

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

OVERLAY WOODSIDE DR, FRANKLIN TO LENOIR

AT THE

MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA

PROJECT: 6251512


DESIGNED BY:

DESIGN MANAGEMENT AND ENGINEERING BRANCH
MCAS, CHERRY POINT, NC

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Date: 29 JUN 2017

PROJECT TABLE OF CONTENTS**DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS**

00 01 15 LIST OF DRAWINGS
00 22 13.00 20 SUPPLEMENTARY INSTRUCTIONS TO OFFERORS

DIVISION 01 - GENERAL REQUIREMENTS

01 11 00 SUMMARY OF WORK
01 14 00 WORK RESTRICTIONS
01 30 00 ADMINISTRATIVE REQUIREMENTS
01 33 00 SUBMITTAL PROCEDURES
01 35 29 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS
01 42 00 SOURCES FOR REFERENCE PUBLICATIONS
01 45 00.00 20 CONSTRUCTION QUALITY CONTROL
01 57 19.00 20 TEMPORARY ENVIRONMENTAL CONTROLS
01 78 00 CLOSEOUT SUBMITTALS

DIVISION 02 - EXISTING CONDITIONS

02 41 00 DEMOLITION

DIVISION 03 - CONCRETE

03 45 33 PLANT-PRECAST STRUCTURAL CONCRETE

DIVISION 31 - EARTHWORK

31 23 00.00 20 EXCAVATION AND FILL

DIVISION 32 - EXTERIOR IMPROVEMENTS

32 01 00 TEMPORARY TRAFFIC CONTROLS
32 01 16.17 COLD MILLING OF BITUMINOUS PAVEMENTS
32 12 17 HOT MIX BITUMINOUS PAVEMENT
32 16 13 CONCRETE SIDEWALKS AND CURBS AND GUTTERS
32 17 23.00 20 THERMOPLASTIC PAVEMENT MARKINGS
32 17 23.00 30 TRAFFIC CONTROL SIGNS
32 92 23 TURF (SOD)

DIVISION 33 - UTILITIES

33 40 00 STORM DRAINAGE UTILITIES

-- End of Project Table of Contents --

DOCUMENT 00 01 15

LIST OF DRAWINGS

02/11

PART 1 GENERAL

1.1 SUMMARY

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

1.2 CONTRACT DRAWINGS

Contract drawings are as follows:

NAVFAC DWG NO	SHEET NO.	TITLE
12731673	G-001	COVER SHEET
12731674	G-002	SHEET STANDARDS
12731675	G-003	OVERALL SITE PLAN
12731676	C-101	EXISTING TOPGRAPHIC SURVEY - AREA "A"
12731677	C-102	EXISTING TOPGRAPHIC SURVEY - AREA "B"
12731678	C-103	SOIL BORINGS
12731679	C-201	OVERALL TRAFFIC CONTROL PLAN
12731680	C-202	TRAFFIC CONTROL AND MARKING DETAILS
12731681	C-301	DEMOLITION PLAN - AREA "A"
12731682	C-302	DEMOLITION PLAN - AREA "B"
12731683	C-401	CIVIL SITE & MARKING PLAN - AREA "A"
12731684	C-402	CIVIL SITE & MARKING PLAN - AREA "B"
12731685	C-501	CIVIL PAVEMENT STAKING PLAN - AREA "A"
12731686	C-502	CIVIL PAVEMENT STAKING PLAN - AREA "B"
12731687	C-601	STAKING POINT TABLES
12731688	C-602	STAKING POINT TABLES
12731689	C-701	GRADING & PROFILE PLAN - AREA "A"
12731690	C-702	GRADING & PROFILE PLAN - AREA "B"

NAVFAC DWG NO	SHEET NO.	TITLE
12731691	C-801	EROSION CONTROL PLAN - AREA "A"
12731692	C-802	EROSION CONTROL PLAN - AREA "B"
12731693	C-901	DETAILS
12731694	C-902	DETAILS
12731695	C-903	DETAILS
12731696	C-904	DETAILS
12731697	C-905	DETAILS
12731698	C-906	DETAILS
12731699	C-907	DETAILS
12731700	C-908	DETAILS
12731701	C-909	DETAILS

1.3 BORINGS

1.3.1 Boring Logs

The Government does not guarantee that borings indicate actual conditions, except for the exact locations and the time that they were made.

-- End of Document --

DOCUMENT 00 22 13.00 20

SUPPLEMENTARY INSTRUCTIONS TO OFFERORS

02/14

PART 1 GENERAL

1.1 CONTRACT LINE ITEMS

The terms Offeror and Bidder and versions thereof (offer/bid) have the same definition as used within this contract.

Provide the Contract Line Item (CLIN) lump sum price for the following items:

CLIN 0001 - BASE PRICE. Price includes the following:

CLIN 0001AA. Price for the entire scope of work for WO 6251512, Overlay Woodside Drive form Franklin Rd to Lenoir Rd, in accordance with the NAVFAC drawings, 12731673-12731701, and specifications, but excluding work described in Contract Line Item (CLIN) 0001AB and 0001AC.

CLIN	DESCRIPTION	TOTAL PRICE FOR CLIN 0001AA
0001AA	WO 6251512, Overlay Woodside Drive form Franklin Rd to Lenoir Rd. NAVFAC drawings, 12731673-12731701.	\$ _____

CLIN 0001AB. Additive 0001, Price for the entire work for WO 6498931, Construct Temporary Parking Lot Woodside Drive, in accordance with the NAVFAC drawings, 12731702-12731719, and specifications, but excluding work described in CLIN 0001AC.

CLIN	DESCRIPTION	TOTAL PRICE FOR CLIN 0001AB
0001AB	WO 6498931, Construct Temporary Parking Lot Woodside Drive. NAVFAC drawings, 12731702-12731719.	\$ _____

CLIN 0001AC. Additive 0002, Price for the Pedestrian Crosswalk shown on sheets C-203, C-205, C-302 and C-402 in WO 6498931, Construct Temporary Parking Lot Woodside Drive, complete in accordance with the NAVFAC drawings, 12731702-12731719, and specifications. Additive 0002 will not be awarded unless additive 0001 is awarded.

CLIN	DESCRIPTION	TOTAL PRICE FOR 0001AC
0001AC	Pedistrian Crosswalk shown on sheets C-203, C-205, C-302 and C-402 in WO 6498931, Construct Temporary Parking Lot Woodside Drive. NAVFAC drawings, 12731702-12731719.	\$ _____

1.2 GENERAL BID NOTES

- a. Award will be made on the total sum of Contract Line Item[s] 0001AA, 0001AB, and 0001AC.
- b. The Government reserves the unilateral right to award CLIN 0001AB and CLIN 0001AC to the Contractor at the proposed price as funding allows. A firm fixed proposed price is required for CLIN 0001. No provision is made for economic price adjustment. Award of CLIN 0001AB extends the contract completion date by 90 calendar days upon award of the CLIN. CLIN 0001AC will not be awarded unless CLIN 0001AB is awarded.
- c. Evaluation of Options (JUL 1990). Except when it is determined in accordance with FAR 17.206 (b) not to be in the Government's best interest, the Government will evaluate offers for award purposes by adding the price for the Option(s) to the total price for CLIN 0001. In accordance with FAR 52.217-5, evaluation of options will not obligate the Government to exercise the Option(s).
- d. The Government may reject an offer as nonresponsive if it is materially unbalanced as to prices for the basic requirement and the option quantities. An offer is unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated for other work.
- e. If CLIN 0001AB OR 0001AC is exercised, additional bonding and consent of surety is required. Consequently, the Performance Bond must reflect 100 percent of the aggregate amount of all Items.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Document --

SECTION 01 11 00

SUMMARY OF WORK

03/15

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

1.1.1 Project Description

The work includes traffic controls, sedimentation and erosion controls, storm drain, earthwork and storm water drainage system modifications, concrete curbing work, asphalt paving work, installation of new pavement markings, installation of traffic signs, shoulder repairs and installation of turf and other 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 Navfac Contract Drawings attached to these bid documents.

1.1.3 Project Completion

Complete all construction work and acceptance by the Government of as-built construction documents within 360 calendar days from the date of the Notice of Contract Award.

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 CONSTRUCTION SCHEDULE

Within the overall schedule, commence and complete the work in logical phases that will advance the work and minimize disruptions to traffic, parking and pedestrian movements. The work schedule must be submitted to the Contracting Officer and approved in advance of construction. Individual roadway section limits are shown on the contract drawings.

a. Work Phasing:

Phase 1: Insure that all submittals have been approved by the Contracting Officer as part of Phase 1 work. Include the installation of sedimentation and erosion control devices, location control and grade control drawings that will be used to

replace Section 1 roadway pavement and appurtenances. Complete Phase 1 work within 60 days after the date of contract award.

Phase 2: Install required traffic control devices and establish detour routes to allow traffic flow. Complete all Phase 2 work within 15 days after the Phase 1.

Phase 3: Road repair as shown on the contract drawings. After Phase 2 work is complete, execute road repairs. Provide temporary access to facilities before closing the intersections and driveways. Provide all required notifications to the Contracting Officer prior to taking the additional roadway pavement out of service. Complete all storm drain enhancements, shoulder repairs, pavement construction and final pavement marking.

If freezing weather or winter work stoppages are anticipated, insure that binder courses are sealed with an approved dense graded bituminous surface course. Provide temporary pavement markings on intermediate lifts of pavement if the pavement is to be returned to traffic prior to installing the final asphalt surface course.

Unless shown on the Contractor's approved traffic control plan as an approved road or lane closure, the Contractor is reminded that all pavements must be open to traffic by the end of the day's paving operations. In order to minimize the impact to adjacent business functions and access to residences, the Contractor must schedule pavement marking work on a weekend under brief full roadway closure conditions.

1.4 LOCATION OF UNDERGROUND FACILITIES

The Contractor's CQC staff shall locate and record underground utility locations within the construction limits shown on the contract drawings. Special emphasis is required for areas where excavation activities required. Excavation activities will be limited to railroad crossing demolition and locations requiring the installation of new or relocated traffic signs. 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.

Utilities to be located 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 excavation 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. The Contractor shall record utility locations for inclusion in the closeout as-built drawing package.

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 15 days prior to starting excavation work. This is exclusive of any other notifications required in specification section 01 14 00, "Work Restrictions".

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 14 00

WORK RESTRICTIONS

05/16

PART 1 GENERAL

1.1 SPECIAL SCHEDULING REQUIREMENTS

- a. The Contractor shall be ready for operation as approved by Contracting Officer before work is started under this contract which would interfere with normal operation.
- b. Have materials, equipment, and personnel required to perform the work at the site or show the Government that the Contractor has ready access to these materials, equipment and personnel prior to the commencement of the work.
- c. **All buildings along Woodside Drive will remain in operation during the entire construction period.** The Contractor must conduct his operations so as to cause the least possible interference with normal operations of the parking lot's activity during the following hours:

<u>Hours</u>	<u>Days of the Week</u>
0700-1630	Monday - Friday

- d. Permission to interrupt any activity on roadways, park lots, railroads, and/or utility service(s) must be requested in writing a minimum of 15 calendar days prior to the desired date of interruption. Railroads, roadways and major utility systems may only be taken out of service, closed or capacity reduced when material and equipment components are in place to quickly perform the work. The work under this contract requires special attention to the scheduling and conduct of the work in connection with existing operations. Identify on the construction schedule each factor which constitutes a potential interruption to operations. Schedule paving and milling activities as weekend work adjacent to these parking lots or during times of the day that will permit the parking lots to remain accessible. **Detours, road closures and temporary traffic control must be detailed in the Contractor's approved traffic control plan.**
- e. Contractor must prepare and submit a traffic control plan for approval before construction begins. Detour signs and traffic control devices must be in place before roadways and sidewalks are removed from service. Detour routes must allow for two full lanes of travel during all times of the day.
- f. For mobile operations, provide accommodations for traffic movements utilizing approved flaggers. The Contractor shall conduct his operations so as to cause the least possible interference with normal operations of the MCAS Cherry Point activity.
- g. Driveways will be closed only after specific notifications noted in the paragraph below have been given to the Contracting Officer and appropriate traffic control devices have been set. Driveway closures shall be properly addressed in the Contractor's approved traffic control plan.

- h. Construction activities, occurring outside of facilities that have been approved for full road closure, shall cease during periods of peak traffic demand. For periods of peak demand, travel lanes shall be opened in such a configuration to allow for 1) two way traffic movements, 2) maximum lane capacity required for traffic movements in the major direction of traffic flow and 3) work may continue in areas not impacted by traffic movements. When presented in the Contractor's approved work schedule and approved traffic control plan, pavement milling and patching work may shift to roadway segments outside of the high traffic areas.

Peak Hours of Traffic Demand

<u>Hours</u>	<u>Days of the Week</u>
0630 - 0800	Monday - Friday
1130 - 1300	Monday - Friday
1530 - 1700	Monday - Friday

- i. Insure that all underground utilities are located prior to construction.

1.1.1 General Notifications Required

General notifications shall be given to the Contracting Officer 15 days in advance of anticipated construction activities. Notifications shall be coordinated with the Contractor's approved work schedule.

1.1.2 Specific Notifications Required

In addition to the general notifications required by the paragraph above, provide additional notifications for the specific instances encountered below:

- a. Notice to building occupants shall be given via the Contracting Officer 7 days in advance of any driveway or roadway outage that will limit access to buildings.
- b. Notice to emergency organizations shall be provided to the Contracting Officer for dissemination. Provide the notification 24 hours in advance of changes in work locations, lane closures or road closures.

1.1.3 Access by Emergency Vehicles

Provide high priority for emergency vehicles passing through a work zone. If required, allow emergency vehicles to traverse through road or driveway closure areas by temporarily relocating traffic control devices.

1.1.4 Partial/Full Road Closures and Lane Closures

Provide traffic control devices to effectively close roadways partially or completely as required to perform pavement repairs and pavement markings. Closures must include pedestrian movements.

1.1.4.1 Prohibitions for Reopening Travel Lanes

Traffic lanes shall not be opened to traffic if any of the following conditions exist.

- a. Open excavations where the difference in elevations between excavation bottom and adjacent pavement exceeds 2 inches,
- b. During the installation of crack sealing materials until such materials reach a non-trackable state,
- c. A bituminous tack coat or prime coat is in place but is not fully cured,
- d. During times when newly placed bituminous pavement has not cooled to a surface temperature of less than 110 degrees or 6 hours after completion of pavement compaction activities; whichever is less,
- e. During the installation of pavement markings and pavement reflectors,
- f. During shoulder grading and sodding operations.

1.1.4.2 Traffic Control Measures

In accordance with the Contractor's approved traffic control plans, provide the following traffic control measures to insure safe travel through the work zone. Preparation and submission of the traffic control plans and provision and maintenance of all temporary traffic control devices shall be provided as required by each individual Task Order.

- a. For lane closures, barrels and cones shall be employed in accordance with the MUTCD guidelines and requirements. Road closures must utilize MUTCD Type III barricades complete with retroreflective road closed signs.
- b. Insure that either temporary retroreflective latex pavement markings are installed only on milled or intermediate pavement surfaces. Do not install temporary pavement markings on the final surface course.
- c. Provide temporary traffic control signs and detour signs throughout the work zone. Maintain and adjust signage during periods of time when there is active construction in the work zone. Cover signs when construction has been suspended or terminated.
- d. Provide flagging operations where two lane two-way traffic is reduced to one lane two-way traffic. Where flaggers are not in visual sight of one another, provide two way radio communications between flaggers or a pilot vehicle. Flaggers shall be certified in accordance with NCDOT's new certification program.
- e. Provide for continuous access to intersecting roads and streets unless approved detour routes are provided.

1.1.4.3 Pavement Transitions

Where bituminous milling operations terminate, provide temporary featheredges or temporary transition milling.

1.1.5 Traffic Control Plans

Each Bid Item shall include the preparation of traffic control plan. Plans shall be prepared by the Contractor and submitted to the Contracting Officer for approval. The cost for preparing and submitting the plans shall be considered incidental to the cost of performing work under this contract and no direct reimbursement shall be made to the Contractor. No site work, other than verification of quantities, shall be performed prior to obtaining approval of the traffic control plans. Refer to specification section 32 01 00, "Temporary Traffic Controls" for specific plan requirements. Insure that plans cover full roadway and parking lot closures, partial roadway (lane) closures and mobile construction operations.

1.2 CONTRACTOR ACCESS AND USE OF PREMISES

1.2.1 MCAS Cherry Point Regulations

Ensure that Contractor personnel employed on the MCAS Cherry Point become familiar with and obey MCAS Cherry Point regulations including safety, fire, traffic and security 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. Mark Contractor equipment for identification.

1.2.1.1 Subcontractors and Personnel Contacts

Provide 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.

1.2.1.1.1 Identification Badges and Installation Access

Application for and use of badges will be as directed. Obtain access to the installation by participating in the Navy Commercial Access Control System (NCACS), or by obtaining passes each day from the Base Pass and Identification Office. Costs for obtaining passes through the NCACS are the responsibility of the Contractor. One-day passes, issued through the Base Pass and Identification Office, will be furnished without charge.

NCACS Program: NCACS is a voluntary program in which Contractor personnel (and their sub-contractor personnel) who enroll, and are approved, are subsequently granted access to the installation for a period up to one year, or the length of the contract, whichever is less, and are not required to obtain a new pass from the Base Pass and Identification Office for each visit. Throughout the year the Contractor employee must continue to meet background screening standards. Periodic background screenings are conducted to verify continued NCACS participation and installation access privileges. Information on costs and requirements to participate and enroll in NCACS is available at <http://www.rapidgate.com> or by calling 1-877-727-4342. Contractors should be aware that the costs incurred to obtain NCACS credentials, or costs related to any means of access to an Installation, are not reimbursable. Any time invested, or price(s) paid, for obtaining NCACS credentials will not be compensated in any way or approved as a cost of any contract with the Department of the Navy.

1.2.1.2 No Smoking Policy

Smoking is prohibited within and outside of all buildings on installation, except in designated smoking areas. This applies to existing buildings, buildings under construction and buildings under renovation. Discarding tobacco materials other than into designated tobacco receptacles is considered littering and is subject to fines. The Contracting Officer will identify designated smoking areas.

1.2.2 Working Hours

Regular working hours shall consist of an 8 1/2 hour period normally between the hours of 7:00 am to 3:30 pm, Monday through Friday, excluding Government holidays.

1.2.3 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, giving the specific dates, hours, location, type of work to be performed, contract number and project title. Based on the justification provided, the Contracting Officer may approve work outside regular hours. During periods of darkness, the different parts of the work must be lighted in a manner approved by the Contracting Officer. [Make utility cutovers after normal working hours or on Saturdays, Sundays, and Government holidays unless directed otherwise.

1.2.4 Occupied Building[s]

The Contractor shall be working around existing buildings which are occupied. Do not enter the building[s] without prior approval of the Contracting Officer.

1.2.5 Utility Cutovers and Interruptions

a. 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."

b. Ensure that new utility lines are complete, except for the connection, before interrupting existing service.

c. Interruption to water, sanitary sewer, storm sewer, telephone service, electric service, air conditioning, heating, fire alarm, and compressed air are considered utility cutovers pursuant to the paragraph entitled "Work Outside Regular Hours."

d. Operation of Station Utilities: The Contractor must 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 must notify the Contracting Officer giving reasonable advance notice when such operation is required.

1.3 SECURITY REQUIREMENTS

1.3.1 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 FEAD, Facilities Engineering & Acquisition Division.

IMPORTANT NOTE: FEAD personnel (Construction Managers, Engineers/Architects, Engineering Technicians, Contract Specialists, or Contract Surveillance Representatives) will not receive, process, re-transmit or otherwise handle IN ANY WAY Personally Identifiable Information (PII) related to the badging process. Do NOT forward any of this information to the FEAD

1.3.2 Contractor Access to MCAS Cherry Point and Outlying Areas

1. Documentation requirements for granting access to MCAS Cherry Point for commercial and contract employers and employees. This document is an aid in meeting ASO 5560.6A requirements and is not a substitute for the order

2. In response to new and emerging Department of Defense (DoD) and Headquarters Marine Corps requirements, MCAS Cherry Point is making significant changes which will directly impact how vendors, contractors, and service providers currently access the Installation. These changes will be fully implemented by April 4, 2016.

3. To further enhance compliance with these new directives, MCAS Cherry Point is implementing a program known as RAPIDGate, which will also be used at Camp Lejeune and MCAS New River. We recognize the important role that contractors play in our day-to-day operations and feel that RAPIDGate offers the best solution to meet complex and challenging requirements associated with Installation access control. This program will enhance our security while offering a streamlined access request procedure for contractors, sub-contractors, vendors, suppliers, and service providers with sustained, long-term access requirements (in excess of 1 day), that are otherwise not approved to receive the DoD Common Access Card (CAC).

4. Contractors should be aware that the costs incurred to obtain RAPIDGate credentials, or costs related to any means of access to this Installation, are not reimbursable. Any time invested, or price(s) paid, for obtaining RAPIDGate credentials will not be compensated in any way or approved as a cost of any contract with the Department of the Navy.

5. Upon issuance, the RAPIDGate credential will allow cardholders to access MCAS Cherry Point Gates in the same way as the CAC.

6. The RAPIDGate credential is the ONLY long-term credential that can be issued in excess of one year and to authorized contractors whose employers are enrolled and participating in the RAPIDGate Program. Local long-term credentials will NO LONGER BE ISSUED. During the enrollment process, you may apply to receive a ONE-TIME, pre-enrollment pass (valid for 30 days) at the Pass & Identification Office at Building 251. All currently issued contractor badges will maintain their existing expiration dates but are scheduled to be COLLECTED on April 4, 2016. If issued contract badges expire before April 4, 2016, options for Installation access will be the RAPIDGate Credential or a one-time 30 day pass followed by up to a 96 hour pass (4 days).

7. The Pass & Identification Office at Building 251 will issue RAPIDGate Credentials to authorized contractors who complete the process below. Sub-Contractors and suppliers must coordinate through the Prime-Contractor:

- a. The Contractor's RAPIDGate Company Administrator (RCA) must enroll in RAPIDGate at www.rapidgate.com or 1-877-RAPIDGate (1-877-727-4342).
- b. The RAPIDGate Program representative will confirm Contractor Company Approval by Installation. Note: Upon awarding a new construction, architect-engineer, or service contract, the Facilities Engineering & Acquisition Division (FEAD) (Tenant Sponsor) contract specialist will forward contract information to Pass & Identification Office. This information will also specify whether flightline and/or FRCE access is required.
- c. The RAPIDGate Program Representative will provide the Company RCA the "Company Code" to be used for employee enrollment.
- d. The Contractor Employee registers using the RAPIDGate Kiosk machine located at the Pass & Identification Office Building 251. (RAPIDGate "Company Code" is needed for this step).
- e. The RAPIDGate Company Administrator (RCA) verifies Employee Information.
- f. An Initial Background check is conducted by RAPIDGate.
- g. RAPIDGate Credential is manufactured and sent to the Pass & Identification Office at Building 251 for Issuance.
- h. The RCA and Employee are notified that the RAPIDGate Program Credential is ready for pickup.
- i. The Employee should make an appointment to pick up credential at Building 251.
- j. After review of Acceptable Identity Documents, RAPIDGate Program Credential is activated issued to Contractor Employee.
- k. RAPIDGate credentials are issued to cover the entire employer contract timeframe and are renewed through RAPIDGate Gate.
- l. RAPIDGate credentials must be returned to the RAPIDGate.

8. Criminal Activity. In accordance with ASO 5560.6A, the below list of criminal activities within an applicant's record are considered not in the best interest of the Marine Corps and will be grounds for automatic denial of access aboard the Installation:

- a. Conviction of any felony offense.
- b. Conviction of any misdemeanor offense, which was the result of a plea bargain of a felony offense.
- c. Conviction of any offense involving a weapon.
- d. Conviction of any drug offense involving manufacturing or

trafficking.

- e. More than one misdemeanor conviction of drug related offenses over the applicant's lifetime or one misdemeanor drug related offense within the last five years.
- f. Conviction of any assault charge.
- g. Conviction of any offense involving theft or larceny.
- h. Conviction of any offense of domestic violence.
- i. Conviction of any offense related to the abuse/neglect of a child
- j. Conviction of any sexual in nature related offense or registration as a sex offender. .
- k. Commission of any grievous criminal offense/misconduct while aboard any Federal installation, including blatant disregard for rules and regulations of the Installation, but excluding minor traffic offenses.
- l. Other than Honorable, Bad Conduct, and Dishonorable discharges from the U.S. Military.
- m. Those identified as undocumented citizens.
- n. Those on the National Terrorist Watch List.
- o. Any individual who attempts to hide or purposely fails to disclose all past criminal history during the vetting process.
- p. Any individual that the Provost Marshal's Office determines to present a risk to the security and safety of the Installation and whose access is deemed not in the best interest of the Marine Corps.
- q. Any individual who has been debarred from the Installation by the Installation Commander or is currently listed as debarred from any other Federal installation.
- r. Any individual with an outstanding warrant for their arrest or apprehension.
- s. Any individual with a pending criminal court case that, if convicted, would result in access denial in accordance with the criteria listed above.

1.3.3 FLIGHTLINE SECURITY REQUIREMENTS

Work involved under this contract is in the Flightline Security Area. No employee or representative of the Contractor will be admitted to the work site unless they (1) are specifically authorized admittance by the FEAD, and (2) has a security badge. The Contractor shall obtain clearance and flightline security badges for all personnel required to be on the project site prior to performing any work. The Contractor shall submit a written request for security badges to the FEAD and to Pass & ID. Each employee will be required to go to PASS & ID at Building 251 to obtain his security

badge with flightline access. A limited number of Contractor vehicles will be allowed access to the site of work subject to meeting regular Station access requirements. No personal vehicles will be allowed behind the security fence. Parking of vehicles shall be restricted to the immediate project site as determined by the FEAD. The security badges issued under this contract are valid for this specific project and are not transferable to another project.

1.3.4 Staging Area

The Contractor's staging area will be coordinate by the Contracting Officer. Amount of material on site shall be kept to a minimum and shall only be material that is pertinent to the work currently being performed. All stockpiling of equipment and materials shall be closely coordinated with the Government and shall not disrupt activities at the site.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

08/15

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 (2014) Safety and Health Requirements Manual

1.2 SUBMITTALS

Government approval is required for all in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

List of contact personnel

1.2.1 Contract 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 MINIMUM INSURANCE REQUIREMENTS

Provide the minimum insurance coverage required by FAR 28.307-2 LIABILITY, during the entire period of performance under this contract. Provide other insurance coverage as required by North Carolina State law.

1.4 SUPERVISION

1.4.1 Minimum Communication Requirements

Have at least one qualified superintendent, or competent alternate, capable of reading, writing, and conversing fluently in the English language, on the job-site at all times during the performance of contract work. In addition, if a Quality Control (QC) representative is required on the contract, then that individual must also have fluent English communication skills.

1.4.2 Superintendent Qualifications

The project superintendent must have a minimum of 10 years experience in construction with at least 5 of those years as a superintendent on projects similar in size and complexity. 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. The individual must be capable of interpreting a critical path schedule and construction drawings. The

qualification requirements for the alternate superintendent are the same as for the project superintendent. The Contracting Officer may request proof of the superintendent's qualifications at any point in the project if the performance of the superintendent is in question.

For routine projects where the superintendent is permitted to also serve as the Quality Control (QC) Manager as established in Section QUALITY CONTROL, the superintendent must have qualifications in accordance with that section.

1.4.2.1 Duties

The project superintendent is primarily responsible for managing and coordinating day-to-day production and schedule adherence on the project. The superintendent is required to attend partnering meetings, and quality control meetings. The superintendent or qualified alternative must be on-site at all times during the performance of this contract until the work is completed and accepted.

1.4.3 Non-Compliance Actions

The Project Superintendent is subject to removal by the Contracting Officer for non-compliance with requirements specified in the contract and for failure to manage the project to insure timely completion. Furthermore, 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 is acceptable as the subject of claim for extension of time for excess costs or damages by the Contractor.

1.5 PRECONSTRUCTION

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 of prices or earned value report, shop drawings, and other submittals, scheduling programming, prosecution of the work, and clear expectations of the "Interim DD Form 1354" Submittal. Major subcontractors who will engage in the work must also attend.

1.6 PARTNERING

To most effectively accomplish this contract, the Government requires the formation of a cohesive partnership within the Project Team whose members are from the Government, the Contractor and their Subcontractors. Key personnel from the Supported Command, the End User (who will occupy the facility), the Government Design and Construction team and Subject Matter Experts, the Installation, the Contractor and Subcontractors, and the Designer of Record will be invited to participate in the Partnering process. The Partnership will draw on the strength of each organization in an effort to achieve a project that is without any safety mishaps, conforms to the Contract, and stays within budget and on schedule.

The Contracting Officer will provide Information on the Partnering Process and a list of key and optional personnel who should attend the Partnering meeting.

1.6.1 Informal Partnering

The Contracting Officer will organize the Partnering Sessions with key personnel of the project team, including Contractor personnel and Government personnel.

The Initial Partnering session should be a part of the Pre-Construction Meeting. Partnering sessions will be held at a location agreed to by the Contracting Officer and the Contractor (typically a conference room provided by the office or the Contractor). The Initial Informal Partnering Session will be conducted and facilitated using electronic media (a video and accompanying forms) provided by the Contracting Officer. The Partners will determine the frequency of the follow-on sessions, at no more than 3 to six month intervals.

1.7 ELECTRONIC MAIL (E-MAIL) ADDRESS

Establish and maintain electronic mail (e-mail) capability along with the capability to open various electronic attachments as text files, pdf files, and other similar formats. Within 10 days after contract award, 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 or terrorist threats. Multiple email addresses are 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). 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

05/16

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by Submittal Description (SD) numbers and titles as follows:

SD-01 Preconstruction Submittals

- Submittals which are required prior to
- Certificates of insurance
- Surety bonds
- List of proposed Subcontractors
- List of proposed products
- Construction progress schedule
- Network Analysis Schedule (NAS)
- Submittal register
- Schedule of prices or Earned Value Report
- Health and safety plan
- Work plan
- Quality Control(QC) plan
- Environmental protection plan
- Detour and Traffic Control Plans

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. Unless specified in another section, 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 document purpose is to further promote the 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 (MSDS) concerning impedances, hazards and safety precautions.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

Submittals required for Guiding Principle Validation (GPV) or Third Party Certification (TPC).

Special requirements necessary to properly close out a construction contract. For example, Record Drawings and as-built drawings. Also, submittal requirements necessary to properly close out a major phase of

construction on a multi-phase contract.

1.1.2 Approving Authority

Office or designated person authorized to approve submittal.

1.1.3 Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor QC 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 this section.

SD-01 Preconstruction Submittals

Submittal Register; G

1.3 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.3.1 Government Approved (G)

Within the terms of the Contract Clause SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, they are considered to be "shop drawings."

1.3.2 Sustainability Reporting Submittals (S)

Submittals for Guiding Principle Validation (GPV) or Third Party Certification (TPC) are indicated with an "S" designation. Submit the information required by the technical sections that demonstrates compliance with the sustainable requirement, and for inclusion in the Sustainability Notebook as required by Section 01 33 29 SUSTAINABILITY REPORTING. A full submittal for an item may be provided under another SD; however, for the "S" submittal, only provide that portion of the submittal that demonstrates compliance with the sustainable requirement. If the sustainable submittal does require Government Approval, it may be tagged under another SD with a "G."

Schedule submittals for these items throughout the course of construction as provided; do not wait until closeout.

1.4 PREPARATION

1.4.1 Transmittal Form

1.4.2 Source Drawings for Shop Drawings

The entire set of Source Drawing files (DWG) will not be provided to the Contractor. Only those requested by the Contractor to prepare shop drawings may be provided. Request the specific Drawing Number only for the

preparation of Shop Drawings. These drawings may only be provided after award.

1.4.2.1 Terms and Conditions

Data contained on these electronic files must not be used for any purpose other than as a convenience in the preparation of construction data for the referenced project. Any other use or reuse shall be at the sole risk of the Contractor and without liability or legal exposure to the Government. The Contractor must make no claim and waives to the fullest extent permitted by law, any claim or cause of action of any nature against the Government, its agents or sub consultants that may arise out of or in connection with the use of these electronic files. The Contractor must, to the fullest extent permitted by law, indemnify and hold the Government harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic Source Drawing files are not construction documents. Differences may exist between the Source Drawing files and the corresponding construction documents. The Government makes no representation regarding the accuracy or completeness of the electronic Source Drawing files, nor does it make representation to the compatibility of these files with the Contractor hardware or software. In the event that a conflict arises between the signed and sealed construction documents prepared by the Government and the furnished Source Drawing files, the signed and sealed construction documents govern. The Contractor is responsible for determining if any conflict exists. Use of these Source Drawing files does not relieve the Contractor of duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate the work of all contractors for the project. If the Contractor uses, duplicates or modifies these electronic Source Drawing files for use in producing construction data related to this contract, remove all previous indicia of ownership (seals, logos, signatures, initials and dates).

1.5 VARIATIONS

Variations from contract requirements require both Designer of Record (DOR) and Government approval pursuant to contract Clause FAR 52.236-21 and will be considered where advantageous to Government.

1.5.1 Considering Variations

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

Specifically point out variations from contract requirements in transmittal letters. Failure to point out deviations may result in the Government requiring rejection and removal of such work at no additional cost to the Government.

1.5.2 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, including the DOR's written analysis and approval. If lower cost is a benefit, also include an estimate of the cost savings. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

1.5.3 Warranting that Variations are Compatible

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

1.5.4 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.

1.6 SUBMITTAL REGISTER

Prepare and maintain submittal register, as the work progresses. 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. A submittal register showing items of equipment and materials for which submittals are required by the specifications is provided as an attachment. This list may not be all inclusive and additional submittals may be required. [The Government will provide the initial submittal register][in electronic format][with 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-02 Shop 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.

Thereafter, the Contractor is to track all submittals by maintaining a complete list, including completion of all data columns, including dates on which submittals are received and returned by the Government.

1.6.1 Use of Submittal Register

Submit submittal register. Submit with QC plan and project schedule. Verify that all submittals required for project are listed and add missing submittals. Coordinate and complete the following fields on the register submitted with the QC plan and the project schedule:

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.

1.6.2 Contractor Use of Submittal Register

Update the following fields[in the Government-furnished submittal register program or equivalent fields in program utilized by Contractor] with each submittal throughout contract.

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.

1.6.3 Approving Authority Use of Submittal Register

Update the following fields[in the Government-furnished submittal register program or equivalent fields in program utilized by Contractor].

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

Column (l) List date of submittal receipt.

Column (m) through (p) List Date related to review actions.

Column (q) List date returned to Contractor.

1.6.4 Copies Delivered to the Government

Deliver one copy of submittal register updated by Contractor to Government with each invoice request.

1.7 SCHEDULING

Schedule and submit concurrently submittals covering component items forming a system or items that are interrelated. Include certifications to be submitted with the pertinent drawings at the same time. No delay damages or time extensions will be allowed for time lost in late submittals.

- 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 resubmittal of requirements.
- b. Submittals called for by the contract documents will be listed on the register. If a submittal is called for but does not pertain to the contract work, the Contractor is to include the submittal in the register and annotate it "N/A" with a brief explanation. Approval by the Contracting Officer does not relieve the Contractor of supplying

submittals required by the contract documents but which have been omitted from the register or marked "N/A."

- c. Re-submit register and annotate monthly by the Contractor with actual submission and approval dates. When all items on the register have been fully approved, no further re-submittal is required.
- d. Carefully control procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.8 GOVERNMENT APPROVING AUTHORITY

When approving authority is Contracting Officer, the Government will:

- a. Note date on which submittal was received.
- 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 REVIEW NOTATIONS and with markings appropriate for action indicated.

Upon completion of review of submittals requiring Government approval, stamp and date submittals. One copies of the submittal will be retained by the Contracting Officer and one copies of the submittal will be returned to the Contractor.

1.8.1 Review Notations

Submittals will be returned to the Contractor with the following notations:

- a. Submittals marked "approved" or "accepted" authorize the Contractor to proceed with the work covered.
- b. Submittals marked "approved as noted" "or approved, except as noted, resubmittal not required," authorize the Contractor to proceed with the work covered provided he takes no exception to the corrections.
- c. Submittals marked "not approved" or "disapproved," or "revise and resubmit," indicate noncompliance with the contract requirements or design concept, or that submittal is incomplete. Resubmit with appropriate changes. No work shall proceed for this item until resubmittal is approved.
- d. 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.

1.9 DISAPPROVED OR REJECTED SUBMITTALS

Contractor shall make corrections required by the Contracting Officer. If the Contractor considers any correction or notation on the returned

submittals to constitute a change to the contract drawings or specifications; notice as required under the Contract clause CHANGES, is to be given to the Contracting Officer. Contractor is responsible for the dimensions and design of connection details and construction of work. Failure to point out deviations may result in the Government requiring rejection and removal of such work at the Contractor's expense.

If changes are necessary to submittals, make such revisions and submission of the submittals in accordance with the procedures above. No item of work requiring a submittal change is to be accomplished until the changed submittals are approved.

1.10 APPROVED OR ACCEPTED SUBMITTALS

The Contracting Officer's approval or acceptance of submittals is not to be construed as a complete check, and indicates only that

Approval or acceptance 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.

After submittals have been approved or accepted by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.11 APPROVED SAMPLES

Approval of a sample is only for the characteristics or use named in such approval and is not to be construed to change or modify any contract requirements. Before submitting samples, the Contractor to assure that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.

Match the approved samples for materials and equipment incorporated in the work. If requested, approved samples, including those which may be damaged in testing, will be returned to the Contractor, at his expense, upon completion of the contract. Samples not approved will also be returned to the Contractor at its expense, if so requested.

Failure of any materials to pass the specified tests will be sufficient cause for refusal to consider, under this contract, any further samples of the same brand or make of that material. Government reserves the right to disapprove any material or equipment which previously has proved unsatisfactory in service.

Samples of various materials or equipment delivered on the site or in place may be taken by the Contracting Officer for testing. Samples failing to meet contract requirements will automatically void previous approvals. Contractor to replace such materials or equipment to meet contract requirements.

Approval of the Contractor's samples by the Contracting Officer does not relieve the Contractor of his responsibilities under the contract.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

Overlay Woodside Dr from Franklin Rd to Lenoir Rd

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT OR CLASSIFICATION REVIEW	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY					REMARKS	
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		MAILED TO CONTR/ DATE RCD FRM APPR AUTH
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01 30 00	SD-01 Preconstruction Submittals														
			List of contact personnel	1.2.1													
		01 33 00	SD-01 Preconstruction Submittals														
			Submittal Register	1.6	G												
		01 35 29	SD-01 Preconstruction Submittals														
			Accident Prevention Plan (APP)	1.6	G												
			Activity Hazard Analysis (AHA)	1.7	G												
			Crane Critical Lift Plan	1.6.1	G												
			Crane Operators	1.5.1.2	G												
			SD-06 Test Reports														
			Reports	1.11													
			Accident Reports	1.11.1													
			Monthly Exposure Reports	1.11.3													
			Crane Reports	1.11.4													
			Regulatory Citations and Violations														
			SD-07 Certificates														
			Hot work permit	1.8													
			Contractor Safety Self-Evaluation Checklist		G												
			Machinery & Mechanized Equipment Certification Form														
		01 45 00.00 20	SD-01 Preconstruction Submittals														
			Construction Quality Control (CQC) Plan		G												

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

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						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	MAILED TO CONTR/ DATE RCD FRM APPR AUTH
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01 45 00.00 20	CQC Staff Roster and Qualifications		G												
		01 57 19.00 20	SD-07 Certificates														
			Demolition Plan		G												
			SD-11 Closeout Submittals Receipts														
		01 78 00	SD-03 Product Data														
			As-Built Record of Equipment and Materials	1.3.3													
			Warranty Materials and Systems List														
			SD-11 Closeout Submittals														
			As-Built Drawings	1.3.1	G												
			Record Drawings	1.3.2	G												
			Interim Form DD1354	1.6	G												
			Checklist for Form DD1354	1.6	G												
		02 41 00	SD-01 Preconstruction Submittals														
			Demolition plans		G												
			Pavement Removal Plan														
			Underground Utility Search Findings														
		03 45 33	SD-05 Design Data														
			Concrete mix design	1.6.2	G												
			SD-06 Test Reports														
			Contractor-furnished mix design	2.1	G												
			SD-07 Certificates														

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

Overlay Woodside Dr from Franklin Rd to Lenoir Rd

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ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT OR CLASSIFICATION REVIEW	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY					REMARKS		
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		MAILED TO CONTR/ DATE RCD FRM APPR AUTH	
																		(g)
		03 45 33	Fabrication	2.3	G													
			SD-11 Closeout Submittals batch ticket	1.6.3														
		31 23 00.00 20	SD-01 Preconstruction Submittals															
			Surface Dewatering work plan		G													
			SD-03 Product Data															
			Nonwoven Geotextile Fabric		G													
			Geogrid Fabric	2.8	G													
			SD-06 Test Reports															
			Moisture Content Tests															
			Density tests	3.15.2.4	G													
			Flowable cement fill	2.6.2	G													
			Flowable cement fill	3.4.2	G													
			SD-07 Certificates															
			Geotextile fabric	2.7	G													
			Geotextile fabric	3.3	G													
			Geogrid Fabric	2.8	G													
			Stone Aggregates	2.6.3	G													
		32 01 00	SD-04 Samples															
			Traffic control plan		G													
			Temporary Detour Plan		G													
		32 12 17	SD-03 Product Data															
			Fiberglass Pavement Reinforcement	2.1.5														
			SD-05 Design Data															
			Asphalt Mix Design	2.1.4														

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

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(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		32 12 17	SD-07 Certificates														
			Asphalt Cement	2.1.4													
			Tack Coat	2.1.3													
			NCDOT QMS certifications	1.6.2													
			Fiberglass Grid Installer Certification	1.6.1													
		32 16 13	SD-03 Product Data														
			Concrete	2.1													
			SD-06 Test Reports														
			Field Quality Control	3.8													
		32 17 23.00 20	SD-03 Product Data														
			Reflective media for roads and streets	2.1.1													
			Thermoplastic compounds gG	2.1.2													
			Preformed Retroreflective Thermoplastic Markings	2.1.2.4	G												
			SD-06 Test Reports														
			Reflective media for roads and streets	2.1.1													
			Thermoplastic compounds	2.1.2													
			SD-07 Certificates														
			Reflective media for roads and streets	2.1.1													
			Thermoplastic compounds	2.1.2													
			Construction equipment list	1.6													

SUBMITTAL REGISTER

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(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		32 17 23.00 20	SD-08 Manufacturer's Instructions														
			Thermoplastic compounds	2.1.2													
		32 17 23.00 30	SD-03 Product Data														
			Frangible Sign Post Base		G												
			SD-07 Certificates														
			Sign supports and hardware		G												
			Signs, complete assembly		G												
			Manufacturer's Warranty for Reflective Sheeting														
			SD-08 Manufacturer's Instructions														
			Frangible Sign Post Base		G												
		32 92 23	SD-03 Product Data														
			Fertilizer	2.5	G												
			Turf Reinforcement Mat	2.1	G												
			SD-07 Certificates														
			sods	2.2	G												
			Fertilizer	2.5	G												
			SD-08 Manufacturer's Instructions														
			Turf Reinforcement Mat	2.1	G												
		33 40 00	SD-03 Product Data														
			HDPE Corrugated Pipe and Fittings	2.1													
			Concrete Pipe														
			Mortar and Grout	2.3.3													
			Precast Concrete Waffle Box														
			Frame and Cover for Gratings	2.3.4													

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
Overlay Woodside Dr from Franklin Rd to Lenoir Rd

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	GOVT OR CLASSIFICATION REVIEW	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				REMARKS		
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE		DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		33 40 00	Stormwater Inlet Appurtenances	2.3.5													
			SD-07 Certificates														
			NCDOT QC/QA Program Certification	2.1.1													
			NCDOT QC/QA Program Certification	2.1.2													
			Pipeline Testing	3.7													
			Frame and Cover for Gratings	2.3.4													
			Precast Concrete Inlet Box														

SECTION 01 35 29

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

03/15

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/ASSE A10.34 (2001, R2012) Protection of the Public on or Adjacent to Construction Sites

ASME INTERNATIONAL (ASME)

ASME B30.22 (2010) Articulating Boom Cranes

ASME B30.5 (2011) Mobile and Locomotive Cranes

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10 (2013) Standard for Portable Fire Extinguishers

NFPA 51B (2009; TIA 09-1) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work

NFPA 70 (2011; Errata 2 2012) National Electrical Code

NFPA 70E (2012; Errata 2012) Standard for Electrical Safety in the Workplace

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2014) Safety and Health Requirements Manual

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

29 CFR 1926 Safety and Health Regulations for Construction

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Government acceptance is required for submittals with a "G" designation.

SD-01 Preconstruction Submittals

- Accident Prevention Plan (APP); G
- Activity Hazard Analysis (AHA); G
- Crane Critical Lift Plan; G
- Proof of qualification for Crane Operators; G

SD-06 Test Reports

Reports

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

- Accident Reports
- Monthly Exposure Reports
- Crane Reports
- Regulatory Citations and Violations

SD-07 Certificates

- Hot work permit
- Contractor Safety Self-Evaluation Checklist; G
- Machinery & Mechanized Equipment Certification Form

1.3 DEFINITIONS

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.

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 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.

1.5 SITE QUALIFICATIONS, DUTIES AND MEETINGS

1.5.1 Personnel Qualifications

1.5.1.1 Site Safety and Health Officer (SSHO)

Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The Contractor Quality Control (QC) person can be the SSHO on this project. The SSHO shall meet the following requirements:

Level 4:

A minimum of 10 years safety work of a progressive nature with at least 5 years of experience on similar projects.

30-hour OSHA construction safety class or equivalent within the last 5 years.

An average of at least 24 hours of formal safety training each year for the past 5 years with training for competent person status for at least the following 4 areas of competency: 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.; .

1.5.1.2 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.

1.5.2 Personnel Duties

1.5.2.1 Site Safety and Health Officer (SSHO)/Superintendent

- a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' daily production/quality control report.
- b. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub-contractors.
- c. Maintain applicable safety reference material on the job site.
- d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
- e. Implement and enforce accepted APPS and AHAs.
- f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.
- g. Ensure sub-contractor compliance with safety and health requirements.

Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

1.5.3 Meetings

1.5.3.1 Preconstruction Conference

- a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).
- b. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of

anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.

c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.

d. The functions of a Preconstruction conference may take place at the Post-Award Kickoff meeting for Design Build Contracts.

1.6 ACCIDENT PREVENTION PLAN (APP)

The Contractor shall use a qualified person to prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of USACE EM 385-1-1 and as supplemented herein. Cover all paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum Basic Outline for Accident Prevention Plan". Specific requirements for some of the APP elements are described below. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, 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, SSO and quality control manager. Should any hazard become evident, stop work in the area, secure the area, and develop a plan to remove the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate/remove the hazard. In the interim, all necessary action shall be taken to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ANSI/ASSE A10.34,) and the environment.

Copies of the accepted plan will be maintained at the Contracting Officer's office and at the job site. The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

1.6.1 EM 385-1-1 Contents

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

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).

i. Site Safety and Health Plan. The safety and health aspects prepared in accordance with Section 01 35 30 SAFETY HEALTH AND EMERGENCY RESPONSE (HTRW/UST).

l. Excavation Plan. The safety and health aspects prepared in accordance with Section 31 00 00 EARTHWORK.

1.7 ACTIVITY HAZARD ANALYSIS (AHA)

The Activity Hazard Analysis (AHA) format shall be in accordance with USACE EM 385-1-1. Submit the AHA for review at least 15 calendar days prior to the start of each phase. Format subsequent AHAs as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

The activity hazard analyses shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.8 DISPLAY OF SAFETY INFORMATION

Within 1 calendar days after commencement of work, erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by EM 385-1-1, section 01.A.06. Additional items required to be posted include:

a. Hot work permit.

1.9 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturer's manuals.

1.10 EMERGENCY MEDICAL TREATMENT

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

1.11 REPORTS

1.11.1 Accident Reports

a. For recordable injuries and illnesses, and property damage accidents resulting in at least \$2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the 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.

1.11.2 Accident Notification

Notify the Contracting Officer as soon as practical, but not later than four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than \$2,000, or any weight handling equipment accident. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

1.11.3 Monthly Exposure Reports

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.11.4 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.

1.11.5 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.

1.12 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

3.1.1 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-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.

3.1.2 Unforeseen Hazardous Material

The design should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If 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 EQUIPMENT

3.3.1 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.

3.3.2 Weight Handling Equipment

- a. Cranes and derricks shall be equipped as specified in EM 385-1-1, section 16.
- b. 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.
- c. The Contractor shall comply with ASME B30.5 for mobile and locomotive cranes and ASME B30.22 for articulating boom cranes.
- d. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.

- e. 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.
- f. 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.
- g. Portable fire extinguishers shall be inspected, maintained, and recharged as specified in NFPA 10, Standard for Portable Fire Extinguishers.
- h. All employees shall be kept clear of loads about to be lifted and of suspended loads.
- i. The Contractor shall use cribbing when performing lifts on outriggers.
- j. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
- k. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.
- l. 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.
- m. 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.
- n. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

3.4 EXCAVATIONS

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

3.4.1 Utility Locations

Prior to digging, 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.

3.4.2 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.

3.5 ELECTRICAL

While no electrical work is anticipated, should utilities become damaged during the course of construction, the Contractor shall apply the following requirements to any electrical work performed.

3.5.1 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.

3.5.2 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.

-- End of Section --

SECTION 01 42 00

SOURCES FOR REFERENCE PUBLICATIONS

11/14

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 B564 Standard Specification for 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.

AACE INTERNATIONAL (AACE)
1265 Suncrest Towne Centre Drive
Morgantown, WV 26505-1876 USA
Ph: 304-296-8444
Fax: 304-291-5728
E-mail: info@aacei.org
Internet: <http://www.aacei.org>

ACOUSTICAL SOCIETY OF AMERICA (ASA)
1305 Walt Whitman Road, Suite 300
Melville, NY 11747-4300
Ph: 516-576-2360
Fax: 631-923-2875
E-mail: asa@aip.org
Internet: <http://asa.aip.org>

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC. (AIA/NAS)
1000 Wilson Blvd, Suite 1700
Arlington, VA 22209
Ph: 703-358-1052
Fax: 703-358-1052
E-mail: chris.carnahan@aia-aerospace.org
Internet: <http://www.aia-aerospace.org>

AIR CONDITIONING CONTRACTORS OF AMERICA (ACCA)
2800 Shirlington Road, Suite 300
Arlington, VA 22206
Ph: 703-575-4477
E-mail: info@acca.org
Internet: <http://www.acca.org>

AIR DIFFUSION COUNCIL (ADC)
1901 N. Roselle Road, suite 800
Schaumburg, IL 60195
Ph: 847-706-6750
Fax: 847-706-6751
E-mail: info@flexibleduct.org
Internet: <http://www.flexibleduct.org>

AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL (AMCA)
30 West University Drive
Arlington Heights, IL 60004-1893
Ph: 847-394-0150
Fax: 847-253-0088
E-mail: amca@amca.org
Internet: <http://www.amca.org>

AIR-CONDITIONING, HEATING AND REFRIGERATION INSTITUTE (AHRI)
2111 Wilson Blvd, Suite 500
Arlington, VA 22201
Ph: 703-524-8800
Fax: 703-562-1942
Internet: <http://www.ahrinet.org>

ALLIANCE FOR TELECOMMUNICATIONS INDUSTRY SOLUTIONS (ATIS)
1200 G Street, NW, Suite 500
Washington, D.C. 20005
Ph: 202-628-6380
Fax: 202-393-5453
E-mail: kconn@atis.org
Internet: <http://www.atis.org>

ALUMINUM ASSOCIATION (AA)
National Headquarters
1525 Wilson Boulevard, Suite 600
Arlington, VA 22209
Ph: 703-358-2960
E-Mail: info@aluminum.org
Internet: <http://www.aluminum.org>

AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA)
1827 Walden Office Square, Suite 550
Schaumburg, IL 60173-4268
Ph: 847-303-5664
Fax: 847-303-5774
E-mail: customerservice@aamanet.org
Internet: <http://www.aamanet.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@ashto.org
Internet: <http://www.aashto.org>

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)
1 Davis Drive
P.O. Box 12215

Research Triangle Park, NC 27709-2215
Ph: 919-549-8141
Fax: 919-549-8933
Internet: <http://www.aatcc.org>

AMERICAN BEARING MANUFACTURERS ASSOCIATION (ABMA)
2025 M Street, NW, Suite 800
Washington, DC 20036
Ph: 202-367-1155
E-mail: info@americanbearings.org
Internet: <http://www.americanbearings.org>

AMERICAN BOILER MANUFACTURERS ASSOCIATION (ABMA/BOIL)
8221 Old Courthouse Road, Suite 202
Vienna, VA 22182
Ph: 703-356-7172
Internet: <http://www.abma.com>

AMERICAN BUREAU OF SHIPPING (ABS)
16855 Northchase Drive
Houston, TX 77060 USA
Ph: 281-877-5800
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SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION
(SMACNA)
4201 Lafayette Center Drive
Chantilly, VA 20151-1219
Ph: 703-803-2980
Fax: 703-803-3732
Internet: <http://www.smacna.org>

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Waltham, MA 02452
Ph: 781-647-7026
Fax: 781-647-7222
E-mail: info@spri.org
Internet: <http://www.spri.org>

SOCIETY FOR PROTECTIVE COATINGS (SSPC)
40 24th Street, 6th Floor
Pittsburgh, PA 15222
Ph: 412-281-2331
Fax: 412-281-9992
E-mail: info@sspc.org
Internet: <http://www.sspc.org>

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)
400 Commonwealth Drive
Warrendale, PA 15096
Ph: 724-776-4970
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E-mail: customerservice@sae.org
Internet: <http://www.sae.org>

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Fax: 610-363-5898
E-Mail: information@scte.org
<http://www.scte.org>

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Ph: 914-761-1100
Fax: 914-761-3115
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400 High Point Drive, Suite 400
Cocoa, FL 32926
Ph: 321-213-6037
Fax: 321-821-0910
E-mail: srcc@solar-rating.org
Internet: <http://www.solar-rating.org>

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)
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Glenshaw, PA 15116
Ph: 412.487.3325
Fax: 412.487.3326
E-mail: bob@sdi.org

Internet: <http://www.sdi.org>

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Westlake, OH 44145
Ph: 440-899-0010
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Internet: <http://www.steeldoor.org>

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Internet: <http://www.steelwindows.com>

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Internet: <http://www.tappi.org>

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Fax: 703-907-7727
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Fax: 303-541-9215
E-mail: info@masonrysociety.org
<http://www.masonrysociety.org>

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Anderson, SC 29625
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Fax: 864-646-2821

E-mail: info@tileusa.com
Internet: <http://www.tcnatile.com/>

TREE CARE INDUSTRY ASSOCIATION (TCIA)
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Ph: 215-697-6396 - for account/password issues
Internet: <http://assist.daps.dla.mil/online/start/>; account
registration required
Obtain Unified Facilities Criteria (UFC) from:
Whole Building Design Guide (WBDG)
National Institute of Building Sciences (NIBS)
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Washington, DC 20005
Ph: 202-289-7800
Fax: 202-289-1092
Internet: http://www.wbdg.org/references/docs_refs.php

U.S. DEPARTMENT OF ENERGY (DOE)
1000 Independence Avenue Southwest
Washington, D.C. 20585
Internet: www.eere.energy.gov

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)
HUD User
P.O. Box 23268
Washington, DC 20026-3268
Ph: 800-245-2691 or 202-708-3178
TDD: 800-927-7589
Fax: 202-708-9981
Internet: <http://www.huduser.org>

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U.S. NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)
1322 Patterson Ave. SE, Suite 1000
Washington Navy Yard, DC 20374-5065
Ph: 202-685-9387
Internet: <http://www.navfac.navy.mil>

NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER
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1000 23rd Avenue
Port Hueneme, CA 93043-4301
Internet:
http://www.navfac.navy.mil/navfac_worldwide/specialty_centers/exwc.html

U.S. NAVAL SEA SYSTEMS COMMAND (NAVSEA)
Commander Naval Sea Systems Command
1333 Isaac Hull Ave., SE
Washington Navy Yard, DC 20376-1080
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Marietta, GA 30067
Ph: 770-933-0638
Fax: 770-980-0072
E-mail: environment@ul.com
Intertet: <http://www.ul.com/environment>

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Camas, WA 98607-8542
Ph: 877-854-3577
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Internet: <http://www.ul.com/>
UL Directories available through IHS at <http://www.ihs.com>

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WATER QUALITY ASSOCIATION (WQA)
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Ph: 61 2 8295 3100
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PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

-- End of Section --

SECTION 01 45 00.00 20

CONSTRUCTION QUALITY CONTROL

09/14

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.

ASTM INTERNATIONAL (ASTM)

ASTM D 6345 (2010) Selection of Methods for Active, Integrative Sampling of Volatile Organic Compounds in Air

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2014) Safety and Health Requirements Manual

1.2 SUBMITTALS

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

SD-01 Preconstruction Submittals

Construction Quality Control (CQC) 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 entire Period of Performance of construction.

CQC Staff Roster and Qualifications; G

Provide a complete staffing list for the Contractor's CQC Team. List required qualifications for each member of the staff

Certifications for Asphalt Plant and Roadway Technicians

1.3 INFORMATION FOR THE CONTRACTING OFFICER

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. Combined Contractor Production Report/Contractor Quality Control Report; original and 1 copy by 10:00AM the next working day after each day that work is performed. **Include a copy of the updated Estimated Quantity Usage Log.**
- b. Preparatory Phase Checklist: Original attached to the original CQC Report and one copy attached to each QC Report copy.
- c. Initial Phase Checklist: Original attached to the original Contractor Quality Control Report and 1 copy attached to each copy.
- d. Field Test Reports: 2 copies, with 2 working days after the test is performed, attached to the Contractor Quality Control Report.
- e. Monthly Summary Report of Tests: 2 copies attached to the Contractor Quality Control Report.
- f. Testing Plan and Log: Submit 2 copies at the end of each month.
- g. Rework Items List: Submit 2 copies, by the last working day of the month.
- h. CQC Meeting Minutes: Within two working days after the meeting is held, submit 2 copies, within 2 working days after the meeting.
- i. 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 Acceptance of the Construction Quality Control (QC) Plan

Acceptance 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 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.

1.4.2.1 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.

1.4.3 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 STAFF

The Contractor shall provide a CQC Staff via a Surveying or Engineering firm or Engineering Laboratory which is approved by the Contracting Officer. The QC manager may delegate "stop work" authority to any competent member of the CQC staff.

1.5.1 QC Manager

1.5.1.1 Duties

Provide a QC Manager, independent of the Project or Site Superintendent, whose duty it will be to implement and manage the QC program. 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 staff activities. **The QC Manager and his staff shall be given complete authority by the Contractor to take actions necessary to ensure compliance with the requirements of this contract.** Neither the QC Manager nor any member of the CQC staff shall be subordinate to any individual in the Contractor's firm. The QC Manager shall have "stop work" authority for use when the Contractor's work does not meet contract specifications or the approved contract construction plans and drawings.

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, safety compliance, and sustainability.

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 5 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, safety compliance, and sustainability.

1.5.1.3 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.

1.5.2 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 work days during a calendar year. The qualification requirements for the Alternate QC Manager shall be the same as for the QC Manager.

1.5.3 Engineering Laboratory

When performing construction activities that require testing to be performed, provide laboratory facility and personnel that meet the following requirements:

1.5.3.1 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.

1.5.3.2 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/> or the American Association for Laboratory Accreditation (A2LA) program at <http://www.a2la.org/>.

1.5.3.3 NCDOT HMA/ QMS Certifications

Level I certified asphalt plant technicians shall be at the asphalt plant and Level I certified roadway technicians shall be present for all roadway and site work. A Level II certified technician shall be on-call should problems with mix production arise at the asphalt plant. Along with the registered land surveyor, these technicians shall be the backbone of the Contractor's QC program. Submit copies of current certifications for each employee prior to beginning work. Roadway technicians shall be present at all preconstruction meetings and QC meetings. These persons shall be well versed with the contract requirements and the responsibilities of all of the CQC staff members.

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 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. TRAINING PROCEDURES AND TRAINING LOG:

XVI. 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. Schedule construction operations with consideration for indoor air quality as specified in the IAQ Management Plan. Coordinate prefunctional tests and startup testing with Cx.

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 DFOW.

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 DFOW. When the DFOW 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 DFOW:

- 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. Coordinate the schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials;
- h. Arrange for the return of shipping/packaging materials, such as wood pallets, where economically feasible;
- i. 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;
- j. 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 DFW;
- 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 DFW, conduct the initial phase with the Project Superintendent, and the foreman responsible for that DFW. Observe the initial segment of the DFW 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 DFW:

- 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 DFW 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 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.

1.13.2 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".

1.13.3 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 and the CA 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, the CA, 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 20 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 Requirements During Construction

Provide for evaluation of indoor Carbon Dioxide concentrations in accordance with ASTM D 6245. Provide for evaluation of volatile organic compounds (VOCs) in indoor air in accordance with ASTM D 6345. Use filters with a Minimum Efficiency Reporting Value (MERV) of 8 in permanently installed air handlers during construction.

1.18.1 Control Measures

The Contractor shall meet or exceed the requirements of SMACNA 1507, Chapter 3, to help minimize contamination of the building from construction activities. The five requirements of this manual which must be adhered to

are described below:

- a. HVAC protection: Isolate return side of HVAC system from surrounding environment to prevent construction dust and debris from entering the duct work and spaces.
- b. Source control: Use low emitting paints and other finishes, sealants, adhesives, and other materials as specified. When available, cleaning products shall have a low VOC content and be non-toxic to minimize building contamination. Utilize cleaning techniques that minimize dust generation. Cycle equipment off when not needed. Prohibit idling motor vehicles where emissions could be drawn into building. Designate receiving/storage areas for incoming material that minimize IAQ impacts.
- c. Pathway interruption: When pollutants are generated use strategies such as 100 percent outside air ventilation or erection of physical barriers between work and non-work areas to prevent contamination.
- d. Housekeeping: Clean frequently to remove construction dust and debris. Promptly clean up spills. Remove accumulated water and keep work areas dry to discourage the growth of mold and bacteria. Take extra measures when hazardous materials are involved.
- e. Scheduling: Control the sequence of construction to minimize the absorption of VOCs by other building materials.

1.18.2 Moisture Contamination

- a. Remove accumulated water and keep work dry.
- b. Use dehumidification to remove moist, humid air from a work area.
- c. Do not use combustion heaters or generators inside the building.
- d. Protect porous materials from exposure to moisture.
- e. Remove and replace items which remain damp for more than a few hours.

1.19 Requirements after Construction

After construction ends and prior to occupancy, conduct a building flush-out or test the indoor air contaminant levels. Flush-out shall be a minimum two-week building flush-out with MERV-13 filtration media as determined by ASHRAE 52.2 at 100 percent outside air, or in accordance with LEED Reference Guide. Air contamination testing shall be consistent with EPA's current Compendium of Methods for the Determination of Air Pollutants in Indoor Air, and with the LEED Reference Guide. After building flush-out or testing and prior to occupancy, replace filtration media. Filtration media shall have a MERV of 13 as determined by ASHRAE 52.2.

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 57 19.00 20

TEMPORARY ENVIRONMENTAL CONTROLS

03/15

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	Occupational Safety and Health Standards
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 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 279	Standards for the Management of Used Oil
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 173	Shippers - General Requirements for Shipments and Packaging
49 CFR 178	Specifications for Packaging

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-07 Certificates

Demolition Plan; G

SD-11 Closeout Submittals

Receipts

Receipts or bills of lading, as specified.

1.3 DEFINITIONS

1.3.1 Sediment

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

1.3.2 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 not 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. Metal meeting the definition of lead contaminated or lead based paint contaminated may be included as recyclable if sold to a scrap metal company. Paint cans may not be included as recyclable if sold to a scrap metal company.
- 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.

1.3.3 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.

1.3.4 Chemical Wastes

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

1.3.5 Garbage

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

1.3.6 Hazardous Waste (Including Universal Hazardous Waste)

Hazardous Wastes are defined by the Resource Conservation and Recovery Act (RCRA - Subtitle C) as wastes which first meet the definition of "solid" wastes and are then further defined in 40CFR Parts 261.21, 261.22, 261.23, 261.24, 261.31, 261.32, 261.33(e), and 261.33(f) with regard to their hazardous waste properties and / or characteristics (to include U.S. EPA's lists of Hazardous Wastes. These regulations cover a wide range of process and product generated wastes, and discarded (including materials intended to be discarded) or unusable materials in solid, liquid, and gaseous forms.

Universal (Hazardous) Wastes are a subset of Hazardous Waste, and are defined in 40CFR Part 273.2, 273.3, 273.4, and 273.5 and include batteries, pesticides, mercury containing equipment, and lamps.

Contractors must be intimately familiar with the above-detailed Hazardous Waste regulations to ensure compliance with section 1.4.1.

1.3.7 Hazardous Materials

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.

1.3.8 Waste Hazardous Material and Substances

Waste hazardous materials and substances are those materials which do not meet any of the regulatory definitions of either Hazardous Waste or Universal (Hazardous) Waste, but which still may pose a threat to human health or the environment or cause significant legal liabilities under CERCLA if not properly managed. In general, such materials may be defined as those which pose a threat to human health and / or the environment due to their quantity, concentration, or their physical, chemical, or infectious characteristics and which have been so designated by federal, state, or local agencies.

1.3.9 Used Oil and Oily Wastes

Used Oil is defined in 40CFR Part 279 to include a wide variety of oils and fuels and how they must be properly managed to ensure proper disposal,

reclamation, and / or recycling. Animal and vegetable oils do not fall under this regulatory classification. Grease does not fall under this regulatory classification

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.

1.3.10 Regulated Waste

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

1.3.11 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 |

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When

used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Solid Waste Management Plan and Permit; G

Regulatory Notification; G

Environmental Protection Plan; G

SD-06 Test Reports

Disposal Requirements

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

Disposal Documentation for Hazardous and Regulated Waste

Contractor 40 CFR Employee Training Records

Solid Waste Management Report

Contractor Hazardous Material Inventory Log; G

Hazardous Waste/Debris Management

1.5 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.

1.5.1 Facility Hazardous Waste Generator Status

Marine Corps Air Station Cherry Point is designated as a Large Quantity Generator (LQG) of Hazardous Waste, a Large Quantity Handler of Universal (Hazardous) Waste, and maintains a Treatment, Storage, and Disposal facility. Accordingly, MCAS Cherry Point is required to actively maintain and comply with a RCRA Part "B" operating permit issued by the State of North Carolina. All work conducted within the boundaries of this activity must be in compliance with the Part B permit, and the generator's various designations and operational requirements. Contractors will comply with all federal, state, and local regulatory requirements governing the proper training of personnel, and proper identification, generation, management, storage, handling, manifesting, transportation, and disposal of any Hazardous Waste(s) which they may cause to be generated in the course of the execution of their contract(s).

1.6 QUALITY ASSURANCE

1.6.1 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).

1.6.2 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.

1.6.3 Contractor 40 CFR Employee Training Records

Prepare and maintain employee training records throughout the term of the contract meeting applicable 40 CFR requirements. The Contractor will ensure every employee completes a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures compliance with Federal, State and local regulatory requirements for RCRA Large Quantity Generator. The Contractor will provide a Position Description for each employee, by subcontractor, based on the Davis-Bacon Wage Rate designation or other equivalent method, evaluating the employee's association with hazardous and regulated wastes. This Position Description will include training requirements as defined in 40 CFR 265 for a Large Quantity Generator facility. Submit these training records to the

Contracting Officer at the conclusion of the project, unless otherwise directed.

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

- 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.

No permits will be obtained by the Contracting Officer.

Where required by the State regulatory authority, 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.

3.2 PROTECTION OF NATURAL RESOURCES

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. 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) Sod: Install sod as soon as disturbed surface are brought to final grade.

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 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 agency's approval of the disposal plan before transporting wastes off Government property.

3.3.1 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.

3.3.2 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.

3.4 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.

3.4.1 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.

3.4.2 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.

3.5 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.

3.5.1 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.

3.6 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.

3.7 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.

3.8 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.

3.9 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.

3.9.1 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.

3.10 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.

3.11 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.

3.12 CONTROL AND DISPOSAL OF HAZARDOUS WASTES

3.12.1 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.

3.12.1.1 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 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>	_____

Location of the Site: _____
(Attach Site Plan to the Request)

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

3.12.2 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.

3.13 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.

3.13.1 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.

3.14 ABRASIVE BLASTING

3.14.1 Blasting Operations

The use of silica sand is prohibited in sandblasting.

Provide tarpaulin drop cloths and windscreens to enclose abrasive blasting operations to confine and collect dust, abrasive, agent, paint chips, and other debris in accordance with the requirements specified. Perform work involving removal of hazardous material in accordance with 29 CFR 1910.

3.14.2 Disposal Requirements

Submit analytical results of the debris generated from abrasive blasting operations per paragraph entitled Laboratory Analysis of this section. Hazardous waste generated from blasting operations will be managed in accordance with paragraph entitled "Hazardous Waste\Debris Management" of this section and with the approved HWMP.

3.15 NOISE

Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives will not be permitted without written permission from the Contracting Officer, and then only during the designated times. Confine pile-driving operations to the period between 8 a.m. and 4 p.m., Monday through Friday, exclusive of holidays, unless otherwise specified.

3.16 SOILS

Soils encountered during project activities shall be managed per Air Station soil management polices 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.

3.16.1 Contaminated Soils

Contaminated soils are not anticipated.

3.16.1.1 Screening Soils

Screen soils as they are generated using the methods described in the paragraph below. Screen the soils for volatile organics using a Photoionization Detector (PID) instrument at the point of excavation. Samples shall be collected at the leading edge of the excavation and screened for volatile organic compounds at approximately 1-foot depth intervals down to the deepest depth of excavation. Screened soils that do not result in detection may be reincorporated into the site or transported to the appropriate facility noted in the paragraph below.

Stockpiling and screening soils for contaminants shall be included under Bid Item 0001, Firm Fixed Price Lump Sum Work.

3.16.1.2 In-depth Testing of Contaminated Soils

Once test results are available, contact the Air Station Environmental Affairs Department (EAD) via the Contracting Officer for assistance in

determining restrictions on disposal.

3.16.1.3 Disposal of Clean Excess Soils

Contractor shall bid on removing all excess soils from the Air Station that will not be reincorporated into the work site. Clean soils shall be excavated, screened for contaminants, stockpiled and removed under Bid Item 0002AG listed on the bid sheet.

3.16.1.4 Disposal of Petroleum Contaminated Soils

For bidding purposes, bidders shall assume that all excess soil excavated below two feet in depth below the existing surface generated in the performance of Bid Items 0001 is contaminated with petroleum hydrocarbons but is not classed as a hazardous waste. Assume that the soil shall require transportation and disposal at a Subtitle D facility (such as BFI at Roseboro, North Carolina, phone 910-525-4134). Bidders are cautioned that not every Subtitle D facility will accept petroleum contaminated soil. Include the cost of testing, stockpiling, loading, manifesting, transportation and disposal at a Subtitle D facility in the unit cost for Bid Item 0002AM.

3.16.2 Disposal of Soils Treated as Hazardous Waste

If test results indicate the soil is classified as a hazardous waste or requires disposal in a Subtitle C facility, transport and dispose of the soil at a Subtitle C facility (such as Chemical Waste Management, Emelle, Alabama, phone 205-652-9721 or Safety Kleen Pinewood, Inc., Rimini, South Carolina, phone 804-452-5003). If this disposal method is required, the Contracting Officer will be required to issue a change order for additional testing of soils, transportation and disposal to determine the transportation and disposal of the waste material above. For bidding purposes, the bid for this item should account for the additional expense of transportation and disposal at a subtitle C facility, over and above any amount already included in the Fixed Price portion of the Bid.

3.16.3 Manifests

Text

3.16.4 Loading Transport and Disposal

Text

3.16.4.1 Disposal of Excess Soil

If test results indicate soil is clean, dispose of excess soil off the Air Station. No special restrictions apply and the soil may be treated as clean fill. As stated above, for bidding purposes, bidders should assume that the test results will not show excess soil to be clean. If test results indicate that the soil is clean, such an event will constitute a "Differing Site Condition" and an adjustment will be made as described in FAR 2.236-2, Differing site Conditions, incorporated by reference.

3.16.5 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 78 00

CLOSEOUT SUBMITTALS
03/15

PART 1 GENERAL

1.1 REFERENCES

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

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 1-300-08

(2009, with Change 2) Criteria for Transfer and Acceptance of DoD Real Property

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

As-Built Record of Equipment and Materials
Warranty Materials and Systems List

SD-11 Closeout Submittals

As-Built Drawings; G
Record Drawings; G
Interim Form DD1354; G
Checklist for Form DD1354; G

1.3 PROJECT RECORD DOCUMENTS

1.3.1 1.5.1 As-Built Drawings

"NFAS 5252.236-9310, Record Drawings." Perform a georeferenced as-built survey performed by the CQC surveyor. Surveys must be geo-referenced to the NAD83 North Carolina State Plane FIPS 3200 Feet projection system. Survey data will be used to update the Air Station GIS. Provide geo-referencing for the survey using Air station control points. Items to be included will not be limited to the following items:

1. New sidewalk limits
2. Roadway repair limits
3. New sign locations (including unique identifier provided by the Government)
4. New pavement marking locations and limits

5. New pavement elevations
6. Underground utility search results
7. New storm drain features including pipe inlet elevations and limits. Include revised open drainage conveyances.

Surveys will be exported to AutoCAD version 2016 compatible files. A drawing file will be prepared and presented at a scale of 1" =20'. All notations will be presented using annotative text and leader options. Paper space Roman S text will have a text height of 0.13. Provide a review opportunity prior to submitting the files for approval. It is suggested that the Contractor submit the files via email to the Contracting Officer expedite the review process. Provide two copies of the CD as part of the closeout package. Label each CD with the Project number, Contract title, Contractor's name and date and the Contract number/ Task Order.

1.3.2 Record Drawings

Separate from the as-built drawings required above, prepare drawings showing final as-built conditions of the project using the AutoCad drawing files provided by the Government. This paragraph covers record drawings complete, as a requirement of the contract. The terms "drawings," "contract drawings," "drawing files," "working record drawings" and "final record drawings" refer to contract drawings which are revised to be used for final record drawings showing as-built conditions. The final CAD record drawings must consist of one set of electronic CAD drawing files in the specified format, 2 sets of prints, and one set of the approved working Record drawings.

1.3.2.1 Working Record and Final Record Drawings

Revise 2 sets of paper drawings by red-line process to show the as-built conditions during the prosecution of the project. Keep these working as-built marked drawings current on a weekly basis and at least one set available on the jobsite at all times. Changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction must be accurately and neatly recorded as they occur by means of details and notes. Prepare final record (as-built) drawings after the completion of each definable feature of work as listed in the Contractor Quality Control Plan (Foundations, Utilities, Structural Steel, etc., as appropriate for the project). The working as-built marked prints and final record (as-built) drawings will be jointly reviewed for accuracy and completeness by the Contracting Officer and the Contractor prior to submission of each monthly pay estimate. If the Contractor fails to maintain the working and final record drawings as specified herein, the Contracting Officer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the record drawings. This monthly deduction will continue until an agreement can be reached between the Contracting Officer and the Contractor regarding the accuracy and completeness of updated drawings. Show on the working and final record drawings, but not limited to, the following information:

- a. The actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, show by offset dimensions to two permanently

fixed surface features the end of each run including each change in direction on the record drawings. Locate valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Also record the average depth below the surface of each run.

- c. Correct grade, elevations, cross section, or alignment of roads and railroad tracks, earthwork, structures or utilities if any changes were made from contract plans. Include coordinate locations of any relocated permanent traffic control signs.
- d. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor; including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.
- e. The topography, invert elevations and grades of drainage installed or affected as part of the project construction.
- f. Changes or modifications which result from the final inspection.
- j. Modifications (include within change order price the cost to change working and final record drawings to reflect modifications) and compliance with the following procedures.
 - (1) Follow directions in the modification for posting descriptive changes.
 - (2) Place a Modification Circle at the location of each deletion.
 - (3) For new details or sections which are added to a drawing, place a Modification Circle by the detail or section title.
 - (4) For minor changes, place a Modification Circle by the area changed on the drawing (each location).
 - (5) For major changes to a drawing, place a Modification Circle by the title of the affected plan, section, or detail at each location.
 - (6) For changes to schedules or drawings, place a Modification Circle either by the schedule heading or by the change in the schedule.
 - (7) The Modification Circle size shall be 1/2 inch diameter unless the area where the circle is to be placed is crowded. Smaller size circle shall be used for crowded areas.

1.3.2.2 Drawing Preparation

Modify the record drawings as may be necessary to correctly show the features of the project as it has been constructed by bringing the contract set into agreement with approved working as-built prints, and adding such additional drawings as may be necessary. These working as-built marked prints must be neat, legible and accurate. These drawings are part of the permanent records of this project and must be returned to the Contracting Officer after approval by the Government. Any drawings damaged or lost by the Contractor must be satisfactorily replaced by the Contractor at no expense to the Government.

1.3.2.3 Computer Aided Design and Drafting (CADD) Drawings

Only employ personnel proficient in the preparation of CADD drawings to modify the contract drawings or prepare additional new drawings. Additions and corrections to the contract drawings must be equal in quality and detail to that of the originals. Line colors, line weights, lettering, layering conventions, and symbols must be the same as the original line colors, line weights, lettering, layering conventions, and symbols. If additional drawings are required, prepare them using the specified electronic file format applying the same graphic standards specified for original drawings. The title block and drawing border to be used for any new final record drawings must be identical to that used on the contract drawings. Accomplish additions and corrections to the contract drawings using CADD files. The Contractor will be furnished "as-constructed" drawings in AutoCad Release 2010. The electronic files will be supplied on optical disk. Provide all program files and hardware necessary to prepare final record drawings. The Contracting Officer will review final record drawings for accuracy and return them to the Contractor for required corrections, changes, additions, and deletions.

- a. Provide CADD "base" colors of red, green, and blue. Color code for changes as follows:
 - (1) Deletions (Red) - Over-strike deleted graphic items (lines), lettering in notes and leaders.
 - (2) Additions (Green) - Added items, lettering in notes and leaders.
 - (3) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes.
- b. Rename the Contract Drawing files in a manner related to the contract number (i.e., 98-C-10.DGN) as instructed in the Pre-Construction conference. Use only those renamed files for the Marked-up changes. All changes shall be made on the layer/level as the original item.
- c. When final revisions have been completed, show the wording "RECORD DRAWINGS / AS-BUILT CONDITIONS" followed by the name of the Contractor in letters at least 3/16 inch high on the cover sheet drawing. Mark all other contract drawings either "Record" drawing denoting no revisions on the sheet or "Revised Record" denoting one or more revisions. Date original contract drawings in the revision block.
- d. Within 10 days after Government reviews and approves the working record drawings, prepare the final CADD record drawings for Government review and approval. The Government will promptly return one set of prints annotated with any necessary corrections. Based on the Government's comments, revise the CADD files accordingly at no additional cost and submit one set of final prints for the completed phase of work to the Government. Submit the final corrected record drawing package for the entire project. Submit one set of electronic files on optical disk, and two sets of blue-line prints accompanied by one set of the approved working record drawings. They must be complete in all details and identical in form and function to the contract drawing files supplied by the Government. Any transactions or adjustments necessary to accomplish this is the responsibility of the Contractor. The Government reserves the right to reject any drawing files it deems incompatible with the customer's CADD system. Paper prints, drawing

files and storage media submitted will become the property of the Government upon final approval. Failure to submit final record drawing files and marked prints as specified will be cause for withholding any payment due the Contractor under this contract. Approval and acceptance of final record drawings must be accomplished before final payment is made to the Contractor.

1.3.2.4 Payment

No separate payment will be made for record drawings required under this contract, and all costs accrued in connection with such drawings are considered a subsidiary obligation of the Contractor.

1.3.3 As-Built Record of Equipment and Materials

Furnish one copy of preliminary record of equipment and materials used on the project 15 days prior to final inspection. This preliminary submittal will be reviewed and returned 2 days after final inspection with Government comments. Submit two sets of final record of equipment and materials 10 days after final inspection. Key the designations to the related area depicted on the contract drawings. Include in the list a description of the item, associated specification section, manufacturer's Manufacturer and Catalog, Model, and Serial Number, composition and size.

1.3.4 Final Approved Shop Drawings

Furnish final approved project shop drawings 30 days after transfer of the completed facility.

1.3.5 Real Property Equipment

Furnish a list of installed equipment furnished under this contract. Include all information usually listed on manufacturer's name plate. In the "EQUIPMENT-IN-PLACE LIST" include, as applicable, the following for each piece of equipment installed: description of item, location (by room number), model number, serial number, capacity, name and address of manufacturer, name and address of equipment supplier, condition, spare parts list, manufacturer's catalog, and warranty. Furnish a draft list at time of transfer. Furnish the final list 30 days after transfer of the completed facility.

1.4 WARRANTY MANAGEMENT

1.4.1 Warrantied Materials and Systems

Develop a list of all warrantied materials and systems installed by this contract. Submit the list for review by the Government at least 30 days prior to contract's final inspection. Include a narrative of each warrantied item presented in sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below must include due date and whether item has been submitted or was accomplished. Warranty information made available during the construction phase must be submitted to the Contracting Officer for approval prior to each monthly pay estimate. Assemble approved information in a binder and turn over to the Government upon acceptance of the work. The construction warranty period will begin on the date of project acceptance and continue for the full product warranty period. Include within the submittal the following:

- a. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subContractors, manufacturers or suppliers involved.
- b. Furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest to the project location.
- c. Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include new traffic signs and the new railroad crossing system.
- d. A list for each warranted equipment, item, feature of construction or system indicating:
 - (1) Name of item.
 - (2) Model and serial numbers.
 - (3) Location where installed.
 - (4) Name and phone numbers of manufacturers or suppliers.
 - (5) Names, addresses and telephone numbers of sources of spare parts.
 - (6) Warranties and terms of warranty. Include one-year overall warranty of construction, including the starting date of warranty of construction. Items which have extended warranties must be indicated with separate warranty expiration dates.
 - (7) Cross-reference to warranty certificates as applicable.
 - (8) Starting point and duration of warranty period.
 - (9) Summary of maintenance procedures required to continue the warranty in force.
 - (10) Cross-reference to specific pertinent Operation and Maintenance manuals.
 - (11) Organization, names and phone numbers of persons to call for warranty service.
 - (12) Typical response time and repair time expected for various warranted equipment.
- e. Procedure and status of tagging of all equipment covered by extended warranties.

1.4.2 Performance Bond

The Contractor's Performance Bond must remain effective throughout the construction period.

- a. In the event the Contractor fails to commence and diligently pursue any construction warranty work required, the Contracting Officer will have the work performed by others, and after completion of the work, will charge the remaining construction warranty funds of expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.
- b. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Contracting Officer will have the right to recoup expenses from the bonding company.
- c. Following oral or written notification of required construction warranty repair work, respond in a timely manner. Written verification will follow oral instructions. Failure of the Contractor to respond

will be cause for the Contracting Officer to proceed against the Contractor.

1.5 CLEANUP

Remove sedimentation and erosion control features including collected sediments, fine grade disturbed surfaces and install turf (sod). Clean debris from curb and gutters, flumes and drainage systems. Sweep paved areas and rake clean landscaped areas. Remove waste and surplus materials, rubbish and construction facilities from the site. Collect and remove construction waste and debris and remove materials from the Air Station. Dispose of construction and demolition waste from project in accordance with the Waste Management Plan. Promptly and legally transport and dispose of any trash. Do not burn, bury, or otherwise dispose of trash on the project site.

1.6 REAL PROPERTY RECORD

Near the completion of Project, but a minimum of 60 days prior to final acceptance of the work, complete, update draft DD Form 1354 attached to this section, and submit an accounting of all installed property with Interim Form DD1354 "Transfer and Acceptance of Military Real Property." Include any additional assets/improvements/alterations from the Draft DD Form 1354. Contact the Contracting Officer for any project specific information necessary to complete the DD Form 1354. Refer to UFC 1-300-08 for instruction on completing the DD Form 1354. For information purposes, a blank DD Form 1354 (fill-able) in ADOBE (PDF) may be obtained at the following web site:

<http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd1354.pdf>

Submit the completed Checklist for Form DD1354 of Installed Building Equipment items. Attach this list to the updated DD Form 1354.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 02 41 00

DEMOLITION
03/15

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.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.6 (2006) Demolition Operations

1.2 GENERAL REQUIREMENTS

Do not begin demolition until authorization is received from the Contracting Officer. Provide advance notices as required by specification section 01 14 00, "Work Restrictions". All traffic controls shall be in place and approved prior to closing any lanes. All required submittals shall have been submitted and approval received from the Contracting Officer before work begins. Remove rubbish and debris from the Air Station daily; do not allow accumulations on roadways.

1.3 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures." Submittal preparations including supporting documents shall be prepared as Bid Item 0001, Firm Fixed Price Lump Sum work.

SD-01 Preconstruction Data

Demolition plans; G

Submit proposed traffic control measures, salvage, demolition and removal procedures to the Contracting Officer for approval before work is started. Specific detailed demolition plans and sequences of work are noted below:

b. Pavement Removal Plan

Describe sequence of events required to remove pavement structures under a) road and lane closure conditions and b) construction phasing to minimize loss of access to facilities. Reference both typical contract specific traffic control plans that will be utilized submitted separately. Show pavement demolition limits and milling limits on this plan.

c. Underground Utility Search Findings

The Contractor's CQC surveyor must record any utilities discovered during the utility search. Place the data on a unique layer

reserved for underground utility data.

1.4 REGULATORY AND SAFETY REQUIREMENTS

Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," safety requirements shall conform with ANSI A10.6.

1.5 DUST AND DEBRIS CONTROL

Prevent the spread of dust and debris onto Air Station roadways.

1.6 PROTECTION

1.6.1 Traffic Control Signs

Where pedestrian and driver safety is endangered in the area of removal work, use traffic control measures indicated on the drawings and by specification section 32 01 00, "Temporary Traffic Controls". Notify the Contracting Officer once traffic controls are in-place for field inspection and approval. Make adjustments to traffic controls when directed by the Contracting Officer.

1.6.2 Existing Work

Protect existing work which is to remain in place, be reused, or remain the property of the Government. Repair items which are to remain which are to be salvaged and which are damaged during performance of the work to their original condition, or replace with new. Do not overload pavements to remain.

1.6.3 Trees

Conform to Section 01 57 19.00 20, "Temporary Environmental Controls," for protection of natural resources. Mark clearing and grubbing limits with reflective tape and bright painted markings.

1.7 SALVAGED ITEMS

Perform the removal and reinstallation of salvaged items where indicated on the contract drawings with workmen skilled in the trades involved. Repair items to be relocated which are damaged or replace damaged items with new undamaged items as approved by the Contracting Officer.

1.8 Required Data

Demolition plan shall include 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. Include statements affirming Contractor plan to remove surface storm water runoff.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 ADVANCE NOTICES TO THE GOVERNMENT

Provide advance notice to the Contracting Officer before removing pavements or utilities from service. Refer to specification section 01 14 00, "Work Restrictions" for specific and general notices that are required.

3.2 EXISTING FACILITIES TO BE REMOVED

Insure that all approved submittals are in place and that materials, labor and equipment noted in specification section 01 14 00, "Work Restrictions" are in-place before taking any work feature out of service.

3.2.1 Traffic Control Signs

Remove signs and posts indicated on the drawings for reinstallation or relocation upon completion of work. Protect signs from damage during construction. Should sign posts become difficult to salvage, the Contractor may provide new sign posts to match and dispose of the existing posts.

3.2.2 Paving and Concrete Demolition

Remove sawcut and milled asphaltic concrete paving to a depths indicated on the plans. Contractor shall be prepared to trim pavements broken during construction at no additional cost to the Government. Saw cuts will be made to the full depth thickness of the bituminous concrete. Sidewalks and curbing shall be removed at the nearest joint at or beyond the removal limits shown on the drawings. Sawcut through the joint full depth for concrete sidewalks and full depth to the maximum extent for concrete curbing with gutters.

3.2.3 Removal of Underground Storm Drain System

Remove existing concrete headwalls and one attached pipe section at the locations shown on the contract drawings. Exercise great care not to damage remaining underground conduits. Excavate using hand methods to expose the existing pipe segment and form the cast-in-place concrete pipe collar. Insure that the storm drain conduit remains free of dirt and debris.

3.2.4 Miscellaneous Demolition Activities

Perform miscellaneous demolition activities noted below:

- a. Traffic sign and post assemblies.
- b. Utility Vaults, Markers and Valve Boxes

3.3 DISPOSITION OF MATERIAL

3.3.1 Title to Materials

Except where specified in other sections, all materials and equipment removed, and not reused, shall become the property of the Contractor and shall be removed from Government property. Title to materials resulting from demolition, and materials and equipment to be removed, is vested in the Contractor upon approval by the Contracting Officer of the Contractor's

demolition and removal procedures, and authorization by the Contracting Officer to begin demolition. The Government will not be responsible for the condition or loss of, or damage to, such property after contract award. Materials and equipment shall not be viewed by prospective purchasers or sold on the site.

3.3.2 Reuse of Materials and Equipment

a. Remove and carefully store sign and post assemblies (and posts when directed by the Contracting Officer), or relocated to prevent damage, and reinstall as the work progresses.

b. Reuse and adjust elevations of valve boxes, utility manholes, precast concrete utility markers and precast composite junction boxes to match new pavement and shoulder elevations.

3.4 CLEANUP

3.4.1 Debris and Rubbish

Remove and transport debris and rubbish in a manner that will prevent spillage on streets or adjacent areas. Clean up spillage from streets and adjacent areas.

-- End of Section --

SECTION 03 45 33

PLANT-PRECAST STRUCTURAL CONCRETE
03/15

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. Utilize latest edition or revision to the publication dates shown below.

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 304R	Measuring, Mixing, Transporting, and Placing Concrete
ACI 305R	Hot Weather Concreting
ACI 306.1	Cold Weather Concreting
ACI 309R	Consolidation of Concrete
ACI 318/318M	Building Code Requirements for Structural Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 27	Steel Castings, Carbon, for General Application
ASTM A 47	Ferritic Malleable Iron Castings
ASTM A 123/A 123M	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153/A 153M	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 307	Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
ASTM A 563	Carbon and Alloy Steel Nuts
ASTM A 615/A	Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 616/A	Rail-Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A 617/A	Axle-Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A 706/A	Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

ASTM C 33	Concrete Aggregates
ASTM C 94	Ready-Mixed Concrete
ASTM C 150	Portland Cement
ASTM C 260	Air-Entraining Admixtures for Concrete
ASTM C 494	Chemical Admixtures for Concrete
ASTM C 595	Blended Hydraulic Cements
ASTM C 618	Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 989	Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
ASTM C 1107	Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM F 436	Hardened Steel Washers
ASTM F 844	Washers, Steel, Plain (Flat), Unhardened for General Use

PRECAST/PRESTRESSED CONCRETE INSTITUTE (PCI)

PCI MNL-116	Quality Control for Plants and Production of Precast Prestressed Concrete Products
PCI MNL-120	Design Handbook - Precast and Prestressed Concrete

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00, "Submittal Procedures."

SD-05 Design Data

Concrete mix design; G

SD-06 Test Reports

Aggregate Properties

Contractor-furnished mix design; G

Submit copies of test reports showing that the mix has been successfully tested to produce concrete with the properties specified and will be suitable for the job conditions. Obtain approval before concrete placement.

SD-07 Certificates

Fabrication; G

Submit quality control procedures established in accordance with PCI MNL-116 by the precast manufacturer.

SD-11 Closeout Submittals

Concrete batch ticket information

1.3 QUALITY CONTROL

1.3.1 Precast Concrete Design

ACI 318/318M and the PCI MNL-120. Design all precast units for the design load conditions indicated, and for additional loads imposed during installation of the units. Design precast members for handling without cracking in accordance with the PCI MNL-120.

1.4 DELIVERY AND STORAGE

Lift and support precast units at the lifting and supporting points provided by the manufacturer and indicated on the shop drawings. Store precast members off the ground. Separate stacked precast members by battens across the full width of each bearing point. Protect from weather, marring, damage, and overload.

1.5 FACTORY INSPECTION

At the option of the Contracting Officer, precast units may be inspected by the Contracting Officer or the QC Representative prior to being transported to the job site. The Contractor shall give notice 14 days prior to the time the units will be available for plant inspection. Neither the exercise nor waiver of inspection at the plant will affect the Government's right to enforce contractual provisions after units are transported or erected.

1.6 QUALITY ASSURANCE

1.6.1 Drawing Information

Submit drawings indicating complete information for the fabrication, handling, and erection of the precast member. Drawings shall not be reproductions of contract drawings. Design calculations and drawings of precast members (including connections) shall be prepared and sealed by a registered professional engineer, and submitted for approval prior to fabrication. The drawings shall indicate, as a minimum, the following information:

- a. Marking of members for erection
- c. Connections between members and other construction
- d. Location and size of openings
- e. Headers for openings
- f. Joints between members
- g. Reinforcing details

- h. Material properties of steel and concrete used
- i. Lifting and erection inserts
- j. Dimensions and surface finishes of each member
- k. Erection sequence and handling requirements
- l. All loads used in design (such as live, dead, handling, and erection)

1.6.2 Concrete Mix Design

Thirty days minimum prior to concrete placement, submit a mix design for each strength and type of concrete. Include a complete list of materials including type; brand; source and amount of cement, pozzolan, and admixtures; and applicable reference specifications.

1.6.3 Certificates: Record Requirement

ASTM C 94. Submit mandatory batch ticket information for each load of ready-mixed concrete.

PART 2 PRODUCTS

2.1 CONTRACTOR-FURNISHED MIX DESIGN

ACI 318/318M. The minimum compressive strength of concrete at 28 days shall be 5000 psi, unless otherwise indicated. Add air-entraining admixtures at the mixer to produce between 4 and 6 percent air by volume.

2.2 MATERIALS

2.2.1 Cement

ASTM C 150, Type I, II, or III; or ASTM C 595 Type IP(MS) or IS(MS) ASTM C 150, Type II; or ASTM C 595 Type IP(MS) or IS(MS) blended cement, except as modified herein. The blended cement shall consist of a mixture of ASTM C 150 cement and one of the following materials: ASTM C 618 pozzolan or fly ash, or ASTM C 989 ground iron blast furnace slag. The pozzolan/fly ash content shall not exceed 25 percent by weight of the 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 Type N and F.

2.2.1.2 Ground Iron Blast-Furnace Slag

ASTM C 989, Grade 100 or 120.

2.2.2 Water

Water shall be fresh, clean, and potable.

2.2.3 Aggregates

2.2.3.1 Aggregates Selection

ASTM C 33, Size 57 or 67, except as modified herein. Obtain aggregates for exposed concrete surfaces from one source. Aggregates shall not contain any substance which may be deleteriously reactive with the alkalis in the cement. Aggregates shall show abrasion resistance of no more than 40 when tested by ASTM D 131.

2.2.4 Grout

2.2.4.1 Nonshrink Grout

ASTM C 1107.

2.2.4.2 Cementitious Grout

Shall be a mixture of portland cement, sand, and water. Proportion one part cement to approximately 2.5 parts sand, with the amount of water based on placement method. Provide air entrainment for grout exposed to the weather.

2.2.5 Admixtures

2.2.5.1 Air-Entraining

ASTM C 260.

2.2.5.2 Accelerating

ASTM C 494, Type C or E.

2.2.5.3 Water Reducing

ASTM C 494, Type A, E, or F.

2.2.6 Reinforcement

2.2.6.1 Reinforcing Bars

ASTM A 706/A, Grade 60; ASTM A 615/A, Grade 60; ASTM A 617/A, Grade 60; or ASTM A 616/A, Grade 60.

2.2.7 Metal Accessories

Provide ASTM A 123/A 123M or ASTM A 153/A 153M galvanized.

2.2.7.1 Inserts

ASTM A 47, Grade 32510 or 35018, or ASTM A 27 Grade U-60-30.

2.2.7.2 Bolts

All permanent bolts shall be ASTM A 325 stainless steel, Grade 304, temporary bolts required for rigging shall conform to ASTM A 307; ASTM A 325.

2.2.7.3 Nuts

ASTM A 563.

2.2.7.4 Washers

ASTM F 844 washers for ASTM A 307 bolts, and ASTM F 436 washers for ASTM A 325 bolts.

2.2.8 Bearing Pads

2.2.8.1 Elastomeric

AASHTO SSHB-I-14, for plain neoprene bearings.

2.3 FABRICATION

PCI MNL-116 unless specified otherwise.

2.3.1 Forms

Forms shall be production forms already in use by the manufacturer. Constructions shall be well braced to prevent deformation. Forms shall produce a smooth, dense surface. If offered as an option by the manufacturer, provide chamfered edges where edges are not protected by and adjacent panel. Provide threaded or snap-off type form ties.

2.3.2 Reinforcement Placement

ACI 318/318M for placement and splicing. Reinforcement may be preassembled before placement in forms. Provide exposed connecting bars, or other approved connection methods, between precast and cast-in-place construction. Remove any excess mortar that adheres to the exposed connections.

2.3.3 Concrete

2.3.3.1 Concrete Mixing

ASTM C 94. Mixing operations shall produce batch-to-batch uniformity of strength, consistency, and appearance.

2.3.3.2 Concrete Placing

ACI 304R, ACI 305R for hot weather concreting, ACI 306.1 for cold weather concreting, and ACI 309R, unless otherwise specified.

2.3.3.3 Concrete Curing

Commence curing immediately following the initial set and completion of surface finishing. Provide curing procedures to keep the temperature of the concrete between 50 and 190 degrees F. When accelerated curing is used, apply heat at controlled rate and uniformly along the casting beds. Monitor temperatures at various points in a product line in different casts.

2.3.4 Surface Finish

Repairs located in a bearing area shall be approved by the Contracting Officer prior to repairs. Precast members containing hairline cracks which

are visible and are less than 0.02 inches in width, may be accepted, except that cracks larger than 0.005 inches in width for surfaces exposed to the weather shall be repaired. Precast members which contain cracks greater than 0.02 inches in width shall be approved by the Contracting Officer, prior to being repaired. Any precast member that is structurally impaired or contains honeycombed section deep enough to expose reinforcing shall be rejected.

2.3.4.1 Unformed Surfaces

Provide a cast diamond grid antiskid pattern to exposed surfaces subject to traffic. If provided as an option, bevel all exposed edges. Other surfaces shall have a steel troweled finish.

2.3.4.2 Formed Surfaces

PCI MNL-116 (Appendix A - Commentary), Chapter 3, for grades of surface finishes.

- a. Unexposed Surfaces: Provide a standard grade surface finish.
- b. Exposed Surfaces: Provide a finish Grade B surface finish. The combined area of acceptable defective areas shall not exceed 0.2 percent of the exposed to view surface area, and the patches shall be indistinguishable from the surrounding surfaces when dry.

PART 3 EXECUTION

3.1 SURFACE REPAIR

Prior to erection, and again after installation, precast members shall be checked for damage, such as cracking, spalling, and honeycombing. As directed by the Contracting Officer, precast members that do not meet the surface finish requirements specified in Part 2 in paragraph entitled "Surface Finish" shall be repaired, or removed and replaced with new precast members.

3.2 BEARING SURFACES

Shall be flat, free of irregularities, and properly sized. Correct bearing surface irregularities with flowable cement fill struck to grade. Grade checks will be performed by the Contractor's CQC surveyor. Once the bearing surface has been approved by the Contracting Officer, carefully install a layer of nonwoven filter fabric weighing not less than 6 ounces per square yard. Accurately mark the location of panel corners for each panel to insure accurate alignment of the crossing. Place precast members at right angles to the bearing surface, unless indicated otherwise, and draw-up tight without forcing or distortion, with sides plumb. Rail channels shall be aligned to accept the rail without placing unnecessary stresses on the rail. Tops of panels shall match the elevation of the adjacent panel.

3.3 ANCHORAGE

Provide stainless steel anchorage for fastening gauge panels to the precast concrete base panels. Conceal fasteners where practicable. Make threaded connections up tight.

3.4 GROUTING

Clean and pressure grout ports with nonshrink grout or cementitious grout to insure even bearing of the panels. Provide reinforcing where indicated. Remove excess grout before hardening.

3.5 SEALANTS

Install silicone sealant and backer rod at exposed joints between adjacent crossing panels and between interior gauge panels. Do not overfill joints.

-- End of Section --

SECTION 31 23 00.00 20

EXCAVATION AND FILL

01/15

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. Utilize the latest editions, errata and amendments.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C33	Concrete Aggregates
ASTM C136	Sieve Analysis of Fine and Coarse Aggregates
ASTM D698	Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft (600 kN-m/m))
ASTM D1140	Amount of Material in Soils Finer Than the No. 200 (75-Micrometer) Sieve
ASTM D1556	Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft (2,700 kN-m/m))
ASTM D2321	Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
ASTM D2487	Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D2922	Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D3017	Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D4318	Liquid Limit, Plastic Limit, and Plasticity Index of Soils

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NCDOT SSRS	Specifications for Roads and Structures
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1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal

Procedures."

SD-01 Preconstruction Submittals

Surface Dewatering work plan; G

SD-03 Manufacturer's Product Data

Nonwoven Geotextile Fabric; G

Geogrid Fabric; G

Submit 15 days prior to starting work.

SD-06 Test Reports

Moisture Content Tests

Density tests; G

Flowable cement fill; G

SD-07 Certificates

Geotextile fabric; G

Geogrid Fabric; G

Stone Aggregates; G

1.3 DELIVERY, STORAGE, AND HANDLING

Perform in a manner to prevent contamination or segregation of materials.

1.4 CRITERIA FOR BIDDING

Base bids on the following criteria:

- a. Surface elevations are as indicated.
- b. Contractor will be responsible for scanning the site for underground utilities.

1.5 QUALITY ASSURANCE

1.5.1 Dewatering Work Plan

Submit procedures for accomplishing surface dewatering work.

1.8 Grade Control and Location Control

Excavation work shall be controlled by the Contractor's CQC surveyor. Work shall progress based on the Contractor's approved construction drawings.

1.6 Location Control

Establish and utilize roadway centerlines and offsets in combination with coordinates to locate new or replacement features. Re-establish control points as often as is necessary to support excavation and fill efforts.

1.7 Requirements for Offsite Soils

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

1.7.1 Documentation

The Contractor shall provide documentation certifying that all soils furnished under the contract contains no petroleum or hazardous or toxic materials as stated in DOD Instruction 4715.6, which implements 10 U.S.C. 2692. This documentation shall include the Soils Authorization Form (SAF) showing the volume of soil needed, analytical test data to support the environmental condition of the soil, and a copy of the State-issued "mining permit" for the borrow pit source. The Contractor shall obtain the SAF from MCAS Cherry Point Environmental Affairs Department (EAD). EAD will review these documents before off site soil is considered approved for use.

1.7.2 Sampling Requirements

Sampling requirements are summarized below and are for a single soil source only.

- a. For contracts that require 200 cubic yards or less of off site soil, the contractor shall certify the soil meets the requirements for off site soil (RFOSS) by inspecting for "apparent contamination" as determined by visual or other indications of conamination including abnormal or unnatural color, chemical or petroleum odors or saturation with a chemical or petroleum. If the soil shows no apparent contamination, the contractor shall provide to EAD a signed SAF certifying the soil contains no apparent contamination. Soil showing apparent conamination shall not be utilized aboard MCAS Cherry Point or outlying fields.
- b. Take one representative sample for soil volumes of 200 cubic yards to 1,000 cubic yards
- c. For soil volumes greater than 1,000 cubic yards, take one additional represenative sample for each additional 2000 curbic yards or portion thereof.

A representative sample is achieved by collecting multiple samples in a defined area (i.e. soil stockpile or borrow pit) and directing the laboratory to combine them into a "composite sample" for analysis. The composite or representative sample is intended to represent the soil source as a whole.

1.7.3 Soil Sampling

Samples shall be collected by qualified personnel following proper field sampling methodology. For each representative sample, 3 "primary samples" from each of 2 soil borings (or excavation pits) shall be obtained for a total of 6 primary samples. The 3 primary samples collected from each boring/ pit shall be obtained at even intervals throughout the soil column (i.e. upper, middle, lower) and placed into individual sampling containers. Samples shall not be combined in the field. The 6 primary samples shall be sent to the NC certified laboratory where they will be

combined into one "composite asmples" for analysis.

1.7.4 Transporting, Storage and Handling

Follow proper field sampling methodology and proper chain-of-custody protocols for each test to be performed. Consult with the selected laboratory about specific sample handling procedures required by the test and method of analysis. Container labeling, containers, sample volumes and timeframes differ depending on the analytical method. Failure to follow proper field sampling, handling methods and proper chain-of-custody protocols will render the test and analysis invalid.

1.7.5 Soil Testing and Analysis

If the total amount of soil to be brought aboard MCAS, Cherry Point exceeds 200 cubic yards, the soil shall be analyzed by a North Carolina certified laboratory. A laboratory must be certified for each specific test to be performed. Utilize proper sampling, specimen storage and handling procedures required above. Testing will be performed by laboratory personnel certified to perform each test.

Utilize the following methods for testing and analyzing soil to determine if soil meets the requirements for off site soil (RFOSS).

Soil sample(s) shall be analyzed for Gasoline Range Organics (GRO), Diesel Range Organics (DRO), Oil and Grease (O&G) and eight metals (Arsenic; Barium; Cadmium; Chromium; Lead; Mercury; Selenium; and Silver). The laboratory method detection limits must be set below the State action levels or the testing will be considered invalid. All units are to be reported in milligrams per kilogram (mg/kg).

- a. Gasoline Range Organics - use EPA Standard Method 5030
- b. Diesel Range Organics - use EPA Standard Method 5030
- c. Oil & Grease - use EPA Method 9071 with a silica gel wash
- d. Total Metals - use EPA 6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium and Silver)
- e. Total Metals - Use EPA 7471 (Mercury only)

If test results are greater than the allowed detection limits for petroleum constituents (GRO, DOR and O&G) or the standards for the eight metals (as provided by the EPA), the soil from which the sample was taken shall not be approved for use.

1.8 Elevation controls

Establish temporary bench marks where necessary. Utilize grade stakes in sufficient quantity to indicate depths of excavations and fill activities that when such activities are complete will support the finished pavement, curb and gutter and drainage system modifications shown on the Contractor's approved construction drawings.

1.9 CONTAMINATED SOILS

Approximately 1 acre of the construction site located on the west end of Onslow Road is located with Operable Unit (OU) 2. The contractor is

responsible for the testing requirements below.

Contaminated soil is not expected outside the limits of OU2. within the construction limits shown on the contract drawings. If contaminated soils are discovered, further testing, handling, storage, transportation and disposal will be considered a changed condition to the contract.

1.9.1 Detection

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, Contractor shall immediately stop work in that area, and the Contractor shall advise the Environmental Affairs Department (EAD) via the FEAD Contract Manager of the situation so a course of action can be developed to address the contamination.

1.9.2 Testing Contaminated Soils

Use of a North Carolina certified laboratory to perform the specific soil analyses is required. The laboratory shall be certified by North Carolina in the specific tests to be performed. Contractor shall 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 shall be conducted by qualified personnel and proper chain-of-custody protocol shall 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, with silica gel wash

Full TCLP

1.9.3 Stockpiling Contaminated Soil

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 is discovered, the soil shall be segregated by PID (≥ 10 ppm or exhibits staining), properly stockpiled, tested, and disposed. If soil is stockpiled, it shall 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.

1.9.4 Transportation and Disposal of Contaminated Soils

Any excess soil that cannot be re-utilized as backfill at the same location from which it was removed shall be disposed at a Subtitle D landfill (e.g.; Tuscarora) as a minimum with the understanding that the analytical testing results shall determine the final disposal facility. Contractor shall provide supporting laboratory analysis to the EAD for review. The EAD shall 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 shall also contain the amount of soil (weight) and supporting laboratory

results for EAD to review. One composite sample shall be taken and analyzed for each 200 cubic yards of the stockpile per DENR Guidelines in order to determine the proper method for disposal.

1.10 DISPOSAL OF CONTAMINATED GROUND WATER

In contaminated areas, if dewatering is required during excavation, all water shall be containerized. The groundwater shall not be discharged to the ground surface, storm sewer etc. prior to sampling and analysis due to the potential contamination from migrating plumes. FACENG/ROICC shall 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 shall be obtained from EAD (Timothy Lawrence 466-2754) prior to sending contaminated water to the IWTP.

1.11 DISPOSAL OF UNCONTAMINATED EXCESS SOILS

Clean excess soil that will not be reincorporated into the construction will become the property of the Contractor. Materials must be properly disposed of at locations permitted by the North Carolina Department of Environment and Natural Resources with valid mining permit or erosion and sediment control permit.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

Free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, and frozen, deleterious, or objectionable materials. Unless specified otherwise, the maximum particle diameter shall be one-half the lift thickness at the intended location. Test soil imported from off-station sources as required by the paragraphs above entitled "Requirements for Offsite Soils".

2.1.1 Common Fill

Approved, unclassified soil material with the characteristics required to compact to the soil density specified for the intended location.

2.1.2 Backfill and Fill Material

ASTM D2487, classification GW, GP, GM, SW, SP, SM with a maximum ASTM D4318 liquid limit of 35, maximum ASTM D4318 plasticity index of 12, and a maximum of 25 percent by weight passing ASTM D1140, No. 200 sieve.

2.1.3 Topsoil

Provide as specified in Section 32 92 23, "Turf (SOD)".

2.1.4 Select Material

ASTM D2487, classification GW, GP, SW, SP.

2.2 POROUS FILL FOR CAPILLARY WATER BARRIER

ASTM C33 shall be a manufactured washed fine aggregate grading with a maximum of 3 percent by weight passing ASTM D1140, No. 200 sieve, or coarse aggregate Size 57, 67, or 77 and conforming to the general soil material

requirements specified in paragraph entitled "Soil Materials." Unwashed aggregates will be rejected.

2.3 BORROW

Obtain borrow materials required in excess of those generated from the job site excavations from sources outside of Government property. Test materials to insure that there are no contaminants as stated by paragraph 1.6, "Requirements for Offsite Soil".

2.4 BURIED WARNING AND IDENTIFICATION TAPE

Polyethylene plastic and metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, 3 inch minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Color and printing shall be permanent, unaffected by moisture or soil.

Warning Tape Color Codes

Yellow:	Electric
Orange:	Telephone and Other Communications
Blue:	Water Systems
Green:	Sewer Systems

2.4.1 Detectable Warning Tape for Non-Metallic Piping

Polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of the tape shall be 0.004 inch. Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise. Tape shall be manufactured with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to 3 feet deep. Encase metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

2.5 DETECTION WIRE FOR NON-METALLIC PIPING

Detection wire shall be insulated single strand, solid copper with a minimum of 12 AWG.

2.6 MATERIAL FOR RIP-RAP

Rock shall conforming to NCDOT SSRS, Class B and shall be manufactured from granite.

2.6.1 Bedding Material

Consisting of sand, gravel, or crushed rock, well graded. Provide separate stockpiles of minus 1 inch maximum particle size material and minus 1/2 inch maximum particle size material for use in constructing the railroad crossing and placement of the storm drain extension. Material shall be composed of tough, durable particles. Fines passing the No. 200 standard sieve shall have a plasticity index less than six.

2.6.2 Flowable Cement Fill

Provide the following materials from an established local ready-mix concrete producer.

Mix #1				Mix #2			
Less Flowable				Very Flowable			
Weights		Volume		Weights		Volume	
Min.	50 lbs	Cement	.25	Min.	50 lbs	Cement	.25
Min.	600 lbs	Fly Ash	4.24	Min.	600 lbs	Fly Ash	4.24
SSD	2500 lbs	Sand	15.18	SSD	2500 lbs	Sand	15.18
55 Gal	458 lbs	Water	7.34	65 Gal	541 lbs	Water	8.68
Total Cubic Feet = 27.00				Total Cubic Feet = 28.34*			

*One cubic yard of very flowable fill will be mixed to contain more than 27 cubic feet due to the additional water.

The above values are based on specific gravities - cement 3.15, fly ash 2.27 sand 2.64, and water 1.00. Anticipated unconfined compressive strength is 80 psi at 28 days and 150 psi at 56 days. Adding water to a flowable fill to obtain the desired plastic characteristics will not compromise the quality of the hardened flowable fill.

2.6.3 Stone Aggregates

NCDOT SSRS, materials for construction of the base course shall be in accordance with Section 1005 and Section 1010, Type ABC gradation.

2.7 Geotextile fabric

Fabric shall be a nonwoven 100% continuous filament, polyester or polypropylene, needle punched fiber mat. Weight of mat shall be 6 ounces per square yard or greater. Weight of mat under railroad crossing panels shall be 16 ounces per square yard. Fabric shall be UV protected.

2.8 Geogrid Fabric

Product shall be a UV stabilized geogrid fabric having triangular shaped aperture openings equal or superior to TriAx 140 manufactured by the Tensar Corporation. Radial stiffness at low strain must equal or exceed 15,000 lb/ft when tested by ASTM D6637-01.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

3.1.1 Erosion Control Measures

Prior to the removal of turf, insure that all erosion control devices (minimum effort shown on the contract drawings) are in-place. Maintain each device through the life of the contract.

3.1.2 Drainage

Plan excavation and milling work to coincide with favorable weather conditions. Should unexpected storms approach the work site, the Contractor shall be prepared to dispose of surface water which may

accumulate in open excavations, unfinished fills, or other low areas. Remove water by trenching where approved, pumping, or other methods to prevent softening of exposed surfaces. Collect and dispose of surface and subsurface water encountered in the course of construction.

3.1.3 Removal of Turf

For Shoulder and ditch regrading, only remove turf to the extent that the area disturbed can be fine graded and sodded within a period not to exceed 24 hours.

3.1.4 Unsuitable Material

Remove vegetation, debris, decayed vegetable matter, sod, mulch, and rubbish underneath paved areas or concrete slabs.

3.2 EXCAVATION WORK

3.2.1 Excavations for Pavement Extension, Curb and Gutter and New Pavement Structure

Excavate to the depths and dimensions generated by the Contractor's calculations such that a uniform depth of pavement is provided. Maintain the same cross slopes indicated for the stationing indicated on the contract drawings. Keep excavations free from water while construction is in progress. Refill excavations cut below the depths indicated with bituminous concrete during paving operations at no additional cost to the Government. Excavate soil disturbed or weakened by construction operations or soils soften from exposure to weather.

Stockpile excavated materials for reuse in shoulder and ditch regrading applications. Excavate soil disturbed or weakened by Contractor's operations, soils softened or made unsuitable for subsequent construction due to exposure to weather. Refill excavations with an approved structural granular material and/ or crushed stone aggregates. Refill excavations cut below indicated depth with approved materials provided and installed at no additional cost to the Government.

3.2.2 Pipe Trenches

Excavate to the dimension indicated. Grade bottom of trenches to provide uniform support for each section of pipe after pipe bedding placement.

3.3 GEOTEXTILE FABRICS

Once subgrade elevations for new pavement extensions, french drains or railroad subgrades are inspected and approved by the Contracting Officer, place fabrics where shown on the contract drawings. The function of fabrics (including geogrids) is to provide separation between different layers of materials, the Contractor shall place laps and seams in such a manner to limit the infiltration of one soil or aggregate material with another soil or aggregate material. Provide 1.5 feet of overlap minimum at seams or more if recommended by the fabric manufacturer. A Contractor bidding on this contract shall include ample overlap coverages in his bid for materials. Place materials as wrinkle free as possible by keeping tension on the fabric during backfilling operations.

3.4 FILLING AND BACKFILLING

3.4.1 Fill and Backfill Beside and Under Pavements

Work new soil shoulders to meet new adjacent pavement elevations. Allow for the replacement of 4 inches of topsoil. Place required backfill material adjacent to structures and compact in a manner that prevents wedging action or eccentric loading upon or against the pavement structure. Moisten or aerate material as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used. Do not place material on surfaces that are muddy, frozen, or contain frost. Do not use equipment for backfilling operations or for the formation of embankments against structures that will overload the structure. Compact all soils to a minimum of 98 percent of ASTM D 698 density.

3.4.2 Placement of Flowable Cement Fill

Paragraphs below apply to general placement of flowable cement fill.

3.4.2.1 Preparation Work

The trench or excavation shall have subgrades shaped and compacted as specified within this specification section. Form necessary walls or bulkheads capable of withstanding the hydrostatic pressure exerted by the plastic flowable fill. Trench ends outside the roadway should be blocked with sandbags or compacted soil. Provide a sump or other means of diverting "bleed water" from the surface of the newly placed fill.

3.4.2.2 Delivery

Flowable cement fill shall be delivered by a rotary drum concrete truck. Fill material shall be batched at a local commercial concrete plant. Deliver the less flowable mix (mix design #1) to anchor the conduit and prevent flotation. Thereafter, additional water may be added in the field in an amount not to exceed the water requirements of mix design #2.

3.4.2.3 Placement

The flowable fill shall be discharged directly from the truck into the space to be filled. The mix may be placed part depth or full depth as situations at the site dictate. Place fill to the level indicated on the plan. Allow for an initial subsidence of one-eighth of an inch per vertical foot. Once the flowable fill has hardened, there will be no further subsidence. For a faster rate of hardening, minimize the mix water within the limits set by mix design #1 and remove "bleed water" as quickly as possible. Do not use vapor barriers such as plastic sheets.

3.4.2.4 Finishing Flowable Fill

Finishing shall be accomplished with a square shovel along the edges of the trench if the fill surface is at the bottom of the pavement. The remaining surface shall be smoothed with a wood float to produce a uniform and smooth surface. As an alternative, the hardened flowable fill can be shaped to grade the next day to allow for the patch thickness required by the plans. Full traffic can be allowed onto the flowable fill within eight to twenty hours without damage to the fill or structures below. If it is necessary to return traffic to the surface in less than eight hours or if there is concern that traffic flow will rut the hardening fill, steel

plates shall be used as soon as it is able to support foot traffic.

3.5 Weather Limitations

Fill and backfill shall not be constructed when weather conditions detrimentally affect the quality of the finished course. Place fill and backfill only if the atmospheric temperature is above freezing in the shade and is rising. Do not construct fill and backfill in the rain or on saturated subgrades. If weather conditions are windy, hot or arid, with high rate of evaporation, schedule the placement in cooler portions of the day and furnish equipment to add moisture to the fill or backfill during and after placement.

3.6 Placement of Stone Base Course

For pavement extensions and pavement base course height adjustments, railroad subgrade height adjustments and base courses for precast concrete structures, refill excavations with NCDOT SSRS type ABC stone aggregate to the depths indicated on the drawings. **Place stone over biaxial plastic geogrid fabric.** Fine grade and compact the exposed subgrade to the density specified below. Tolerances for smoothness shall match the requirements for finished subgrades as specified below. Excess materials shall be removed and the surface recompact. Meet compaction requirements and grading requirements as specified below.

3.7 FILLING AND BACKFILLING

3.7.1 Common Fill Placement

For roadway side slopes outside of the shoulder limits indicated on the contract drawings, place common fill in 6 inch lifts. Shoulders and side slopes may be over filled and sculpted to final contours and elevations. Compact areas not accessible to rollers or compactors with mechanical hand tampers. Aerate material excessively moistened by rain to a satisfactory moisture content. Finish to a smooth surface by blading, rolling with a smooth roller, or both.

3.7.2 Select Material Placement

Place in 6 inch lifts. Till existing soils to accept new select embankment fill materials. Insure full contact between compaction equipment and new subgrade where new soils abut existing pavement structures. Place and compact material to avoid loading upon or against structure. Meet compaction requirements below.

3.7.3 Trench Backfilling

Backfill as rapidly as construction, testing, and acceptance of work permits. **Place flowable cement fill under pavements and shoulders for storm drainage work required by Bid Item 1. Extend the use of flowable cement fill to a distance of not less than "D" where "D" is the depth of the bottom of the excavation below the top of finished pavement.** Backfilling requirements beyond the limits of flowable cement fill shall be backfilled with a granular select fill in lifts not to exceed 6 inches.

3.7.3.1 Bedding Requirements

Except as specified otherwise in the individual piping section, provide bedding for buried piping in accordance with AWWA C600, Type 4, except as

specified herein. Backfill to top of pipe shall be compacted to 95 percent of ASTM D698 maximum density. Plastic piping shall have bedding to spring line of pipe. Provide ASTM D2321 materials as follows:

- a. Class I: Angular, 0.25 to 1.5 inches, graded stone, including a number of fill materials that have regional significance such as coral, slag, cinders, crushed stone, and crushed shells.
- b. Class II: Coarse sands and gravels with maximum particle size of 1.5 inches, including various graded sands and gravels containing small percentages of fines, generally granular and noncohesive, either wet or dry. Soil Types GW, GP, SW, and SP are included in this class as specified in ASTM D2487.

3.8 BURIED WARNING AND IDENTIFICATION TAPE

Repair identification tapes for buried utility lines with such lines are encountered. Bury tape 12 inches below finished grade; under pavements and slabs, bury tape 6 inches below top of subgrade.

3.9 BURIED DETECTION WIRE

Bury detection wire directly above non-metallic piping at a distance not to exceed 12 inches above the top of pipe. The wire shall extend continuously and unbroken, from manhole to manhole. The ends of the wire shall terminate inside the manholes at each end of the pipe, with a minimum of 3 feet of wire, coiled, remaining accessible in each manhole. The wire shall remain insulated over its entire length. The wire shall enter manholes between the top of the corbel and the frame, and extend up through the chimney seal between the frame and the chimney seal. For force mains, the wire shall terminate in the valve pit at the pump station end of the pipe.

3.10 COMPACTION

Expressed as a percentage of maximum density. Determine in-place density of existing subgrade; if required density exists, no compaction of existing subgrade will be required. Density requirements specified herein are for cohesionless materials. When cohesive materials are encountered or used, density requirements may be reduced by 5 percent.

3.10.1 General Site

Compact underneath areas designated for vegetation and areas outside the 5 foot line of the structure to 90 percent of ASTM D698.

3.10.2 Structures, Spread Footings, and Concrete Slabs

Compact top 12 inches of subgrades to 95 percent of ASTM D1557. Compact railroad track and crossing subgrades to 97 percent of ASTM D1557.

3.10.3 Porous Fill for Capillary Water Barrier

Compact with two passes of a hand-operated, plate type vibratory compactor. Use porous aggregate fill and compact to 95 percent of ASTM D1557 maximum density for construction of the french drain shown on the contract drawings.

3.10.4 Adjacent Area

Compact areas outside of pavement shoulder width to 90 percent of ASTM D1557.

3.10.5 Stone Aggregates

Compact stone aggregates as each lift is placed. Compact to 100 percent of ASTM D1557.

3.11 Compaction

3.11.1 General Requirements

Cohesionless materials include gravels, gravel-sand mixtures, sands, and gravelly sands. Cohesive materials include clayey and silty gravels, gravel-silt mixtures, clayey and silty sands, sand-clay mixtures, clays, silts, and very fine sands. When results of compaction tests for moisture-density relations are recorded on graphs, cohesionless soils will show straight lines or reverse-shaped moisture-density curves, and cohesive soils will show normal moisture-density curves.

3.11.2 Minimum Density

Backfill over and around the pipe and backfill around and adjacent to drainage structures shall be compacted at the approved moisture content to the following applicable minimum density, which will be determined as specified below.

- a. Under airfield and heliport pavements, paved roads, streets, parking areas, and similar-use pavements including adjacent shoulder areas, the density shall be not less than 90 percent of maximum density for cohesive material and 95 percent of ASTM D 698 maximum density for cohesionless material, up to the elevation where requirements for pavement subgrade materials and compaction shall control.
- b. Under unpaved or turfed traffic areas, density shall not be less than 90 percent of maximum density for cohesive material and 95 percent of maximum density for cohesionless material.
- c. Under nontraffic areas, density shall be not less than that of the surrounding material.

3.12 Determination of Density

Testing is the responsibility of the Contractor and performed at no additional cost to the Government. Testing shall be performed by an approved commercial testing laboratory or by the Contractor subject to approval. Tests shall be performed in sufficient number to ensure that specified density is being obtained. Laboratory tests for moisture-density relations shall be made in accordance with ASTM D 698 except that mechanical tampers may be used provided the results are correlated with those obtained with the specified hand tamper. Field density tests shall be determined in accordance with ASTM D 2167 or ASTM D 6938. When ASTM D 6938 is used, the calibration curves shall be checked and adjusted, if necessary, using the sand cone method as described in paragraph Calibration of the referenced publications. ASTM D 6938 results in a wet unit weight of soil and ASTM D 6938 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall be checked along with density calibration checks as described

in ASTM D 6938. Test results shall be furnished the Contracting Officer. The calibration checks of both the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at intervals as directed.

3.13 FINISH OPERATIONS

Grading operations shall be controlled at all times by the registered land surveyor.

3.13.1 Shoulder Grading

Grade to finished grades within 0.05 foot. Grade areas to drain water away from pavements per the cross slopes indicated on the drawings and to provide suitable surfaces for mowing machines. Existing grades which are to remain but are disturbed by the Contractor's operations shall be restored as specified herein.

3.13.2 Roadway Grading

Calculate finish grades based on the finished elevations shown on the contact drawings. Grades shall meet planned grades within one tenth of one foot for subgrades and five-one hundredth of one foot for aggregate base courses. For existing grades that will remain but which were disturbed by Contractor's operations, grade as directed.

3.13.3 Grading for Railroad Crossing Structure

Finished top of crossing shall match the elevations shown on the plans. Utilize the elevations shown for calculating excavation and backfilling requirements set forth by the contract drawings.

3.13.4 Finishing Subgrades Under Railroad Tracks

Finish surface of top lift of fill or top of subgrade to the elevation and cross section indicated. Finished surface shall be smooth and of uniform texture. Lightly scarify or blade the finished surface to bring the finished surface to within 0.05 foot of the calculated grade and to eliminate imprints made by compaction and shaping equipment. Surface shall show no deviations in excess of 3/8 inch when tested with a 10 foot straightedge. For railroad tracks, provide a 1/4 inch per foot cross slope to shed water off of the subgrade. Fill over excavations with flowable cement fill.

3.13.5 Spreading Topsoil

Clear areas indicated or specified to receive topsoil of materials interfering with planting and maintenance operations. Do not place topsoil when subgrade is frozen, extremely wet or dry, or in other conditions detrimental to seeding, planting, or grading. Spread topsoil to a uniform depth of 4 inches over the designated area.

3.13.6 Protection of Surfaces

Protect newly graded areas from traffic, erosion, and settlements that may occur and as required in the Section 01 57 19.00 20, "Temporary Environmental Controls" and as specified in the paragraph entitled "Protection and Restoration of Surfaces." Repair or reestablish damaged grades, elevations, or slopes prior to acceptance of work.

3.13.7 Sodding

Provide as specified in Section 32 92 23, "Turf (Sodding)". Place sod as soon as a surface receives final grading. Conduct overall operations in such a manner as to minimize the time that soil surfaces are exposed to the elements. If sod is salvaged on-site, supplement shortages with additional sod specified in Section 32 92 23.

3.13.8 Protection of Surfaces

Protect newly graded areas from traffic, erosion, and settlements that may occur. Repair or reestablish damaged grades, elevations, or slopes.

3.14 DISPOSITION OF SURPLUS MATERIAL

Excess soil materials that are determined to be not contaminated by the Contractor, shall become the property of the Contractor and removed from the Air Station. Materials that are confirmed to be contaminated, shall be removed to the appropriate landfill off-station in accordance with the specification section 01 57 19.00 20, "Temporary Environmental Controls". Remove from Government property, brush, refuse, stumps and roots.

3.15 FIELD QUALITY CONTROL

3.15.1 Sampling

Take the number and size of samples required to perform the following tests.

3.15.2 Testing

Perform one of each of the following tests for each material used. Provide additional tests for each source change.

3.15.2.1 Fill and Backfill Material Testing

Test fill and backfill materials in accordance with ASTM C136 for conformance to ASTM D2487 gradation limits; ASTM D1140 for material finer than the No. 200 sieve; ASTM D4318 for liquid limit and for plastic limit; ASTM D698 or ASTM D1557 for moisture density relations, as applicable.

3.15.2.2 Select Material Testing

Test select material in accordance with ASTM C136 for conformance to ASTM D2487 gradation limits; ASTM D1140 for material finer than the No. 200 sieve; ASTM D698 or ASTM D1557 for moisture density relations, as applicable.

3.15.2.3 Porous Fill Testing

Test porous fill in accordance with ASTM C136 for conformance to gradation specified in ASTM C33.

3.15.2.4 Density Tests

Test density in accordance with ASTM D1556, or ASTM D2922 and ASTM D3017. When ASTM D2922 and ASTM D3017 density tests are used, verify density test results by performing an ASTM D1556 density test at a location already tested as specified herein. Perform an ASTM D1556 density test at the

start of the job, and for every 10 ASTM D2922 and ASTM D3017 density tests thereafter. Test each lift at randomly selected locations every 2000 square feet of existing grade in fills for roadway pavements. Test at one random location per lift for subgrades and aggregate base courses associated with the railroad roadbed. Test at a minimum of two random locations per lift for subgrades and aggregate base courses associated with the bituminous pavements.

-- End of Section --

SECTION 32 01 00.00 00

TEMPORARY TRAFFIC CONTROLS

03/15

PART 1 GENERAL

1.1 REFERENCES

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

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NCDOT RSD (2012) NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)

MUTCD (2009) Manual of Uniform Traffic Control Devices

1.2 GENERAL REQUIREMENTS

The Contractor shall be responsible for furnishing, installation and field maintaining all temporary traffic control devices for road and sidewalk and detour routes required during the life of the contract. Devices shall be checked on a regular schedule daily and at the end of the beginning and end of each work day to insure that all devices are intact and functional. Adjustments to the approved traffic control plan must be made by the Contractor as construction schedules are adjusted. It is also the Contractor's responsibility to notify the Contracting Officer as far in advance as possible for changes to the construction schedule and traffic control plan adjustments. This will allow for the widest dissemination of the changes to residents, employees and life safety functions aboard the Air Station.

1.3 SUBMITTALS

Submit the following in accordance with Section 01 33 00, "Submittal Procedures."

1.3.1 SD-01 Data

1.3.1.1 Required Data

Submit a description of the traffic control equipment and methods required for each phase of the work. Emphasis shall be placed on operations that will require full roadway closure, partial roadway closure, temporary parking, one way traffic routes and for mobile operations. Refer to the MUTCD for typical construction related signs and placement of one way traffic signs. Utilize NCDOT RSD for barrel and sign placement. Provide copies of the standard drawings referenced by the traffic control description.

1.3.2 SD-04 Drawings

- a. Traffic control plan ; G

b. Temporary Detour Plan ; G

1.3.2.1 Traffic Control Device Layout

The Contractor shall prepare and submit traffic control plans for each phase of the work. Locations for each type of traffic control device shall be encoded on the drawing. Temporary traffic controls shall be placed on unique layers of the drawing so that these layers of information can be easily turned off or modified. Submit drawings or sketches to the Contracting Officer for approval before beginning work. Show detour routes where full road closures will be required. Plans shall be coordinated with specification section 01 14 00, "Work Restrictions". Insure that the plan indicates all of the traffic control elements that will be deployed by the Contractor. For road work, insure that all approaches through the planned segment of work are provided with detour signs. It is intended that detour signs route traffic completely around the work segment.

PART 2 MATERIALS

2.1 Lane Delineators

Devices shall conform to MUTCD and NCDOT RSD 1130.01. Traffic cones shall meet the requirements of MUTCD and NCDOT RSD 1135.01. All devices shall be ballasted to prevent movement. Replace devices that become damaged during the course of construction.

2.2 Barricades

Devices shall conform to MUTCD and NCDOT RSD 1145.01. At least one Type III barricade shall be deployed across each lane to be closed. Set additional Type III barricades at wide intersection pavements to provide complete closure of the intersection. Provide striping that will accommodate the traffic patterns that are anticipated. Refer to note 9 drawing 1145.01 in this regard. All devices shall be ballasted to prevent movement. Replace devices that become damaged during the course of construction.

2.3 Temporary Traffic Signs

Temporary Signs shall be placed in accordance with recommended MUTCD practices. Signs shall conform in color and message in accordance with chapter 6F of the MUTCD. Replace signs or support posts that become damaged during the course of construction.

PART 3 EXECUTION

Provide sufficient number of barrels and traffic cones to provide coverage rates as noted herein. Higher density of devices shall be used to control turning traffic.

3.1 General Intent

Devices shall be deployed in accordance with the Contractor's approved traffic control plans. It is recognized by the Government that there will be phases of the work (example: short term mobile operations) that will require deviations from the approved plans. In such instances, the Contractor shall supply the Contracting Officer with a description of the deviations intended. In addition, the Contractor shall make every effort

to keep the Contracting Officer informed of the day's intended operations; referencing the portion of the approved traffic control plan that applies.

3.2 Lane Delineators

Provide barrels and cones spaces at the posted speed limit (converted directly to feet). Maintain minimum travel lane widths of 10 feet.

3.3 Barricades

Install and maintain barricades at orientations that provide maximum visibility to the approaching vehicle. Barricades may be staggered to allow for construction access; however, the approach view of the barricade line shall appear to be continuous.

3.4 Temporary Traffic Signs

Locate signs transverse to the edge of pavement. Offset near edge of the sign from the edge of pavement (new pavement if applicable) at a minimum of 4 feet (6 feet preferred). Near edge of signs located behind curbs shall be placed no closer than 2 feet as measured from the back of curb. Sign heights shall meet MUTCD criteria, Section 6F.03.

3.5 Detour Routes

Where roadway segments require full road closures, the Contractor's approved traffic control plans shall include fully detailed detour route plans. The plans shall note sign placements that will insure coverage for all approaches to the work zone. Before closing the road segment, the Contractor and Government will drive the intended route(s) to insure that all approaches to the work zone are adequately signed. Where detour routes must vary by time of day, signs shall be covered when the route is taken out of operation. Particular care shall be taken by the Contractor when operating detour route plans during peak rush hours.

-- End of Section --

SECTION 32 01 16.17

COLD MILLING OF BITUMINOUS PAVEMENTS

3/15

PART 1 GENERAL

Milling of bituminous pavement is required for the partial depth removal of exiting roadway surfaces. Milling activities will serve to remove surface defects and to transition new pavements to match grade with existing features that will be retained. Milling limits are identified on the contract drawings. Millings shall become the property of the Contractor and removed from the Air Station.

1.1 SYSTEM DESCRIPTION

Maintain in a satisfactory working condition equipment, tools, and machines used in the performance of the work.

1.1.1 Cold-Milling Machine

Provide a cold-milling machine which is self-propelled, capable of milling the pavement to a specified depth and smoothness and of establishing grade control; with means of controlling transverse slope and dust produced during the pavement milling operation. The machine shall have the ability to remove the millings or cuttings from the pavement and load them into a truck. The milling machine shall not cause damage to any part of the pavement structure that is not to be removed.

1.1.2 Cleaning Equipment

Provide cleaning equipment suitable for removing and cleaning loose material from the pavement surface.

1.1.3 Straightedge

Furnish and maintain at the site, in good condition, one 12 foot straightedge or other suitable device for each milling machine, for testing the finished surface. Make straightedge available for Government use. Straightedges shall be constructed of aluminum or other lightweight metal, with blades of box or box-girder cross section with flat bottom reinforced to insure rigidity and accuracy. Straightedges shall have handles to facilitate movement on the pavement.

1.2 QUALITY ASSURANCE

1.2.1 Grade

Conform the finished milled surfaces to the lines, grades, and cross sections indicated. The finished milled-pavement surfaces shall vary not more than 1/4 inch from the established plan grade line and elevation. Finished surfaces at a juncture with other pavements shall coincide with the finished surfaces of the abutting pavements. The deviations from the plan grade line and elevation will not be permitted in areas of pavements where closer conformance with planned grade and elevation is required for the proper functioning of appurtenant structures involved.

1.2.2 Surface Smoothness

Finished surfaces shall not deviate from the testing edge of a straightedge more than 1/4 inch in the transverse or longitudinal direction.

1.2.3 Traffic Control

Provide all necessary traffic controls during milling operations as required by Bid Item 0001, Firm Fixed Price.

1.3 ENVIRONMENTAL REQUIREMENTS

Milling shall not be performed when there is accumulation of snow or ice on the pavement surface.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 PREPARATION OF SURFACE

Clean the pavement surface of excessive dirt, clay, or other foreign material immediately prior to milling the pavement.

3.2 GRADE CONTROLS

3.2.1 Differential Milling

Prior to milling, the Contractor's CQC surveyor shall deploy a sufficient quantity of elevation control points and milling limit points necessary to guide the milling equipment operator during milling operations. Replace control markings that become obscure. Elevations shall be shown to the nearest 1/100th of a foot. Differential milling must take into consideration the uniform milling requirement of 1.5 inches to insure that there is ample depth for the final bituminous surface course.

3.2.2 Uniform Milling

Provide milling limits for uniform milling operations. Uniform milling depth is 1.5 inches within the paving limits shown on the construction drawings.

3.3 MILLING OPERATION

A minimum of seven days notice is required, prior to start work, for the Contracting Officer to coordinate the milling operation with other activities at the site. Make sufficient passes so that the designated area is milled to the grades and cross sections indicated. The milling shall proceed with care and in depth increments that will not damage the pavement below the designated finished grade. Utilize spotters when needed guide milling activities and to protect at-grade utility features and concrete gutters. Repair or replace, as directed, items damaged during milling such as manholes, valve boxes, utility lines, pavement that is torn, cracked, gouged, broken, or undercut. The milled material shall be removed from the pavement and loaded into trucks as work progresses.

3.4 GRADE AND SURFACE-SMOOTHNESS TESTING

3.4.1 Grade-Conformance Tests

Test the finished milled surface of the pavement for conformance with the plan-grade requirements and for acceptance by the Contracting Officer by running lines of levels at intervals of 25' feet longitudinally and 10 feet minimum feet transversely to check milled surface elevations. Correct variations from the designated grade line and elevation in excess of the plan-grade requirements as directed. Skin patching for correcting low areas will not be permitted. Remove and replace the deficient low area. Remove sufficient material to allow at least 1.5 inch of asphalt concrete to be placed.

3.4.2 Surface-Smoothness Tests

After completion of the final milling, the finished milled surface will be tested by the Government with a straightedge. Other approved devices may be used, provided that when satisfactorily and properly operated, such devices reveal all surface irregularities exceeding the tolerances specified. Correct surface irregularities that depart from the testing edge by more than 1/4 inch. Skin patching for correcting low areas will not be permitted. Remove and replace the deficient low area. Remove sufficient material to allow at least 1.5 inch of asphalt concrete to be placed.

3.5 REMOVAL OF MILLED MATERIAL

Material that is removed shall become the property of the Contractor and removed from the site.

-- End of Section --

SECTION 32 12 17

HOT MIX BITUMINOUS PAVEMENT

03/15

PART #1 GENERAL

1.1 WORK SUMMARY:

This section covers installation of new (virgin) hot-mix bituminous concrete mixtures. **RAP material** in the asphalt mixes specified below **may be allowed** for surface course applications. Provisions for milling existing pavement are included in specification section 32 01 16.17, "Cold Milling of Bituminous Pavements". Provisions for new aggregate base courses are included in specification section 31 23 00.00 20, "Excavation and Fill."

For Woodside Drive, as a no additional cost alternative to installing the fiberglass grid composite pavement reinforcement fabric, the contractor may substitute an additional 1.5" lift of NCDOT Type I-9.5B bituminous concrete to be placed on the milled pavement surface. With this alternative, the pavement milling depth must be adjusted so that there are no changes to the finished pavement elevations shown on the contract drawings. The alternative section is not shown on the contract drawings. The new pavement section for this alternative must be 3" lift of NCDOT Type I-9.5B and a 1.5" lift of NCDOT Type S-9.5B as a substitute for the 3" lifts of NCDOT Type S-9.5B placed over the fiberglass grid pavement reinforcement fabric pavement section shown on the contract drawings. The Contractor must indicate in the schedule of prices submitted to the Government after contract award that the alternative section will be installed.

1.2 REFERENCES

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

AMERICAN ASSOCIATION OF STATE HIGHWAY
AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M140	Emulsified Asphalt
AASHTO M208	Cationic Emulsified Asphalt
AASHTO T209	Maximum Specific Gravity of Bituminous Mixtures
AASHTO MP-1	Performance Graded Asphalt Binder

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D2950	Standard Test Method for Density of Bituminous In Place by Nuclear Method
ASTM D3665	Standard Practice for Random Sampling of Construction Materials

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT)

SSRS

(2012, English Units) Standard
Specifications for Roads and Structures

1.2.1 Modification to References

Except as specified herein or as indicated, work and materials must be in accordance with the NCDOT SSRS, 2012, English Edition. The provisions therein for method of measurement and payment do not apply, and references to "Engineer" must be interpreted to mean the Contracting Officer.

In the specifications, bid items or drawings/ sketches, where reference is made to asphalt "surface course", the reference must be interpreted to mean "asphalt concrete surface course" (Asphalt Concrete Mix Type designation by the NCDOT SSRS). In the specifications, bid items or drawings/ sketches, where reference is made to asphalt "binder course", the reference must be interpreted to mean "asphalt concrete intermediate course" (Asphalt Concrete Mix Type designation by the NCDOT SSRS). In the specifications, bid items and drawings/ sketches refer to "asphalt base course", that reference must be interpreted to mean "asphalt concrete base course" (Asphalt Concrete Mix Type designation by the NCDOT SSRS).

1.3 SUBMITTALS

Submit the following in accordance with Section 01 33 00, "Submittal Procedures". Submit Mix design data to the Facilities Engineering Department for approval. Submit for approval a minimum of 30 days prior to use.

1.3.1 Design Data

Submit for NCDOT type Superpave Asphalt Mixes. Mix must have been approved by the State of North Carolina Department of Transportation with the past twelve months. Mix designs older than twelve months must be retested at no additional expense to the Government. All mix designs must be based on actual source materials to be used at the job site and must meet the requirements set forth in NCDOT SSRS, Section 610-3. **Include superpave rut depth test results generated by the NCDOT for each mix design submitted.**

The mix design must be attached to the first delivery ticket and to subsequent delivery tickets should the mix design is changed. Highlight the JMF mix temperature and AASHTO T209 specific gravity for use by the Government and the Contractor's QC staff.

NOTE: Submittals previously approved by NCDOT within the past twelve months may be submitted for approval without additional testing of the mix design as required by this specification. Mix designs based on material sources that will not be used in the performance of this contract must not be submitted. Submit additional data regarding materials if the source of the materials change during the life of this contract.

1.3.2 SD-01, Preconstruction Submittals

Submit prior to beginning construction.

1.3.2.1 Equipment Data

Submit the following equipment data to the Design Management and

Engineering Branch (DM&E) for approval.

- a. Asphalt Distributor
- b. Asphalt Paver
- c. Compaction Equipment
- d. Straightedge

1.3.2.2 SD-03, Product Data

submit the following product data to the Design Management and Engineering Branch (DM&E) for approval.

- a. Fiberglass Pavement Reinforcement

1.3.2.3 SD-05, Design Data:

Submit the following test data to the Design Management and Engineering Branch (DM&E) for approval.

- a. Asphalt Mix Design

1.3.2.4 SD-07, Certificates of Compliance

- a. Asphalt Cement
- b. Tack Coat
- c. NCDOT QMS certifications (for plant and Roadway personnel)
- d. Fiberglass Grid Installer Certification

1.3.3 SD-06, Test Reports

Submit test data as work progresses to the Facilities Engineering and Acquisitions Department (FEAD) designated construction manager. Delays in submitting test data must not, in any way, relieve the Contractor from correcting deficiencies discovered by the test data.

1.3.3.1 Bituminous Mat

Provide survey data and bituminous mat test results:

- a. Finished Pavement Elevations by Roadway Stationing and Offsets
- b. Bituminous Mat Thickness
- c. Bituminous Mat Density
- d. Bituminous Mat Smoothness

1.3.3.2 Delivery tickets

Delivery tickets must be the vehicle for payment for work performed under this specification section. The Contactor must collect delivery tickets daily and submit the tickets attached to the daily report. Before the final statement is allowed, the Contractor must file with the Contracting

Officer certified delivery tickets for all bituminous materials actually used in construction. Insure that the delivery ticket provides the following information:

- a. Truck No:
- b. Time In:
- c. Time Out:
- d. Tonnage and Discharge Temperature:
- e. Mix Type:
- f. Location:
- g. Stations and Lane Placed:
- h. Maximum Specific Gravity

1.4 ENVIRONMENTAL AND SEASONAL LIMITATIONS

Conform to the restrictions set forth in NCDOT SSRS, Section 610-4. In addition to these requirements, do not produce or place bituminous concrete when the weather is foggy, when the base course has excess moisture which can prevent proper bond.

1.5 BARRICADES AND SIGNALS

Provide devices that are supportive of the Contractor's approved traffic control plan for each phase of the construction activity. Refer to requirements of sections 01 14 00, "Work Restrictions", 01 50 00.00 20, "Temporary Facilities and Controls" for special scheduling and specification section 32 01 00, "Temporary Traffic Controls" for traffic control devices and traffic control operations required during construction. Existing traffic signals must remain in operation during construction except for outages approved by the Contracting Officer.

1.5.1 Detour Signs

Provide detour signs for road closure conditions in conformance with Special Scheduling paragraphs, Section 01 14 00, "Work Restrictions" and related specification sections. Do not remove signs until the roadway segment or parking lot is reopened to traffic.

1.6 CERTIFICATIONS FOR KEY PERSONNEL

1.6.1 Fiberglass Grid Installer Certification

Proper installation of paving fabric is critical to good field performance. In order to ensure the paving fabric is properly installed, it must be placed by a certified and trained installer licensed by the manufacturer to place paving fabric. The contractor must provide evidence of certification by the manufacturer of the paving fabric at least fourteen days prior to installation. Alternately, the paving fabric manufacturer representative must be on site during the installation and certify, in writing, that the installation was performed according to these specifications. Certificates must have been issued within 12 months prior to the date of installation of the product at MCAS Cherry Point. Personnel

utilized to perform the actual work must be substantially the same as those personnel active with the company at the time of certification.

1.6.2 NCDOT QMS certifications

Provide plant and field technicians certified under NCDOT SSRS, Section 609-5, subparagraph (A). Certifications must be current and maintained throughout the life of the contract.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Aggregate Base Course

Refer to 31 23 00.00 20, "Excavation and Fill" for stone base course material requirements.

2.1.2 Aggregates for Asphalt Pavement

NCDOT SSRS, Section 1006 Aggregate Quality Control and Section 1012-1 for Aggregates for Asphalt Plant Mixes.

2.1.3 Tack Coat

a. Asphalt Binder: AASHTO MP-1, grade PG-64, and as specified in NCDOT SSRS Sections 605-2 and 1020-2. **Only hot applied asphalt binder will be applied to pavement surfaces that will receive fiberglass reinforcement fabrics using the performance grade specified by the fabric manufacturer.**

b. Anionic Emulsified Asphalts: AASHTO M140, and as specified in NCDOT SSRS Sections 600-2 and Article 1020-6.

c. Cationic Emulsified Asphalts: AASHTO M208, and as specified in NCDOT SSRS Sections 600-2 and Article 1020-7.

2.1.4 Asphalt Mix Design

Bituminous mixes utilized for this contract must conform to NCDOT SSRS, Section 610 for Superpave type mixes. Asphalt cement will be the penetration grade (PG) specified by the NCDOT SSRS Mix Design Criteria, Table 610-2.

2.1.5 Fiberglass Pavement Reinforcement

Provide a fiberglass pavement reinforcement fabric such as Tensar CG100 (Regional Distributor is Landsaver Environmental, 804 263-4087), Mirafi PGM-G4 (Regional Sales American Paving Fabrics, 704-320-0238) or Luckenhaus Star Grid G-PS 100 (Regional Sales is Cameron Gallamore, 704-840-6922). Fiberglass ultimate tensile strength in any fabric direction shall be no less than 100 kN/m. Elongation at break must not exceed 3%.

2.2 PLANT AND EQUIPMENT

2.2.1 Mix Plant

must conform to NCDOT SSRS, sections 610-5 and 610-6. As noted above, recycled asphalt materials will not be allowed under this specification.

2.2.2 Access to plant and equipment

The Contracting Officer must have access at all times to all parts of the paving plant for checking adequacy of the equipment in use; inspecting operation of the plant; verifying weights, proportions, and character of materials; and checking temperatures maintained in preparation of the mixtures.

2.3 Straightedge

The Contractor must furnish and maintain at the site, in good condition, one 12-foot straightedge for each bituminous paver. Straightedge must be made available for Government use. Straightedges must be constructed of aluminum or other lightweight metal and must have blades of box or box-girder cross section with flat bottom reinforced to insure rigidity and accuracy. Straightedges must have handles to facilitate movement on pavement.

2.4 Asphalt Distributor

must conform to MS-8, Section 4.02. Insure that nozzles are adjusted to fan the spray of material in an overlapping pattern. Clogged nozzles will not be tolerated.

2.5 Fiberglass Mat Installation Equipment

Equipment must be robustly designed to accommodate the roll width and roll weight of the fabric to be installed. The equipment must provide adequate tension on the roll to minimize or prevent fabric from wrinkling during installation. Provide stiff broom or roller action to consistently seat the fabric into the tack.

2.6 Asphalt Paver Equipment

Equipment must conform to MS-8, Sections 4.06 and 4.07. In addition, pavers must be provided with 30 feet skis for leveling over existing asphalt pavements and electronic controls. Equip spreading equipment with tamping or vibrating devices, electronically adjustable screeds and equalizing devices. Operating speeds must be variable between 5 and 45 feet per minute.

2.7 Compaction Equipment

Compaction of the asphalt mixture must begin immediately after the asphalt mixture has been placed. Compaction equipment must conform to NCDOT SSRS Section 610-9 and to MS-8, Sections 4.11 and 4.12.

In addition, pneumatic-tired rollers may be used to seat the fiberglass fabric and to assist in meeting target densities. Pneumatic-tired rollers must be capable of operating both forward and backward without turning on the mat, and without loosening the surface being rolled. Suitable wetting devices must be employed to prevent adherence of bituminous mixtures.

PART 3 EXECUTION

3.1 WORK SCHEDULING

Except at locations where road closures are planned, pavement removal must

be planned only for the rate in which repairs can be made within the limits of a workday and/ or weather conditions. For pavement work that will remain open to traffic, plan work so that pavements will be available to rush hour traffic. Where pavements can be closed to traffic, work may progress relative to weather limitations. Do not open more pavements than can be sealed off from inclement weather. Refer to the special scheduling paragraphs contained within specification section 01 14 00, "Work Restrictions".

3.2 TRAFFIC CONTROLS

According to the Contractor's approved traffic control plan, traffic controls and temporary crossover routes must be in-place before pavement work begins. Maintain temporary crossover pavements and all traffic control devices in good serviceable condition for the life of the project.

3.3 PAVEMENT DEMOLITION

Partial depth pavement demolition and profile work will be performed using cold milling techniques. Sawcuts must be made for the full depth of asphalt pavement. The utmost care must be taken when excavating pavements to minimize disruptions to remaining stone aggregate and soil sub structures. Overexcavations will be repaired by the Contractor at no additional cost to the Government. Carefully remove pavement spoil materials and remove excess materials from the Air Station as work progresses.

3.4 PREPARATIONS FOR PAVING

3.4.1 Subgrade Preparations

Shape and compact exposed subgrades disturbed by pavement removal operations. **Limit compaction by rollers to the static mode of operation so that degradation of the subgrade structure is prevented.**

3.4.2 Aggregate Base Course

Install new approved aggregates over new approved geogrid soil reinforcement fabric in accordance with specification section 31 23 00.00 20, "Excavation and Fill". The contractor's CQC surveyor will provide location and grade controls verification prior to applying the bituminous prime coat. **The aggregate base course will extend 1' beyond the edge of pavement and 6 inches beyond the back side of new curb and gutter limits shown on the contract drawings.**

3.4.3 Fiberglass Pavement Reinforcement

Install fiberglass pavement reinforcement mat over a prepared surface in conformance with the mat manufacturer's specifications. Included with this work is the cost to lightly mill the pavement surface to remove surface height variations adjacent to existing pavement cracks.

The certified installer will place the performance grade (PG) asphalt cement at the prescribed rate of application recommended by the fabric manufacturer followed closely by the reinforcement fabric. Increase the application rate to allow for the additional cement absorption by the existing aged pavement. Insure that the fabric is well bonded to the tack coat. Neatly size and hand place fabric within intersection radii and other abrupt changes in pavement width. Repair fabric wrinkles using

methods prescribed by the fabric manufacturer. Overlap adjacent strips of fabric using overlap widths prescribed by the fabric manufacturer.

3.4.4 Bituminous Tack Coat Placement

With the exception of tack required for the installation of reinforcement fabric, provide tack coat on other existing pavement to be overlaid, pavement repair edges, vertical concrete gutter surface and at construction joints. Provide tack coat on existing pavement to be overlaid and at construction joints. Apply tack at the rate of 0.06 gallon residual asphalt per square yard at the temperatures noted in Table 605-1 of the NCDOT SSRS and in accordance with NCDOT SSRS Section 605-8. Thoroughly clean surfaces to receive the tack coat immediately prior to application of tack coat. Protect concrete surfaces from overspray during applications of tack coat. Ambient temperature must be 35 Degrees F and rising. Do not apply when weather is foggy or rainy.

3.4.5 Bituminous Concrete Application

3.4.5.1 Transportation of Bituminous Mixtures

Transport bituminous material from the mixing plant to the paving site in trucks having tight, clean, smooth beds that have been coated with a minimum amount of concentrated solution of hydrated lime and water or other approved coating to prevent adhesion of the mixture to the truck. Petroleum products will not be permitted for coating truck. Cover each load with canvas or other approved material of ample size to protect the mixture from the loss of heat. Make deliveries so that the spreading and rolling of all the mixture prepared for one day's run can be completed during daylight, unless adequate approved artificial lighting is provided. Deliver mixture to area to be paved so that the temperature at the time of dumping into the spreader is within the range specified herein. Reject loads that are below minimum temperature, that have crusts of cold unworkable material, or that have been wet excessively by rain. Hauling over freshly laid material is prohibited.

3.4.5.2 Placing Temperature

Minimum temperature of bituminous concrete during placement into mechanical spreader must be within a tolerance of +15 Degrees F to -25 Degrees F of the job mix formula mixture. Mixtures which have a lower temperature will be rejected. At the time of discharge and using the port provided at the bottom of the truck bed, the Contactor's QC staff must obtain the temperature of each truck load and record the temperature on the delivery ticket. Turn in the delivery tickets to the Contracting Officer daily.

3.4.5.3 Joints

Where new pavement abuts existing bituminous pavement, cut existing surface course along straight lines approximately 6 inches from edge. Cuts must be vertical and extend full depth. As an option the contractor may mill pavements in lieu of saw cutting. Milling operations must cease if under the opinion of the Contracting Officer, edges of the remaining pavement appears ragged and broken. Curbs and other appurtenances must be protected if milling is required or chosen as an option. Prior to bituminous concrete placement, apply tack coat of asphalt cement to exposed edges of cold joints. Joints required during the construction of a bituminous mat must conform to NCDOT SSRS, Section 610-11. Paper parting strips are required under this contract as specified under NCDOT SSRS

Section 610-11.

3.4.5.4 Machine Spreading and Finishing Equipment

Spread the bituminous concrete to a uniform density and produce a smooth finish, true to cross section and free from irregularities. Pavers must be provided with a joint matching device as described in NCDOT SSRS, section 610-8. For roadways where curb and gutters are not present, provide string line control for vertical control for new construction and 30 feet skis for hot mix overlays over existing asphalt pavements. Provide grade stakes for string line controls. Provide electronically controlled adjustable screeds to shape the surface to true cross section.

3.4.5.5 Hand Spreading and Finishing

In areas where the use of machine spreading is impractical, spread mixture by hand. The mix temperature must, whenever possible, meet the temperature required by the JMF as determined above. Order asphalt mix materials in quantities that match the rate of installation for sawcut and patch operations. Spread hot mixtures with rakes in a uniformly loose layer of at thickness that, when compacted will conform to the required grade, thickness and smoothness. Broadcasting of mixtures over the repair area will not be permitted. During hand spreading, place each shovel full of mixture by turning the shovel over in a manner that will prevent segregation. Do not dump loads any faster than can be properly handled by the shovelers and rakers.

3.4.5.6 Bituminous Concrete Placement

Placement must be as continuous as possible. **During the placement of the initial pavement lift(s), protect existing concrete curbs and valley gutters from damage by delivery trucks, paving and compaction equipment. Provide spotters to prevent damage by compaction equipment.** Schedule delivery trucks to provide a minimum disruption to the placement of the mat. Provide transverse paper joints where delays are required. Cut back the mat to remove the paper at the time that paving resumes. Intersections and irregular areas must be placed after the adjacent roadway has been paved. Place in 1-1/2 inch lifts. Avoid passing rollers over unprotected edges of bituminous concrete prior to bituminous concrete cooling. If rollers pass over unprotected edges of bituminous concrete prior to cooling, cut bituminous concrete back to expose full depth of bituminous concrete. Immediately prior to resumption of bituminous concrete placement, coat exposed edges of bituminous concrete with asphalt cement. Excess materials must be removed from the mat and must not be returned to the mat for any reason. Perform handwork for pavement areas not accessible with conventional paving equipment. Segregation of aggregates during placement must be avoided. Broadcasting of the mix over a bituminous mat must also be avoided. Should segregation occur, pavement repairs will cease until the cause has been determined. At the Contracting Officer's option, segregated mats will be removed and replaced by the Contractor at no additional cost to the Government.

3.4.6 Featheredges

Minimize the use of featheredges except where existing pavements are to be overlaid and not milled. Accomplish featheredging by raking out the larger aggregate as necessary and sloping the pavement uniformly throughout the featheredge to create a smooth transition. Featheredge transition widths are indicated on the drawings.

3.4.7 Compaction

3.4.7.1 Roller Compaction

Compaction must conform to NCDOT SSRS Section 610-9. Employ steel wheel roller for the finish rolling. Set compaction procedures at the beginning of the mat placement. Maintain rolling patterns throughout with adjustments made as necessary to maintain density. Compaction criteria for all superpave mixes must meet NCDOT SSRS Section 610-10. Finished surfaces must be uniform in texture and appearance and free of cracks and creases. The Contractor's QC staff must be present to observe all compaction operations. The Contractor must have NCDOT QMS certified roadway technicians present during all compaction operations to provide continuous testing of the pavement density. The technician must direct and control compaction operations to achieve the target density. Refer to the Field Testing and Quality Control paragraphs below.

3.4.7.2 Plate Compaction

In places not accessible to rollers, compact mixtures thoroughly with hot hand tampers for subcourses. The finished surface course must be rolled with conventional rollers. Finished surfaces must match adjacent pavement grades.

3.4.8 Grade and Surface-Smoothness Requirements

Perform smoothness tests in the presence of the Contracting Officer. For overlay work, **or patch work greater than 10 feet in width**, the Contractor's QC staff must record existing pavement centerline elevations and cross slopes at a minimum 25 feet intervals prior to removing pavement. Except where intersection improvements are to be performed (refer to the contract drawings for specific locations), new cross slope are provided by the cross sections indicated on the contract drawings. Indicate adjustments to existing pavement centerline elevations that will bring the existing cross section into conformance with contract requirements. Adjustments required to cross slopes must be made during placement of the initial pavement lift(s) so that the final lift across the work site will be uniform in thickness. The only exception will be where only a minimum thickness overlay is required. Finished surface of bituminous courses, when checked by the Contractor, must conform to the elevations (where recorded by the Contractor) and cross sections indicated on by the Task Order.

3.4.9 Plan Grade

For overlay work, the grade of the completed surface must not deviate more than 0.05 foot in ten feet from the plan grade. Lines and grades must be established and maintained by the Contractor's CQC surveyor and approved by the Contracting Officer. Place and maintain line and grade stakes the work site. Provide vertical and horizontal controls to match the leveling course control survey plan. Maintain control stakes during construction until work is accepted by the Government. Elevations of bench marks and temporary bench marks used by the Contractor for controlling pavement operations at the site of work will be determined, established, and maintained by the Contractor's CQC surveyor. Finished pavement elevations must be established in advance of construction and controlled at the site of work by the Contractor's CQC surveyor as work progresses. Finished pavement elevations must be recorded as work progresses for inclusion on the Contractor's electronic as-built CAD drawings. Information collected

must include temporary and permanent bench marks used during construction.

3.4.10 Surface Smoothness

When a 12-foot straightedge is laid on the surface parallel with the centerline of the paved area or transverse from crown to pavement edge, the surface must vary not more than 1/4 inch from the straightedge.

3.4.11 Protection

No vehicular traffic must be allowed on pavement until bituminous concrete has cooled sufficiently to support traffic. Refer to specification section 01 14 00, "Work Restrictions" for requirements that must be met before opening new pavement to traffic.

3.5 QUALITY CONTROL

The Contractor must conduct a Quality Control Program in accordance with NCDOT SSRS Section 609-5, except as modified herein. The QC program is defined as all activities, including mix design, process control inspection, plant and equipment calibration, sampling and testing, and necessary adjustments in the processes that are related to production of pavements meeting these specifications. All Quality Control must be performed by the Contractor's QC staff which meet NCDOT SSRS Section 609-5(A). The Contractor must provide a fully equipped laboratory in accordance with NCDOT SSRS, Section 609-5(B). The compensation provisions for damage to test equipment under Article 104-7 must not apply to this contract. Payment of the testing laboratory must be made under the firm fixed price portion of the contract and must apply to all firm fixed price work.

3.5.1 Preconstruction Bituminous Concrete Laboratory Testing

Provide for each sample.

a. Job Mix: Determine gradation and bitumen content. Test results must be compared with only the approved job mix formula. Results must fall within the range of tolerances set forth in NCDOT SSRS, Section 610-3 for the type of mix being applied.

b. Maximum Laboratory Density: AASHTO T209 Compare field density tests to the approved AASHTO T209 maximum density of each mix design used.

3.5.1.1 Plant Quality Control

Plant quality control must be performed by a Level I certified asphalt plant technician. Adjustments to any approved mix design must be accomplished by a Level II certified asphalt plant technician as noted in NCDOT SSRS Section 609-5(A). Work must satisfy the requirements of NCDOT SSRS, Section 609 except that **coring of new pavements is forbidden.**

3.5.1.2 Bituminous Concrete Laboratory Testing During Construction

Test one sample for each 500 tons, or fraction thereof, of the uncompacted mix for extraction in accordance with ASTM D 2172; perform a sieve analysis on each extraction sample in accordance with ASTM C 136 and ASTM C 117. Test one sample for each 500 tons or fraction thereof for stability and flow in accordance with ASTM D 1559.

3.5.2 Field Testing and Quality Control

Perform the following tests:

- a. Density: Field testing for density must be taken using a certified nuclear gauge in accordance with ASTM D2950 or other method approved by the Contracting Officer. Sampling must be taken continuously as paving work progresses. For record purposes, record random density reading in accordance with ASTM D3665 and at locations requested by the Contracting Officer. Test results must indicate if the test was performed within the bituminous mat, longitudinal joints or at transverse construction joints. Test results from the nuclear gauge must be compared with the AASHTO T209 density derived in the laboratory for the approved job mix. Test report must indicate the roadway stationing and offset distance.

Maximum allowable deficiency at any point, excluding joints, must not be more than 2 percent less than the specified density for any course. The average density of each course, excluding joints, must be not less than the specified density. Joint densities must not be more than 2 percent less than specified course densities and are not included when calculating average course densities. When the deficiency exceeds the specified tolerances, correct each such representative area or areas by removing the deficient pavement and replacing with new pavement.

- b. Thickness: Minimum thickness must be the thickness indicated on the Contractor's approved construction drawings.

Determine thickness of base, binder and wearing courses by taking vertical before and after elevations, by the use of approved probes and by averaging the tonnage of bituminous pavement placed over a measured area. The maximum allowable deficiency at any point must not be more than 1/4 inch less than the thickness for the indicated course. Average thickness of course or of combined courses must be not less than the indicated thickness. Where a deficiency exceeds the specified tolerances, correct each such representative area or areas by removing the deficient pavement by milling and replacing with new pavement. Repair work must be performed at no expense to the Government.

- c. Smoothness: Straightedge test the compacted surface of base leveling, binder, and wearing courses as work progresses. Apply straightedge parallel with and at right angles to the centerline after final rolling. Unevenness of new bituminous base course must not vary more than 1/2 inch in 10 feet. Unevenness of leveling and binder courses must not vary more than 1/4 inch in 10 feet; variations in the wearing course must not vary more than 1/8 inch in 10 feet. Correct each portion of the pavement showing irregularities greater than that specified.
- d. Continuity of Cross Slope: Using the straight edge test above, the roadway technician must continuously monitor the cross slope of new pavement extensions to insure that the existing or milled roadway cross slope is transferred to the new pavement section. **New cross slopes that are steeper than the adjacent cross slope will not be tolerated.** Perform repairs by adding leveling course

material until the new extension is brought to the required grade. Leveling course additions must be added at no cost to the Government.

- e. Finished Grades: Check finish grades for bituminous leveling course to insure that the grade elevations for the final pavement course will meet the finished elevations shown on the Contractor's approved construction drawings. Perform grade checks prior to requesting payment for the work. Elevations must not vary from the finish elevations, profiles, and cross sections indicated by more than 1/2 inch.

Finished surface of the final wearing course will be tested by the Contractor's CQC surveyor by running conventional lines of levels at intervals of 25 feet longitudinally and transversely off of the established roadway centerlines at 12 feet intervals determine elevations of completed pavement.

Immediately after placement of the final surface course, the Contractor's CQC surveyor must re-establish roadway centerlines to assist with the placement of permanent pavement markings. During the performance of this survey, the CQC surveyor must record finished centerline pavement elevations for inclusion in the as-built master drawing. Highlight differences between planned final elevations and actual final elevations that vary more than 1/4" Elevations not in conformance with the specified tolerance must be noted on the plan in an approved manner.

The Contracting Officer will inform the Contractor in writing of paved areas that fail to meet the final grades indicated within the specified tolerances. Correct deficient paved areas by removing existing work and replacing with new materials that meet the specifications. Skin patching for correcting low areas is prohibited.

- f. Finish Surface Texture of Wearing Course: Visually check final surface texture for uniformity and reasonable compactness and tightness. Final wearing course with a surface texture having undesirable irregularities such as segregation, cavities, pulls or tears, checking, excessive exposure of coarse aggregates, sand streaks, indentations, ripples, or lack of uniformity must be removed and replaced with new materials.

3.5.2.1 Field Quality Control

Provide CQC surveying and NCDOT QMA certified roadway technician(s) to insure that the field quality control requirements of NCDOT SSRS, Section 609 and the paragraphs below are met.

3.5.2.2 Field Testing

Provide test results and field grade and elevation checks

3.5.3 Quality Assurance

The Government at its own expense has the option to perform Quality Assurance at any time during the construction. This QA program will not exclude the procedures as outlined in NCDOT SSRS 609-6. Any discrepancies between the Contractor's QC results and Government's QA results will

require the Contractor to acquire new samples and have the samples tested at both the Contractor's Lab and the Owner's Lab. The costs of the additional tests will be borne by the Contractor unless the tests reveal the discrepancies are in error which will then require the Government to pay for the additional expense at usual customary rates.

-- End of Section --

SECTION 32 16 13

CONCRETE SIDEWALKS AND CURBS AND GUTTERS
03/15

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
(AASHTO)

AASHTO M 182 (2005) Burlap Cloth Made from Jute or Kenaf

ASTM INTERNATIONAL (ASTM)

ASTM A 185 (2002) Steel Welded Wire Reinforcement, Plain, for Concrete

ASTM A 615/A 615M (2006a) Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement

ASTM C 143/C 143M (2005a) Slump of Hydraulic Cement Concrete

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 231 (2004) Air Content of Freshly Mixed Concrete by the Pressure Method

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 920 (2005) Elastomeric Joint Sealants

ASTM D 1751 (2004) Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

ASTM D 1752 (2004a) Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

ASTM D 5893 (2004) Cold Applied, Single Component,

Chemically Curing Silicone Joint Sealant
for Portland Cement Concrete Pavements

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Concrete

Copies of certified delivery tickets for all concrete used in the construction.

SD-06 Test Reports

Field Quality Control

Copies of all test reports within 24 hours of completion of the test.

1.3 WEATHER LIMITATIONS

1.3.1 Placing During Cold Weather

Concrete placement shall not take place when the air temperature reaches 40 degrees F and is falling, or is already below that point. Placement may begin when the air temperature reaches 35 degrees F and is rising, or is already above 40 degrees F. Provisions shall be made to protect the concrete from freezing during the specified curing period. If necessary to place concrete when the temperature of the air, aggregates, or water is below 35 degrees F, placement and protection shall be approved in writing. Approval will be contingent upon full conformance with the following provisions. The underlying material shall be prepared and protected so that it is entirely free of frost when the concrete is deposited. [Mixing water and aggregates] [Mixing water] [Aggregates] shall be heated as necessary to result in the temperature of the in-place concrete being between 50 and 85 degrees F. Methods and equipment for heating shall be approved. The aggregates shall be free of ice, snow, and frozen lumps before entering the mixer. Covering and other means shall be provided for maintaining the concrete at a temperature of at least 50 degrees F for not less than 72 hours after placing, and at a temperature above freezing for the remainder of the curing period.

1.3.2 Placing During Warm Weather

The temperature of the concrete as placed shall not exceed 85 degrees F except where an approved retarder is used. The mixing water and/or aggregates shall be cooled, if necessary, to maintain a satisfactory placing temperature. The placing temperature shall not exceed 95 degrees F at any time.

1.4 PLANT, EQUIPMENT, MACHINES, AND TOOLS

1.4.1 General Requirements

Plant, equipment, machines, and tools used in the work shall be subject to approval and shall be maintained in a satisfactory working condition at all times. The equipment shall have the capability of producing the required product, meeting grade controls, thickness control and smoothness requirements as specified. Use of the equipment shall be discontinued if it produces unsatisfactory results. The Contracting Officer shall have access at all times to the plant and equipment to ensure proper operation and compliance with specifications.

1.4.2 Slip Form Equipment

Slip form paver or curb forming machine, will be approved based on trial use on the job and shall be self-propelled, automatically controlled, crawler mounted, and capable of spreading, consolidating, and shaping the plastic concrete to the desired cross section in 1 pass.

PART 2 PRODUCTS

2.1 CONCRETE

Concrete shall have a minimum compressive strength of 3500 psi at 28 days. Maximum size of aggregate shall be 1-1/2 inches.

2.1.1 Air Content

Mixtures shall have air content by volume of concrete of 5 to 7 percent, based on measurements made immediately after discharge from the mixer.

2.1.2 Slump

The concrete slump shall be 2 inches plus or minus 1 inch where determined in accordance with ASTM C 143/C 143M.

2.1.3 Reinforcement Steel

Reinforcement bars shall conform to ASTM A 615/A 615M. Wire mesh reinforcement shall conform to ASTM A 185.

2.2 CONCRETE CURING MATERIALS

2.2.1 Impervious Sheet Materials

Impervious sheet materials shall conform to ASTM C 171, type optional, except that polyethylene film, if used, shall be white opaque.

2.2.2 Burlap

Burlap shall conform to AASHTO M 182.

2.2.3 White Pigmented Membrane-Forming Curing Compound

White pigmented membrane-forming curing compound shall conform to ASTM C 309, Type 2.

2.3 CONCRETE PROTECTION MATERIALS

Concrete protection materials shall be a linseed oil mixture of equal parts, by volume, of linseed oil and either mineral spirits, naphtha, or turpentine. At the option of the Contractor, commercially prepared linseed oil mixtures, formulated specifically for application to concrete to provide protection against the action of deicing chemicals may be used, except that emulsified mixtures are not acceptable.

2.4 JOINT FILLER STRIPS

2.4.1 Contraction Joint Filler for Curb and Gutter

Contraction joint filler for curb and gutter shall consist of hard-pressed fiberboard.

2.4.2 Expansion Joint Filler, Premolded

Expansion joint filler, premolded, shall conform to ASTM D 1751 or ASTM D 1752, 1/2 inch thick, unless otherwise indicated.

2.5 JOINT SEALANTS

Joint sealant, cold-applied shall conform to ASTM C 920 or ASTM D 5893.

2.6 FORM WORK

Form work shall be designed and constructed to ensure that the finished concrete will conform accurately to the indicated dimensions, lines, and elevations, and within the tolerances specified. Forms shall be of wood or steel, straight, of sufficient strength to resist springing during depositing and consolidating concrete. Wood forms shall be surfaced plank, 2 inches nominal thickness, straight and free from warp, twist, loose knots, splits or other defects. Wood forms shall have a nominal length of 10 feet. Radius bends may be formed with 3/4 inch boards, laminated to the required thickness. Steel forms shall be channel-formed sections with a flat top surface and with welded braces at each end and at not less than two intermediate points. Ends of steel forms shall be interlocking and self-aligning. Steel forms shall include flexible forms for radius forming, corner forms, form spreaders, and fillers. Steel forms shall have a nominal length of 10 feet with a minimum of 3 welded stake pockets per form. Stake pins shall be solid steel rods with chamfered heads and pointed tips designed for use with steel forms.

2.6.1 Sidewalk Forms

Sidewalk forms shall be of a height equal to the full depth of the finished sidewalk.

2.6.2 Curb and Gutter Forms

Curb and gutter outside forms shall have a height equal to the full depth of the curb or gutter. The inside form of curb shall have batter as indicated and shall be securely fastened to and supported by the outside form. Rigid forms shall be provided for curb returns, except that benders or thin plank forms may be used for curb or curb returns with a radius of 10 feet or more, where grade changes occur in the return, or where the central angle is such that a rigid form with a central angle of 90 degrees cannot be used. Back forms for curb returns may be made of 1-1/2 inch

benders, for the full height of the curb, cleated together. In lieu of inside forms for curbs, a curb "mule" may be used for forming and finishing this surface, provided the results are approved.

PART 3 EXECUTION

3.1 SUBGRADE PREPARATION

3.1.1 Sidewalk Subgrade

The subgrade shall be tested for grade and cross section with a template extending the full width of the sidewalk and supported between side forms.

3.1.2 Curb and Gutter Base Course

The aggregate base course shall be tested for grade and cross section by the CQC surveyor. Refer to the curb and gutter details shown on the contract drawings. Insure that base courses are depressed 2 inches at flume inlet locations to allow for the placement of a uniform thickness of concrete. Refer to the depressed inlet details shown on the contract drawings.

3.1.3 Maintenance of Subgrade

The subgrade shall be maintained in a smooth, compacted condition in conformity with the required section and established grade until the concrete is placed. The subgrade shall be in a moist condition when concrete is placed. The subgrade shall be prepared and protected to produce a subgrade free from frost when the concrete is deposited.

3.1.4 Concrete Flume Subgrade Preparation

Excavate and fine grade subgrades to a depth of 6 inches below the finished flume elevation. Transition the excavation depth to 12 inches to allow the top of the flume to blend with adjacent ditch/ swale contours. Accomodate the required curb washdown and turned down footings at the flume termination. Install nonwoven fabric under and beyond the limits of the flume. Refer to the flume details shown on the contract drawings.

3.2 FORM SETTING

Forms shall be set to the indicated alignment, grade and dimensions. Prior to ordering concrete, form elevation and location must be verified by the contractor's CQC surveyor. Make adjustments indicated by the CQC surveyor to bring forms into compliance with the elevation and location controls shown on the contract drawings.

Forms shall be held rigidly in place by a minimum of 3 stakes per form placed at intervals not to exceed 4 feet. Corners, deep sections, and radius bends shall have additional stakes and braces, as required. Clamps, spreaders, and braces shall be used where required to ensure rigidity in the forms. Forms shall be removed without injuring the concrete. Bars or heavy tools shall not be used against the concrete in removing the forms. Any concrete found defective after form removal shall be promptly and satisfactorily repaired. Forms shall be cleaned and coated with form oil each time before concrete is placed. Wood forms may, instead, be thoroughly wetted with water before concrete is placed, except that with probable freezing temperatures, oiling is mandatory.

3.2.1 Sidewalks

Forms for sidewalks shall be set with the upper edge true to line and grade with an allowable tolerance of 1/8 inch in any 10 foot long section. After forms are set, grade and alignment shall be checked with a 10 foot straightedge. Forms shall have a transverse slope [as indicated] [of 1/4 inch per foot] with the low side adjacent to the roadway. Side forms shall not be removed for 12 hours after finishing has been completed.

3.2.2 Curbs and Gutters

The forms of the front of the curb shall be removed not less than 2 hours nor more than 6 hours after the concrete has been placed. Forms back of curb shall remain in place until the face and top of the curb have been finished, as specified for concrete finishing. Gutter forms shall not be removed while the concrete is sufficiently plastic to slump in any direction.

3.3 SIDEWALK CONCRETE PLACEMENT AND FINISHING

3.3.1 Formed Sidewalks

Concrete shall be placed in the forms in one layer. When consolidated and finished, the sidewalks shall be of the thickness indicated. After concrete has been placed in the forms, a strike-off guided by side forms shall be used to bring the surface to proper section to be compacted. The concrete shall be consolidated with an approved vibrator, and the surface shall be finished to grade with a strike off.

3.3.2 Concrete Finishing

After straightedging, when most of the water sheen has disappeared, and just before the concrete hardens, the surface shall be finished with a wood float or darby to a smooth and uniformly fine granular or sandy texture free of waves, irregularities, or tool marks. A scored surface shall be produced by brooming with a fiber-bristle brush in a direction transverse to that of the traffic, followed by edging.

3.3.3 Handicap Ramp Finishing

While the concrete remains in a plastic state and prior to finishing the ramp using the concrete finishing requirements above, groove the ramp utilizing a "U" shaped joint forming tool. Install parallel grooves that are perpendicular to the slope of the ramp and spaced as shown on the contract detail drawing.

3.3.4 Edge and Joint Finishing

All slab edges, including those at formed joints, shall be finished with an edger having a radius of 1/8 inch. Transverse joint shall be edged before brooming, and the brooming shall eliminate the flat surface left by the surface face of the edger. Corners and edges which have crumbled and areas which lack sufficient mortar for proper finishing shall be cleaned and filled solidly with a properly proportioned mortar mixture and then finished.

3.3.5 Surface and Thickness Tolerances

Finished surfaces shall not vary more than 5/16 inch from the testing edge

of a 10-foot straightedge. Permissible deficiency in section thickness will be up to 1/4 inch.

3.4 CURB AND GUTTER CONCRETE PLACEMENT AND FINISHING

3.4.1 Formed Flumes, Curb and Gutter

Concrete shall be placed to the section required in a single lift. Consolidation shall be achieved by using approved mechanical vibrators. Curve shaped gutters shall be finished with a standard curb "mule".

3.4.2 Curb and Gutter Finishing

Approved slipformed curb and gutter machines may be used in lieu of hand placement.

3.4.3 Concrete Finishing

Exposed surfaces shall be floated and finished with a smooth wood float until true to grade and section and uniform in texture. Floated surfaces shall then be brushed with a fine-hair brush with longitudinal strokes. The edges of the gutter and top of the curb shall be rounded with an edging tool to a radius of 1/2 inch. Immediately after removing the front curb form, the face of the curb shall be rubbed with a wood or concrete rubbing block and water until blemishes, form marks, and tool marks have been removed. The front curb surface, while still wet, shall be brushed in the same manner as the gutter and curb top. The top surface of gutter and entrance shall be finished to grade with a wood float.

3.4.4 Joint Finishing

Curb edges at formed joints shall be finished as indicated.

3.4.5 Surface and Thickness Tolerances

Finished surfaces shall not vary more than 1/4 inch from the testing edge of a 10-foot straightedge. Permissible deficiency in section thickness will be up to 1/4 inch.

3.5 SIDEWALK JOINTS

Sidewalk joints shall be constructed to divide the surface into rectangular areas. Transverse contraction joints shall be spaced at a distance equal to the sidewalk width or 5 feet on centers, whichever is less, and shall be continuous across the slab. Longitudinal contraction joints shall be constructed along the centerline of all sidewalks 10 feet or more in width. Transverse expansion joints shall be installed at sidewalk returns and opposite expansion joints in adjoining curbs. Where the sidewalk is not in contact with the curb, transverse expansion joints shall be installed as indicated. Expansion joints shall be formed about structures and features which project through or into the sidewalk pavement, using joint filler of the type, thickness, and width indicated. Expansion joints are not required between sidewalks and curb that abut the sidewalk longitudinally.

3.5.1 Sidewalk Contraction Joints

The contraction joints shall be formed in the fresh concrete by cutting a groove in the top portion of the slab to a depth of at least one-fourth of

the sidewalk slab thickness, using a jointer to cut the groove, or by sawing a groove in the hardened concrete with a power-driven saw, unless otherwise approved. Sawed joints shall be constructed by sawing a groove in the concrete with a 1/8 inch blade to the depth indicated. An ample supply of saw blades shall be available on the job before concrete placement is started, and at least one standby sawing unit in good working order shall be available at the jobsite at all times during the sawing operations.

3.5.2 Sidewalk Expansion Joints

Expansion joints shall be formed with 1/2 inch joint filler strips. Joint filler in expansion joints surrounding structures and features within the sidewalk may consist of preformed filler material conforming to ASTM D 1752 or building paper. Joint filler shall be held in place with steel pins or other devices to prevent warping of the filler during floating and finishing. Immediately after finishing operations are completed, joint edges shall be rounded with an edging tool having a radius of 1/8 inch, and concrete over the joint filler shall be removed. At the end of the curing period, expansion joints shall be cleaned and filled with cold-applied joint sealant. Joint sealant shall be gray or stone in color. [Joints shall be sealed as specified in Section 32 01 19 FIELD MOLDED SEALANTS FOR SEALING JOINTS IN RIGID PAVEMENTS.] [The joint opening shall be thoroughly cleaned before the sealing material is placed. Sealing material shall not be spilled on exposed surfaces of the concrete. Concrete at the joint shall be surface dry and atmospheric and concrete temperatures shall be above 50 degrees F at the time of application of joint sealing material. Excess material on exposed surfaces of the concrete shall be removed immediately and concrete surfaces cleaned.]

3.5.3 Reinforcement Steel Placement

Reinforcement steel shall be accurately and securely fastened in place with suitable supports and ties before the concrete is placed.

3.6 CURB AND GUTTER JOINTS

Curb and gutter joints shall be constructed at right angles to the line of curb and gutter.

3.6.1 Contraction Joints

Contraction joints shall be constructed directly opposite contraction joints in abutting portland cement concrete pavements and spaced so that monolithic sections between curb returns will not be less than 5 feet nor greater than 15 feet in length.

- a. Contraction joints (except for slip forming) shall be constructed by means of 1/8 inch thick separators and of a section conforming to the cross section of the curb and gutter. Separators shall be removed as soon as practicable after concrete has set sufficiently to preserve the width and shape of the joint and prior to finishing.
- b. When slip forming is used, the contraction joints shall be cut in the top portion of the gutter/curb hardened concrete in a continuous cut across the curb and gutter, using a power-driven saw. The depth of cut shall be at least one-fourth of the gutter/curb depth and 1/8 inch in width.

3.6.2 Expansion Joints

Expansion joints shall be formed by means of preformed expansion joint filler material cut and shaped to the cross section of curb and gutter. Expansion joints shall be provided in curb and gutter directly opposite expansion joints of abutting portland cement concrete pavement, and shall be of the same type and thickness as joints in the pavement. Where curb and gutter do not abut portland cement concrete pavement, expansion joints at least 1/2 inch in width shall be provided at intervals not less than 30 feet nor greater than 120 feet. Expansion joints shall be provided in nonreinforced concrete gutter at locations indicated. Expansion joints shall be sealed immediately following curing of the concrete or as soon thereafter as weather conditions permit. [Joints shall be sealed as specified in Section 32 01 19 FIELD MOLDED SEALANTS FOR SEALING JOINTS IN RIGID PAVEMENTS.] [Expansion joints and the top 1 inch depth of curb and gutter contraction-joints shall be sealed with joint sealant. The joint opening shall be thoroughly cleaned before the sealing material is placed. Sealing material shall not be spilled on exposed surfaces of the concrete. Concrete at the joint shall be surface dry and atmospheric and concrete temperatures shall be above 50 degrees F at the time of application of joint sealing material. Excess material on exposed surfaces of the concrete shall be removed immediately and concrete surfaces cleaned.]

3.7 CURING AND PROTECTION

3.7.1 General Requirements

Concrete shall be protected against loss of moisture and rapid temperature changes for at least 7 days from the beginning of the curing operation. Unhardened concrete shall be protected from rain and flowing water. All equipment needed for adequate curing and protection of the concrete shall be on hand and ready for use before actual concrete placement begins. Protection shall be provided as necessary to prevent cracking of the pavement due to temperature changes during the curing period.

3.7.1.1 Mat Method

The entire exposed surface shall be covered with 2 or more layers of burlap. Mats shall overlap each other at least 6 inches. The mat shall be thoroughly wetted with water prior to placing on concrete surface and shall be kept continuously in a saturated condition and in intimate contact with concrete for not less than 7 days.

3.7.1.2 Impervious Sheeting Method

The entire exposed surface shall be wetted with a fine spray of water and then covered with impervious sheeting material. Sheets shall be laid directly on the concrete surface with the light-colored side up and overlapped 12 inches when a continuous sheet is not used. The curing medium shall not be less than 18-inches wider than the concrete surface to be cured, and shall be securely weighted down by heavy wood planks, or a bank of moist earth placed along edges and laps in the sheets. Sheets shall be satisfactorily repaired or replaced if torn or otherwise damaged during curing. The curing medium shall remain on the concrete surface to be cured for not less than 7 days.

3.7.1.3 Membrane Curing Method

A uniform coating of white-pigmented membrane-curing compound shall be

applied to the entire exposed surface of the concrete as soon after finishing as the free water has disappeared from the finished surface. Formed surfaces shall be coated immediately after the forms are removed and in no case longer than 1 hour after the removal of forms. Concrete shall not be allowed to dry before the application of the membrane. If any drying has occurred, the surface of the concrete shall be moistened with a fine spray of water and the curing compound applied as soon as the free water disappears. Curing compound shall be applied in two coats by hand-operated pressure sprayers at a coverage of approximately 200 square feet/gallon for the total of both coats. The second coat shall be applied in a direction approximately at right angles to the direction of application of the first coat. The compound shall form a uniform, continuous, coherent film that will not check, crack, or peel and shall be free from pinholes or other imperfections. If pinholes, abrasion, or other discontinuities exist, an additional coat shall be applied to the affected areas within 30 minutes. Concrete surfaces that are subjected to heavy rainfall within 3 hours after the curing compound has been applied shall be resprayed by the method and at the coverage specified above. Areas where the curing compound is damaged by subsequent construction operations within the curing period shall be resprayed. Necessary precautions shall be taken to insure that the concrete is properly cured at sawed joints, and that no curing compound enters the joints. The top of the joint opening and the joint groove at exposed edges shall be tightly sealed before the concrete in the region of the joint is resprayed with curing compound. The method used for sealing the joint groove shall prevent loss of moisture from the joint during the entire specified curing period. Approved standby facilities for curing concrete pavement shall be provided at a location accessible to the jobsite for use in the event of mechanical failure of the spraying equipment or other conditions that might prevent correct application of the membrane-curing compound at the proper time. Concrete surfaces to which membrane-curing compounds have been applied shall be adequately protected during the entire curing period from pedestrian and vehicular traffic, except as required for joint-sawing operations and surface tests, and from any other possible damage to the continuity of the membrane.

3.7.2 Backfilling

After curing, debris shall be removed and the area adjoining the concrete shall be backfilled, graded, and compacted to conform to the surrounding area in accordance with lines and grades indicated.

3.7.3 Protection

Completed concrete shall be protected from damage until accepted. The Contractor shall repair damaged concrete and clean concrete discolored during construction. Concrete that is damaged shall be removed and reconstructed for the entire length between regularly scheduled joints. Refinishing the damaged portion will not be acceptable. Removed damaged portions shall be disposed of as directed.

3.7.4 Protective Coating

Protective coating, of linseed oil mixture, shall be applied to the exposed-to-view concrete surface after the curing period, if concrete will be exposed to de-icing chemicals within 6 weeks after placement. Concrete to receive a protective coating shall be moist cured.

3.7.4.1 Application

Curing and backfilling operation shall be completed prior to applying two coats of protective coating. Concrete shall be surface dry and clean before each application. Coverage shall be by spray application at not more than 50 square yards/gallon for first application and not more than 70 square yards/gallon for second application, except that the number of applications and coverage for each application for commercially prepared mixture shall be in accordance with the manufacturer's instructions. Coated surfaces shall be protected from vehicular and pedestrian traffic until dry.

3.7.4.2 Precautions

Protective coating shall not be heated by direct application of flame or electrical heaters and shall be protected from exposure to open flame, sparks, and fire adjacent to open containers or applicators. Material shall not be applied at ambient or material temperatures lower than 50 degrees F.

3.8 FIELD QUALITY CONTROL

3.8.1 General Requirements

The Contractor shall perform the inspection and tests described and meet the specified requirements for inspection details and frequency of testing. Based upon the results of these inspections and tests, the Contractor shall take the action and submit reports as required below, and any additional tests to insure that the requirements of these specifications are met.

3.8.2 Concrete Testing

3.8.2.1 Strength Testing

The Contractor shall provide molded concrete specimens for strength tests. Samples of concrete placed each day shall be taken not less than once a day nor less than once for every 250 cubic yards of concrete. The samples for strength tests shall be taken in accordance with ASTM C 172. Cylinders for acceptance shall be molded in conformance with ASTM C 31/C 31M by an approved testing laboratory. Each strength test result shall be the average of 2 test cylinders from the same concrete sample tested at 28 days, unless otherwise specified or approved. Concrete specified on the basis of compressive strength will be considered satisfactory if the averages of all sets of three consecutive strength test results equal or exceed the specified strength, and no individual strength test result falls below the specified strength by more than 500 psi.

3.8.2.2 Air Content

Air content shall be determined in accordance with ASTM C 173/C 173M or ASTM C 231. ASTM C 231 shall be used with concretes and mortars made with relatively dense natural aggregates. Two tests for air content shall be made on randomly selected batches of each class of concrete placed during each shift. Additional tests shall be made when excessive variation in concrete workability is reported by the placing foreman or the Government inspector. If results are out of tolerance, the placing foreman shall be notified and he shall take appropriate action to have the air content corrected at the plant. Additional tests for air content will be performed

on each truckload of material until such time as the air content is within the tolerance specified.

3.8.2.3 Slump Test

Two slump tests shall be made on randomly selected batches of each class of concrete for every 250 cubic yards, or fraction thereof, of concrete placed during each shift. Additional tests shall be performed when excessive variation in the workability of the concrete is noted or when excessive crumbling or slumping is noted along the edges of slip-formed concrete.

3.8.3 Thickness Evaluation

The anticipated thickness of the concrete shall be determined prior to placement by passing a template through the formed section or by measuring the depth of opening of the extrusion template of the curb forming machine. If a slip form paver is used for sidewalk placement, the subgrade shall be true to grade prior to concrete placement and the thickness will be determined by measuring each edge of the completed slab.

3.8.4 Surface Evaluation

The finished surface of each category of the completed work shall be uniform in color and free of blemishes and form or tool marks.

3.9 SURFACE DEFICIENCIES AND CORRECTIONS

3.9.1 Thickness Deficiency

When measurements indicate that the completed concrete section is deficient in thickness by more than 1/4 inch the deficient section will be removed, between regularly scheduled joints, and replaced.

3.9.2 High Areas

In areas not meeting surface smoothness and plan grade requirements, high areas shall be reduced either by rubbing the freshly finished concrete with carborundum brick and water when the concrete is less than 36 hours old or by grinding the hardened concrete with an approved surface grinding machine after the concrete is 36 hours old or more. The area corrected by grinding the surface of the hardened concrete shall not exceed 5 percent of the area of any integral slab, and the depth of grinding shall not exceed 1/4 inch. Pavement areas requiring grade or surface smoothness corrections in excess of the limits specified above shall be removed and replaced.

3.9.3 Appearance

Exposed surfaces of the finished work will be inspected by the Government and any deficiencies in appearance will be identified. Areas which exhibit excessive cracking, discoloration, form marks, or tool marks or which are otherwise inconsistent with the overall appearances of the work shall be removed and replaced.

-- End of Section --

SECTION 32 17 23.00 20

THERMOPLASTIC PAVEMENT MARKINGS

03/15

PART 1 GENERAL

1.1 COORDINATION AND SPECIAL SCHEDULING

Work performed under this section shall be coordinated with, and approved by the Contracting Officer. A minimum of seven days notice is required prior to start of pavement marking work unless the pavement marking work is scheduled under road closure conditions.

Refer to special scheduling section 01 14 00, "Work Restrictions" for planning pavement marking activities.

1.2 REFERENCES

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

North Carolina Department of Transportation

SSRS 2012 Edition, Standard Specifications for Roads and Structures

RSD 2012 Edition Roadway Standard Drawings

1.3 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-03 Product Data

Reflective media for roads and streets

Thermoplastic compounds and primer; gG

Preformed Retroreflective Thermoplastic Markings and application equipment; G

SD-06 Test Reports

Reflective media for roads and streets

Thermoplastic compounds and primer

Report from sampling and testing made in accordance with paragraph entitled "Sampling and Testing."

SD-07 Certificates

Reflective media for roads and streets

Thermoplastic compounds and primer

Construction equipment list

SD-08 Manufacturer's Instructions

Thermoplastic compounds and primer

Submit manufacturer's Material Safety Data Sheets.

1.4 DELIVERY AND STORAGE

Deliver thermoplastic compound materials in original sealed containers that plainly show the designated name, specification number, batch number, color, date of manufacture, manufacturer's directions, and name of manufacturer. Provide storage facilities at the job site for maintaining materials at temperatures recommended by the manufacturer.

1.5 WEATHER LIMITATIONS AND SEASONAL LIMITATIONS

Reference SSRS, Section 1205-4, Subparagraph (B) for weather and seasonal limitations. Prohibited application dates apply for installation work East of I-95. Pavement moisture shall not be present prior to application. Terminate pavement marking operations should inclement weather threaten during the times required to place and fully cure the new markings. Maintain paint temperature within these same limits.

1.6 EQUIPMENT

Machines, tools, and equipment used in the performance of the work shall be approved by the Contracting Officer and maintained in satisfactory operating condition. Submit construction equipment list for approval by the Contracting Officer. Only extrusion equipment shall be submitted for general thermoplastic installation work.

1.6.1 Reflective Media Dispenser

Attach dispenser for applying the reflective media to the paint dispenser and operate automatically and simultaneously with the paint applicator through the same control mechanism. Use dispenser capable of adjustment and designed to provide uniform flow of reflective media over the full width of the stripe at the rate of coverage specified herein at all operating speeds of the paint applicator to which it is attached.

1.6.2 Thermoplastic Application Equipment

Application equipment shall be mobile and maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. The equipment used for the placement of thermoplastic pavement markings shall be of two general types: mobile applicator and portable applicator.

1.6.2.1 Mobile Application Equipment

The mobile applicator shall be defined as a truck-mounted, self-contained pavement marking machine that is capable of hot applying thermoplastic by either the extrusion or spray method. The mobile unit shall be capable of operating continuously and of installing a minimum of 20,000 lineal feet of longitudinal markings in a 8-hour day. Equip the mobile unit with a melting kettle of such capacity as to hold a minimum of 6000 pounds of

molten thermoplastic material. The kettle shall be capable of heating the thermoplastic composition to temperatures of 375 to 425 degrees F. The heating mechanism shall be by means of a thermostatically controlled heat transfer liquid. Heating of the composition by direct flame shall not be allowed. Oil and material temperature gages shall be visible at both ends of the kettle. Equip the mobile unit with a minimum of two extrusion shoes located one on each side of the truck, and shall be capable of marking simultaneous edge line and centerline stripes. Each extrusion shoe shall be a closed, oil-jacketed unit; shall hold the molten thermoplastic at a temperature of 375 to 425 degrees F; and shall be capable of extruding a line of 3 to 8 inches in width; and at a thickness of not less than 0.125 inch nor more than 0.190 inch, and of generally uniform cross section.

1.6.2.2 Portable Application Equipment

The portable applicator shall be defined as hand-operated equipment, specifically designed for placing special markings such as crosswalks, stop bars, legends, arrows, and short lengths of lane, edge and centerlines. The portable applicator shall be capable of applying thermoplastic pavement markings by the extrusion method. It is intended that the portable applicator will be loaded with hot thermoplastic composition from the melting kettles on the mobile applicator. Equip the portable applicator with all the necessary components, including a materials storage reservoir, bead dispenser, extrusion shoe, and heating accessories, so as to be capable of holding the molten thermoplastic at a temperature of 375 to 425 degrees F, of extruding a line of 3 to 12 inches in width, and in thickness of not less than 0.125 inch nor more than 0.190 inch and of generally uniform cross section.

1.6.2.3 Preformed Marking Application Equipment

Refer to SSRS Section 1205-7, subparagraph (A). Topmark brand thermoplastic tactile warning strips manufactured by Flint Trading Company, if used, shall be rolled with a manufacturer's approved roller.

1.7 PREMARKING PRIOR TO INSTALLING FINAL MARKINGS

Premarking shall be performed by the Contractor's pavement marking crew with assistance from the Contractor's CQC surveyor. Standard industry methods for premarking will be utilized. Pavement edge line locations will conform to the recommended line offset as measured from the edge of pavement noted on NCDOT RSD 1205.01, sheet 2 of 2. Anticipate an overall pavement width of 21 feet in each travel direction. Premarking will be approved by the Contracting Officer in advance of the placement of permanent pavement markings. Make fine adjustments to the pavement marking layouts when directed to do so by the Contracting Officer's representative.

PART 2 PRODUCTS

2.1 MATERIALS

Provide materials conforming to the requirements specified herein.

2.1.1 Reflective Media for Roads and Streets

TT-B-1325, Type I, Gradation A.

2.1.2 Thermoplastic Compounds

The thermoplastic reflectorized pavement marking compound shall be extruded in a molten state onto a primed pavement surface. Following a surface application of glass beads and upon cooling to normal pavement temperatures, the marking shall be an adherent reflectorized strip of the specified thickness and width that is capable of resisting deformation by traffic.

2.1.2.1 Composition Requirements

The binder component shall be formulated as a Alkyd/Maleic resin. The pigment, beads and filler shall be uniformly dispersed in the binder resin. The thermoplastic composition shall be free from all skins, dirt, and foreign objects and shall comply with the following requirements:

<u>Component</u>	<u>Percent by Weight</u>	
	<u>White</u>	<u>Yellow</u>
Binder	18% min.	18% min.
Titanium dioxide	10% min.	-
Glass beads	30% min.	30% min.
Calcium carbonate and inert fillers	42% min. *	48% *
Yellow pigments	-	4.0% min.

* Amount and type of calcium carbonate and inert fillers shall be at the option of the manufacturer, providing the other composition requirements of this specification are met.

2.1.2.2 Physical Properties

- a. Drying time: When installed at 70 degrees F and in thicknesses between 1/8 and 3/16 inch, the composition shall be completely solid and shall show no damaging effect from traffic after curing 15 minutes.
- b. Softening point: The composition shall have a softening point of not less than 194 degrees F when tested in accordance with ASTM E28.
- c. Specific gravity: The specific gravity of the composition shall be between 1.9 and 2.2 as determined in accordance with ASTM D792.

2.1.2.3 Primer

- a. Asphalt concrete primer: The primer for asphalt concrete pavements shall be a thermosetting adhesive with a solids content of pigment reinforced synthetic rubber and synthetic plastic resin dissolved or dispersed in a volatile organic solvent. The solids content shall not be less than 10 percent by weight at 70 degrees F and 60 percent relative humidity. A wet film thickness of 0.005 inch, plus or minus 0.001 inch, shall dry to a tack-free condition in less than 5 minutes.

2.1.2.4 Preformed Retroreflective Thermoplastic Markings

At no additional cost to the Government, the Contractor may substitute preformed markings as a substitute for hot applied molten thermoplastic markings. Refer to SSRS Section 1205-7, subparagraph (C) for minimum marking thickness. Preformed markings are available from Flint Trading

Company, P. O. Box 0160 Thomasville, North Carolina. 27361-0160.
(336)-475-6600.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

Allow new pavement surfaces to cure for a period of not less than 3 days before application of marking materials. Thoroughly clean surfaces to be marked before application of the paint. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods as required. Remove existing thermoplastic markings by grinding where existing markings conflict with new markings shown on each Task Order. Marking removal includes arrows, words, crosswalks, stop bars and lane lines. Do not commence painting in any area until pavement surfaces are dry and clean.

3.2 TEMPORARY PAVEMENT MARKINGS

Temporary pavement markings must not be placed on the final lift of pavement (riding surface). Based on the Contractor controlled sequence of construction, temporary pavement markings may be utilized on intermediate pavement lifts that will be opened to traffic at the Contractor's expense.

3.3 APPLICATION

3.3.1 Rate of Application

3.3.1.1 Thermoplastic Compound

After surface preparation has been completed, prime the asphalt or concrete pavement surface with spray equipment. Allow primer materials to "set-up" prior to applying the thermoplastic composition. Allow the asphalt concrete primer to dry to a tack-free condition, usually occurring in less than 10 minutes. Apply asphalt concrete primer to all asphalt concrete pavements at a wet film thickness of 0.005 inch, plus or minus 0.001 inch 265 to 400 square feet per gallon. After the primer has "set-up", apply the thermoplastic at temperatures no lower than 375 degrees F nor higher than 425 degrees F at the point of deposition. Immediately after installation of the marking, apply drop-on reflective glass spheres mechanically at the rate of one pound per 20 square feet such that the spheres are held by and imbedded in the surface of the molten material. Apply all extruded thermoplastic markings at the specified width and at a thickness of not less than 0.125 inch nor more than 0.190 inch.

3.3.2 Thermoplastic Compound

Place thermoplastic pavement markings upon dry pavement. At the time of installation the pavement surface temperature shall be a minimum of 40 degrees F and rising. Thermoplastics, as placed, shall be free from dirt or tint. Apply all centerline, skip line, edge line, and other longitudinal type markings with a mobile applicator. Place all special markings, crosswalks, stop bars, legends, arrows, and similar patterns with a portable applicator, using the extrusion method.

3.3.3 Reflective Media

Application of reflective surface media shall be an integral part of the thermoplastic application process. Application equipment shall apply the

reflective media immediately after the the thermoplastic marking. Accomplish drop-on application of the glass spheres to ensure even distribution at the specified rate of coverage. Should there be malfunction of either paint applicator or reflective media dispenser, discontinue operations until deficiency is corrected.

3.3.4 Application of Heat Applied Preformed Thermoplastic Markings

Layout locations for preformed markings in similar fashion to formed-in-place thermoplastic markings. Layout materials and install utilizing a hand held heat torch conforming to the manufacturer's recommendations. Heating operations shall be performed in such a manner to insure that the markings are not scorched and to insure full adhesion. Perform a pick test upon completion of each word and symbol recommended by the manufacturer to insure good adhesion of the product. Roll preformed raised tactile warning strips applied to concrete sidewalks as recommended by the marking manufacturer.

3.4 FIELD TESTING AND INSPECTION

3.4.1 Sampling and Testing

3.4.2 Inspection

Examine material at the job site to determine that it is the material referenced in the report of test results or certificate of compliance. A certificate of compliance shall be accompanied by test results substantiating conformance to the specified requirements.

3.4.2.1 Surface Preparations and Application Procedures

Surface preparations and application procedures will be examined by the Contracting Officer to determine conformance with the requirements specified. Approve each separate operation prior to initiation of subsequent operations.

The Facilities Engineer in the presence of the Contracting Officer will inspect premark layouts for conformance with the contract drawings before the application of the marking materials. Failure to observe this requirement will result in the removal and replacement of out of place markings at no additional cost to the Government.

3.5 TRAFFIC CONTROL AND PROTECTION

As required by Bid Item 0001, Firm Fixed Price Lump Sum work, provide protection for work crews, equipment and newly placed markings until they are fully cured. Place warning signs near the beginning of the work site and well ahead of the work site for alerting approaching traffic from both directions. Place small markers along newly placed lines to control traffic and prevent damage to markings until the materials are fully cured. Mark painting equipment with large warning signs indicating slow-moving painting equipment in operation.

3.5.1 Initial and Residual Reflectivity Test

Initial retroreflectivity for pavement markings shall not be less than the values indicated in SSRS Section 1205-4 paragraph (C). Test with an approved reflectometer noted in paragraph (C).

After the required 180 day observation period noted in paragraph SSRS Section 1205-4 paragraph (D), markings shall be retested. Retroreflective values shall meet the minimum values noted in paragraph (D). Markings that fail the final test shall be removed and replaced at no additional cost to the Government.

3.5.2 Final Inspection and Acceptance

Final markings and pavement markings shall be placed so as to produce a crisp clean installation. Remove spills and runs that may occur by means that are approved by the Contracting Officer.

-- End of Section --

SECTION 32 17 23.00 30

TRAFFIC CONTROL SIGNS

03/15

PART 1 GENERAL

1.1 REFERENCES

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

FEDERAL SPECIFICATION PUBLICATIONS (FS)

FF-W-84 Washers, Lock (Spring)

Military Specifications (MS)

DOD-P-21035 Paint, High Zinc Dust Content, Galvanizing Repair

North Carolina Department of Transportation (NCDOT) Publication:

NCDOT SSRS 2012 Edition, North Carolina Department of Transportation Standard Specifications for Roads and Structures (English)

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)

Color Tolerance Charts "Color Tolerance Charts"

MUTCD (2009) Manual of Uniform Traffic Control Devices

AMERICAN SOCIETY FOR TESTING AND MATERIALS STANDARDS (ASTM)

ASTM A123 Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strips

ASTM A153 Zinc Coated (Hot-Dip) on Iron and Steel Hardware

ASTM B209 Aluminum and Aluminum-Alloy Sheet and Plate

ASTM A354 Quenched and Tempered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00, "Submittals."

1.2.1 SD-03 Product Data

a. Frangible Sign Post Base; G

1.2.2 SD-07, Certificates

- a. Sign supports and hardware G
- b. Signs, complete assembly G
- c. Manufacturer's Warranty for Reflective Sheeting

1.2.3 SD-08, Manufactuer's Data

- a. Frangible Sign Post Base; G

PART 2 PRODUCTS

2.1 SIGN POSTS

2.1.1 Steel Posts

Steel posts shall be fabricated from 2" and 2 1/4" square steel tubing conforming to ASTM A1011, Grade 50, and shall be hot-dip galvanized after fabrication in compliance with ASTM A123. Tubing shall be fabricated from 12 gauge steel sheet complete with welded corners. Posts shall be manufactured with punched or drilled to produce 7/16 inch diameter holes with a center alignment on each side of the post and spaced one inch apart. Start holes one inch from the top of the post. Galvanize posts after fabrication. Repair galvanized coatings in accordance with DOD-P-21035. Provide sufficient length to permit mounting signs as shown in the MUTCD, Section 2A.18 and figure 2A-2.

2.2 HARDWARE

2.2.1 Bolts and Nuts

Provide Hex bolts and nuts for sign mounting applications. Provide galvanized corner bolts for mounting sign posts to the frangible base units. Items shall conform to ASTM A354 and galvanized in accordance with ASTM A153.

2.2.2 Lock Washers

Items shall conform to FS FF-W-84 and shall be galvanized in accordance with ASTM A153.

2.2.3 Shims

Shims shall be of the same material as the sign panel.

2.3 Frangible Base Units

For each new sign post, provide a Model S200 Snap'n Safe frangible base unit as manufactured by Designovations, Incorporated, 7339 Wildwood Road Stillman Valley, IL 61084. Provide units appropriately sized for the new post. Include "L" shaped mounting bolt hardware with each unit.

2.4 SIGN PANELS

Signs shall be made from 0.125 inch thick aluminum sheet. The metal shall conform to ASTM B209, alloy G061-T6.

2.5 SIGN REFLECTORIZATION

Traffic signs shall conform in appearance to MUTCD sign requirements and Color Tolerance Charts. Apply reflective sheeting as recommended by the manufacturer. Reflectorized sheeting shall be supported by the manufacturer's extended warranty as required by NCDOT NCDOT SSRS, Section 1093-2, Subparagraph (F). Signs must be fabricated using all of the sheeting manufacturer's recommended means and methods that will insure that the sheeting manufacturer's warranty will remain in full effect.

Each sign shall include the original sign identification number placed on the back of the sign with an indelible black marker. Each sign shall also include a long wearing sign maintenance decal designed for long term outdoor use. The decal must have a self-adhesive backing. The Contractor shall punch out the installation date, type of sheeting, warranty period and anticipated replacement date.

2.5.1 Yield Signs

All signs shall be reflectorized with an ultra-high intensity microprismatic grade retroreflective sheeting. Reflectorized sheeting shall be adhesive backed and conform to ASTM D4956-09, Type VIII 3M "diamond grade" prismatic sheeting for stop and yield signs. Provide a 12 year sheeting manufacturer's warranty.

2.5.2 Regulatory, Warning and Informational Signs

All signs shall be reflectorized with a high intensity microprismatic grade retroreflective sheeting. Reflectorized sheeting shall be adhesive backed and conform to ASTM D4956-09, Type III 3M 3930 series sheeting or approved equal for signs other than stop and yield sign applications. Provide a 10 year sheeting manufacturer's warranty.

2.6 SIGN MESSAGE

Sign message shall be applied by silk screening or reverse silk screening. Message fabrication procedures shall be as recommended by the manufacturer of the reflective sheeting.

PART 3 EXECUTION

3.1 LOCATING EXISTING TRAFFIC OR OTHER SIGNS

Remove and salvage for reuse, sign assemblies located within the construction limits. Construction limits are shown on the contract drawings. Protect sign surfaces from damage during removal, storage and reinstallation.

3.2 SIGN LOCATION

New sign locations are indicated on the contract drawings. Height and offsets from the roadway shall be as required by the MUTCD. When directed by the Contracting Officer, signs shall be relocated to improve sign visibility or improve vehicle and pedestrian safety. Such direction shall

be provided by stakeout methods using Contractor supplied stakes. Bid on one stake for each sign. It will be the Contractor's responsibility to maintain stakeouts until the work is complete. Stakes in good condition may be salvaged and reused. Before installing any sign, the location must be scanned for underground utilities by the Contractor. Report any conflicts to the Contracting Officer immediately. The Contracting Officer's representative and the Air Station traffic engineer will indicate an alternative location for the sign. Rescan the alternative location for underground utilities.

3.3 SIGN POST ANCHORAGE IN SOILS

Drive 2 1/4" base post to a minimum depth of 3 feet. Insure base post is set plumb. Provide a 2" exposure of the base post above finished grade. Set the Snap'n Safe frangible base on top of the exposed base post and anchor with 2 "L" shaped mounting bolts. Install all anchor bolts on the same corner of the base post in accordance with the manufacturer's instructions.

3.4 SIGN POST ANCHORAGE IN CONCRETE

Core a 6 inch diameter hole through the island concrete and bituminous pavement. Drive 2 1/4" base post to a minimum depth of 2.5 feet below the top of concrete. Insure base post is set plumb. Provide a 2" exposure of the base post above the top of concrete. Grout around the post with a non shrink freeze/ thaw resistant grout. Set the Snap'n Safe frangible base on top of the exposed base post and anchor with 2 "L" shaped mounting bolts. Anchor new sign assemblies to the new frangible base with 2 "L" shaped mounting bolts. Trim posts to the length required to meet height requirements noted above.

3.5 SIGN POST INSTALLATIONS

New posts (and existing posts to be relocated) shall be installed in a plumb condition. Compact soil around wood posts on all sides while checking plumb conditions. Check sign heights to insure compliance with the MUTCD height requirements if the sign is left on the post during the installation. Adjust sign heights as required to meet the MUTCD.

3.5.1 Sign Installation

Place new signs or reinstall existing signs with new stainless steel anchor bolts, washers and nuts. Protect sign sheeting from damage during shipping, storage and handling as damaged sheeting will be rejected upon completion of any sign installation. Transfer sign identification markings to the back of any new replacement signs. Include the hole punched sign management decal on the back of each new sign. Do not install the decal to existing signs that are indicated on the contract drawings for reuse.

3.6 RECORDING INSTALLED SIGN LOCATIONS

Each new or relocated sign location must be recorded by the CQC surveyor when producing final as-built drawings. Include the sign number as part of the survey. Transfer the existing sign number to replacement signs. New signs will be assigned a sign number by the Air Station traffic engineer once the sign has been erected.

-- End of Section --

SECTION 32 92 23

TURF (SOD)

3/15

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOD PRODUCERS ASSOCIATION (ASPA)

ASPA GSS Guideline Specifications for Sodding

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 602 Agricultural Liming Materials

1.2 DEFINITIONS

1.2.1 Stand of Turf

95 percent ground cover of the established species.

1.3 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-03 Product Data

Fertilizer; G

Turf Reinforcement Mat; G

Include physical characteristics, and recommendations.

SD-07 Certificates

Sod farm certification for sods; G. Indicate type of sod in accordance with ASPA GSS.

Fertilizer; G

SD-08 Manufacturer's Instructions

Turf Reinforcement Mat; G

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Delivery

1.4.1.1 Sod Protection

Sod shall be delivered on a daily basis. Do not order more sod than can be

installed during a normal day's construction schedule. Protect from drying out and from contamination during delivery, on-site storage, and handling.

1.4.1.2 Fertilizer and Lime Delivery

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 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 Fertilizer and Lime Storage

Store in cool, dry locations away from contaminants.

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 order or place sod when the ground is frozen, snow covered, muddy, or when air temperature exceeds 90 degrees Fahrenheit. Work planning shall consider weather forecasts for the day when ordering sod.

1.6 TIME LIMITATIONS

1.6.1 Sod

Place sod a maximum of twentyfour hours after initial harvesting, in accordance with ASPA GSS as modified herein.

PART 2 PRODUCTS

2.1 TURF REINFORCEMENT MAT

Provide a permanent three dimensional mat comprised of stitched or heat bonded nylon or polypropylene filament formed into a loose matrix (approximately 90% to 95% air voids). All filaments shall be UV stabilized with no less than 2% carbon black. Roll widths may vary to best fit the ditch or swale geometrics. Sources include Enkamat 7020 manufactured by BASF Corporation, TRM C-50 manufactured by Contech Construction Products or P-300 manufactured by North American Green. Core mat weights shall note be less than 11 ounces per square yard.

2.2 SODS

Sod planting dates for locally available sod shall be based on factors such as s climate conditions and availability from local producers. The Contractor should keep abreast of factors controlling availability and adjust construction schedules to accommodate these factors. The Government shall not be held liable for Contractor delays due to shortages or unavailable sources of sod.

2.2.1 Classification

Nursery grown or Field grown as classified in the ASPA 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.

2.2.2 Composition

Proportion grass species as follows.

Botanical and Common Name	Percent:
Centipede	100

2.3 TOPSOIL

2.3.1 Existing Soil

Modify existing soil with the addition of pH adjusters listed below. Apply at rates required by paragraphs 3.1.2, "Soil Preparation" below.

2.3.2 On-Site Topsoil

Reusable surface soil stripped and stockpiled on site if requirements specified for topsoil in paragraph entitled "Composition" are met.

2.3.3 Off-Site Topsoil

Shall be well drained black friable sandy loam from off-station sources.

2.4 pH ADJUSTERS

2.4.1 Lime

ASTM C 602, commercial agricultural limestone containing a minimum of 94 percent of total carbonates, 80 percent calcium, and 14 percent magnesium. Provide the following ASTM E 11 gradation: minimum 86 percent passing the No. 20 sieve and 28 percent passing the No. 100 sieve.

2.5 FERTILIZER

2.5.1 Controlled Release Fertilizer

Nitrogen-phosphorous-potassium ration of 15-0-15 plus 2 percent iron, composed of pills coated with plastic resin to provide continuous release of fertilizer for at least 6 months.

2.6 WATER

Source of water to be approved by Contracting Officer, suitable quality for irrigation.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 EXTENT OF WORK

Provide soil preparation, fertilizing, temporary seeding (if required) and surface top dressing of all newly graded earth surfaces. Treat all areas inside or outside the limits of construction that are disturbed by the Contractor's operations. Ditches, Swales, roadside shoulders and filled surfaces behind curb lines shall be sodded. In accordance with best practices for sedimentation and erosion control, do not disturb turfed surfaces unless final earthwork can be completed quickly and sod installed. **Contractor shall plan work so that disturbed surfaces are sodded on the same day that soils are brought to final elevations and fine graded.**

3.1.2 Soil Preparation

With the exception of surfaces that are treated with turf reinforcement mat, till existing shoulder to minimum depth of 6 inches by scarifying, disking, harrowing, or other methods approved by the Contracting Officer. Remove debris and stones larger than one inch in any dimension remaining on surface after tillage. Provide off-site topsoil to meet finish grade indicated on the contract drawings. Spread stockpiled topsoil evenly to provide positive drainage. Do not spread and topsoil when frozen or excessively wet or dry. Thoroughly mix subgrade, soil amendments and topsoil to a depth of 3 inches by tilling or other method approved by the Contracting Officer. Correct irregularities in finished surfaces to eliminate depressions. Protect finished prepared soil areas from damage by vehicular or pedestrian traffic.

Fine grade sod beds to insure that the finished sod surface will be 0" to 1/2" below finished paved (concrete and bituminous) surfaces. Sod surfaces placed above the grade of finished pavement surfaces shall be removed and reworked to meet the above stated requirements.

3.1.2.1 pH Adjuster Application Rates

Apply pH adjuster at rates as determined by laboratory soil analysis of the soils at the job site. For bidding purposes only apply at rates for the following:

Lime 20 pounds per 1000 square feet.

3.1.2.2 Fertilizer Application Rates

Apply fertilizer at rates as determined by laboratory soil analysis of the soils at the job site. For bidding purposes only apply at rates for the following:

Synthetic Fertilizer applied at a rate of 0.75 pounds of nitrogen per 1000 square feet.

3.2 TURF REINFORCEMENT MAT

Undercut soil surface after all other preparation work has been completed to a depth of 4 inches. Create anchor trenches around the perimeter of areas that will receive the mat and transversely across ditches and swales as detailed on the Contractor's approved drawings. See Navfac Sketch 3282959-52 for depth and locations. Anchor mats against new concrete flume and aprons as detailed on the Contractor's approved drawings. See Navfac Sketch 3283959-60. Compact excavated soils tightly against the turned down mat. Backfill mat matrix with new topsoils and cover with 3 inches of new topsoil.

3.3 SODDING

3.3.1 Placing

Place sod a maximum of 24 hours after initial harvesting, in accordance with ASPA GSS as modified herein. Thoroughly moisten areas to be sodded immediately prior to placing sod. Dormant sod may be placed; however, the Contractor will be responsible for providing proper anchorage until the sod has fully rooted in the spring. Sod that fails to "green-up" in the spring must be replaced by the Contractor at no additional cost to the Government.

3.3.2 Sodding Slopes and Ditches

For slopes 2:1 and greater, lay sod with long edge parallel to slope. For V-ditches and flat bottomed ditches, lay sod with long edge parallel 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.

3.3.3 Finishing

After completing sodding, blend edges of sodded area smoothly into surrounding area.

3.3.4 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.

3.3.5 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.

3.4 PROTECTION OF TURF AREAS

Immediately after turfing, protect area against traffic and other use.

3.5 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 --

SECTION 33 40 00

STORM DRAINAGE UTILITIES
03/15

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
(AASHTO)

AASHTO M 294 (2009) Standard Specification for
Corrugated Polyethylene Pipe, 300- to
1500-mm Diameter

ASTM INTERNATIONAL (ASTM)

ASTM A 48/A 48M (2003; R 2008) Standard Specification for
Gray Iron Castings

ASTM A 536 (1984; R 2009) Standard Specification for
Ductile Iron Castings

ASTM C 231 (2004) Air Content of Freshly Mixed
Concrete by the Pressure Method

ASTM C 270 (2008a) Standard Specification for Mortar
for Unit Masonry

ASTM C 506 (2010a) Standard Specification for
Reinforced Concrete Arch Culvert, Storm
Drain, and Sewer Pipe

ASTM C 55 (2009) Concrete Brick

ASTM C 877 (2008) External Sealing Bands for Concrete
Pipe, Manholes, and Precast Box Sections

ASTM C 913 (2008) Standard Specification for Precast
Concrete and Wastewater Structures

ASTM D 1751 (2004; R 2008) Standard Specification for
Preformed Expansion Joint Filler for
Concrete Paving and Structural
Construction (Nonextruding and Resilient
Bituminous Types)

ASTM D 1752 (2004a; R 2008) Standard Specification for
Preformed Sponge Rubber Cork and Recycled
PVC Expansion

ASTM D 2321 (2005) Standard Practice for Underground

Installation of Thermoplastic Pipe for
Sewers and Other Gravity-Flow Applications

ASTM F 477 (2008) Standard Specification for
Elastomeric Seals (Gaskets) for Joining
Plastic Pipe

North Carolina Department of Transportation

SSRS 2012 Edition, Standard Specifications for
Roads and Structures

RSD 2012 Edition, Roadway Standard Drawings

QPL 2012 Edition, Qualified Purchase List

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00
SUBMITTAL PROCEDURES:

SD-03 Product Data

HDPE Corrugated Pipe and Fittings
Concrete Pipe
Mortar and Grout
Precast Concrete Waffle Box
Frame and Cover for Gratings
Stormwater Inlet Appurtenances

SD-07 Certificates

NCDOT QC/QA Program Certification
Pipeline Testing
Frame and Cover for Gratings
Precast Concrete Inlet Box

1.3 DELIVERY, STORAGE, AND HANDLING

1.3.1 Delivery and Storage

Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris. Before, during, and after installation, plastic pipe and fittings shall be protected from any environment that would result in damage or deterioration to the material. Keep a copy of the manufacturer's instructions available at the construction site at all times and follow these instructions unless directed otherwise by the Contracting Officer. Solvents, solvent compounds, lubricants, elastomeric gaskets, and any similar materials required to install plastic pipe shall be stored in accordance with the manufacturer's recommendations and shall be discarded if the storage period exceeds the recommended shelf life. Solvents in use shall be discarded when the recommended pot life is exceeded.

1.3.2 Handling

Materials shall be handled in a manner that ensures delivery to the trench in sound, undamaged condition. Pipe shall be carried to the trench, not dragged.

PART 2 PRODUCTS

2.1 HDPE CORRUGATED PIPE AND FITTINGS

Polyethylene pipe for culverts and storm drains shall be of the sizes indicated on the contract drawings and shall conform to the requirements specified.

2.1.1 PE Pipe

Submit the pipe manufacturer's NCDOT QC/QA Program Certification covering all new pipe components. If possible, pipe shall be purchased from the NCDOT QPL.

2.1.1.1 Corrugated PE Pipe

AASHTO M 294, Type S. For slow crack growth resistance, acceptance of resins shall be determined by using the notched constant ligament-stress (NCLS) test meeting the requirements of AASHTO M 294. Pipe walls shall have the following properties:

Nominal Size (in.)	Minimum Wall Area (square in/ft)	Minimum Moment of Inertia of Wall Section (in to the 4th/in)
12	1.50	0.024
15	1.91	0.053
18	2.34	0.062
24	3.14	0.116
30	3.92	0.163
36	4.50	0.222
42	4.69	0.543
48	5.15	0.543
54	5.67	0.800
60	6.45	0.800

2.1.2 Concrete Culvert Pipe

Circular pipe will be manufactured in accordance with and conforming to ASTM C76, Class III. Arch pipe will meet the requirements of ASTM C 506, Class AIII

Reinforced concrete pipe for culverts and storm drains shall be of the sizes indicated on the contract drawings.

Submit the pipe manufacturer's NCDOT QC/QA Program Certification covering all new pipe components. If possible, pipe shall be purchased from the NCDOT QPL. Concrete culvert pipe will meet the requirements of NCDOT SSRS, section 1032-9, Subsection (C).

2.2 DRAINAGE STRUCTURES

2.2.1 Beveled End Sections

Sections shall be fabricated in the field by the Contactor in accordance with the contract drawings.

2.2.2 Precast Concrete Inlet Box

Manufactured in accordance with and conforming to SSRS, Section 1077 and ASTM C 913. See RSD 840.45. Provide optional joint detail designed to accept new ductile iron grate and frame. Provide butyl rubber seal between frame and box. Provide an approved nonshrink grout designed for use on vertical surfaces without sagging to seal pipe penetrations.

2.2.3 Field Cast Concrete Junction Box Cover

Fabricate steel reinforced concrete box cover similar to NCDOT RSD drawing 840.35; but, sized to fit the existing junction box. In lieu of a manhole, insert a Neenah R3340-D grate and frame. Minimum slab thickness will be 8 inches adjacent to the new inlet. Thickness will vary greater than 8" to a maximum of 12" at the perimeter of the slab. Slope the slab bottom as shown on the contract drawings. Curb will be cast intergral with the cover. Bevel all exposed concrete edges as detailed on the drawings for curb and gutter. Include #4 bar reinforcement spaced at 6 inches on center around the perimeter of the new inlet frame.

2.2.4 Concrete Headwalls

NCDOT precast concrete headwalls with wingwalls and aprons per NCDOT RSD. Provide nonshrink grout or closed cell neoprene gaskets to seal wall penetrations.

2.3 MISCELLANEOUS MATERIALS

2.3.1 Concrete

Unless otherwise specified, concrete and reinforced concrete shall conform to the requirements for 3000 psi concrete. The concrete mixture shall have air content by volume of concrete, based on measurements made immediately after discharge from the mixer, of 5 to 7 percent when maximum size of coarse aggregate exceeds 1-1/2 inches. Air content shall be determined in accordance with ASTM C 231. The concrete covering over steel reinforcing shall not be less than 1 inch thick for covers and not less than 1-1/2 inches thick for walls and flooring. Concrete covering deposited directly against the ground shall have a thickness of at least 3 inches between steel and ground. Expansion-joint filler material shall conform to ASTM D 1751, or ASTM D 1752, or shall be resin-impregnated fiberboard conforming to the physical requirements of ASTM D 1752.

2.3.2 Concrete Masonry Units

ASTM C 55

2.3.3 Mortar and Grout

Mortar for pipe joints, connections to other drainage structures, and brick or block construction shall conform to ASTM C 270, Type M, except that the maximum placement time shall be 1 hour. The quantity of water in the

mixture shall be sufficient to produce a stiff workable mortar. Water shall be clean and free of harmful acids, alkalies, and organic impurities. The mortar shall be used within 30 minutes after the ingredients are mixed with water. The inside of the joint shall be wiped clean and finished smooth. The mortar head on the outside shall be protected from air and sun with a proper covering until satisfactorily cured. Grout for vertical surface shall be non shrink and non sag.

2.3.4 Frame and Cover for Gratings

Submit certification on the ability of frame and cover or gratings to carry the imposed live load. Frame and cover for gratings shall be cast gray iron, ASTM A 48/A 48M, Class 35B; cast ductile iron, ASTM A 536, Grade 65-45-12; or cast aluminum, ASTM B 26/B 26M, Alloy 356.OT6. Weight, shape, size, and waterway openings for grates and curb inlets shall be as indicated on the plans. The word "Storm Sewer" shall be stamped or cast into covers so that it is plainly visible.

2.3.5 Stormwater Inlet Appurtenances

Provide inlet Curb plates using ductile iron casting, Neenah R-3289-HV (curb plate only). Other manufacturers may be considered with plates having identical dimensions.

2.3.6 Joints

2.3.6.1 Exterior Joint Seals

For polyethylene pipe and concrete pipe, provide a 6 ounce per square yard nonwoven needle punched geotextile fabric for wrapping joints. Provide a suitable adhesive tape to secure the fabric during construction. As an alternative to field fabricated seals, provide a fabric preformed seal conforming to ASTM C 877 with a minimum width of 12 inches.

2.3.6.2 Corrugated PE Plastic Pipe

Pipe joints shall be water tight and shall conform to the requirements in AASHTO M 294. Water tight joints shall be made using a PE coupling and rubber gaskets as recommended by the pipe manufacturer. Rubber gaskets shall conform to ASTM F 477.

2.3.6.3 Reinforced Concrete Pipe

Gaskets for Concrete Pipe: When infiltration or exfiltration is a concern for pipe lines, the couplings may be required to have gaskets. The closed-cell expanded rubber gaskets shall be a continuous band approximately 7 inches wide and approximately 3/8 inch thick, meeting the requirements of ASTM D1056, Type 2 A1, and shall have a quality retention rating of not less than 70 percent when tested for weather resistance by ozone chamber exposure, Method B of ASTM D1171. O-rings shall meet the requirements of ASTM C990 or ASTM C443. Preformed flexible joint sealants shall conform to ASTM C990, Type B.

2.4 EROSION CONTROL RIPRAP

Provide granite riprap. Gradation shall meet SSRS Section 1042, Class B. Minimum mat thickness shall be 18 inches and shall be placed over a nonwoven geotextile fabric.

PART 3 EXECUTION

3.1 EXCAVATION FOR PIPE CULVERTS, STORM DRAINS, AND DRAINAGE STRUCTURES

Excavation of trenches, and for appurtenances and backfilling for culverts and storm drains, shall be in accordance with the applicable portions of Section 31 23 0.00 20, "Excavation and Fill" and the requirements specified below.

3.1.1 Trenching

The width of trenches at any point below the top of the pipe shall be not greater than the outside diameter of the pipe plus the width necessary to permit satisfactory jointing and thorough tamping of the bedding material under and around the pipe. Refer to the contract drawings for minimum trench widths outside of paving limits. Trench widths shall be decreased under roadways where flowable cement fill will be employed. Sheeting and bracing, where required, shall be placed within the trench width as specified, without any overexcavation.

3.1.2 Removal of Unstable Material

Where wet or otherwise unstable soil incapable of properly supporting the pipe, as determined by the Contracting Officer, is unexpectedly encountered in the bottom of a trench, such material shall be removed to the depth required and replaced to the proper grade with select granular material, compacted as provided in paragraph BACKFILLING. When removal of unstable material is due to the fault or neglect of the Contractor while performing shoring and sheeting, water removal, or other specified requirements, such removal and replacement shall be performed at no additional cost to the Government.

3.2 BEDDING

The bedding surface for the pipe shall provide a firm foundation of uniform density throughout the entire length of the pipe. Over excavate the trench depth to allow for the installation of granular bedding materials in accordance with the contract drawings.

3.2.1 Plastic Pipe

Bedding for PE pipe shall meet the requirements of ASTM D 2321. Bedding, haunching, and initial backfill shall be Class IB or II material for other applications.

3.2.2 Concrete Pipe

Install granular Class IB or II bedding materials in accordance with the American Concrete Pipe Association Installation Type 2 recommendations. Haunching and initial backfill shall be completed utilizing flowable cement fill under roads and shoulders. Complete backfilling with the installation of additional flowable cement fill to the top of subgrade.

3.3 PLACING PIPE

Submit printed copies of the manufacturer's recommendations for installation procedures of the material being placed, prior to installation.

Each pipe shall be thoroughly examined before being laid; defective or

damaged pipe shall not be used. Pipelines shall be laid to the grades and alignment indicated on the Contractor's approved contract drawings. Grade control shall be provided by the Contractor's CQC surveyor. Proper facilities shall be provided for lowering sections of pipe into trenches. Lifting lugs in vertically elongated metal pipe shall be placed in the same vertical plane as the major axis of the pipe. Pipe shall not be laid in water, and pipe shall not be laid when trench conditions or weather are unsuitable for such work. Diversion of drainage or dewatering of trenches during construction shall be provided as necessary. Deflection of installed flexible pipe shall not exceed the following limits:

TYPE OF PIPE	MAXIMUM ALLOWABLE DEFLECTION (%)
Plastic (PVC & HDPE)	5

Note post installation requirements of paragraph 'Deflection Testing' in PART 3 of this specification for all pipe products including deflection testing requirements for flexible pipe.

3.3.1 Corrugated PE Pipe

Laying shall be with the separate sections joined firmly on a bed shaped to line and grade and shall follow manufacturer's recommendations. Provide weights to anchor pipes in place during backfilling operations. Remove weights as backfill advances over the pipe.

3.4 JOINTING

Install joint gaskets and exterior joint seals as work progresses. If prefabricated exterior joint seals are utilized, install such seals using procedures recommended by the seal manufacturer. Utilize lubricants to install rubber gaskets and O rings to prevent damage. Protect seals from accumulated foreign debris. Install bell and spigot HDPE pipe to fully engage all available annular rings within the spigot.

3.5 DRAINAGE STRUCTURES

3.5.1 Inlets Boxes

Construction shall be of precast reinforced concrete or concrete brick complete with frames and covers or gratings and precast steel reinforced concrete tops where shown on Contractor's approved construction drawings. Provide fixed galvanized steel ladders where indicated. Pipe connections shall be made waterproof with non shrink non sag concrete mortar. Grade control and location control shall be provided by the Contractor's CQC surveyor.

3.5.1.1 Precast Concrete Box Repairs

Mixing and placing shall be in conformance with the material manufacturer's instructions and as specified therein. Ingredients shall be thoroughly dry-mixed before adding water. After adding water, mix the batch for 3 minutes. Batches shall be of size to allow continuous placement of freshly mixed grout. Discard grout not used within 30 minutes after mixing. The space between the top of the concrete or machinery-bearing surface and the plate shall be filled solid with the grout. Forms shall be of wood or other equally suitable material for completely retaining the grout on all sides and on top and shall be removed after the grout has set. The placed

grout shall be carefully worked by rodding or other means to eliminate voids; however, overworking and breakdown of the initial set shall be avoided. Grout shall not be retempered or subjected to vibration from any source. Where clearances are unusually small, placement shall be under pressure with a grout pump. Temperature of the grout, and of surfaces receiving the grout, shall be maintained at 65 to 85 degrees F until after setting.

3.5.1.2 Parging Existing Inlet Structures

Seal interiors of existing masonry inlet boxes with 1 inch minimum of nonshrink grout designed for application on vertical surfaces. Prime the entire surface to be parged with a primer recommended by the grout manufacturer. For Bid Item 0001 work, Contractor may assume a maximum interior box dimension of 4 feet depth and 3 feet maximum width and length.

3.5.2 Headwalls

Construct new headwalls to accept new pipe extensions. Refer to the Contract drawings for headwall dimensions except that headwalls running transverse across ditch flow lines must be extended in length to intercept surrounding new ditch side slopes.

3.5.3 Concrete Pipe Collars

Seal new pipe to existing pipes with a cast in place concrete pipe collar. Excavate soils around the existing pipe and provide formwork as needed to install a new NCDOT the headwall in accordance with NCDOT Standard Drawing 840.72. Wrap the joint between existing and new pipe with an approved exterior seal prior to placing the concrete.

3.5.4 Beveled Pipe Ends

Once pipe has been installed, field cut HDPE pipe with a reciprocating saw at a slope of not more than 3 (horizontal) to 1 (vertical). Refer to the contract drawings for details.

3.6 BACKFILLING

3.6.1 Backfilling Pipe in Trenches

After the pipe has been properly bedded, selected material from excavation or borrow, at a moisture content that will facilitate compaction, shall be placed along both sides of pipe in layers not exceeding 6 inches in compacted depth. The backfill shall be brought up evenly on both sides of pipe for the full length of pipe. The fill shall be thoroughly compacted under the haunches of the pipe. Each layer shall be thoroughly compacted with mechanical tampers or rammers. This method of filling and compacting shall continue until the fill has reached an elevation equal to the midpoint (spring line) of RCP or has reached an elevation of at least 12 inches above the top of the pipe for flexible pipe. The remainder of the trench shall be backfilled and compacted by spreading and rolling or compacted by mechanical rammers or tampers in layers not exceeding 12 inches. Tests for density shall be made as necessary to ensure conformance to the compaction requirements specified below. Where it is necessary, in the opinion of the Contracting Officer, that sheeting or portions of bracing used be left in place, the contract will be adjusted accordingly. Untreated sheeting shall not be left in place beneath structures or pavements.

3.6.2 Backfilling Pipe in Fill Sections

For pipe placed in fill sections, backfill material and the placement and compaction procedures shall be as specified below. The fill material shall be uniformly spread in layers longitudinally on both sides of the pipe, not exceeding 6 inches in compacted depth, and shall be compacted by rolling parallel with pipe or by mechanical tamping or ramming. Prior to commencing normal filling operations, the crown width of the fill at a height of 12 inches above the top of the pipe shall extend a distance of not less than twice the outside pipe diameter on each side of the pipe or 12 feet, whichever is less. After the backfill has reached at least 12 inches above the top of the pipe, the remainder of the fill shall be placed and thoroughly compacted in layers not exceeding 12 inches. Use select granular material for this entire region of backfill for flexible pipe installations.

3.6.3 Backfilling Trenches Under Roadways and Curbing

Trenches under roadways shall be backfilled with flowable cement backfill to the depths indicated on the Contractor's approved drawings. Refer to the contract drawings for the minimum heavy duty road crossing section. Flowable cement fill shall extend beyond the edge of pavement for a distance equal to the depth of the excavation. Install flowable fill in lifts; weighting the pipe to prevent flotation.

3.6.4 Backfilling Trenches Under Driveway Crossings

Trenches under roadways shall be backfilled with structural fill material to the depths indicated on the Contractor's approved drawings. Refer to the contract drawings for the minimum driveway crossing section. Use structural fill around the entire pipe length except where topsoil or concrete apron is required.

3.6.5 Movement of Construction Machinery

When compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Movement of construction machinery over a culvert or storm drain at any stage of construction shall be at the Contractor's risk. Any damaged pipe shall be repaired or replaced.

3.6.6 Compaction

3.6.6.1 General Requirements

Refer to specification section 31 23 00.00 20, "Excavation and Fill".

3.7 PIPELINE TESTING

3.7.1 Post-Installation Inspection

One hundred percent of all HDPE pipe shall be checked for rips, tears, joint separations, soil migration through the joint, cracks, localized bucking, bulges, settlement and alignment.

- a. Repair or replace any pipe with crack exhibiting displacement across the crack, exhibiting bulges, creases, tears, spalls, or delamination.

- b. Reports: The deflection results and final post installation inspection report shall include: a copy of all video taken, pipe location identification, equipment used for inspection, inspector name, deviation from design, grade, deviation from line, deflection and deformation of flexible pipe systems, inspector notes, condition of joints, condition of pipe wall (e.g. distress, cracking, wall damage dents, bulges, creases, tears, holes, etc.).

3.8 FIELD PAINTING

After installation, clean cast-iron frames, covers, gratings, and steps not buried in masonry or concrete to bare metal of mortar, rust, grease, dirt, and other deleterious materials and apply a coat of bituminous paint.

-- End of Section --