 1051-04-034**

Prepared For:

Mr. Steve Thomas, P.E.
Dewberry, Inc.
2301 Rexwoods Drive Suite 200
Raleigh, North Carolina 27607

Prepared By:

S&ME, Inc.
3109 Spring Forest Road (27616)
P. O. Box 58069
Raleigh, North Carolina 27658-8069

March 18, 2004



March 18, 2004

Dewberry, Inc.
2301 Rexwoods Drive Suite 200
Raleigh, North Carolina 27607

Attention: Mr. Steve Thomas, P.E.

Reference: Report of Subsurface Exploration
MCAS Cherry Point - Transfer Station
Cherry Point, North Carolina
S&ME Project No. 1051-04-034

Dear Mr. Thomas:

S&ME, Inc. is pleased to submit this subsurface exploration report for the referenced project. The purpose of the exploration was to evaluate subsurface conditions with respect to site grading, retaining wall foundations, and pavement subgrade support. This report presents a summary of pertinent project information, results of field and laboratory testing and our geotechnical conclusions and recommendations. A Boring Location Plan, Generalized Subsurface Profiles, Hand Auger Boring Records, and laboratory test results are included in the Appendix.

PROJECT INFORMATION

An existing Transfer Station is located within MCAS and consists of a sheet pile wall and fill placed to create an approximate 15 foot tall embankment. We understand that modifications to the Transfer Station will include construction of a cast-in-place retaining wall, approximately 50

feet long and on the order of 10 to 15 feet tall. Existing gravel roads leading to the Transfer Station will be paved.

The new wall will be constructed at the base of the Transfer Station embankment, on the opposite side from the existing sheet pile wall. About 10 to 12 feet of fill will be required behind the wall to reach design grades at the top of the transfer station. Currently, areas of planned construction are mostly gravel or grass covered. A few small trees and an existing retaining wall are located within the new construction area. Existing site grades range from about 5 to 10 feet along the perimeter of the Transfer Station embankment to about 20 feet at the top of the embankment.

EXPLORATION PROGRAM

Field exploration included a visual site reconnaissance and performance of 6 hand auger borings and dynamic cone penetrometer testing. Hand auger boring locations were selected by representatives of S&ME, Inc. who taped distances from existing site features to establish field locations. Boring locations are shown on Figure 1 in the appendix and should be considered approximate.

Hand auger borings were advanced at depths ranging from approximately 4.5 to 9.5 feet below existing ground surface. Dynamic cone penetrometer (DCP) tests were performed at routine intervals within each hand auger boring. DCP test results are defined as the number of blows required to drive a conical shaped point of specific dimensions an increment of one and three quarter (1-3/4) inches by a fifteen pound hammer falling twenty inches. DCP test results are used to estimate the consistency and relative strength properties of in-place soils. A graph of DCP cone resistance correlated to Standard Penetration test (N-Values) is included in the appendix (figure 2). Soils were visually classified in the field in general accordance with the Unified Soil Classification System (USCS) guidelines.

A Generalized Subsurface Profile drawing (Figure 3) and Hand Auger Boring Logs presenting specific subsurface information from each hand auger boring are included in the Appendix. Ground surface elevations indicated on the logs and profile were interpolated from a provided topographic site plan and should be considered approximate. Stratification lines indicated on Hand Auger Boring Logs and Profile are intended to represent approximate depths of changes in soil types. Naturally, transitional changes are gradual and cannot be defined at a particular depth.

AREA GEOLOGY

The proposed site is located within the Coastal Plain Physiographic and Geologic Province of North Carolina. The Coastal Plain geologic region has been formed during past transgressive and regressive movements of the oceans into and out of North Carolina. As such, subdued topographic features and flat low-lying terrain characterize the Coastal Plain province. Near surface soils often consist of more recent undifferentiated deposits of interbedded sands, silts and clays. Deeper deposits also consist of sands, silts and clays but can be defined as particular formations with distinguishable characteristics and engineering properties. The primary geologic formation beneath the encountered undifferentiated deposits is the Yorktown Formation Undivided.

SUBSURFACE CONDITIONS

Approximately 4 to 8 inches of topsoil or 6 to 12 inches of crushed stone was encountered at the surface of all hand auger borings.

Fill/possible fill was encountered below surface materials (topsoil/crushed stone) in all borings performed for this project except HA-1. Fill thicknesses encountered in hand auger borings

ranged from about 2.5 to 6.5 feet. However, about 10 to 12 feet of fill likely exists on the east side of the Transfer Station embankment behind the existing sheet pile wall. In general, fill consists of silty sands (SM). Occasional gravel pieces were observed within fill at some locations. Dynamic cone penetration (DCP) tests values in the fill ranged from 8 to 20+ blows per increment (bpi) indicating that fill is likely moderately-well to well compacted. It should be noted that some DCP values may have been amplified by rock fragments and may not represent actual fill consistency in some locations. Fill was moist.

Natural soils were encountered below fill and below surface materials (topsoil) where fill was not encountered. Natural soils consist of clayey and silty sands (SC, SM, SP, and SW). Dynamic cone penetration tests values in the natural soils ranged from 4 to 20+ blows per increment (bpi). Natural soils were moist to saturated.

Groundwater was encountered within all hand auger borings except HA-5 and HA-6, immediately after boring termination. Recorded groundwater depths ranged from approximately 5.5 to 8.0 feet below the existing ground surface. It is important to realize that seasonal fluctuations in groundwater levels do occur with changes in rainfall and evaporation rates. Also, perched water may be present within fill soils during wet periods of the year.

Laboratory Results

Two bulk soil samples were subjected to laboratory testing. Laboratory tests consisted of Standard Proctor, California Bearing Ratio (CBR), and natural moisture content tests. The standard Proctor compaction tests resulted in maximum dry densities ranging from approximately 114.2 to 116.2 pounds per cubic foot and optimum moisture contents ranging from approximately 11.0 to 10.5 percent respectively. CBR values ranging from approximately 6.1 to 8.6 was determined for the bulk samples compacted to about 97 percent of the standard Proctor maximum dry density at optimum compaction moisture. The natural moisture contents of tested samples ranged from about

11.9 to 13.3 percent. Results of the laboratory tests are also provided on tables and graphs in the Appendix. All tests were conducted in general accordance with applicable ASTM standards.

CONCLUSIONS AND RECOMMENDATIONS

General Suitability of Site

The subsurface exploration indicates that the site is adaptable for the proposed construction. However, some near surface soils are wet and will likely require drying and recompaction to achieve stable subgrade conditions. Although encountered soils are not as moisture sensitive as silts and clays, subgrade repairs should be anticipated if grading is conducted during periods of extended wet weather. Retaining wall foundations may be designed as conventional spread footings bearing in approved existing soils or and new, well compacted structural fill.

The following paragraphs present more detailed geotechnical conclusions and recommendations regarding planned construction. When reviewing these recommendations, it is important to realize that grading and prior construction has taken place throughout most of the site. Past experience with previously developed sites indicates that unexpected conditions often exist. These may include areas of poorly compacted fill, deleterious materials within fill, underground utilities and others. Such conditions, if encountered, can be handled by engineering evaluations made in the field at time of construction.

Site Preparation

Sands encountered in hand auger borings do not deteriorate as rapidly as silts and clays when exposed to moisture. However, to reduce the potential weather related construction delays and subgrade repairs, site preparation and earthwork should be conducted during the typically drier months of May through November, if practical. If winter grading is attempted, repair of near surface soils and use of select off-site borrow may be necessary to adequately prepare subgrades

for new construction. Heavy rubber-tired construction equipment should not be allowed to operate on exposed subgrades during wet conditions.

Initial site preparation should consist of removing topsoil, trees, and any existing structures or debris from the planned construction area. Asphalt, concrete, and other demolition debris should be wasted from the site. Topsoil should either be wasted from the site or stockpiled and reused in landscaped areas. If practical, crushed stone may remain in place provided it is stable when proofrolled. However, existing crushed stone should not be considered part of design pavement sections. Encountered crushed stone thicknesses ranged from about 6 to 12 inches. Encountered topsoil thicknesses range from about 4 to 8 inches. However, deeper stripping depths are typically required to remove rootmat associated with trees. As such, topsoil stripping depths of at least 12 inches should be anticipated where trees are present.

Initial site preparation should also include relocation of any existing underground utilities that are within the new retaining wall area. Experience indicates that utility trench backfill is often poorly compacted. Also, cracked or deteriorated pipes can collapse, leak or serve as conduits for subsurface erosion, either of which can result in excessive settlements and damage to retaining wall structures. For utility lines that are to be abandoned, we recommend that the pipe be removed, existing fill soils be removed from trenches, and the trenches be properly backfilled with soils compacted in accordance with recommendations provided in this report. If any utilities must remain in service near the planned retaining wall, they should be evaluated on a case-by-case basis. This evaluation should include an assessment of backfill, conduit type, future loading, and the proximity of utilities to the new wall.

After initial site preparation, areas near design grades and areas that are to receive fill should be evaluated by the geotechnical engineer. This evaluation will be particularly important at this site due to the presence of previously placed fill. To aid the engineer during this evaluation, relatively flat subgrades should be proofrolled with a fully loaded tandem axle dump truck or

equivalent. Proofrolling not only helps to reveal the presence of any unstable or otherwise unsuitable surface materials, but may densify the exposed subgrade for new fill placement and building support. Any areas which are observed to rut, pump, or deflect excessively during the proofrolling process and fail to densify with continued rolling should be undercut to firm soils. As an alternative to undercutting, in-place repair of near surface soils, consisting of discing, drying and recompacting subgrade soils, may be practical depending on field conditions at the time of grading.

Excavations

All excavations should be conducted in accordance with OSHA standards. The contractor should be responsible for all site safety including trench excavation safety measures. Based on results of hand auger borings, moderate consistency fill and natural soils are present at the site.

Past experience indicates that moderate to high consistency soils can be excavated by conventional earth moving equipment. That is, mass excavation can typically be accomplished by bulldozer pushed scrapers with light to moderate preloosening of higher consistency soils by tractor drawn rippers. Local excavation for shallow utility trenches can be accomplished with a conventional backhoe. A moderately heavy front end loader should be able to excavate these materials operating basically unassisted. During periods of extended rainfall, light track mounted equipment should be used.

Use of On-Site Soils

In general, most soils encountered in the Hand Auger Borings should be suitable for reuse as structural fill. At the time of our exploration, most soils appeared to be near to wet of optimum compaction moisture. Depending on prevailing weather conditions during fill placement, some drying or wetting of soils may be required prior to their placement as structural fill. If grading is

performed during a wet period of the year, drying of on-site soils may not be practical and off site borrow materials (i.e., sand or crushed stone) will likely be required.

Structural Fill Placement

All fill placed in retaining wall and pavement areas, including trench backfill, should be low plasticity ($PI < 25$) and free of organics and debris. Fill should be placed in 8 to 10 inch loose lifts and compacted to at least 95 percent of the standard Proctor maximum dry density except within the final foot of finished subgrade where this requirement should be increased to at least 98 percent. Lightweight compaction equipment should be used within 5 feet of the retaining wall to avoid placing high stresses on the wall. Soil moisture should be maintained within 3 percent of optimum compaction moisture. Subgrade preparation including fill placement and compaction should be observed by the geotechnical engineer or a qualified soils technician. A sufficient number of density tests should be conducted to confirm that adequate compaction is achieved.

The existing embankment slope should be benched during fill placement along the slope. Benches should be sufficiently wide and level to allow for proper compaction of new fill.

Potential Subgrade Repair and Improvement Methods

Exposed subgrade soils can deteriorate and lose support when exposed to construction activity and environmental changes. Subgrade soil deterioration can occur in the form of freezing, erosion, softening from ponded rainwater, and rutting from construction traffic. Deterioration may be reduced by limiting heavy rubber-tired traffic over exposed soils and maintaining proper surface drainage within cut and fill areas. We recommend that any exposed subgrade surfaces in pavement and retaining wall areas that have softened and deteriorated be properly repaired by scarifying and recompacting immediately prior to further fill placement or wall/pavement

construction. If repairs are performed in wet weather conditions, it will be worthwhile to consider undercutting the disturbed soil and replacing it with compacted crushed stone.

Retaining Wall

Foundations

Based on results of the borings the retaining wall may be supported on shallow spread footings bearing in approved existing soils or new properly compacted structural fill. Shallow spread footings should be designed for a maximum allowable toe bearing pressure of 3,000 pounds per square foot (psf) and a maximum average bearing pressure of 2500 pounds per square foot (psf). Foundations should be embedded at least 12 inches below finished exterior grades to provide adequate embedment against frost penetration.

The geotechnical engineer or his representative should observe the foundation bearing conditions prior to placement of reinforcing steel and concrete. As with proofrolling, observation of bearing conditions is particularly important at this site because of previously placed fill. Evaluation of bearing soils should include the performance of shallow hand auger borings with dynamic cone penetrometer testing to confirm their suitability for foundation support. Excessively soft soils, soils containing excessive organic debris, or other unsuitable materials should be removed. Overexcavated soils should be replaced by washed stone (No. 57 or 67) or lean concrete.

If water collects in excavations, it should be promptly removed or drained with tail ditch drains to prevent softening of foundation bearing soils. Exposure to the environment will cause the bearing soils to rapidly deteriorate. Care should be exercised during construction of foundations in order not to disturb bearing soils and reduce their strength. To further reduce the potential for deterioration of bearing soils, we recommend that foundation excavation and placement of concrete be conducted on the same day if practical. If placement of the foundation concrete is to be delayed, a lean concrete mud mat should be placed on the exposed bearing soils.

Settlement

Based on encountered subsurface conditions, and assuming any excessively soft soils are removed to a sufficient depth below footings, we estimate that total settlements will be less than 1.5 inches. However, based on past experience, we expect differential settlements will be on the order of 1 inch or less.

Similar settlement could occur beneath the concrete slab adjacent to the new retaining wall due to the fill that will be placed. If this magnitude of settlement can not be tolerated, we recommend that fill settlement be monitored and construction of the concrete pad be delayed until settlement has subsided. Monitoring may be conducted by installing survey hubs at the fill surface and measuring elevations at routine intervals. We recommend that elevations be measured twice a week and the data be submitted to a geotechnical engineer for review. Survey hubs should consist of 18 inch long rebar or steel pipe sections driven nearly flush with the fill surface. We expect fill induced settlement could extend over 2 to 3 weeks. However actual settlement rates can only be determined by monitoring.

Design Parameters and Other Considerations

Retaining walls must be capable of supporting lateral earth pressures from the adjacent fill. Design analysis should include an evaluation of overturning, sliding resistance and global stability. Granular soils are most desirable for use as fill behind walls since they typically exhibit higher long term shear strengths when compacted and are more freely draining than lower permeability silts and clays.

We recommend that wall backfill be compacted to 95 percent of the standard Proctor maximum dry density and that the moisture be maintained within two percent of the optimum moisture

content. Lightweight equipment should be used within 5 feet of walls in order to avoid placing high stresses on the walls during compaction. Assuming that the fill will be properly placed and compacted, the following parameters may be used for conventional cantilever walls with granular backfill (sands or gravel).

LATERAL EARTH PRESSURE COEFFICIENT	VALUE
At-Rest Coefficient (K_o)	0.5
Active Coefficient (K_a)	0.33
Passive Coefficient (K_p)	3.0
Unit Weight of Soil (Moist)	125 pcf
Friction Factor for Foundations and Bearing Soils	0.4

These parameters assume a relatively flat backfill surface behind the walls. If a sloping backfill surface is to be used, the resulting additional stresses must be taken into account. In addition, the analysis of wall stability must also include any additional stresses due to loading from vehicles, stockpiled materials, and the slab that will exist adjacent to the top of the wall.

Adequate drainage is very important behind all walls. Drainage should consist of at least an 18 inch wide zone of clean sand or washed stone tied into a properly filtered gravity drain system at the base of the wall.

Flexible and Rigid Pavement Design

Two soaked laboratory California Bearing Ratio (CBR) tests were performed on bulk samples obtained from the project site. The samples were compacted (remolded) to approximately 97 percent of the standard Proctor maximum dry density near the optimum moisture content. The results of the laboratory testing indicated CBR values ranging from approximately 6 to 8 percent.

Based on past experience with similar soils, it is our opinion a CBR value of 7 is acceptable for use in pavement design for this project.

Design procedures used in our analysis were based on the ASSHTO "Guide for Design of Pavement Structures" and associated literature. The materials recommended for the pavement design sections are referenced to the North Carolina Department of Transportation's (NCDOT) "*Standard Specifications for Roads and Structures*". Based on the subsurface conditions and assuming our grading recommendations will be implemented, the following presents our recommendations regarding pavement sections and materials.

Flexible Pavement

Flexible pavements were designed from supplied design traffic information from Dewberry, Inc. We understand traffic will consist of 5 trips per day for transfer trucks and 60 trips per day for garbage trucks. The following design criteria was used for flexible pavements.

A design life of 20 years, terminal serviceability = 2.5, reliability = 85%, initial serviceability = 4.2, and standard deviation = 0.45 for flexible pavements. The calculated design structural number is 3.3.

Flexible pavement should consist of a surface course of asphaltic concrete and a base course of granular material. Granular material is necessary for structural support and to help transport any rainwater that seeps below the pavement. Our recommended flexible pavement design section is summarized in the following table.

MCAS Cherry Point – Transfer Station Cherry Point, North Carolina FLEXIBLE PAVEMENT DESIGN	Thickness (inches)
Asphalt Concrete Surface Course Type S-9.5B or S-12.5B	1.5
Asphalt Concrete Binder Course Type I-19.0B	3.5
Aggregate Base Course (ABC)	6

Note: The above thicknesses are the result of layer thickness criteria from NCDOT.

The aggregate base course should conform to the requirement of the 2002 edition of the NCDOT “*Standard Specifications for Roads and Structure*”, Section 520, Pages 5-9 through 5-14 and Section 1010, Pages 10-23 through 10-33. This base course should be compacted to at least 100 percent of the maximum dry density, as determined by the modified Proctor compaction test, AASHTO T 180 as modified by NCDOT. To confirm that the base course has been uniformly compacted, in-place field density tests should be performed by a qualified Soils Technician and the area should be methodically proofrolled under his evaluation.

The asphaltic concrete should conform to Section 610, Pages 6-20 through 6-37 in the 2002 edition of the NCDOT “*Standard Specifications for Roads and Structures*”. Sufficient tests and evaluations should be performed during pavement installation to confirm that the required thickness, density, and quality requirements of the specifications are followed.

Although our analysis was based on a 20-year design life, our experience indicates that an overlay may be needed in approximately 7 to 10 years due to normal weathering of the asphaltic concrete. Also, some areas could require repair in a shorter time period.

Rigid Pavement

Rigid pavement design was based only on 5 trips per day for transfer trucks as requested by Dewberry, Inc. The following design criteria was used for rigid pavements.

A design life of 20 years, terminal serviceability = 2.5, reliability = 85%, initial serviceability = 4.5, and standard deviation = 0.35 for rigid pavements.

The compressive strength of the concrete was assumed to be 4,000 psi. Based on empirical relationships with CBR values and our past experience, a modulus of subgrade reaction of 150 pci was used for design. Our recommended rigid pavement design section is presented in the following table.

MCAS Cherry Point – Transfer Station Cherry Point, North Carolina	Rigid Pavement Design
Concrete (4000psi)	5 Inches
Aggregate Base Course (ABC)	4 Inches
Jointing	12 to 15 Feet

It is recommended that a minimum of 4 inches of crushed stone base underlie the concrete pavement. This layer will help provide additional support, provide drainage and will help with the long-term performance of the concrete pavements when subjected to freeze-thaw actions. All materials, designs and workmanship for rigid pavements should meet the NCDOT's 2002 edition of "*Standard Specifications for Roads and Structures*".

General

The performance of the flexible and rigid pavements will be influenced by a number of factors including the actual condition of subgrade soils at the time of pavement installation, installed thicknesses and compaction, and drainage. The subgrade soils should be evaluated by thorough proofrolling immediately prior to paving and any unstable areas repaired. This recommendation is very important to the long-term performance of the pavements and slabs. Areas adjacent to pavements (embankments, landscaped island, ditching, etc.) which can drain water (rainwater or sprinklers) should be designed so that water does not seep below the pavements. This may require the use of french drains or swales.

In addition, low safety factors are typically used for pavement design. Therefore, it is very important that all components of design are properly installed and that the expected traffic is not exceeded.

SEISMIC CONSIDERATIONS

A detailed evaluation of subsurface conditions with respect to site seismic considerations was beyond the scope of this report. Our liquefaction analysis, which was based on the 2000 International Building Code (IBC) design earthquake, indicated that the on-site soils are poorly resistant to liquefaction and have the potential to liquefy during the design seismic event. Because of the presence of liquefiable soils, the IBC identifies this site as a Site Class F. We expect that several inches of settlement could occur beneath shallow foundations immediately following the design seismic event. This settlement would result from volumetric compression of the liquefiable sand layers, which occurs as seismically induced soil pore water pressures dissipate, or ground surface disruption (i.e., in the form of sand boils).

If the risks associated with liquefaction are not acceptable, the wall could be supported on deep foundations (i.e., driven piles or auger cast piles) bearing at anticipated depths of 50 to 60 feet.

To be in strict accordance with the 2000 IBC, it would be necessary for us to perform a site-specific seismic response analysis. A site-specific analysis would require collection of additional field data at the site (i.e., shear wave velocity measurements for on-site soils) and performance of computer analyses to simulate anticipated site-specific ground motions during the IBC design earthquake. Alternatively, we believe the intent of the code can be achieved by using the 2000 IBC Site Class E response spectrum for design, while explicitly considering the consequences of liquefaction. This approach is included in the latest IBC Code (2003). The more recent 2003 IBC states that site-specific response analyses need not be performed for structures having a period ≤ 0.5 seconds. We anticipate that the proposed structure will have a period of less than 0.5 seconds. We recommend that the local building code official be contacted to determine if the 2003 IBC Code may be used.

QUALIFICATIONS OF REPORT

This report has been prepared in accordance with generally accepted engineering practice for specific application to this project. The conclusions and recommendations contained in this report are based on the applicable standards of our profession at the time this report was prepared. No other warranty, express or implied, is made.

Conclusions and recommendations submitted in this report are based, in part, upon the data obtained from the subsurface exploration. The nature and extent of variations between the borings made may not become evident until construction. If variations appear evident, then it will be necessary to re-evaluate the recommendations of this report. In the event that any changes in the nature, design, or locations of the proposed pavements, structures, etc. are planned, the conclusions and recommendations contained in this report should be reviewed,

Report of Subsurface Exploration
MCAS Cherry Point - Transfer Station
Cherry Point, North Carolina

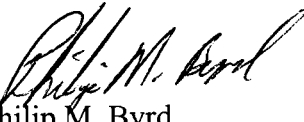
S&ME Project No. 1051-04-034
March 18, 2004

modified or verified in writing. We recommend that our firm be provided the opportunity for general review of final design specifications to confirm that our recommendations are properly interpreted and implemented.


CLOSURE

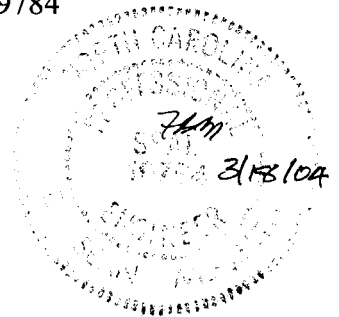
S&ME, Inc. appreciates the opportunity to provide geotechnical engineering services on this project. Should you have any questions concerning this report or if we may be of further assistance, please contact us.

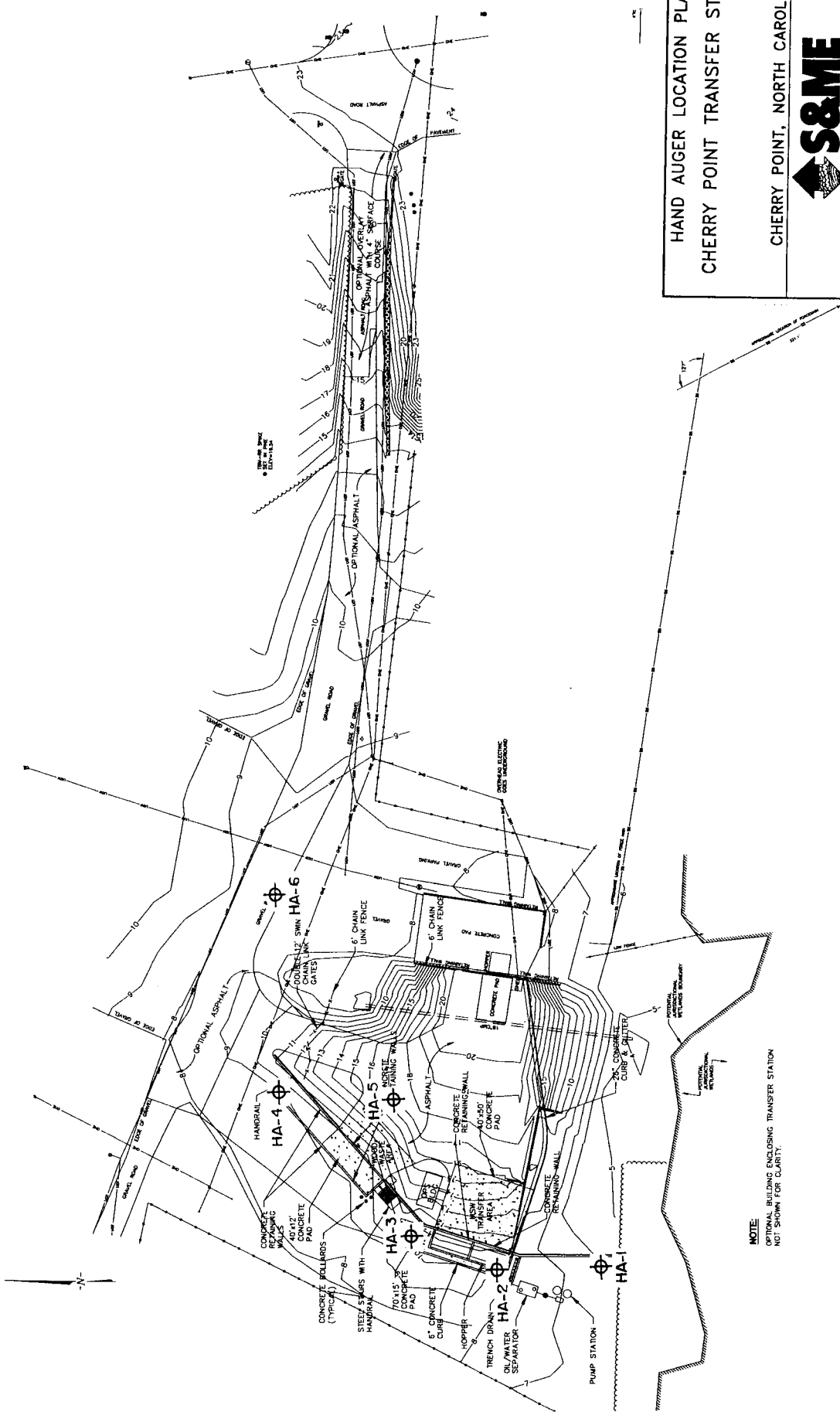
Sincerely,
S&ME, Inc.


Philip M. Byrd
Staff Professional

Attachments


F. Sean McGrath, P.E.
Engineering Department Manager
N.C. Registration No. 19784





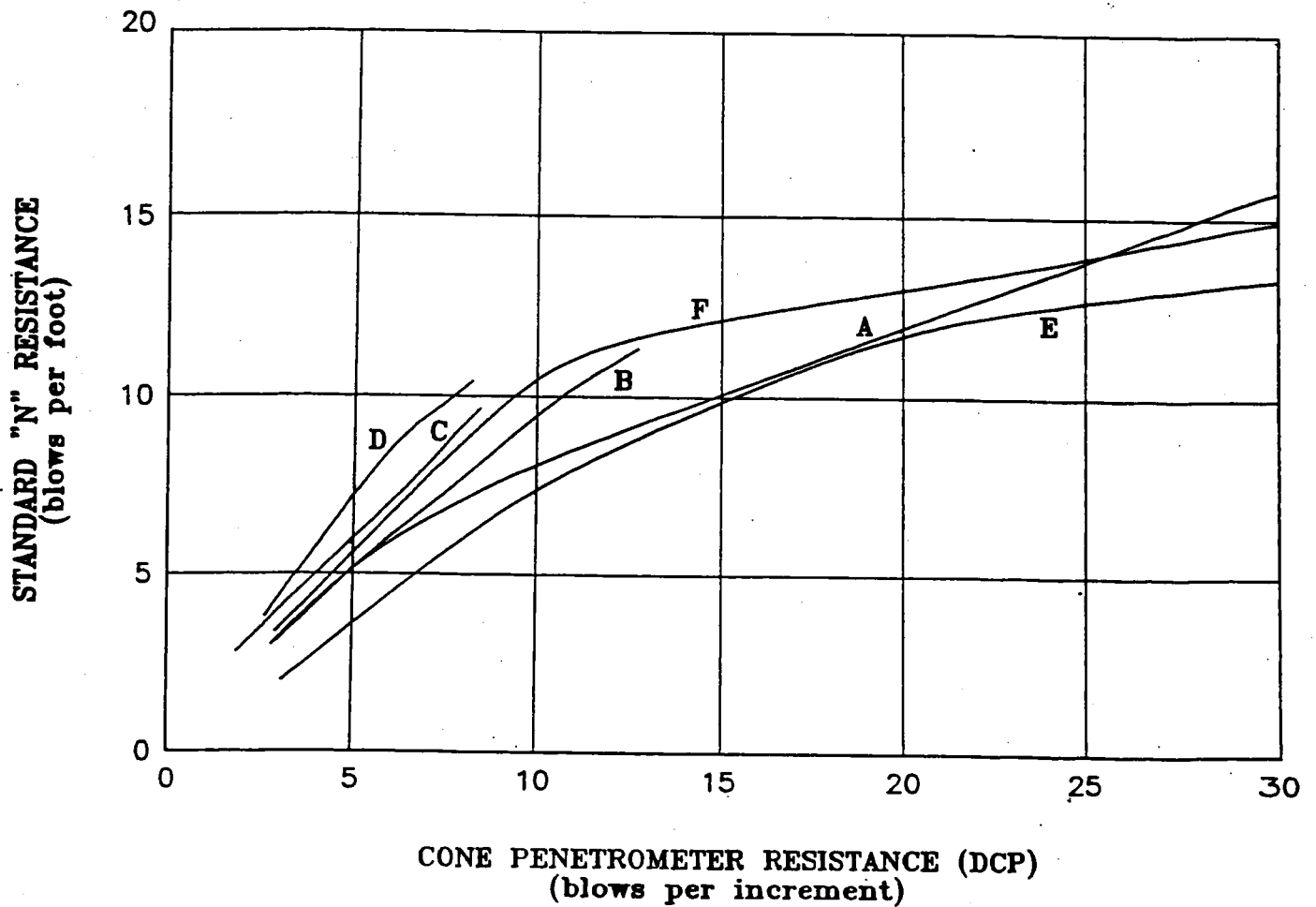
HAND AUGER LOCATION PLAN

CHERRY POINT TRANSFER STATION

CHERRY POINT, NORTH CAROLINA

SCALE:	1" = 60'	APPROVED BY:	PMB
DATE:	FEBRUARY 2004	DRAWN BY:	TRP
JOB NO.	1051-04-Q34	FIGURE	1

NOTE:
OPTIONAL BUILDING ENCLOSING TRANSFER STATION
NOT SHOWN FOR CLARITY.



CURVE

- A - VIRGIN PIEDMONT SOILS
- B - 95% COMPACTED SOIL
- C - 90% COMPACTED SOIL
- D - 85% COMPACTED SOIL
- E - COASTAL PLAIN SOILS
- F - PIEDMONT ALLUVIUM

Reference:

George F. Sowers and Charles S. Hedges. "Dynamic Cone for Shallow In-Situ Penetration Testing." *Vane Shear and Cone Penetration Resistance Testing of In-situ Soils*, ASTM STP 399, American Society of Testing Materials, 1966, page 29.

SCALE: NONE
CHECKED BY: PMB
DRAWN BY: TRP
DATE: FEBRUARY 2004

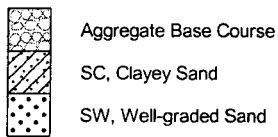
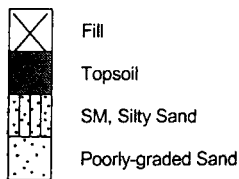
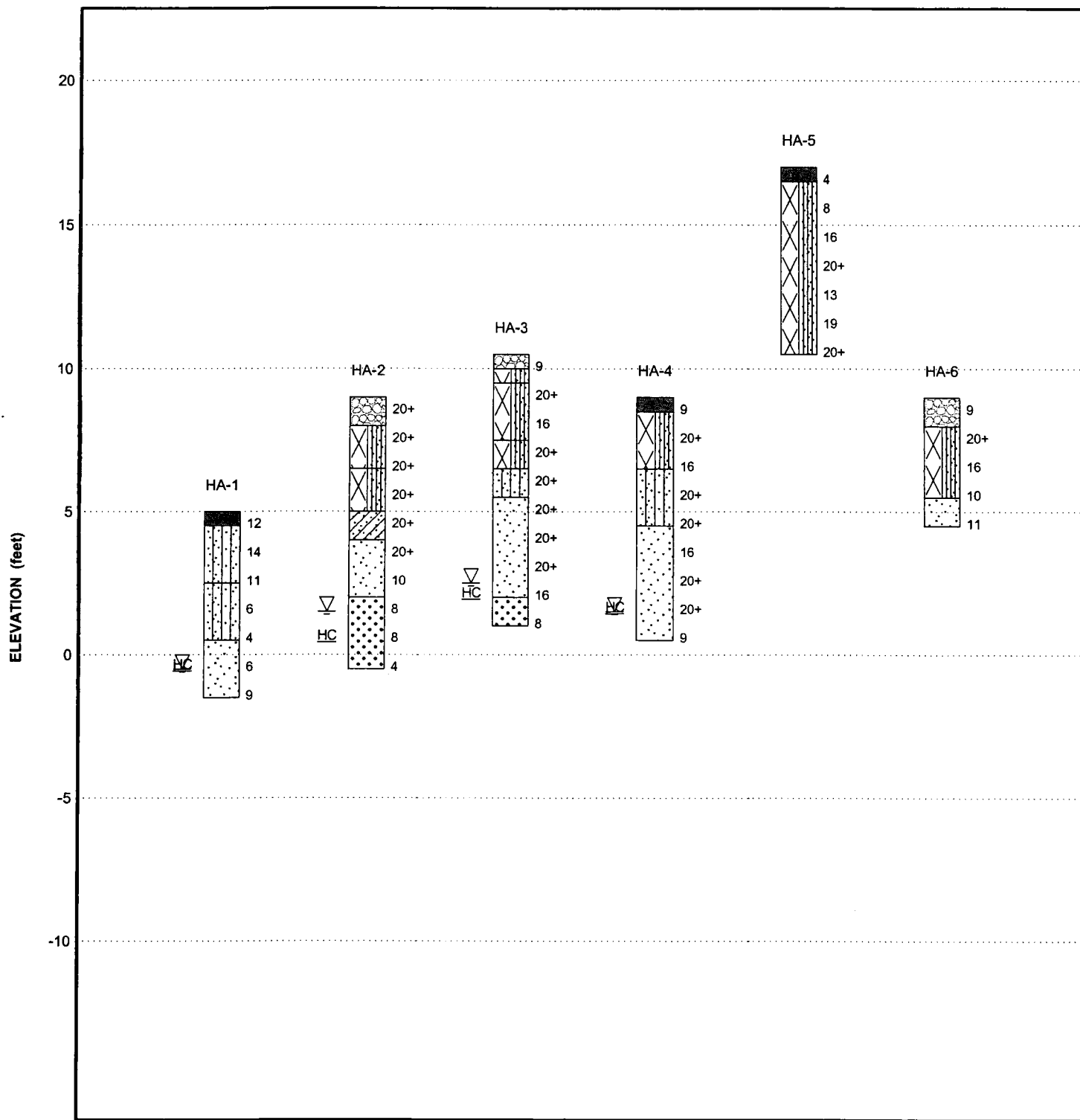


CORRELATION FOR DCP & SPT
CHERRY POINT TRANSFER STATION
CHERRY POINT, NORTH CAROLINA
JOB NO. 1051-04-034

FIGURE NO.

2

GENERALIZED SUBSURFACE CONDITIONS



SCALE: (V) 1" = 5'

CHECKED BY:

DATE: 3/18/2004

JOB NO: 1051-04-034



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GENERALIZED SUBSURFACE CONDITIONS

**Cherry Point
Transfer Station**
Cherry Point, North Carolina


















FIGURE
NO.

3

LEGEND TO SOIL CLASSIFICATION AND SYMBOLS





SOIL TYPES

(Shown in Graphic Log)

	Topsoil
	Gravel
	Sand
	Silt
	Clay
	Organic
	Sandy
	Silty
	Clayey
	Silty Sand
	Clayey Sand
	Sandy Silt
	Clayey Silt
	Sandy Clay
	Silty Clay
	Partially Weathered Rock
	Cored Rock

WATER LEVELS

(Shown in Water Level Column)

-  = Water Level At Termination Of Boring
-  = Water Level Taken After 24 Hours
-  = Loss Of Drilling Water
-  = Hole Cave

CONSISTENCY OF COHESIVE SOILS





<u>CONSISTENCY</u>	<u>STD. PENETRATION RESISTANCE BLOWS/FOOT</u>
Very Soft	0 to 2
Soft	3 to 4
Firm	5 to 8
Stiff	9 to 15
Very Stiff	16 to 30
Hard	31 to 50
Very Hard	Over 50

RELATIVE DENSITY OF COHESIONLESS SOILS

<u>RELATIVE DENSITY</u>	<u>STD. PENETRATION RESISTANCE BLOWS/FOOT</u>
Very Loose	0 to 4
Loose	5 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	Over 50

SAMPLER TYPES

(Shown in Samples Column)

-  Shelby Tube
-  Split Spoon
-  Rock Core
-  No Recovery

TERMS

Standard Penetration - The Number of Blows of 140 lb. Hammer Falling 30 in. Required to Drive 1.4 in. I.D. Split Spoon Sampler 1 Foot. As Specified in ASTM D-1586

REC - Total Length of Rock Recovered in the Core Barrel Divided by the Total Length of the Core Run Times 100%.

RQD - Total Length of Sound Rock Segments Recovered that are Longer Than or Equal to 4" (mechanical breaks exluded) Divided by the Total Length of the Core Run Times 100%.



PROJECT: Cherry Point Transfer Station Cherry Point, North Carolina 1051-04-034				Hand Auger Boring Log HA-1								
DATE DRILLED: 2/25/04		ELEVATION: 5.0 ft		NOTES: Boring location and Elevation are approximate.								
DRILLING METHOD: Hand Auger		BORING DEPTH: 6.5 ft										
LOGGED BY: A. NASH		WATER LEVEL: 5.5 @ TOB										
OPERATOR: K. Fain		DRILL RIG: N/A										
DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO./TYPE	ELEVATION (feet)	DYNAMIC CONE PENETRATION RESISTANCE					Average DCP Value	
		Topsoil		X								12
		Natural: Light Gray Silty Fine SAND (SM), Moist		X								14
		Brown Silty Fine SAND (SM), Moist		X								11
				X								6
				X								4
5		Tan-Gray Very Fine SAND (SP), Saturated		X	0.0							6
				X								9
		Hand auger boring terminated at 6.5 Feet Below Existing Ground Surface. Borehole Caved at 5.5 feet below existing ground surface. Groundwater was observed at a depth of 5.5 feet at termination of hand auger boring.										
10					-5.0							
15					-10.0							

NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. PENETRATION (DCP-VALUE) IS THE AVERAGE NUMBER OF BLOWS OF A 15 LB. HAMMER FALLING 20 IN. REQUIRED TO DRIVE A CONICAL SHAPED POINT INTO THE SOIL.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

Page 1 of 1



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HAND AUGER BORING LOG 51-034.GPJ S&ME.GDT 2/26/04

PROJECT: Cherry Point Transfer Station Cherry Point, North Carolina 1051-04-034				Hand Auger Boring Log		HA-2	
DATE DRILLED: 2/25/04		ELEVATION: 9.0 ft		NOTES: Boring location and Elevation are approximate.			
DRILLING METHOD: Hand Auger		BORING DEPTH: 9.5 ft					
LOGGED BY: A. NASH		WATER LEVEL: 7.5 @ TOB					
OPERATOR: K. Fain		DRILL RIG: N/A					

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet)	DYNAMIC CONE PENETRATION RESISTANCE							Average DCP Value		
						2	4	6	8	12	16				
	[Pattern: ABC Stone]	ABC Stone		X											20+
	[Pattern: Tan Silty SAND (SM), Moist]	Fill: Tan Silty SAND (SM), Moist		X											20+
	[Pattern: Gray Silty Coarse to Medium SAND (SM) with Gravel, Moist]	Fill: Gray Silty Coarse to Medium SAND (SM) with Gravel, Moist		X											20+
	[Pattern: Gray Clayey SAND (SC) with Clay Layers, Moist]	Natural: Gray Clayey SAND (SC) with Clay Layers, Moist		X											20+
5	[Pattern: Light Gray Fine SAND (SP), Saturated]	Light Gray Fine SAND (SP), Saturated		X	4.0										20+
	[Pattern: Tan Coarse to Fine SAND (SW), Saturated]	Tan Coarse to Fine SAND (SW), Saturated	▽ HC	X											10
	[Pattern: Tan Coarse to Fine SAND (SW), Saturated]			X											8
	[Pattern: Tan Coarse to Fine SAND (SW), Saturated]			X											8
10		Hand auger boring terminated at 9.5 Feet Below Existing Ground Surface. Borehole Caved at 8.5 feet below existing ground surface. Groundwater was observed at a depth of 7.5 feet at termination of hand auger boring.		X	-1.0										4
				X											
15					-6.0										

NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. PENETRATION (DCP-VALUE) IS THE AVERAGE NUMBER OF BLOWS OF A 15 LB. HAMMER FALLING 20 IN. REQUIRED TO DRIVE A CONICAL SHAPED POINT INTO THE SOIL.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

HAND AUGER BORING LOG 51-034.GPJ S&ME.GDT 2/26/04

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PROJECT: Cherry Point Transfer Station Cherry Point, North Carolina 1051-04-034				Hand Auger Boring Log		HA-5						
DATE DRILLED: 2/25/04		ELEVATION: 17.0 ft		NOTES: Boring location and Elevation are approximate.								
DRILLING METHOD: Hand Auger		BORING DEPTH: 6.5 ft										
LOGGED BY: A. NASH		WATER LEVEL: N/M										
OPERATOR: K. Fain		DRILL RIG: N/A										
DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet)	DYNAMIC CONE PENETRATION RESISTANCE			Average DCP Value			
		TOPSOIL				2	4	6	8	12	16	
		FILL: Brown and Gray Silty Fine SAND (SM), Moist										
5					12.0							
		Hand auger boring terminated at 6.5 Feet Below Existing Ground Surface.										
10					7.0							
15					2.0							

NOTES:

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2. PENETRATION (DCP-VALUE) IS THE AVERAGE NUMBER OF BLOWS OF A 15 LB. HAMMER FALLING 20 IN. REQUIRED TO DRIVE A CONICAL SHAPED POINT INTO THE SOIL.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

Page 1 of 1








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Raleigh, NC 27616

HAND AUGER BORING LOG 51-034.GPJ S&ME.GDT 2/25/04

PROJECT: Cherry Point Transfer Station Cherry Point, North Carolina 1051-04-034			Hand Auger Boring Log		HA-6	
DATE DRILLED: 2/25/04		ELEVATION: 9.0 ft		NOTES: Boring location and Elevation are approximate.		
DRILLING METHOD: Hand Auger		BORING DEPTH: 4.5 ft				
LOGGED BY: A. NASH		WATER LEVEL: N/M				
OPERATOR: K. Fain		DRILL RIG: N/A				

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet)	DYNAMIC CONE PENETRATION RESISTANCE							Average DCP Value	
						2	4	6	8	12	16			
5		CABC STONE (geotextile fabric below stone)		X										9
		FILL: Brown and Tan Silty Fine SAND (SM), Moist, with Trace Gravel		X										20+
				X										16
				X										10
		NATURAL: Light Yellow Fine SAND (SP), Moist		X										11
		Hand auger boring terminated at 4.5 Feet Below Existing Ground Surface.			4.0									
10					-1.0									
15					-6.0									

HAND AUGER BORING LOG 51-034.GPJ S&ME.GDT 2/25/04

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2. PENETRATION (DCP-VALUE) IS THE AVERAGE NUMBER OF BLOWS OF A 15 LB. HAMMER FALLING 20 IN. REQUIRED TO DRIVE A CONICAL SHAPED POINT INTO THE SOIL.
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CBR (California Bearing Ratio) of Laboratory Compacted Soil

ASTM D 1883

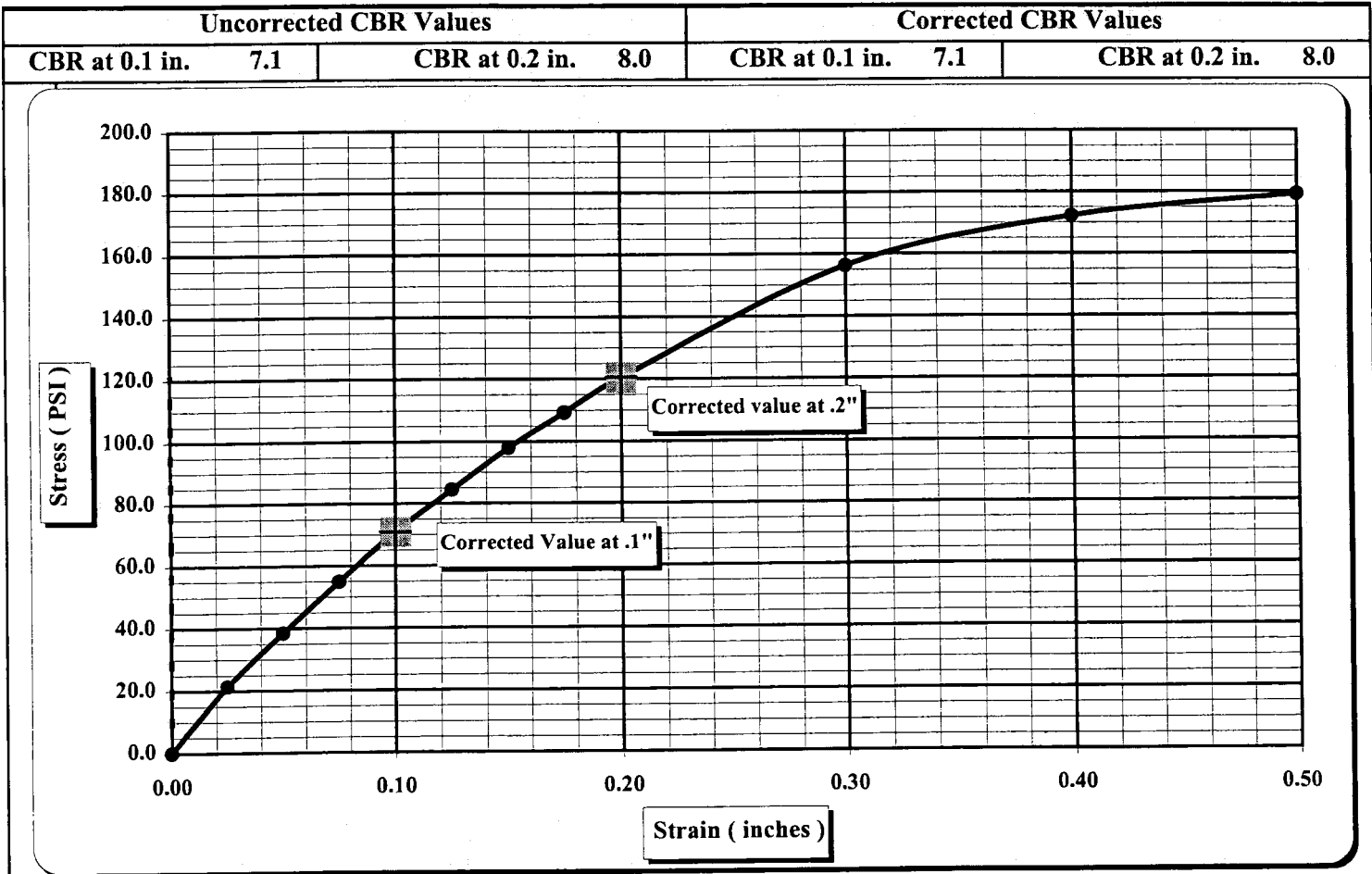
Project #: 1051-04-034
 Project Name: Cherry Point Transfer Station
 Client Name:
 Client Address:

Report Date: 03/10/04
 Test Date(s): 03/01/04 - 03/10/04

Boring #: HA-3 Sample #: S-1 Sample Date: 02/25/04
 Location: On-Site Offset: Depth (ft): 0-2

Sample Description: Olive-Gray Silty SAND

ASTM D 698 Method A Maximum Dry Density (PCF): 114.2 Optimum Moisture Content: 11.0%
 % Retained on the 3/4" sieve: 0.0%



CBR Sample Preparation: Performed on the fine fraction

The replacement method was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	20	Final Dry Density (PCF)	110.2
Initial Dry Density (PCF)	111.4	Average Final Moisture Content	14.4%
Moisture Content of the Compacted Specimen	13.2%	Moisture Content (top 1" after soaking)	16.5%
Percent Compaction	97.6%	Percent Swell	0.0%
Soak Time: 98.4 hours	Surcharge Weight 10.0	Surcharge Wt. per sq. Ft. 50.9	Apparent Relative Density 2.678

References: ASTM D 1883: CBR (California Bearing Ratio) of Laboratory-Compacted Soil
 ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
 ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 ASTM D 2488: Description and Identification of Soils (Visual-Manual Procedure)

ASTM D 422: Particle Size Analysis of Soils

Technical Responsibility:

Mal Krajan

Laboratory Supervisor

Position

Moisture - Density Report



S&ME Project #: 1051-04-034
 Project Name: Cherry Point Transfer Station
 Client Name:
 Client Address:

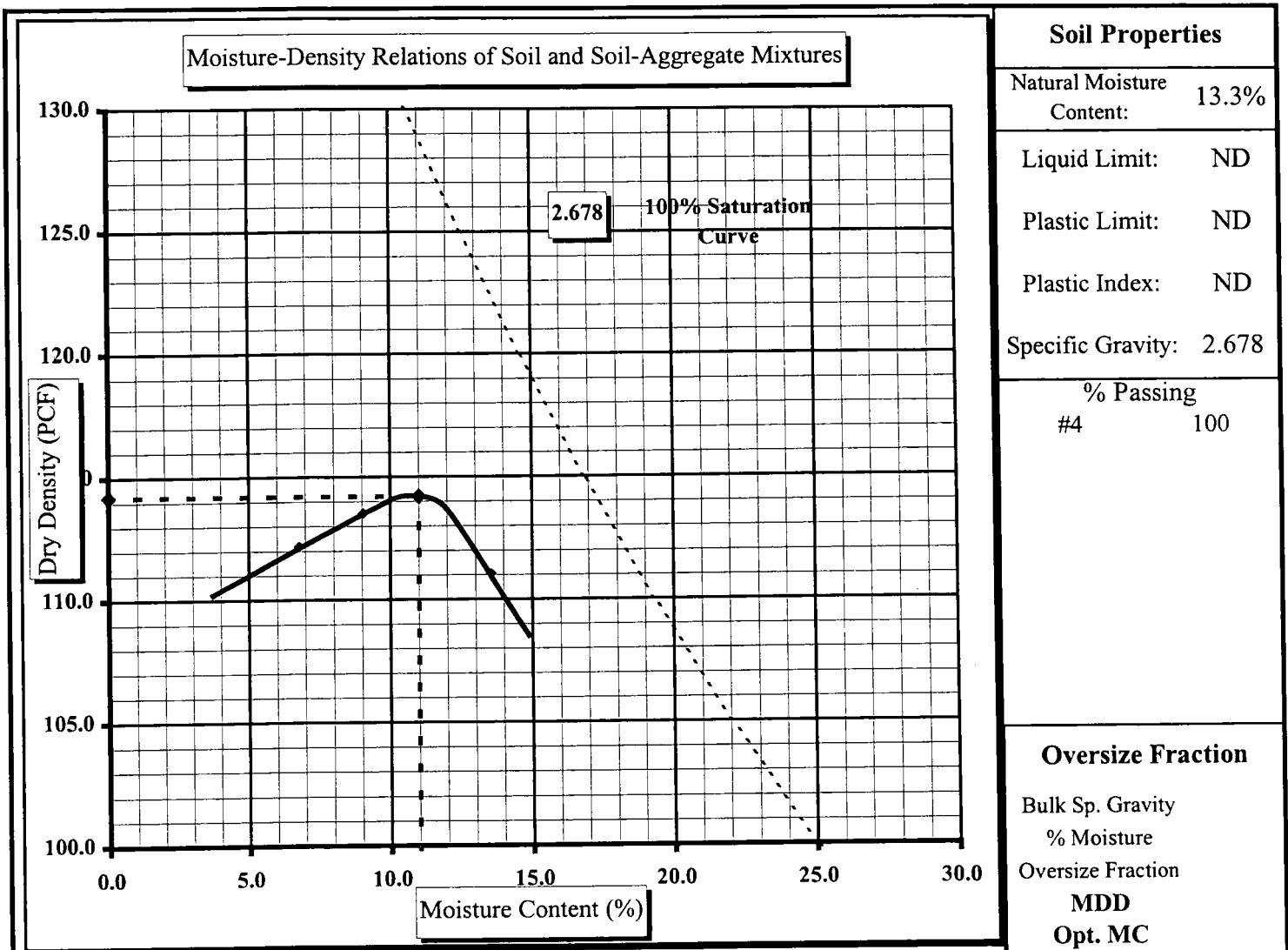
Report Date: March 2, 2004
 Test Date(s): 2/25/04-3/2/04

Boring #: HA-3 Sample #: S-1 Sample Date: February 25, 2004
 Location: Project Site Offset: Depth (ft): 0-2 ft.
 Sample Description: Olive-Gray Silty SAND

Maximum Dry Density 114.2 PCF.

Optimum Moisture Content 11.0 %

ASTM D 698 Method A



Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
 Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
 Mechanical Hammer ☐ Manual Hammer ☒ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
 ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 ASTM D 422: Particle Size Analysis of Soils
 ASTM D 854: Specific Gravity of Soils

ASTM D 2488: Description and Identification of Soils (Visual-Manual Procedure)

ND=Not Determined

Technical Responsibility:

Mal Krajan

Mal Krajan
 Signature

Laboratory Supervisor

Position

S&ME, INC.

3109 Spring Forest Road, Raleigh, NC. 27616

HA-3- Bag -Proctor & Sg



CBR (California Bearing Ratio) of Laboratory Compacted Soil

ASTM D 1883

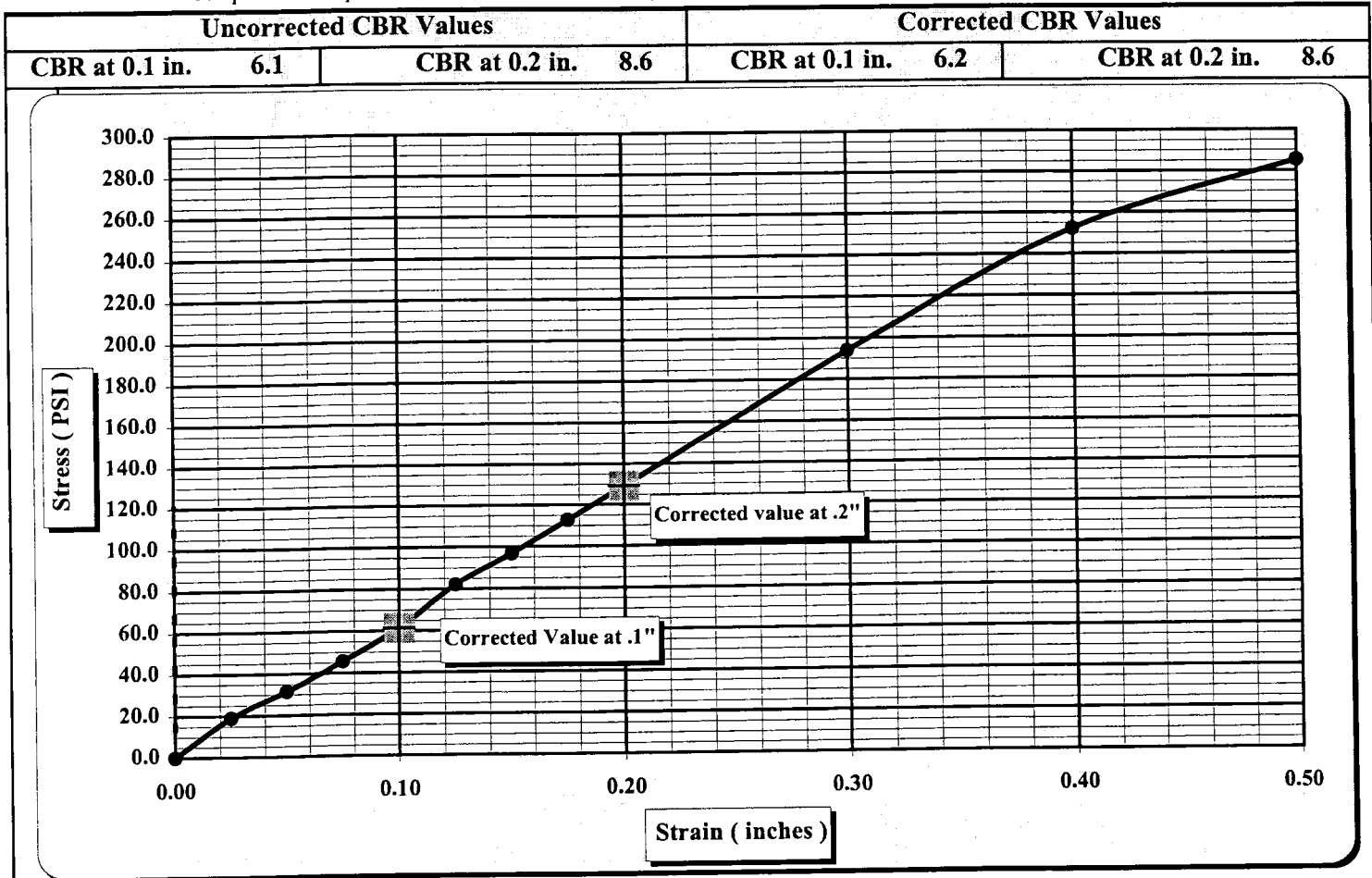
Project #: 1051-04-034
 Project Name: Cherry Point Transfer Station
 Client Name:
 Client Address:

Report Date: 3/10/04
 Test Date(s): 03/01/04 - 3/10/04

Boring #: HA-6 Sample #: S-2 Sample Date: 02/25/04
 Location: On-Site Offset: Depth (ft): 0-5

Sample Description: Olive-Gray Silty SAND

ASTM D 698 Method A Maximum Dry Density (PCF): 116.2 Optimum Moisture Content: 10.5%
 Compaction Test performed on the Fine Fraction only % Retained on the 3/4" sieve: 0.0%



CBR Sample Preparation: Performed on the fine fraction

The replacement method was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	20	Final Dry Density (PCF)	112.6
Initial Dry Density (PCF)	113.3	Average Final Moisture Content	13.9%
Moisture Content of the Compacted Specimen	13.2%	Moisture Content (top 1" after soaking)	15.0%
Percent Compaction	97.5%	Percent Swell	0.0%
Soak Time: 98.7 hours	Surcharge Weight 10.0	Surcharge Wt. per sq. Ft. 51.0	Apparent Relative Density 2.656

References: ASTM D 1883: CBR (California Bearing Ratio) of Laboratory-Compacted Soil
 ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
 ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 ASTM D 2488: Description and Identification of Soils (Visual-Manual Procedure)

ASTM D 422: Particle Size Analysis of Soils

Technical Responsibility:

Mal Krajan

Laboratory Supervisor

Position

Moisture - Density Report



S&ME Project #: 1051-04-034
 Project Name: Cherry Point Transfer Station
 Client Name:
 Client Address:

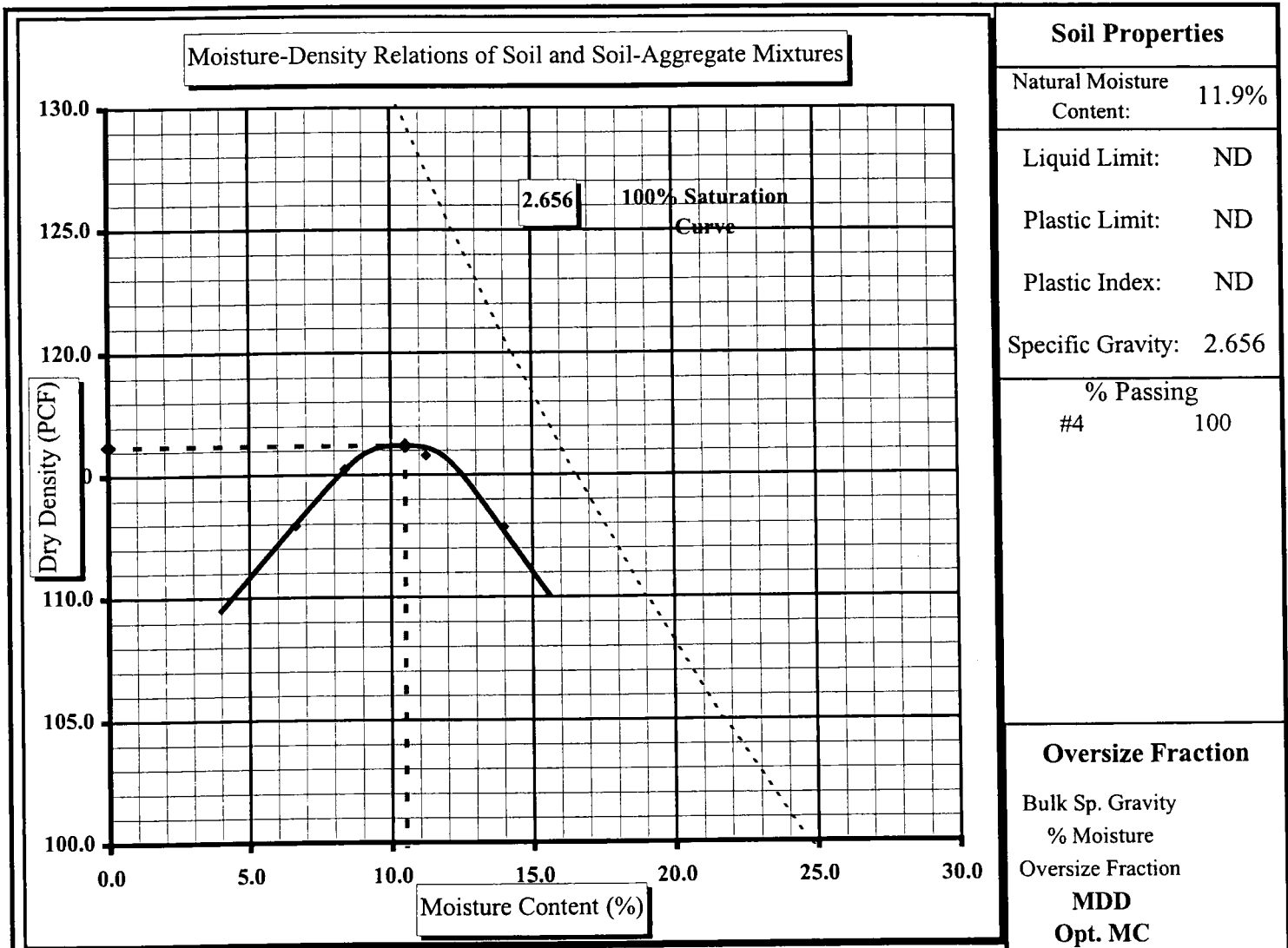
Report Date: February 27, 2004
 Test Date(s): 2/25/04-2/29/04

Boring #: HA-6 Sample #: S-2 Sample Date: February 25, 2004
 Location: On-Site Offset: Depth (ft): 0-2 ft.
 Sample Description: Olive-Gray Silty SAND

Maximum Dry Density 116.2 PCF.

Optimum Moisture Content 10.5 %

ASTM D 698 Method A



Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
 Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☒
 Mechanical Hammer ☐ Manual Hammer ☒ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
 ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 ASTM D 422: Particle Size Analysis of Soils ASTM D 854: Specific Gravity of Soils

ASTM D 2488: Description and Identification of Soils (Visual-Manual Procedure)

ND=Not Determined

Technical Responsibility:

Mal Krajan

Signature

Laboratory Supervisor
 Position

S&ME, INC.

3109 Spring Forest Road, Raleigh, NC. 27616

HA-6- Bag -Proctor & Sg

COMMENTS ON
Modify Transfer Station 4185

SOIL ISSUES

STAN C. KEGLEY

30 JANUARY 2009

The project site is located within the boundaries of Operable Unit 1 (OU1) just off Mockingbird Hill Road. This site location is in an area where there is a history of possible POL or chemical spills. Pre-characterization or soil sampling is not required prior to excavation. This information is provided to give the contractor's Industrial Hygiene Department the ability to look at the contaminants historically found in the area for incorporation into their Health and Safety Plan to ensure worker safety.

If any soil which exhibits an abnormal or unnatural color, a chemical or petroleum odor, or is saturated with a chemical or petroleum is encountered during excavation, work should be immediately stopped in that area, and the Environmental Affairs Department (EAD) should be advised of the situation so a course of action can be developed to address the contamination.

All excavated soil may be re-utilized as backfill at the same location from which it was removed unless petroleum contamination is discovered. If petroleum contamination were discovered, the soil would need to be segregated by PID (≥ 10 ppm or exhibits staining), properly stockpiled, tested, and disposed. If soil is to be stockpiled, then it should be stockpiled on plastic, bermed, and covered in accordance with NC DENR Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater, Vol. 1 dated July 2000 (Guidelines), or placed in a rolloff container and covered with plastic.

For this site within the OU-1 boundary, any excess soil that cannot be re-utilized as backfill at the same location from which it was removed must be disposed at a Subtitle D landfill (e.g.; Tuscara) as a minimum with the understanding that the analytical testing results will determine the final disposal facility. Contactor must provide supporting laboratory analysis to the EAD for review. The EAD must review and sign the waste manifests/bill of lading for the soil disposal prior to any of this soil leaving the Air Station. The manifest should also contain the amount of soil (weight) and supporting laboratory results for EAD to review. One composite sample must be taken and analyzed for each 200 cubic yards of the stockpile per DENR Guidelines in order to determine the proper method for disposal.

Use of a North Carolina certified laboratory to perform the specific soil analyses required. The laboratory must be certified by North Carolina in the specific tests to be performed. Consult with the selected laboratory about the specific sample handling procedures required by the analytical methods. Sample containers, volumes, procedures, and preservation vary among methods. Sampling must be conducted by qualified personnel and proper chain-of-custody protocol must be followed. The stockpile sample(s) shall be analyzed for the following:

Std Method 5030 sample prep with Modified 8015 (CA GC-FID Method) - Gasoline Range Organics,

Std Method 5030 and 3550 sample prep with Modified 8015 - Diesel Range Organics,

EPA Method 9071 - Oil & Grease, and

TCLP for 8 RCRA Metals (D004-D011)

All disturbed areas must also be capped by either (1) covering the surficial soil with an impervious material such as concrete or asphalt, or (2) topping the excavated area with 12 inches of compacted, clean fill. Capping is required to prevent an increased exposure risk from both surficial exposure and contaminant leaching. Therefore, backfilled soils must be compacted to minimize infiltration of surface water through the soil column.

In contaminated areas, if dewatering is required during excavation, all water must be containerized. The groundwater cannot be discharged to the ground surface, storm sewer etc. prior to sampling and analysis due to the potential contamination from migrating plumes. FACENG/ROICC may make arrangements with the IWTP for disposal of contaminated groundwater. If groundwater is accepted for disposal by the IWTP, then sampling may not be required (water disposed of at the IWTP, historically has not required testing). A chit must be obtained from EAD (Glenn Hartzog 466-4789) prior to sending contaminated water to the IWTP.












Please call or send an email if you require any additional assistance.

Stan C. Kegley, 466-4674 E-mail : stanley.kegley@USMC.mil

Environmental Affairs Department

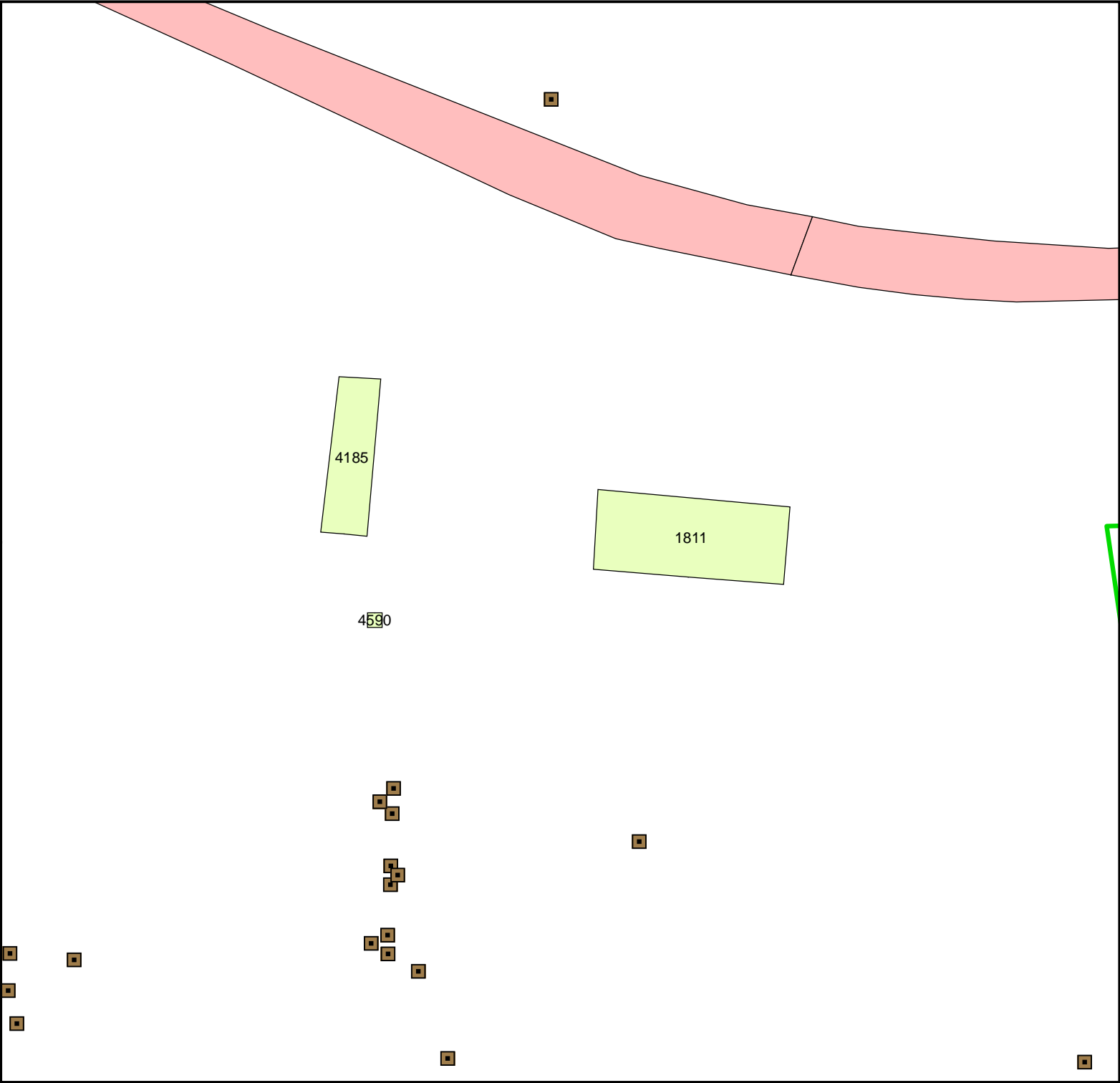
Modify Transfer Station 4185

Legend

-  Locations: SO
-  Installation Area
-  Operable Unit
-  Site
-  SWMU
-  Structure Existing Area
-  Road Area
-  Airfield Surface Site
-  Surface Water Body Area
-  Water Course Centerline
-  Water Course Area



Stan C. Kegley
30 January 2009



DOCUMENT 00 19 000

SCOPE OF WORK

07/06

PART 1 GENERAL

1.1 CONTRACTOR RESPONSIBILITIES

The contractor will be responsible for project safety including his employees and the building occupants where they may be affected by construction activities. Provide necessary enclosures and barricades as required to effectively control access to the work area. Provided all required safety measures to insure the safety of his employees and the employees of his subcontractors. Make certain that there are no personnel under areas of construction or that would be affected by material lifting operations.

1.2 DRAWINGS

The drawings provided for this project are diagrammatic for clearness and legibility and although size and locations are shown to scale where possible, the contractor will make use of all information including manufacturers data and supplemental submittals and verify requirements at the site. It is not intended that the drawings fully indicate all requirements of the work and the contractor shall furnish such additional labor and material as may reasonably be required to complete the construction as shown. The Contractor is responsible for an on-site visit to inspect the work area and examine all conditions affecting the work. All dimensions are the responsibility of the contractor for verification. Adjustments that may be required will be the responsibility of this contractor and will be made with the consultation and direction of the Contracting Officer.

1.3 SUBMITTALS

Where shop drawings and/or samples are requested, furnish six copies to the government for review and approval prior to ordering or fabrication of any materials or assemblies. Incomplete submittals will not be reviewed and will be returned to the submitter for completion.

1.4 SUBCONTRACTOR/CONTRACTOR ACCOUNTABILITY

All contractors and sub-contractors for this project will be responsible for review and compliance of all requirements covered under this contract. It shall be the responsibility of this contractor to coordinate the work of all his sub-contractors. The government will not fund extra cost issues necessitated as a result of failure by this contractor to properly schedule and coordinate efforts made by him or his sub-contractors with the efforts of other sub-contractors. Work done out of sequence with other work, resulting in additional material requirements and effort and/or the removal and reinstallation of work already installed, will be the responsibility of this contractor at no additional cost to the government.

1.5 SAMPLES

The government reserves the right to sample any materials at random from

products delivered to the job site and test them to verify the products either conform to the project requirements or approved substitution. Products, which do not conform, shall be removed from the job site and replaced with new products that conform to the project requirements or approved substitution.

1.6 PRECONSTRUCTION CONFERENCE

Pre-construction conference will convene after approval of submittals and before performing any associated work. The contracting officer will hold a Pre-construction conference to review the following:

- a. Drawings and specifications;
- b. Procedure for the manufacturer's technical representative's onsite inspection and acceptance of materials per the warranty, the name of the manufacturer's technical representatives, the frequency of the onsite visits, copies of the status reports from the technical representatives to manufacturer, and pertinent details relating to the system;
- c. Contractor's plan for coordination of the work of the various trades involved in providing the completed system and other components; and
- d. Safety requirements. Pre construction conference will be attended by the designer, the contractor and personnel directly responsible for the installation of the system and representatives of the materials manufacturer. Before beginning any work, confirm in writing the resolution of conflicts among those attending the pre construction conference.

PART 2 PRODUCTS

2.1 GENERAL

2.1.1 Administrative Issues

2.1.1.1 Basic Design

Design drawings are provided as a method of communicating the basic design concept that the air station desires to execute.

2.2 SITEWORK

2.2.1 Demolition

2.2.1.1 Barricades and Trash Removal

Use as required for traffic control or safety.

2.3 CONCRETE

Not used.

2.4 MASONRY

Not Used.

2.5 STEEL

Used

2.6 WOOD & PLASTICS

Not Used.

2.6.1 Certification

Provide certification that materials meet the referenced requirements.

2.7 MOISTURE PROTECTION

Not Used.

2.8 DOORS & WINDOWS

Not Used.

2.9 FINISHES

Not Used.

2.10 SPECIALTIES

Not used.

2.11 EQUIPMENT

Not used.

2.12 FURNISHINGS

Not used.

2.13 SPECIAL CONSTRUCTION

Not used.

2.14 CONVEYING SYSTEMS

Not used.

2.15 MECHANICAL

Not used.

2.16 ELECTRICAL

Not Used.

PART 3 EXECUTION

3.1 DRAWING PREPARATION

Provide project shop drawings as required to facilitate the activities of all disciplines and trades as noted under each item.

3.2 SPECIFICATIONS

Provide additional and revised specifications, as needed to complete

project. These specifications may be specific with the manufacturer as well as generic in nature and shall fully delineate the items to be furnished, materials used, conditions of installation and service, and the method of installation.

3.3 POST CONSTRUCTION SERVICES

3.3.1 As-Built Drawings

Prepare final drawings as a mark-up on redlined "as-built" drawings for update of AutoCAD files by MCAS Cherry Point Facilities Engineering Department personnel. The contractor will keep daily records of the progress of construction and mark any changes made to the original design, approved by the government and incorporated into the final construction including revision to specification items. (The contractor is cautioned that the forgoing statement is not intended as a license to make changes in the design. Changes can only be made with specific requests for approval in the proper form covered elsewhere in these specifications and written approval by the government granted.)

-- End of Section --

SECTION 02 41 00

DEMOLITION
10/06

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

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

40 CFR 61 National Emission Standards for Hazardous
Air Pollutants

1.2 GENERAL REQUIREMENTS

Do not begin demolition or deconstruction until authorization is received from the Contracting Officer. The work of this section is to be performed in a manner that maximizes salvage and recycling of materials. Remove rubbish and debris from the project site; do not allow accumulations. The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. Remove rubbish and debris from Government property daily, unless otherwise directed. Store materials that cannot be removed daily in areas specified by the Contracting Officer. In the interest of occupational safety and health, perform the work in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections.

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 01 33 00 SUBMITTAL PROCEDURES:

SD-07 Certificates

Demolition Plan; G]
Notifications; G

Proposed demolition, and removal procedures for approval before
work is started.

1.3 REGULATORY AND SAFETY REQUIREMENTS

Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," conform to the

safety requirements contained in ASSE/SAFE A10.6 .

1.3.1 Notifications

1.3.1.1 General Requirements

Furnish timely notification of demolition projects to Federal, State, regional, and local authorities in accordance with 40 CFR 61, Subpart M. Notify the Regional Office of the United States Environmental Protection Agency (USEPA), State's environmental protection agency and the Contracting Officer in writing 10 working days prior to the commencement of work in accordance with 40 CFR 61, Subpart M.

1.4 DUST AND DEBRIS CONTROL

Prevent the spread of dust and debris and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution. Sweep pavements as often as necessary to control the spread of debris.

1.5 PROTECTION

1.5.1 Traffic Control Signs

Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Notify the Contracting Officer prior to beginning such work.

1.5.2 Items to Remain in Place

Take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government. Repair or replace damaged items as approved by the Contracting Officer. Coordinate the work of this section with all other work indicated. Construct and maintain shoring, bracing, and supports as required. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, deconstruction, or demolition work performed under this contract. Do not overload structural elements or pavements to remain. Provide new supports and reinforcement for existing construction weakened by demolition, deconstruction, or removal work. Repairs, reinforcement, or structural replacement require approval by the Contracting Officer prior to performing such work.

1.5.3 Existing Construction Limits and Protection

Do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove dust, dirt, and debris from work areas daily.

1.5.4 Utility Service

Maintain existing utilities indicated to stay in service and protect against damage during demolition and deconstruction operations. Prior to start of work, the Government will disconnect and seal utilities serving each area of alteration or removal upon written request from the Contractor.

1.5.5 Facilities

Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities. Ensure that no elements determined to be unstable are left unsupported and place and secure bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

1.5.6 Protection of Personnel

Before, during and after the demolition work the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the project site.

1.6 BURNING

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

1.7 FOREIGN OBJECT DAMAGE (FOD)

Not Used.

1.8 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Items to be relocated which are damaged by the Contractor shall be repaired or replaced with new undamaged items as approved by the Contracting Officer.

1.9 REQUIRED DATA

Prepare a Demolition Plan. Include in the plan procedures for careful removal and disposition of materials specified to be salvaged, coordination with other work in progress, a detailed description of methods and equipment to be used for each operation and of the sequence of operations. Provide procedures for safe conduct of the work in accordance with EM 385-1-1. Plan shall be approved by Contracting Officer prior to work beginning.

1.10 ENVIRONMENTAL PROTECTION

Comply with the Environmental Protection Agency requirements specified.

1.11 USE OF EXPLOSIVES

Use of explosives will not be permitted.

1.12 AVAILABILITY OF WORK AREAS

Not Used.

PART 2 PRODUCTS

PART 3 EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

Inspect and evaluate existing structures on site for reuse. Existing construction scheduled to be removed for reuse shall be disassembled. Dismantled and removed materials are to be separated, set aside, and prepared as specified, and stored or delivered to a collection point for reuse, remanufacture, recycling, or other disposal, as specified. Materials shall be designated for reuse on site whenever possible.

3.1.1 Structures

- a. Remove existing structures indicated to be removed to grade or as indicated on drawings. Remove sidewalks, curbs, gutters and street light bases as indicated.

3.1.2 Utilities and Related Equipment

3.1.2.1 General Requirements

Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the Contracting Officer. Do not interrupt existing utilities serving facilities occupied and used by the Government except when approved in writing and then only after temporary utility services have been approved and provided. Do not begin demolition or deconstruction work until all utility disconnections have been made. Shut off and cap utilities for future use, as indicated.

3.1.2.2 Disconnecting Existing Utilities

Remove existing utilities uncovered by work and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Contracting Officer. When utility lines are encountered that are not indicated on the drawings, the Contracting Officer shall be notified prior to further work in that area. Remove meters and related equipment and deliver to a location in accordance with instructions of the Contracting Officer.

3.1.3 Paving and Slabs

Remove sawcut concrete and asphaltic concrete paving and slabs including aggregate base as indicated. Provide neat sawcuts at limits of pavement removal as indicated.

3.1.4 Concrete

Saw concrete along straight lines to a full depth. Make each cut in walls perpendicular to the face and in alignment with the cut in the opposite face.

3.1.5 Structural Steel

Dismantle structural steel at field connections and in a manner that will prevent bending or damage. Salvage for recycle structural steel, steel joists, girders, angles, plates, columns and shapes. Flame-cutting torches are permitted when other methods of dismantling are not practical.

Transport steel joists and girders as whole units and not dismantled. Transport structural steel shapes to a designated area as directed by the Contracting Officer, stacked according to size, type of member and length, and stored off the ground, protected from the weather.

3.1.6 Miscellaneous Metal

Scrap metal shall become the Contractor's property. Recycle scrap metal as part of demolition and deconstruction operations. Provide separate containers to collect scrap metal and transport to a scrap metal collection or recycling facility, in accordance with the Waste Management Plan.

3.2 CONCURRENT EARTH-MOVING OPERATIONS

Not Used

3.3 DISPOSITION OF MATERIAL

3.3.1 Title to Materials

Except for salvaged items specified in related Sections, and for materials or equipment scheduled for salvage, all materials and equipment removed and not reused or salvaged, shall become the property of the Contractor and shall be removed from Government property. Title to materials resulting from demolition and deconstruction, and materials and equipment to be removed, is vested in the Contractor upon approval by the Contracting Officer of the Contractor's demolition, deconstruction, and removal procedures, and authorization by the Contracting Officer to begin demolition and deconstruction. The Government will not be responsible for the condition or loss of, or damage to, such property after contract award. Showing for sale or selling materials and equipment on site is prohibited.

3.4 CLEANUP

Remove debris and rubbish from basement and similar excavations. Remove and transport the in a manner that prevents spillage on streets or adjacent areas. Apply local regulations regarding hauling and disposal.

3.5 DISPOSAL OF REMOVED MATERIALS

3.5.1 Regulation of Removed Materials

Dispose of debris, rubbish, scrap, and other nonsalvageable materials resulting from removal operations with all applicable federal, state and local regulations as contractually specified off the Government Property.

3.5.2 Removal from Government Property

Transport waste materials removed from demolished and deconstructed structures, except waste soil, from Government property for legal disposal. Dispose of waste soil as directed.

3.6 REUSE OF SALVAGED ITEMS

Not Used.

-- End of Section --

SECTION 03 30 00.00 20

CAST-IN-PLACE CONCRETE

04/06

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 211.1	(1991; R 2002) Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 301	(2005) Specifications for Structural Concrete for Buildings
ACI 302.1R	(2004) Guide for Concrete Floor and Slab Construction
ACI 304.2R	(1996) Placing Concrete by Pumping Methods
ACI 304R	(2000) Guide for Measuring, Mixing, Transporting, and Placing Concrete
ACI 305R	(1999) Hot Weather Concreting
ACI 306.1	(1990; R 2002) Standard Specification for Cold Weather Concreting
ACI 318M/318RM	(2002) Metric Building Code Requirements for Structural Concrete and Commentary

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 182	(2005) Burlap Cloth Made from Jute or Kenaf
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AMERICAN WELDING SOCIETY (AWS)

AWS D1.4	(1998) Structural Welding Code - Reinforcing Steel
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ASTM INTERNATIONAL (ASTM)

ASTM A 496	(2002) Steel Wire, Deformed, for Concrete Reinforcement
ASTM A 615/A 615M	(2005a) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 617/A 617M	(1996a) Axle-Steel Deformed and Plain Bars for Concrete Reinforcement

ASTM A 82	(2005) Steel Wire, Plain, for Concrete Reinforcement
ASTM C 1017/C 1017M	(2003) Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C 1107	(2005) Packaged Dry, Hydraulic-Cement Grout(Nonshrink)
ASTM C 143/C 143M	(2005) Slump of Hydraulic Cement Concrete
ASTM C 150	(2005) Portland Cement
ASTM C 171	(2003) Sheet Materials for Curing Concrete
ASTM C 172	(2004) Sampling Freshly Mixed Concrete
ASTM C 173/C 173M	(2001e1) Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C 192/C 192M	(2005) Making and Curing Concrete Test Specimens in the Laboratory
ASTM C 227	(2003) Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method)
ASTM C 231	(2004) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(2001) Air-Entraining Admixtures for Concrete
ASTM C 295	(2003) Petrographic Examination of Aggregates for Concrete
ASTM C 309	(2003) Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 31/C 31M	(2003a) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(2003) Concrete Aggregates
ASTM C 39	(1993a) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 42/C 42M	(2004) Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C 494/C 494M	(2005) Chemical Admixtures for Concrete
ASTM C 59/C 59M5	(2000; Rev A) Blended Hydraulic Cements
ASTM C 618	(2005) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete

ASTM C 881	(1999) Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C 94/C 94M	(2004a) Ready-Mixed Concrete
ASTM C 989	(2005) Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
ASTM D 4397	(2002) Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications

1.2 DEFINITIONS

- a. "Cementitious material" as used herein shall include all portland cement, pozzolan, fly ash, and ground iron blast-furnace slag.
- b. "Exposed to public view" means situated so that it can be seen from eye level from a public location after completion of the building. A public location is accessible to persons not responsible for operation or maintenance of the building.

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Materials for curing concrete

Vapor retarder Vapor barrier

Epoxy bonding compound

SD-05 Design Data

Concrete mix design

Thirty days minimum prior to concrete placement, submit a mix design for each strength and type of concrete. Submit a complete list of materials including type; brand; source and amount of cement, fly ash, pozzolans, ground slag, and admixtures; and applicable reference specifications. Provide mix proportion data using at least three different water-cement ratios for each type of mixture, which will produce a range of strength encompassing those required for each class and type of concrete required. If source material changes, resubmit mix proportion data using revised source material. No material shall be provided unless proven by trial mix studies to meet the requirements of this specification, unless otherwise approved in writing by the Contracting Officer. The submittal shall clearly indicate where each mix design will be used when more than one mix design is submitted. Submit additional data regarding concrete aggregates if the source of aggregate changes. In addition, copies of the fly ash, and pozzolan test results shall be submitted. The approval of fly ash, and pozzolan test results shall have been within 6 months of submittal date. Obtain acknowledgement of receipt prior to concrete placement.

SD-06 Test Reports

Concrete mix design

Fly ash

Pozzolan

Ground iron blast-furnace slag

Aggregates

Compressive strength tests

1.4 MODIFICATION OF REFERENCES

Accomplish work in accordance with ACI publications except as modified herein. Consider the advisory or recommended provisions to be mandatory, as though the word "shall" had been substituted for the words "should" or "could" or "may," wherever they appear. Interpret reference to the "Building Official," the "Structural Engineer," and the "Architect/Engineer" to mean the Contracting Officer.

1.5 DELIVERY, STORAGE, AND HANDLING

Do not deliver concrete until vapor barrier, forms, reinforcement, embedded items, and chamfer strips are in place and ready for concrete placement. ACI 301 for job site storage of materials. Protect materials from contaminants such as grease, oil, and dirt. Ensure materials can be accurately identified after bundles are broken and tags removed.

1.5.1 Reinforcement

Store reinforcement of different sizes and shapes in separate piles or racks raised above the ground to avoid excessive rusting. Protect from contaminants such as grease, oil, and dirt. Ensure bar sizes can be accurately identified after bundles are broken and tags removed.

1.6 Quality Assurance

1.6.1 Test Reports

1.6.1.1 Concrete Mix Design

Submit copies of laboratory test reports showing that the mix has been successfully tested to produce concrete with the properties specified and that mix will be suitable for the job conditions. The laboratory test reports shall include mill test and all other test for cement, aggregates, and admixtures. Provide maximum nominal aggregate size, gradation analysis, percentage retained and passing sieve, and a graph of percentage retained verses sieve size. Test reports shall be submitted along with the concrete mix design. Obtain approval before concrete placement.

1.6.1.2 Fly Ash and Pozzolan

Submit test results in accordance with ASTM C 618 for fly ash and pozzolan. Submit test results performed within 6 months of submittal date.

1.6.1.3 Ground Iron Blast-Furnace Slag

Submit test results in accordance with ASTM C 989 for ground iron blast-furnace slag. Submit test results performed within 6 months of submittal date.

1.6.1.4 Aggregates

ASTM C 227 for potential alkali-silica reactions, ASTM C 295 for petrographic analysis.

PART 2 PRODUCTS

2.1 CONCRETE

2.1.1 Contractor-Furnished Mix Design

ACI 211.1, ACI 301, ACI 318M/318RM and ACI 304.2R except as otherwise specified. The compressive strength (f'c) of the concrete for each portion of the structure(s) shall be as indicated and as specified below.

Location	f'c (Min. 28- Day Comp. Strength) (psi)	ASTM C 33 Maximum Nominal Aggregate (Size No.)	Range of Slump (inches)	Maximum Water- Cement Ratio (by weight)	Air Entr. (percent)
All	4000	57	2-4	0.50	6

Maximum slump shown above may be increased 1 inch for methods of consolidation other than vibration. Slump may be increased to 8 inches when superplasticizers are used. Provide air entrainment using air-entraining admixture. Air entrainment shall be within plus or minus 1.5 percent of the value specified. The water soluble chloride ion concentrations in hardened concrete at ages from 28 to 42 days shall not exceed 0.30.

Note (a): Entrapped air shall be 3% or less.

2.1.1.1 Mix Proportions for Normal Weight Concrete

Trial design batches, mixture proportioning studies, and testing requirements for various classes and types of concrete specified shall be the responsibility of the Contractor. Mixture proportions shall be based on compressive strength as determined by test specimens fabricated in accordance with ASTM C 192/C 192M and tested in accordance with ASTM C 39. Samples of all materials used in mixture proportioning studies shall be representative of those proposed for use in the project and shall be accompanied by the manufacturer's or producer's test report indicating compliance with these specifications. Trial mixtures having proportions, consistencies, and air content suitable for the work shall be made based on methodology described in ACI 211.1. The trial mixture shall use at least three different water-cement ratios for each type of mixture, which will produce a range of strength encompassing those required for each class and type of concrete required on the project. The maximum water-cement ratio required will be based on equivalent water-cement ratio calculations as determined by the conversion from the weight ratio of water to cement plus pozzolan, and ground granulated blast-furnace slag by weight equivalency.

method. Laboratory trial mixture shall be designed for maximum permitted slump and air content. Each combination of material proposed for use shall have separate trial mixture, except for accelerator or retarder use can be provided without separate trial mixture. 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 and tested in accordance with ASTM C 39 for 7 and 28 days. From these results, a curve shall be plotted showing the relationship between water-cement ratio and strength for each set of trial mix studies. In addition a curve shall be plotted showing the relationship between 7 and 28 day strengths.

2.1.1.2 Required Average Strength of Mix Design

The selected mixture shall produce an average compressive strength exceeding the specified strength by the amount indicated in ACI 301. When a concrete production facility has a record of at least 15 consecutive tests, the standard deviation shall be calculated and the required average compressive strength shall be determined in accordance with ACI 301. When a concrete production facility does not have a suitable record of tests to establish a standard deviation, the required average strength shall be as follows:

- a. For $f'c$ less than 3000 psi, 1000 psi plus $f'c$.
- b. For $f'c$ between 3000 and 5000 psi, 1200 psi plus $f'c$.
- c. For $f'c$ over 5000 psi, 1400 psi plus $f'c$.

2.2 MATERIALS

2.2.1 Cement

ASTM C 150, Type I or II or ASTM C 59/C 59M5, Type IP(MS) or IS(MS) blended cement except as modified herein. The blended cement shall consist of a mixture of ASTM C 150, Type II, cement and one of the following materials: ASTM C 618 pozzolan or fly ash, ASTM C 989 ground iron blast-furnace slag. The pozzolan or fly ash content shall not exceed 25 percent by weight of the total cementitious material. The ground iron blast-furnace slag shall not exceed 50 percent by weight of total cementitious material. For exposed concrete, use one manufacturer for each type of cement, ground slag, fly ash, and pozzolan.

2.2.1.1 Fly Ash and Pozzolan

ASTM C 618, Type N, F, or C, except that the maximum allowable loss on ignition shall be 6 percent for Types N and F. Add with cement.

2.2.1.2 Ground Iron Blast-Furnace Slag

ASTM C 989, Grade 120.

2.2.2 Water

Water shall be fresh, clean, and potable; free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances deleterious to concrete.

2.2.3 Aggregates

ASTM C 33, except as modified herein. Furnish aggregates for exposed concrete surfaces from one source. Aggregates shall not contain any substance which may be deleteriously reactive with the alkalies in the cement. Aggregates shall show expansions less than 0.10 percent at 6 months when tested in accordance with ASTM C 227 using a cement with an alkali content above 0.8 percent (expressed as sodium oxide), and shall not possess properties or constituents that are known to have specific unfavorable effects in concrete when tested in accordance with ASTM C 295.

2.2.3.1 Aggregates/Combined Aggregate Gradation (Floor Slabs Only)

ASTM C 33, uniformly graded and as follows: Nominal maximum aggregate size of 1 inch. A combined sieve analysis shall indicate a well graded aggregate from coarsest to finest with not more than 18 percent and not less than 8 percent retained on an individual sieve, except that less than 8 percent may be retained on coarsest sieve and on No. 50 (0.3mm) sieve, and less than 8 percent may be retained on sieves finer than No. 50 (0.3mm). Sand shall be at least 50 percent natural sand.

2.2.4 Nonshrink Grout

ASTM C 1107.

2.2.5 Admixtures

ASTM C 494/C 494M: Type A, water reducing; Type B, retarding; Type C, accelerating; Type D, water-reducing and retarding; and Type E, water-reducing and accelerating admixture. Do not use calcium chloride admixtures.

2.2.5.1 Air-Entraining

ASTM C 260.

2.2.5.2 High Range Water Reducer (HRWR) (Superplasticizers)

ASTM C 494/C 494M, Type F and Type G (HRWR retarding admixture) and ASTM C 1017/C 1017M.

2.2.6 Vapor Retarder Vapor Barrier

ASTM D 4397 polyethylene sheeting, minimum 10 mil thickness.

2.2.7 Materials for Curing Concrete

2.2.7.1 Impervious Sheeting

ASTM C 171; waterproof paper, clear or white polyethylene sheeting, or polyethylene-coated burlap.

2.2.7.2 Pervious Sheeting

AASHTO M 182.

2.2.7.3 Liquid Membrane-Forming Compound

ASTM C 309, white-pigmented, Type 2, Class B.

2.2.8 Liquid Chemical Sealer-Hardener Compound

Compound shall be magnesium fluosilicate which when mixed with water seals and hardens the surface of the concrete. Do not use on exterior slabs exposed to freezing conditions. Compound shall not reduce the adhesion of resilient flooring, tile, paint, roofing, waterproofing, or other material applied to concrete.

2.2.9 Epoxy Bonding Compound

ASTM C 881. Provide Type I for bonding hardened concrete to hardened concrete; Type II for bonding freshly mixed concrete to hardened concrete; and Type III as a binder in epoxy mortar or concrete, or for use in bonding skid-resistant materials to hardened concrete. Provide Grade 1 or 2 for horizontal surfaces and Grade 3 for vertical surfaces. Provide Class A if placement temperature is below 40 degrees F; Class B if placement temperature is between 40 and 60 degrees F; or Class C if placement temperature is above 60 degrees F.

2.3 REINFORCEMENT

2.3.1 Reinforcing Bars

ACI 301 unless otherwise specified. ASTM A 615/A 615M and ASTM A 617/A 617M with the bars marked A, S, W, Grade 60.

2.3.2 Wire

ASTM A 82 or ASTM A 496.

2.3.3 Reinforcing Bar Supports

Provide bar ties and supports of coated or non corrodible material.

PART 3 EXECUTION

3.1 PLACING REINFORCEMENT AND MISCELLANEOUS MATERIALS

ACI 301. Provide bars, wire fabric, wire ties, supports, and other devices necessary to install and secure reinforcement. Reinforcement shall not have rust, scale, oil, grease, clay, or foreign substances that would reduce the bond. Rusting of reinforcement is a basis of rejection if the effective cross-sectional area or the nominal weight per unit length has been reduced. Remove loose rust prior to placing steel. Tack welding is prohibited.

3.1.1 Reinforcement Supports

Place reinforcement and secure with galvanized or non corrodible chairs, spacers, or metal hangers. For supporting reinforcement on the ground, use concrete or other non corrodible material, having a compressive strength equal to or greater than the concrete being placed.

3.1.2 Splicing

As indicated. For splices not indicated ACI 301. Do not splice at points of maximum stress. Overlap welded wire fabric the spacing of the cross wires, plus 2 inches. AWS D1.4. Welded splices shall be approved prior to

use.

3.1.3 Future Bonding

Plug exposed, threaded, mechanical reinforcement bar connectors with a greased bolt. Bolt threads shall match the connector. Countersink the connector in the concrete. Calk the depression after the bolt is installed.

3.1.4 Cover

ACI 301 for minimum coverage, unless otherwise indicated.

3.1.5 Setting Miscellaneous Material

Place and secure anchors and bolts, pipe sleeves, conduits, and other such items in position before concrete placement. Plumb anchor bolts and check location and elevation. Temporarily fill voids in sleeves with readily removable material to prevent the entry of concrete.

3.2 BATCHING, MEASURING, MIXING, AND TRANSPORTING CONCRETE

ASTM C 94/C 94M, ACI 301, ACI 302.1R, and ACI 304R, except as modified herein. Batching equipment shall be such that the concrete ingredients are consistently measured within the following tolerances: 1 percent for cement and water, 2 percent for aggregate, and 3 percent for admixtures. Furnish mandatory batch ticket information for each load of ready mix concrete.

3.2.1 Measuring

Make measurements at intervals as specified in paragraphs entitled "Sampling" and "Testing."

3.2.2 Mixing

ASTM C 94/C 94M and ACI 301. Machine mix concrete. Begin mixing within 30 minutes after the cement has been added to the aggregates. Place concrete within 90 minutes of either addition of mixing water to cement and aggregates or addition of cement to aggregates if the air temperature is less than 85 degrees F. Reduce mixing time and place concrete within 60 minutes if the air temperature is greater than 85 degrees F except as follows: if set retarding admixture is used and slump requirements can be met, limit for placing concrete may remain at 90 minutes. Additional water may be added, provided that both the specified maximum slump and water-cement ratio are not exceeded. When additional water is added, an additional 30 revolutions of the mixer at mixing speed is required. If the entrained air content falls below the specified limit, add a sufficient quantity of admixture to bring the entrained air content within the specified limits. Dissolve admixtures in the mixing water and mix in the drum to uniformly distribute the admixture throughout the batch.

3.2.3 Transporting

Transport concrete from the mixer to the forms as rapidly as practicable. Prevent segregation or loss of ingredients. Clean transporting equipment thoroughly before each batch. Do not use aluminum pipe or chutes. Remove concrete which has segregated in transporting and dispose of as directed.

3.3 PLACING CONCRETE

Place concrete as soon as practicable after the forms and the reinforcement have been inspected and approved. Do not place concrete when weather conditions prevent proper placement and consolidation; in uncovered areas during periods of precipitation; or in standing water. Prior to placing concrete, remove dirt, construction debris, water, snow, and ice from within the forms. Deposit concrete as close as practicable to the final position in the forms. Do not exceed a free vertical drop of 3 feet from the point of discharge. Place concrete in one continuous operation from one end of the structure towards the other. Position grade stakes on 10 foot centers maximum in each direction when pouring interior slabs and on 20 foot centers maximum for exterior slabs.

3.3.1 Footing Placement

Concrete for footings may be placed in excavations without forms upon inspection and approval by the Contracting Officer. Excavation width shall be a minimum of 4 inches greater than indicated.

3.3.2 Vibration

ACI 301. Furnish a spare, working, vibrator on the job site whenever concrete is placed. Consolidate concrete slabs greater than 4 inches in depth with high frequency mechanical vibrating equipment supplemented by hand spading and tamping. Consolidate concrete slabs 4 inches or less in depth by wood tampers, spading, and settling with a heavy leveling straightedge. Operate internal vibrators with vibratory element submerged in the concrete, with a minimum frequency of not less than 6000 impulses per minute when submerged. Do not use vibrators to transport the concrete in the forms. Insert and withdraw vibrators approximately 18 inches apart. Penetrate the previously placed lift with the vibrator when more than one lift is required. Place concrete in 18 inch maximum vertical lifts. External vibrators shall be used on the exterior surface of the forms when internal vibrators do not provide adequate consolidation of the concrete.

3.3.3 Application of Epoxy Bonding Compound

Apply a thin coat of compound to dry, clean surfaces. Scrub compound into the surface with a stiff-bristle brush. Place concrete while compound is stringy. Do not permit compound to harden prior to concrete placement. Follow manufacturer's instructions regarding safety and health precautions when working with epoxy resins.

3.3.4 Pumping

ACI 304R and ACI 304.2R. Pumping shall not result in separation or loss of materials nor cause interruptions sufficient to permit loss of plasticity between successive increments. Loss of slump in pumping equipment shall not exceed 2 inches. Concrete shall not be conveyed through pipe made of aluminum or aluminum alloy. Rapid changes in pipe sizes shall be avoided. Maximum size of coarse aggregate shall be limited to 33 percent of the diameter of the pipe. Maximum size of well rounded aggregate shall be limited to 40 percent of the pipe diameter. Samples for testing shall be taken at both the point of delivery to the pump and at the discharge end.

3.3.5 Cold Weather

ACI 306.1. Do not allow concrete temperature to decrease below 50 degrees F

Obtain approval prior to placing concrete when the ambient temperature is below 40 degrees F or when concrete is likely to be subjected to freezing temperatures within 24 hours. Cover concrete and provide sufficient heat to maintain 50 degrees F minimum adjacent to both the formwork and the structure while curing. Limit the rate of cooling to 5 degrees F in any 1 hour and 50 degrees F per 24 hours after heat application.

3.3.6 Hot Weather

ACI 305R. Maintain required concrete temperature using Figure 2.1.5 in ACI 305R to prevent the evaporation rate from exceeding 0.2 pound of water per square foot of exposed concrete per hour. Cool ingredients before mixing or use other suitable means to control concrete temperature and prevent rapid drying of newly placed concrete. Shade the fresh concrete as soon as possible after placing. Start curing when the surface of the fresh concrete is sufficiently hard to permit curing without damage. Provide water hoses, pipes, spraying equipment, and water hauling equipment, where job site is remote to water source, to maintain a moist concrete surface throughout the curing period. Provide burlap cover or other suitable, permeable material with fog spray or continuous wetting of the concrete when weather conditions prevent the use of either liquid membrane curing compound or impervious sheets. For vertical surfaces, protect forms from direct sunlight and add water to top of structure once concrete is set.

3.4 CURING AND PROTECTION

ACI 301 unless otherwise specified. Begin curing immediately following form removal. Avoid damage to concrete from vibration created by blasting, pile driving, movement of equipment in the vicinity, disturbance of formwork or protruding reinforcement, and any other activity resulting in ground vibrations. Protect concrete from injurious action by sun, rain, flowing water, frost, mechanical injury, tire marks, and oil stains. Do not allow concrete to dry out from time of placement until the expiration of the specified curing period. Do not use membrane-forming compound on surfaces where appearance would be objectionable, on any surface to be painted, where coverings are to be bonded to the concrete, or on concrete to which other concrete is to be bonded. If forms are removed prior to the expiration of the curing period, provide another curing procedure specified herein for the remaining portion of the curing period. Provide moist curing for those areas receiving liquid chemical sealer-hardener or epoxy coating.

3.4.1 Moist Curing

Remove water without erosion or damage to the structure.

3.4.1.1 Ponding or Immersion

Continually immerse the concrete throughout the curing period. Water shall not be more than 20 degrees F less than the temperature of the concrete. For temperatures between 40 and 50 degrees F, increase the curing period by 50 percent.

3.4.1.2 Fog Spraying or Sprinkling

Apply water uniformly and continuously throughout the curing period. For temperatures between 40 and 50 degrees F, increase the curing period by 50 percent.

3.4.1.3 Pervious Sheeting

Completely cover surface and edges of the concrete with two thicknesses of wet sheeting. Overlap sheeting 6 inches over adjacent sheeting. Sheeting shall be at least as long as the width of the surface to be cured. During application, do not drag the sheeting over the finished concrete nor over sheeting already placed. Wet sheeting thoroughly and keep continuously wet throughout the curing period.

3.4.1.4 Impervious Sheeting

Wet the entire exposed surface of the concrete thoroughly with a fine spray of water and cover with impervious sheeting throughout the curing period. Lay sheeting directly on the concrete surface and overlap edges 12 inches minimum. Provide sheeting not less than 18 inches wider than the concrete surface to be cured. Secure edges and transverse laps to form closed joints. Repair torn or damaged sheeting or provide new sheeting. Cover or wrap columns, walls, and other vertical structural elements from the top down with impervious sheeting; overlap and continuously tape sheeting joints; and introduce sufficient water to soak the entire surface prior to completely enclosing.

3.4.2 Liquid Membrane-Forming Curing Compound

Seal or cover joint openings prior to application of curing compound. Prevent curing compound from entering the joint. Apply in accordance with the recommendations of the manufacturer immediately after any water sheen which may develop after finishing has disappeared from the concrete surface. Provide and maintain compound on the concrete surface throughout the curing period. Do not use this method of curing where the use of Figure 2.1.5 in ACI 305R indicates that hot weather conditions will cause an evaporation rate exceeding 0.2 pound of water per square foot per hour.

3.4.2.1 Application

Unless the manufacturer recommends otherwise, apply compound immediately after the surface loses its water sheen and has a dull appearance, and before joints are sawed. Mechanically agitate curing compound thoroughly during use. Use approved power-spraying equipment to uniformly apply two coats of compound in a continuous operation. The total coverage for the two coats shall be 200 square feet maximum per gallon of undiluted compound unless otherwise recommended by the manufacturer's written instructions. The compound shall form a uniform, continuous, coherent film that will not check, crack, or peel. Immediately apply an additional coat of compound to areas where the film is defective. Re-spray concrete surfaces subjected to rainfall within 3 hours after the curing compound application.

3.4.2.2 Protection of Treated Surfaces

Prohibit pedestrian and vehicular traffic and other sources of abrasion at least 72 hours after compound application. Maintain continuity of the coating for the entire curing period and immediately repair any damage.

3.4.3 Liquid Chemical Sealer-Hardener

Apply sealer-hardener to interior floors not receiving floor covering and floors located under access flooring. Apply the sealer-hardener in accordance with manufacturer's recommendations. Seal or cover joints and openings in which joint sealant is to be applied as required by the joint

sealant manufacturer. The sealer-hardener shall not be applied until the concrete has been moist cured and has aged for a minimum of 30 days. Apply a minimum of two coats of sealer-hardener.

3.4.4 Curing Periods

ACI 301 except 10 days for retaining walls, pavement or chimneys, 21 days for concrete that will be in full-time or intermittent contact with seawater, salt spray, alkali soil or waters. Begin curing immediately after placement. Protect concrete from premature drying, excessively hot temperatures, and mechanical injury; and maintain minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of the concrete. The materials and methods of curing shall be subject to approval by the Contracting Officer.

3.5 FIELD QUALITY CONTROL

3.5.1 Sampling

ASTM C 172. Collect samples of fresh concrete to perform tests specified. ASTM C 31/C 31M for making test specimens.

3.5.2 Testing

3.5.2.1 Slump Tests

ASTM C 143/C 143M. Take concrete samples during concrete placement. The maximum slump may be increased as specified with the addition of an approved admixture provided that the water-cement ratio is not exceeded. Perform tests at commencement of concrete placement, when test cylinders are made, and for each batch (minimum) or every 20 cubic yards (maximum) of concrete.

3.5.2.2 Temperature Tests

Test the concrete delivered and the concrete in the forms. Perform tests in hot or cold weather conditions (below 50 degrees F and above 80 degrees F) for each batch (minimum) or every 20 cubic yards (maximum) of concrete, until the specified temperature is obtained, and whenever test cylinders and slump tests are made.

3.5.2.3 Compressive Strength Tests

ASTM C 39. Make five test cylinders for each set of tests in accordance with ASTM C 31/C 31M. Precautions shall be taken to prevent evaporation and loss of water from the specimen. Test two cylinders at 7 days, two cylinders at 28 days, and hold one cylinder in reserve. Samples for strength tests of each mix design of concrete placed each day shall be taken not less than once a day, nor less than once for each 100 cubic yards of concrete, nor less than once for each 5000 square feet of surface area for slabs or walls. For the entire project, take no less than five sets of samples and perform strength tests for each mix design of concrete placed. Each strength test result shall be the average of two cylinders from the same concrete sample tested at 28 days. If the average of any three consecutive strength test results is less than f'c or if any strength test result falls below f'c by more than 500 psi, take a minimum of three ASTM C 42/C 42M core samples from the in-place work represented by the low test cylinder results and test. Concrete represented by core test shall be considered structurally adequate if the average of three cores is equal to

at least 85 percent of f'_c and if no single core is less than 75 percent of f'_c . Locations represented by erratic core strengths shall be retested. Remove concrete not meeting strength criteria and provide new acceptable concrete. Repair core holes with nonshrink grout. Match color and finish of adjacent concrete.

3.5.2.4 Air Content

ASTM C 173/C 173M or ASTM C 231 for normal weight concrete. Test air-entrained concrete for air content at the same frequency as specified for slump tests.

-- End of Section --

SECTION 05 12 00

STRUCTURAL STEEL

10/07

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 INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC 303	(2005) Code of Standard Practice for Steel Buildings and Bridges
AISC 316	(1989) ASD Manual of Steel Construction
AISC 317	(1992; Reprint 1999) ASD Manual of Steel Construction, Vol II: Connections
AISC 325	(2005) Manual of Steel Construction
AISC 326	(2002) Detailing for Steel Construction
AISC 348	(2000) Structural Joints Using ASTM A325 or A490 Bolts
AISC 360	(2005) Specification for Structural Steel Buildings, with Commentary
AISC 810	(1997) Erection Bracing of Low-Rise Structural Steel Frames/Fisher and West
AISC FCD	(1995a) Quality Certification Program Description

AMERICAN WELDING SOCIETY (AWS)

AWS A2.4	(2007) Standard Symbols for Welding, Brazing and Nondestructive Examination
AWS D1.1/D1.1M	(2006; Errata 2006) Structural Welding Code - Steel

ASME INTERNATIONAL (ASME)

ASME B46.1	(2002) Surface Texture (Surface Roughness, Waviness and Lay)
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ASTM INTERNATIONAL (ASTM)

ASTM A 307	(2007) Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength
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ASTM A 325	(2006) Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A 325M	(2005) Standard Specification for Structural Bolts, Steel, Heat Treated, 830 Mpa Minimum Tensile Strength (Metric)
ASTM A 36/A 36M	(2005) Standard Specification for Carbon Structural Steel
ASTM A 500	(2003a) Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A 53/A 53M	(2006a) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 563	(2004a) Standard Specification for Carbon and Alloy Steel Nuts
ASTM A 6/A 6M	(2007) Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
ASTM A 780	(2001; R 2006) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A 992/A 992M	(2006a) Standard Specification for Structural Steel Shapes
ASTM C 1107/C 1107M	(2007a) Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C 827	(2001a; R 2005) Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
ASTM F 436	(2004) Hardened Steel Washers
ASTM F 844	(2004e1) Washers, Steel, Plain (Flat), Unhardened for General Use
ASTM F 959	(2007) Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners

1.2 SYSTEM DESCRIPTION

Provide the structural steel system, including hot-dipped galvanizing, complete and ready for use. Structural steel systems including design, materials, installation, workmanship, fabrication, assembly, erection, inspection, quality control, and testing shall be provided in accordance with AISC 317 except as modified in this contract.

1.3 MODIFICATIONS TO REFERENCES

Conform to AISC 316, AISC 317, AISC 360, AISC 303, AISC 348, and AISC 325, except as modified in this section.

1.4 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Erection Plan

Fabrication drawings including description of connections;

SD-07 Certificates

Welding procedures and qualifications

1.5 AISC QUALITY CERTIFICATION

Not Used.

1.6 SEISMIC PROVISIONS

Not Used.

1.7 QUALITY ASSURANCE

1.7.1 Drawing Requirements

Submit fabrication drawings for approval prior to fabrication. Prepare in accordance with AISC 326, AISC 316 and AISC 317. Fabrication drawings shall not be reproductions of contract drawings. Include complete information for the fabrication and erection of the structure's components, including the location, type, and size of bolts, welds, member sizes and lengths, connection details, blocks, copes, and cuts. Use AWS A2.4 standard welding symbols. Member substitutions of details shown on the contract drawings shall be clearly highlighted on the fabrication drawings. Explain the reasons for any deviations from the contract drawings.

1.7.2 Certifications

1.7.2.1 Erection Plan

Submit for record purposes. Indicate the sequence of erection, temporary shoring and bracing, and a detailed sequence of welding, including each welding procedure required.

1.7.2.2 Welding Procedures and Qualifications

Prior to welding, submit certification for each welder stating the type of welding and positions qualified for, the code and procedure qualified under, date qualified, and the firm and individual certifying the qualification tests. If the qualification date of the welding operator is more than one-year old, the welding operator's qualification certificate shall be accompanied by a current certificate by the welder attesting to the fact that he has been engaged in welding since the date of

certification, with no break in welding service greater than 6 months.

Conform to all requirements specified in AWS D1.1/D1.1M.

PART 2 PRODUCTS

2.1 STEEL

2.1.1 Structural Steel

ASTM A 36/A 36M.

2.1.2 High-Strength Structural Steel

2.1.2.1 Low-Alloy Steel

ASTM A 992/A 992M Grade 50.

2.1.3 Structural Shapes for Use in Building Framing

Wide flange shapes, ASTM A 992/A 992M.

2.1.4 Structural Steel Tubing

ASTM A 500, Grade B.

2.1.5 Steel Pipe

ASTM A 53/A 53M, Type E or S, Grade B.

2.2 BOLTS, NUTS, AND WASHERS

Provide the following unless indicated otherwise.

2.2.1 High-Strength Structural Steel and Structural Steel Tubing

2.2.1.1 Bolts

ASTM A 325, Type 1.

2.2.1.2 Nuts

ASTM A 563, Grade and Style as specified in the applicable ASTM bolt standard.

2.2.1.3 Washers

ASTM F 436, plain carbon steel.

2.2.2 Foundation Anchorage

2.2.2.1 Anchor Bolts

ASTM A 307, Galvanized.

2.2.2.2 Anchor Nuts

ASTM A 563, Grade A, hex style.

2.2.2.3 Anchor Washers

ASTM F 844.

2.3 STRUCTURAL STEEL ACCESSORIES

2.3.1 Welding Electrodes and Rods

AWS D1.1/D1.1M.

2.3.2 Non-Shrink Grout

ASTM C 1107/C 1107M, with no ASTM C 827 shrinkage. Grout shall be nonmetallic.

2.4 GALVANIZING

ASTM 123 or ASTM A 153, as applicable, unless specified otherwise. Galvanize after fabrication where practicable.

2.5 FABRICATION

2.5.1 Markings

Prior to erection, members shall be identified by a painted erection mark. Connecting parts assembled in the shop for reaming holes in field connections shall be match marked with scratch and notch marks. Do not locate erection markings on areas to be welded. Do not locate match markings in areas that will decrease member strength or cause stress concentrations.

2.6 DRAINAGE HOLES

Adequate drainage holes shall be drilled to eliminate water traps. Hole diameter shall be 1/2 inch and location shall be indicated on the detail drawings. Hole size and location shall not affect the structural integrity.

PART 3 EXECUTION

3.1 FABRICATION

Fabrication shall be in accordance with the applicable provisions of AISC 316. Fabrication and assembly shall be done in the shop to the greatest extent possible.

Compression joints depending on contact bearing shall have a surface roughness not in excess of 500 micro inch as determined by ASME B46.1, and ends shall be square within the tolerances for milled ends specified in ASTM A 6/A 6M.

Structural steelwork, except surfaces of steel to be encased in concrete, surfaces to be field welded, and contact surfaces of friction-type high-strength bolted connections shall be prepared for painting in accordance with endorsement "P" of AISC FCD and primed with the specified paint.

3.2 INSTALLATION

3.3 ERECTION

- a. Erection of structural steel, except as indicated in item b. below, shall be in accordance with the applicable provisions of AISC 316.
- b. For low-rise structural steel buildings (60 feet tall or less and a maximum of 2 stories), the erection plan shall conform to AISC 303 and the structure shall be erected in accordance with AISC 810.

3.3.1 STORAGE

Material shall be stored out of contact with the ground in such manner and location as will minimize deterioration.

3.4 CONNECTIONS

Except as modified in this section, connections not detailed shall be designed in accordance with AISC 360. Build connections into existing work. Do not tighten anchor bolts set in concrete with impact torque wrenches. Punch, subpunch and ream, or drill bolt and pin holes perpendicular to the surface of the member. Holes shall not be cut or enlarged by burning. Bolts, nuts, and washers shall be clean of dirt and rust, and lubricated immediately prior to installation.

3.4.1 Common Grade Bolts

ASTM A 307 bolts shall be tightened to a "snug tight" fit. "Snug tight" is the tightness that exists when plies in a joint are in firm contact. If firm contact of joint plies cannot be obtained with a few impacts of an impact wrench, or the full effort of a man using a spud wrench, contact the Contracting Officer for further instructions.

3.4.2 High-Strength Bolts

ASTM A 325 bolts shall be fully tensioned to 70 percent of their minimum tensile strength. Provide load indicator bolts or washers in all ASTM A 325M bolted connections, except provide only load indicator washers for slip critical connections. Direct tension indicator tightening shall be the only acceptable tightening methods. Use only direct tension indicator tightening for slip critical connections. Bolts shall be installed in connection holes and initially brought to a snug tight fit. After the initial tightening procedure, bolts shall then be fully tensioned, progressing from the most rigid part of a connection to the free edges.

3.5 GAS CUTTING

Use of gas-cutting torch in the field for correcting fabrication errors will not be permitted on any major member in the structural framing. Use of a gas cutting torch will be permitted on minor members not under stress only after approval has been obtained from the Contracting Officers.

3.6 WELDING

AWS D1.1/D1.1M. Provide AWS D1.1/D1.1M qualified welders, welding

operators, and tackers.

The Contractor shall develop and submit the Welding Procedure Specifications (WPS) for all welding, including welding done using prequalified procedures. Prequalified procedures may be submitted for information only; however, procedures that are not prequalified shall be submitted for approval.

3.7 GALVANIZING REPAIR

Provide as indicated or specified. Galvanize after fabrication where practicable. Repair damage to galvanized coatings using ASTM A 780 zinc rich paint for galvanizing damaged by handling, transporting, cutting, welding, or bolting, 3 coats. Do not heat surfaces to which repair paint has been applied.

3.8 FIELD QUALITY CONTROL

Perform field tests, and provide labor, equipment, and incidentals required for testing. The Contracting Officer shall be notified in writing of defective welds, bolts, nuts, and washers within 7 working days of the date of weld inspection.

3.8.1 Welds

3.8.1.1 Visual Inspection

AWS D1.1/D1.1M. Furnish the services of AWS-certified welding inspectors for fabrication and erection inspection and testing and verification inspections. Welding inspectors shall visually inspect and mark welds, including fillet weld end returns.

3.8.2 Load Indicator Washers

3.8.2.1 Load Indicator Washer Compression

Load indicator washers shall be tested in place to verify that they have been compressed sufficiently to provide the 0.015 inch gap when the load indicator washer is placed under the bolt head and the nut is tightened, and to provide the 0.005 inch gap when the load indicator washer is placed under the turned element, as required by ASTM F 959.

3.8.3 High-Strength Bolts

3.8.3.1 Inspection

Inspection procedures shall be in accordance with AISC 348, Section 9. Confirm and report to the Contracting Officer that the materials meet the project specification and that they are properly stored. Confirm that the faying surfaces have been properly prepared before the connections are assembled. Observe the specified job site testing and calibration, and confirm that the procedure to be used provides the required tension. Monitor the work to ensure the testing procedures are routinely followed on joints that are specified to be fully tensioned.

Inspection by the Government will include proper preparation, size, gaging location, and acceptability of welds; identification marking; operation and current characteristics of welding sets in use; and calibration of torque wrenches for high-strength bolts.

Inspection of high-strength bolted connections by the Government will be performed in accordance with AISC 317.

3.8.3.2 Testing

The Government has the option to perform nondestructive tests on 5 percent of the installed bolts to verify compliance with pre-load bolt tension requirements. The nondestructive testing will be done in-place using an ultrasonic measuring device or any other device capable of determining in-place pre-load bolt tension. The test locations shall be selected by the Contracting Officer. If more than 10 percent of the bolts tested contain defects identified by testing, then all bolts used from the batch from which the tested bolts were taken, shall be tested. Retest new bolts after installation.

3.9 SPECIAL INSPECTION AND TESTING FOR SEISMIC-RESISTING SYSTEMS

Not Used.

-- End of Section --

SECTION 31 00 00

EARTHWORK
08/08

PART 1 GENERAL

1.1 CRITERIA FOR BIDDING

Base bids on the following criteria:

- a. Surface elevations are as indicated.
- b. Pipes or other artificial obstructions, except those indicated, will not be encountered.

1.2 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; R 2004) Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and an 457-mm (18-in) Drop

AASHTO T 224 (2001; R 2004) Correction for Coarse Particles in the Soil Compaction Test

ASTM INTERNATIONAL (ASTM)

ASTM C 136 (2006) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

ASTM D 1140 (2000; R 2006) Amount of Material in Soils Finer than the No. 200 (75-micrometer) Sieve

ASTM D 1556 (2007) Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D 1557 (2007) Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³) (2700 kN-m/m³)

ASTM D 2434 (1968; R 2006) Permeability of Granular Soils (Constant Head)

ASTM D 2487 (2006e1) Soils for Engineering Purposes (Unified Soil Classification System)

ASTM D 422 (1963; R 2007) Particle-Size Analysis of Soils

ASTM D 4318

(2005) Liquid Limit, Plastic Limit, and
Plasticity Index of Soils

1.3 DEFINITIONS

1.3.1 Satisfactory Materials

Satisfactory materials comprise any materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, and SP. Satisfactory materials for grading comprise stones less than 8 inches, except for fill material for pavements and railroads which comprise stones less than 3 inches in any dimension.

1.3.2 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. Notify the Contracting Officer when encountering any contaminated materials.

1.3.3 Cohesionless and Cohesive Materials

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

1.3.4 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, express the degree of compaction for material having more than 30 percent by weight of their particles retained on the 3/4 inch sieve as a percentage of the maximum density in accordance with AASHTO T 180 and corrected with AASHTO T 224. To maintain the same percentage of coarse material, use the "remove and replace" procedure as described in NOTE 8 of Paragraph 7.2 in AASHTO T 180.

1.3.5 Topsoil

Material suitable for topsoils obtained from offsite areas 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.

1.3.6 Hard/Unyielding Materials

Hard/Unyielding materials comprise weathered rock, dense consolidated deposits, or conglomerate materials which are not included in the definition of "rock" with stones greater than 3 inch in any dimension or

as defined by the pipe manufacturer, whichever is smaller. These materials usually require the use of heavy excavation equipment, ripper teeth, or jack hammers for removal.

1.3.7 Rock

Solid homogeneous interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which can be removed without systematic drilling and blasting, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders, buried masonry, or concrete other than pavement exceeding 1/2 cubic yard in volume. Removal of hard material will not be considered rock excavation because of intermittent drilling and blasting that is performed merely to increase production.

1.3.8 Unstable Material

Unstable material are too wet to properly support the utility pipe, conduit, or appurtenant structure.

1.3.9 Select Granular Material

1.3.9.1 General Requirements

Select granular material consist of materials classified as GW, GP, SW, SP, by ASTM D 2487 where indicated. The liquid limit of such material must not exceed 35 percent when tested in accordance with ASTM D 4318. The plasticity index must not be greater than 12 percent when tested in accordance with ASTM D 4318, and not more than 35 percent by weight may be finer than No. 200 sieve when tested in accordance with ASTM D 1140. Provide a minimum coefficient of permeability of 0.002 feet per minute when tested in accordance with ASTM D 2434.

1.3.10 Initial Backfill Material

Initial backfill consists of select granular material or satisfactory materials free from rocks 1.5 inches or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer, whichever is smaller. When the pipe is coated or wrapped for corrosion protection, free the initial backfill material of stones larger than 1.5 inches in any dimension or as recommended by the pipe manufacturer, whichever is smaller.

1.4 SYSTEM DESCRIPTION

Subsurface investigation was not performed on this project.

1.4.1 Classification of Excavation

No consideration will be given to the nature of the materials, and all excavation will be designated as unclassified excavation.

1.4.1.1 Common Excavation

Include common excavation with the satisfactory removal and disposal of all materials not classified as rock excavation.

1.4.1.2 Rock Excavation

Include rock excavation with blasting, excavating, grading, disposing of material classified as rock, and the satisfactory removal and disposal of boulders 1/2 cubic yard or more in volume; solid rock; rock material that is in ledges, bedded deposits, and unstratified masses, which cannot be removed without systematic drilling and blasting; firmly cemented conglomerate deposits possessing the characteristics of solid rock impossible to remove without systematic drilling and blasting; and hard materials (see Definitions). Include the removal of any concrete or masonry structures, except pavements, exceeding 1/2 cubic yard in volume that may be encountered in the work in this classification. If at any time during excavation, including excavation from borrow areas, the Contractor encounters material that may be classified as rock excavation, uncover such material and notify the Contracting Officer. Do not proceed with the excavation of this material until the Contracting Officer has classified the materials as common excavation or rock excavation and has taken cross sections as required. Failure on the part of the Contractor to uncover such material, notify the Contracting Officer, and allow ample time for classification and cross sectioning of the undisturbed surface of such material will cause the forfeiture of the Contractor's right of claim to any classification or volume of material to be paid for other than that allowed by the Contracting Officer for the areas of work in which such deposits occur.

1.4.2 Dewatering Work Plan

Submit procedures for accomplishing dewatering work.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Dewatering Work Plan; G

Submit 15 days prior to starting work.

SD-03 Product Data

Utilization of Excavated Materials; G
Rock Excavation

Shoulder Construction

Procedure and location for disposal of unused satisfactory material. Proposed source of borrow material. Notification of encountering rock in the project. Advance notice on the opening of excavation or borrow areas. Advance notice on shoulder construction for rigid pavements.

SD-06 Test Reports

Testing

Borrow Site Testing

Within 24 hours of conclusion of physical tests, 5 copies of test results, including calibration curves and results of calibration tests. Results of testing at the borrow site.

SD-07 Certificates

Testing

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

PART 2 PRODUCTS

2.1 REQUIREMENTS FOR OFFSITE SOILS

Do not furnish or transport soils onto the MCAS Cherry Point when such act would violate the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) or the General Statutes of North Carolina.

Provide certification that all soil furnished under the contract contains no petroleum or hazardous or toxic materials as defined in DoD Instruction 4715.6, which implements 10 U.S.C. 2692. The following methods shall be used to determine if soil meets this standard.

If the total amount of soil to be brought onto the MCAS Cherry Point for a single contract is less than 200 cubic yards, certify the soil meets the standard by inspecting for "Apparent Contamination" (visual or other indications of contamination including abnormal or unnatural color, chemical or petroleum odors, or saturation with a chemical or petroleum). Soil which is contaminated, as determined by inspecting for "Apparent Contamination", shall not be utilized on the MCAS Cherry Point or outlying fields.

If the total amount of soil to be brought onto the MCAS Cherry Point for a single contract is greater than 200 cubic yards, provide certification that the soil meets the standard by analytical testing performed by a laboratory holding current certification from the North Carolina Department of Environment and Natural Resources, Division of Water Quality. Collect one representative sample of the soil to be used for each 200 cubic yards or fraction thereof, and analyze for Gasoline Range Organics, Diesel Range Organics, Oil and Grease, and 8 RCRA Metals (Totals). If any of the test results are greater than the Method Detection Limits for petroleum, the soil from which the sample was taken shall not be certified as meeting the standard. If any test results are greater than the following North Carolina soil-to-groundwater target concentrations for the 8 RCRA metals, the soil from which the sample was taken shall not be certified as meeting the standard. All units are mg/kg (ppm): Arsenic 26.2; Barium 848; Cadmium 2.72; Chromium 27.2; Lead 270.06; Mercury 0.0154; Selenium 12.2; and Silver 0.223.

2.2 BURIED WARNING AND IDENTIFICATION TAPE

Not Used.

2.3 DETECTION WIRE FOR NON-METALLIC PIPING

Not Used.

2.4 MATERIAL FOR RIP-RAP

Not used.

2.5 CAPILLARY WATER BARRIER

Not Used.

2.6 PIPE CASING

Not Used.

PART 3 EXECUTION

3.1 STRIPPING OF TOPSOIL

Where indicated or directed, strip topsoil to a depth of 4 inch. Spread topsoil on areas already graded and prepared for topsoil, or transported and deposited in stockpiles convenient to areas that are to receive application of the topsoil later, or at locations indicated or specified. Keep topsoil separate from other excavated materials, brush, litter, objectionable weeds, roots, stones larger than 2 inch in diameter, and other materials that would interfere with planting and maintenance operations. Stockpile in locations indicated any surplus of topsoil from excavations and gradings.

3.2 GENERAL EXCAVATION

The project site is located within the boundaries of Operable Unit 1 (OU1) just off Mockingbird Hill Road. This site location is in an area where there is a history of possible POL or chemical spills. Pre-characterization or soil sampling is not required prior to excavation. This information is provided to give the contractor's Industrial Hygiene Department the ability to look at the contaminants historically found in the area for incorporation into their Health and Safety Plan to ensure worker safety.

If any soil which exhibits an abnormal or unnatural color, a chemical or petroleum odor, or is saturated with a chemical or petroleum is encountered during excavation, work should be immediately stopped in that area, and the Environmental Affairs Department (EAD) should be advised of the situation so a course of action can be developed to address the contamination. All excavated soil may be re-utilized as backfill at the same location from which it was removed unless petroleum contamination is discovered. If petroleum contamination were discovered, the soil would need to be segregated by PID (./+ 10 ppm or exhibits staining), properly stockpiled, tested, and disposed. If soil is to be stockpiled, then it should be stockpiled on plastic, bermed, and covered in accordance with NC DENR Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater, Vol. 1 dated July 2000 (Guidelines), or placed in a rolloff container and covered with plastic.

For this site within the OU-1 boundary, any excess soil that cannot be re-utilized as backfill at the same location from which it was removed must be disposed at a Subtitle D landfill (e.g.; Tuscarora) as a minimum with the understanding that the analytical testing results will determine the final disposal facility. Contactor must provide supporting laboratory analysis to the EAD for review. The EAD must review and sign the waste manifests/bill of lading for the soil disposal prior to any of this soil

leaving the Air Station. The manifest should also contain the amount of soil (weight) and supporting laboratory results for EAD to review. One composite sample must be taken and analyzed for each 200 cubic yards of the stockpile per DENR Guidelines in order to determine the proper method for disposal.

Use of a North Carolina certified laboratory to perform the specific soil analyses required. The laboratory must be certified by North Carolina in the specific tests to be performed. Consult with the selected laboratory about the specific sample handling procedures required by the analytical methods. Sample containers, volumes, procedures, and preservation vary among methods. Sampling must be conducted by qualified personnel and proper chain-of-custody protocol must be followed. The stockpile sample(s) shall be analyzed for the following:

Std Method 5030 sample prep with Modified 8015 (CA GC-FID Method) - Gasoline Range Organics,

Std Method 5030 and 3550 sample prep with Modified 8015 - Diesel Range Organics,

EPA Method 9071 - Oil & Grease, and

TCLP for 8 RCRA Metals (D004-D011)

All disturbed areas must also be capped by either (1) covering the surficial soil with an impervious material such as concrete or asphalt, or (2) topping the excavated area with 12 inches of compacted, clean fill. Capping is required to prevent an increased exposure risk from both surficial exposure and contaminant leaching. Therefore, backfilled soils must be compacted to minimize infiltration of surface water through the soil column.

In contaminated areas, if dewatering is required during excavation, all water must be containerized. The groundwater cannot be discharged to the ground surface, storm sewer etc. prior to sampling and analysis due to the potential contamination from migrating plumes. FACENGIROICC may make arrangements with the IWTP for disposal of contaminated groundwater. If groundwater is accepted for disposal by the IWTP, then sampling may not be required (water disposed of at the IWTP, historically has not required testing). A chit must be obtained from EAD (Glenn Hartzog 466-4789) prior to sending contaminated water to the IWTP.

Perform excavation of every type of material encountered within the limits of the project to the lines, grades, and elevations indicated and as specified. Perform the grading in accordance with the typical sections shown and the tolerances specified in paragraph FINISHING. Transport satisfactory excavated materials and place in fill or embankment within the limits of the work. Excavate unsatisfactory materials encountered within the limits of the work below grade and replace with satisfactory materials as directed. Include such excavated material and the satisfactory material ordered as replacement in excavation. Dispose surplus satisfactory excavated material not required for fill or embankment in areas approved for surplus material storage or designated waste areas. Dispose unsatisfactory excavated material in designated waste or spoil areas. During construction, perform excavation and fill in a manner and sequence that will provide proper drainage at all times. Excavate material required for fill or embankment in excess of that produced by excavation within the grading limits from the borrow areas indicated or from other approved areas

selected by the Contractor as specified.

3.2.1 Ditches, Gutters, and Channel Changes

Not used.

3.2.2 Drainage Structures

Not used.

3.2.3 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. 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 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 and ground water conditions presented by the plans and specifications and to employ necessary measures to permit construction to proceed.

3.2.4 Dewatering

Control groundwater flowing toward or into excavations to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. Do not permit French drains, sumps, ditches or trenches 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. Take control measures by the time the excavation reaches the water level in order to maintain the integrity of the in situ material. While the excavation is open, maintain the water level continuously, at least 2 feet below the working level. Operate dewatering system continuously until construction work below existing water levels is complete.

3.2.5 Underground Utilities

The Contractor is responsible for movement of construction machinery and equipment over pipes and utilities during construction. Excavation made with power-driven equipment is not permitted within two feet of known Government-owned utility or subsurface construction. For work immediately adjacent to or for excavations exposing a utility or other buried obstruction, excavate by hand. Start hand excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Support uncovered lines or other existing work affected by the contract excavation until approval for backfill is granted by the Contracting Officer. Report damage to utility lines or subsurface construction immediately to the Contracting Officer.

3.3 SELECTION OF BORROW MATERIAL

Select borrow material to meet the requirements and conditions of the

particular fill or embankment for which it is to be used. Obtain borrow material from approved private sources. Unless otherwise provided in the contract, the Contractor is responsible for obtaining the right to procure material, pay royalties and other charges involved, and bear the expense of developing the sources, including rights-of-way for hauling from the owners. Borrow material from approved sources on Government-controlled land may be obtained without payment of royalties. Unless specifically provided, do not obtain borrow within the limits of the project site without prior written approval. Consider necessary clearing, grubbing, and satisfactory drainage of borrow pits and the disposal of debris thereon related operations to the borrow excavation.

3.4 OPENING AND DRAINAGE OF EXCAVATION AND BORROW PITS

Notify the Contracting Officer sufficiently in advance of the opening of any excavation or borrow pit to permit elevations and measurements of the undisturbed ground surface to be taken. Except as otherwise permitted, excavate borrow pits and other excavation areas providing adequate drainage. Transport overburden and other spoil material to designated spoil areas or otherwise dispose of as directed. Provide neatly trimmed and drained borrow pits after the excavation is completed. Ensure that excavation of any area, operation of borrow pits, or dumping of spoil material results in minimum detrimental effects on natural environmental conditions.

3.5 SHORING

Not Used.

3.6 GRADING AREAS

Where indicated, divide work into grading areas within which satisfactory excavated material will be placed in embankments, fills, and required backfills. Do not haul satisfactory material excavated in one grading area to another grading area except when so directed in writing. Place and grade stockpiles of satisfactory and unsatisfactory materials as specified.

Keep stockpiles in a neat and well drained condition, giving due consideration to drainage at all times. Clear, grub, and seal by rubber-tired equipment, the ground surface at stockpile locations; separately stockpile excavated satisfactory and unsatisfactory materials. Protect stockpiles of satisfactory materials from contamination which may destroy the quality and fitness of the stockpiled material. If the Contractor fails to protect the stockpiles, and any material becomes unsatisfactory, remove and replace such material with satisfactory material from approved sources.

3.7 FINAL GRADE OF SURFACES TO SUPPORT CONCRETE

Not used.

3.8 GROUND SURFACE PREPARATION

3.8.1 General Requirements

Remove and replace unsatisfactory material with satisfactory materials, as directed by the Contracting Officer, in surfaces to receive fill or in excavated areas. Scarify the surface to a depth of 6 inch before the fill is started. Plow, step, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so that the fill material will bond with the

existing material. When subgrades are less than the specified density, break up the ground surface to a minimum depth of 6 inch, pulverizing, and compacting to the specified density. When the subgrade is part fill and part excavation or natural ground, scarify the excavated or natural ground portion to a depth of 12 inch and compact it as specified for the adjacent fill.

3.9 UTILIZATION OF EXCAVATED MATERIALS

Dispose unsatisfactory materials removing from excavations into designated waste disposal or spoil areas. Use satisfactory material removed from excavations, insofar as practicable, in the construction of fills, embankments, subgrades, shoulders, bedding (as backfill), and for similar purposes. Do not waste any satisfactory excavated material without specific written authorization. Dispose of satisfactory material, authorized to be wasted, in designated areas approved for surplus material storage or designated waste areas as directed. Clear and grub newly designated waste areas on Government-controlled land before disposal of waste material thereon. Stockpile and use coarse rock from excavations for constructing slopes or embankments adjacent to streams, or sides and bottoms of channels and for protecting against erosion. Do not dispose excavated material 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.

3.10 BURIED TAPE AND DETECTION WIRE

Not Used.

3.11 BACKFILLING AND COMPACTION

Place backfill adjacent to any and all types of structures, and compact to at least 90 percent laboratory maximum density for cohesive materials or 95 percent laboratory maximum density for cohesionless materials, to prevent wedging action or eccentric loading upon or against the structure. Prepare ground surface on which backfill is to be placed as specified in paragraph GROUND SURFACE PREPARATION. Provide compaction requirements for backfill materials in conformance with the applicable portions of paragraphs GROUND SURFACE PREPARATION. Finish compaction by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

3.12 SPECIAL REQUIREMENTS

Not used.

3.13 EMBANKMENTS

Not used.

3.14 SUBGRADE PREPARATION

Not used.

3.15 SHOULDER CONSTRUCTION

Not used.

3.16 FINISHING

Finish the surface of excavations, embankments, and subgrades to a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations shown. Provide the degree of finish for graded areas within 0.1 foot of the grades and elevations indicated except that the degree of finish for subgrades specified in paragraph SUBGRADE PREPARATION. Finish gutters and ditches in a manner that will result in effective drainage. Finish the surface of areas to be turfed from settlement or washing to a smoothness suitable for the application of turfing materials. Repair graded, topsoiled, or backfilled areas prior to acceptance of the work, and re-established grades to the required elevations and slopes.

3.17 PLACING TOPSOIL

On areas to receive topsoil, prepare the compacted subgrade soil to a 2 inch depth for bonding of topsoil with subsoil. Spread topsoil evenly to a thickness of 4 inch and grade to the elevations and slopes shown. Do not spread topsoil when frozen or excessively wet or dry. Obtain material required for topsoil in excess of that produced by excavation within the grading limits from offsite areas.

3.18 TESTING

Perform testing by a Corps validated commercial testing laboratory or the Contractor's validated testing facility. If the Contractor elects to establish testing facilities, do not permit work requiring testing until the Contractor's facilities have been inspected, Corps validated and approved by the Contracting Officer. Determine field in-place density in accordance with ASTM D 1556. When test results indicate, as determined by the Contracting Officer, that compaction is not as specified, remove the material, replace and recompact to meet specification requirements. Perform tests on recompacted areas to determine conformance with specification requirements. Appoint a registered professional civil engineer to certify inspections and test results. These certifications shall state that the tests and observations were performed by or under the direct supervision of the engineer and that the results are representative of the materials or conditions being certified by the tests. The following number of tests, if performed at the appropriate time, will be the minimum acceptable for each type operation.

3.18.1 Fill and Backfill Material Gradation

One test per 1,000 cubic yards stockpiled or in-place source material. Determine gradation of fill and backfill material in accordance with ASTM D 422.

3.18.2 In-Place Densities

- a. One test per 500 linear feet, or fraction thereof, of each lift of embankment or backfill for airfields.

3.18.3 Moisture Contents

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

3.18.4 Optimum Moisture and Laboratory Maximum Density

Perform tests for each type material or source of material including borrow material to determine the optimum moisture and laboratory maximum density values. One representative test per 500 cubic yards of fill and backfill, or when any change in material occurs which may affect the optimum moisture content or laboratory maximum density.

3.18.5 Tolerance Tests for Subgrades

Perform continuous checks on the degree of finish specified in paragraph SUBGRADE PREPARATION during construction of the subgrades.

3.19 DISPOSITION OF SURPLUS MATERIAL

Provide surplus material or other soil material not required or suitable for filling or backfilling, and brush, refuse, stumps, roots, and timber as wasted in Government disposal area removed from Government property as directed by the Contracting Officer.

-- End of Section --

SECTION 32 31 13

CHAIN LINK FENCES AND GATES

01/08

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 116	(2005) Standard Specification for Metallic-Coated, Steel Woven Wire Fence Fabric
ASTM A 153/A 153M	(2005) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 702	(1989; R 2006) Standard Specification for Steel Fence Posts and Assemblies, Hot Wrought
ASTM A 780	(2001; R 2006) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A 90/A 90M	(2007) Standard Test Method for Weight Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
ASTM C 94/C 94M	(2007) Standard Specification for Ready-Mixed Concrete
ASTM F 1043	(2008) Strength and Protective Coatings on Metal Industrial Chain-Link Fence Framework
ASTM F 1083	(2008) Standard Specification for Pipe, Steel, Hot-Dipped Zinc Coated (Galvanized) Welded, for Fence Structures
ASTM F 567	(2007) Standard Practice for Installation of Chain Link Fence
ASTM F 626	(2008) Standard Specification for Fence Fittings

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FS RR-F-191	(Rev K) Fencing, Wire and Post Metal (and Gates, Chain-Link Fence Fabric, and Accessories)
FS RR-F-191/3	(Rev D) Fencing, Wire and Post, Metal

(Chain-Link Fence Posts, Top Rails and Braces)

FS RR-F-191/4

(Rev D) Fencing, Wire and Post, Metal
(Chain-Link Fence Accessories)

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. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Submit Erection/Installation Drawings for the following items in accordance with paragraph entitled, "Assembly and Installations Instructions," of this section.

Fence Assembly
Location of Corner, End, and Pull Posts

SD-03 Product Data

Submit Manufacturer's catalog data for the following items:

Fence Assembly

SD-07 Certificates

Submit Certificates of compliance in accordance with the applicable reference standards and descriptions of this section for the following items:

Zinc Coating
Fabric
Stretcher Bars
Concrete

SD-08 Manufacturer's Instructions

Submit Manufacturer's instructions for the following items:

Fence Assembly
Hardware Assembly
Accessories

1.3 ASSEMBLY AND INSTALLATION INSTRUCTIONS

Contractor must provide manufacturer's instructions that detail proper assembly and materials in the design for fence, hardware and accessories.

Submit Erection/Installation drawings along with manufacturer's catalog data for Complete fence assembly, hardware assembly and accessories.

1.4 DELIVERY, STORAGE, AND HANDLING

Deliver materials to site in an undamaged condition. Store materials off

the ground to provide protection against oxidation caused by ground contact.

1.5 QUALITY ASSURANCE

Not Used.

PART 2 PRODUCTS

2.1 GENERAL

Provide fencing materials that conform to the requirements of ASTM A 116, ASTM A 702, ASTM F 626, and as specified.

2.2 ZINC COATING

Ferrous-metal components and accessories, except as otherwise specified, must be hot-dip galvanized after fabrication.

Provide zinc coating of weight not less than 1.94 ounces per square foot, as determined from the average result of two specimens, when tested in accordance with ASTM A 90/A 90M.

Provide zinc coating that conforms to the requirements of the following:

Pipe: FS RR-F-191/3 Class 1 Grade A in accordance with ASTM F 1083.

Hardware and accessories: ASTM A 153/A 153M, Table 1

Surface (ASTM F 1043):

External: Type B-B surface zinc with organic coating, 0.97 ounce per square foot minimum thickness of acrylated polymer.

Internal: Surface zinc coating of 0.97 ounce per square foot minimum.

Provide galvanizing repair material that is cold-applied zinc-rich coating conforming to ASTM A 780.

2.3 FABRIC

FS RR-F-191 and detailed specifications as referenced and other requirements as specified.

Fabric must consist of No. 9-gage wires woven into a 2-inch diamond mesh, with dimensions of fabric and wire conforming to ASTM A 116, ASTM A 702 and ASTM F 626, with 1.29 ounces per square foot zinc galvanizing.

2.4 TOP AND BOTTOM SELVAGES

Fabric shall be interwoven or clipped along the top and bottom row of fabric diamonds and have twisted and barbed selvage at the bottom and the top.

2.5 POSTS AND BRACES

Not Used.

2.6 LINE POSTS

Minimum acceptable line posts must be as follows:

Up to 6-feet high:

Grade B: 2.375 inch O.D. pipe weighing 3.12 pounds per linear foot.

2.7 END, CORNER, AND PULL POSTS

Provide minimally acceptable end, corner, and pull posts as follows:

Up to 6 feet high:

Grade A: 2.375 inch O.D. pipe weighing 3.65 pounds per linear foot.

Grade B: 2.375 inch O.D. pipe weighing 3.12 pounds per linear foot.

2.8 SLEEVES

Not Used.

2.9 TOP RAIL

Rails must be a minimum of 1.625 inches O.D. pipe Grade A weighing 2.27 pounds per linear foot. Provide expansion couplings 6-inches long at each joint in top rails.

2.10 CENTER RAILS BETWEEN LINE POSTS

Not Used.

2.11 BOTTOM RAIL

Not Used.

2.12 POST-BRACE ASSEMBLY

Bracing must consist of 1.660 inches O.D. pipe Grade A weighing 2.27 pounds per linear foot and 3/8 inch adjustable truss rods and turnbuckles.

2.13 TENSION WIRE

Wire must be galvanized, No. 7-gage, coiled spring wire, provided at the bottom of the fabric only. Provide Zinc Coating that weighs not less than 1.6 ounces per square foot.

2.14 STRETCHER BARS

Provide bars that have one-piece lengths equal to the full height of the fabric with a minimum cross section of 3/16 by 3/4 inch, in accordance with ASTM A 116, ASTM A 702 and ASTM F 626.

2.15 POST TOPS

Provide tops that are steel, wrought iron, or malleable iron designed as a weathertight closure cap. Provide one cap for each post, unless equal protection is provided by a combination post-cap and barbed-wire supporting arm. Caps must have an opening to permit through passage of the top rail.

2.16 STRETCHER BAR BANDS

Provide bar bands for securing stretcher bars to posts that are steel, wrought iron, or malleable iron spaced not over 15 inches on center. Bands may also be used in conjunction with special fittings for securing rails to posts. Provide bands with projecting edges chamfered or eased.

2.17 GATE POSTS

Not Used.

2.18 GATES

Not Used.

2.19 GATE HARDWARE AND ACCESSORIES

Not Used.

2.20 MISCELLANEOUS HARDWARE

Provide miscellaneous hot-dip galvanized hardware as required.

2.21 WIRE TIES

Wires for tying fabric to line posts must be 9-gage galvanized steel wire spaced 15 inches on center. For tying fabric to rails and braces, wire ties must be spaced 24 inches on center. For tying fabric to tension wire, 0.105-inch hog rings must be spaced 24 inches on center.

Manufacturer's standard procedure will be accepted if of equal strength and durability.

FS RR-F-191/4. Provide wire ties constructed of the same material as the fencing fabric.

2.22 CONCRETE

Provide concrete conforming to ASTM C 94/C 94M. Concrete mix must obtain a minimum 28-day compressive strength of 3,000 psi.

2.23 GROUT

Provide grout of proportions one part portland cement to three parts clean, well-graded sand and a minimum amount of water to produce a workable mix.

2.24 PADLOCKS

Not Used.

PART 3 EXECUTION

Completed installation must conform to ASTM F 567.

3.1 GENERAL

Final grading and established elevations must be complete prior to commencing fence installation, unless otherwise approved by Contracting

Officer.

3.2 EXCAVATION

Excavations for post footings must be drilled holes in virgin or compacted soil, of minimum sizes as indicated.

Space footings for line posts 6 feet on center maximum and at closer intervals when indicated.

Bottoms of the holes must be approximately 6-inches below the bottoms of the posts. Set bottom of each post not less than 40-inches below finished grade when in firm, undisturbed soil. Set posts deeper, as required, in soft and problem soils and for heavy, lateral loads.

Soil from excavations must be spread uniformly adjacent to the fence line or on areas of Government property, as directed.

When solid rock is encountered near the surface, the Contractor must drill into the rock at least 12 inches for line posts and at least 18 inches for end, pull, corner, and gate posts. Drill holes at least 1 inch greater in diameter than the largest dimension of the placed post.

If solid rock is below the soil overburden, Contractor must drill to the full depth required except that penetration into rock need not exceed the minimum depths specified above.

3.3 SETTING POSTS

Remove loose and foreign materials from holes and the soil moistened prior to placing concrete.

Provide tops of footings that are trowel finished and sloped or domed to shed water away from posts. Set hold-open devices, sleeves, and other accessories in concrete.

Keep exposed concrete moist for at least 7 calendar days after placement or cured with a membrane curing material, as approved.

Posts set in concrete construction must be set vertically, with tops aligned and held in position until concrete has set.

3.3.1 Earth and Bedrock

Provide concrete bases of dimensions indicated. Compact concrete to eliminate voids, and finish to a dome shape.

3.3.2 Bracing

Brace corner, end, and pull posts to nearest post with a horizontal brace used as a compression member, placed at least 12 inches below top of fence, and a diagonal truss rod and truss tightener used as a tension member.

3.4 CONCRETE STRENGTH

Provide Concrete that has attained at least 75 percent of its minimum 28-day compressive strength, but in no case sooner than 7 calendar days after placement, before rails, tension wire, or fabric are installed. Fabric and wires must not be stretched until the concrete has attained its

full design strength.

Samples and test concrete must be taken to determine strength as specified.

3.5 TOP RAILS

Provide top rails that run continuously through post caps or extension arms, bending to radius for curved runs. Provide expansion couplings as recommended by the fencing manufacturer.

3.6 CENTER RAILS

Not Used.

3.7 BRACE ASSEMBLY

Contractor must provide bracing assemblies at end and at both sides of corner and pull posts, with the horizontal brace located at midheight of the fabric.

Install brace assemblies so posts are plumb when the diagonal rod is under proper tension.

Provide two complete brace assemblies at corner and pull posts where required for stiffness and as indicated.

3.8 TENSION WIRE INSTALLATION

Install tension wire by weaving them through the fabric and tying them to each post with not less than 7-gage galvanized wire or by securing the wire to the fabric with 10-gage ties or clips spaced 24 inches on center.

3.9 FABRIC INSTALLATION

Provide Fabric in single lengths between stretch bars with bottom barbs placed approximately 2-inches above the ground line. Pull fabric taut and tied to posts, rails, and tension wire with wire ties and bands.

Install fabric on the security side of fence, unless otherwise directed.

Fabric must remain under tension after the pulling force is released.

3.10 STRETCHER BARS INSTALLATION

Thread stretcher bars through or clamped to fabric 4 inches on center and secured to posts with metal bands spaced 15 inches on center.

3.11 GATE INSTALLATION

Not Used.

3.12 TIE WIRES

Provide tie wires that are U-shaped to the pipe diameters to which attached. Twist ends of tie wires not less than a 540 degree tightened loop and bent so as not to present a hazard.

3.13 FASTENERS

Install nuts for tension bands and hardware on the side of the fence opposite the fabric side. Peen ends of bolts to prevent removal of nuts.

3.14 ZINC-COATING REPAIR

Clean and repair galvanized surfaces damaged by welding or abrasion, and cut ends of fabric, or other cut sections with specified galvanizing repair material applied in strict conformance with the manufacturer's printed instructions.

3.15 TOLERANCES

Provide posts that are straight and plumb within a vertical tolerance of 2 degrees after the fabric has been stretched. Provide fencing that is true to line with no more than 1/2 inch deviation from the established centerline between line posts. Repair defects as directed.

3.16 SITE PREPARATION

3.16.1 Clearing and Grading

Clear fence line of trees, brush, and other obstacles to install fencing. Establish a graded, compacted fence line prior to fencing installation.

3.17 FENCE INSTALLATION

Install fence on prepared surfaces to line and grade indicated. Secure fastening and hinge hardware in place to fence framework by peening or welding. Allow for proper operation of components. Coat peened or welded areas with a repair coating matching original coating. Install fence in accordance with fence manufacturer's written installation instructions except as modified herein.

3.17.1 Post Spacing

Provide line posts spaced equidistantly apart, not exceeding 6 feet on center. Do not exceed 500 feet on straight runs between braced posts. Provide corner or pull posts, with bracing in both directions, for changes in direction of 15 degrees or more, or for abrupt changes in grade. Provide drawings showing location of corner, end, and pull posts.

3.17.2 Top and Bottom Tension Wire

Install bottom tension wires before installing chain-link fabric, and pull wires taut. Place bottom tension wires within 8 inches of respective fabric line.

3.18 ACCESSORIES INSTALLATION

3.18.1 Post Caps

Install post caps as recommended by the manufacturer.

3.19 GROUNDING

Ground fencing as indicated on drawings.

3.20 SECURITY

Install new security fencing, remove existing security fencing, and perform related work to provide continuous security for facility. Schedule and fully coordinate work with Contracting Officer and cognizant Security Officer.

3.21 CLEANUP

Remove waste fencing materials and other debris from the work site.

-- End of Section --

SECTION 32 92 23

SODDING

04/06

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 602 (1995a; R 2001) Agricultural Liming Materials

ASTM D 4427 (1992; R 2002e1) Peat Samples by Laboratory Testing

ASTM D 4972 (2001) pH of Soils

TURFGRASS PRODUCERS INTERNATIONAL (TPI)

TPI GSS (1995) Guideline Specifications to Turfgrass Sodding

U.S. DEPARTMENT OF AGRICULTURE (USDA)

DOA SSIR 42 (1996) Soil Survey Investigation Report No. 42, Soil Survey Laboratory Methods Manual, Version 3.0

1.2 DEFINITIONS

1.2.1 Stand of Turf

100 percent ground cover of the established species.

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Fertilizer

Include physical characteristics, and recommendations.

SD-06 Test Reports

Topsoil composition tests (reports and recommendations).

SD-07 Certificates

Nursery or Sod farm certification for sods. Indicate type of sod

in accordance with TPI GSS.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Delivery

1.4.1.1 Sod Protection

Protect from drying out and from contamination during delivery, on-site storage, and handling.

1.4.1.2 Fertilizer, Gypsum and Lime Delivery (As Required)

Deliver to the site in original, unopened containers bearing manufacturer's chemical analysis, name, trade name, trademark, and indication of conformance to state and federal laws. Instead of containers, fertilizer, gypsum and lime may be furnished in bulk with certificate indicating the above information.

1.4.2 Storage

1.4.2.1 Sod Storage

Lightly sprinkle with water, cover with moist burlap, straw, or other approved covering; and protect from exposure to wind and direct sunlight until planted. Provide covering that will allow air to circulate so that internal heat will not develop. Do not store sod longer than 24 hours. Do not store directly on concrete or bituminous surfaces.

1.4.2.2 Topsoil

Prior to stockpiling topsoil, treat growing vegetation with application of appropriate specified non-selective herbicide. Clear and grub existing vegetation three to four weeks prior to stockpiling topsoil.

1.4.2.3 Handling

Do not drop or dump materials from vehicles.

1.5 TIME RESTRICTIONS AND PLANTING CONDITIONS

1.5.1 Restrictions

Do not plant when the ground is frozen, snow covered, muddy, or when air temperature exceeds 90 degrees Fahrenheit.

1.6 TIME LIMITATIONS

1.6.1 Sod

Place sod a maximum of thirty six hours after initial harvesting, in accordance with TPI GSS as modified herein.

PART 2 PRODUCTS

2.1 SODS

2.1.1 Classification

Nursery grown, certified as classified in the TPI GSS. Machine cut sod at a uniform thickness of 3/4 inch within a tolerance of 1/4 inch, excluding top growth and thatch. Each individual sod piece shall be strong enough to support its own weight when lifted by the ends. Broken pads, irregularly shaped pieces, and torn or uneven ends will be rejected. Wood pegs and wire staples for anchorage shall be as recommended by sod supplier.

2.1.2 Purity

Sod species shall be genetically pure, free of weeds, pests, and disease.

2.1.3 Planting Dates

Lay sod from 01 March to 30 May for warm season spring planting.

2.1.4 Composition

2.1.4.1 Proportion

Proportion grass species as follows.

Common Name	Percent
Centipede Grass	100%

2.2 TOPSOIL

2.2.1 On-Site Topsoil

Surface soil stripped and stockpiled on site and modified as necessary to meet the requirements specified for topsoil in paragraph entitled "Composition."

2.2.2 Off-Site Topsoil

Conform to requirements specified in paragraph entitled "Composition." Additional topsoil shall be furnished by the Contractor.

2.2.3 Composition

Containing from 5 to 10 percent organic matter as determined by the topsoil composition tests of the Organic Carbon, 6A, Chemical Analysis Method described in DOA SSIR 42. Maximum particle size, 3/4 inch, with maximum 3 percent retained on 1/4 inch screen. The pH shall be tested in accordance with ASTM D 4972. Topsoil shall be free of sticks, stones, roots, and other debris and objectionable materials. Other components shall conform to the following limits:

Silt	25-50 percent
Clay	10-30 percent
Sand	20-35 percent
pH	5.5 to 7.0

Soluble Salts 600 ppm maximum

2.3 SOIL CONDITIONERS

Add conditioners to topsoil as required to bring into compliance with "composition" standard for topsoil as specified herein.

2.3.1 Lime

Commercial grade hydrate limestone containing a calcium carbonate equivalent (C.C.E.) as specified in ASTM C 602 of not less than 100 percent.

2.3.2 Aluminum Sulfate

Commercial grade.

2.3.3 Sulfur

100 percent elemental

2.3.4 Iron

100 percent elemental

2.3.5 Peat

Natural product of peat moss derived from a freshwater site and conforming to ASTM D 4427. Shred and granulate peat to pass a 1/2 inch mesh screen and condition in storage pile for minimum 6 months after excavation.

2.3.6 Sand

Clean and free of materials harmful to plants.

2.3.7 Perlite

Horticultural grade.

2.3.8 Composted Derivatives

Ground bark, nitrolized sawdust, humus or other green wood waste material free of stones, sticks, and soil stabilized with nitrogen and having the following properties:

2.3.8.1 Particle Size

Minimum percent by weight passing:

No. 4 mesh screen	95
No. 8 mesh screen	80

2.3.8.2 Nitrogen Content

Minimum percent based on dry weight:

Fir Sawdust	0.7
Fir or Pine Bark	1.0

2.3.9 Gypsum

Coarsely ground gypsum comprised of calcium sulfate dihydrate 91 percent, calcium 22 percent, sulfur 17 percent; minimum 96 percent passing through 20 mesh screen, 100 percent passing thru 16 mesh screen.

2.3.10 Calcined Clay

Calcined clay shall be granular particles produced from montmorillonite clay calcined to a minimum temperature of 1200 degrees F. Gradation: A minimum 90 percent shall pass a No. 8 sieve; a minimum 99 percent shall be retained on a No. 60 sieve; and a maximum 2 percent shall pass a No. 100 sieve. Bulk density: A maximum 40 pounds per cubic foot.

2.4 FERTILIZER

2.4.1 Granular Fertilizer

Organic, granular controlled release fertilizer containing the following minimum percentages, by weight, of plant food nutrients:

- 20 percent available nitrogen
- 3 percent available phosphorus
- 4 percent available potassium
- 1 percent sulfur
- 2 percent iron

2.5 WATER

Source of water shall be approved by Contracting Officer and of suitable quality for irrigation containing no element toxic to plant life.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 EXTENT OF WORK

Provide soil preparation (including soil conditioners), fertilizing, and sodding of all newly graded finished earth surfaces, unless indicated otherwise, and at all areas inside or outside the limits of construction that are disturbed by the Contractor's operations.

3.1.2 Soil Preparation

Provide 4 inches of off-site topsoil or on-site topsoil to meet indicated finish grade. After areas have been brought to indicated finish grade, incorporate fertilizer, pH adjusters and soil conditioners as needed 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. Correct irregularities in finish surfaces to eliminate depressions. Protect finished topsoil areas from damage by vehicular or pedestrian traffic.

3.1.2.1 Soil Conditioner Application Rates

Apply soil conditioners at rates as determined by laboratory soil analysis of the soils at the job site.

3.1.2.2 Fertilizer Application Rates

Apply fertilizer at rates as determined by laboratory soil analysis of the soils at the job site.

3.2 SODDING

3.2.1 Finished Grade and Topsoil

Prior to the commencement of the sodding operation, the Contractor shall verify that finished grades are as indicated on drawings; the placing of topsoil, smooth grading, and compaction requirements have been completed.

The prepared surface shall be a maximum 1 inch below the adjoining grade of any surfaced area. New surfaces shall be blended to existing areas. The prepared surface shall be completed with a light raking to remove from the surface debris and stones over a minimum 5/8 inch in any dimension.

3.2.2 Placing

Place sod a maximum of 36 hours after initial harvesting, in accordance with TPI GSS as modified herein.

3.2.3 Sodding Slopes and Ditches

For slopes 2:1 and greater, lay sod with long edge perpendicular to the contour. For V-ditches and flat bottomed ditches, lay sod with long edge perpendicular to flow of water. Anchor each piece of sod with wood pegs or wire staples maximum 2 feet on center. On slope areas, start sodding at bottom of the slope.

3.2.4 Finishing

After completing sodding, blend edges of sodded area smoothly into surrounding area. Air pockets shall be eliminated and a true and even surface shall be provided. Frayed edges shall be trimmed and holes and missing corners shall be patched with sod.

3.2.5 Rolling

Immediately after sodding, 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.

3.2.6 Watering

Start watering areas sodded as required by daily temperature and wind conditions. Apply water at a rate sufficient to ensure thorough wetting of soil to minimum depth of 6 inches. Run-off, puddling, and wilting shall be prevented. Unless otherwise directed, watering trucks shall not be driven over turf areas. Watering of other adjacent areas or plant material shall be prevented.

3.3 PROTECTION OF TURF AREAS

Immediately after turfing, protect area against traffic and other use.

3.4 RESTORATION

Restore to original condition existing turf areas which have been damaged during turf installation operations. Keep clean at all times at least one paved pedestrian access route and one paved vehicular access route to each building. Clean other paving when work in adjacent areas is complete.

-- End of Section --