

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH, N.C.

C202826

CONTRACT AND
CONTRACT BONDS
FOR CONTRACT NO. C202826

WBS 36492.3.4 STP-0210(23)

T.I.P NO. U-4444AB, U-4444B

COUNTY OF CUMBERLAND

THIS IS THE ROADWAY & STRUCTURE CONTRACT

ROUTE NUMBER NC 210 LENGTH 1.696 MILES

LOCATION NC-210 (MURCHISON RD) FROM NORTH OF HONEYCUTT RD TO BUTNER
RD.

CONTRACTOR BARNHILL CONTRACTING COMPANY

ADDRESS P.O. BOX 1529

TARBORO, NC 278861529

BIDS OPENED OCTOBER 16, 2012

CONTRACT EXECUTION NOV 0 8 2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH, N.C.

PROPOSAL

DATE AND TIME OF BID OPENING: **OCTOBER 16, 2012 AT 2:00 PM**

CONTRACT ID C202826

WBS 36492.3.4

FEDERAL AID NO. STP-0210(23)

COUNTY CUMBERLAND

T.I.P. NO. U-4444AB, U-4444B

MILES 1.696

ROUTE NO. NC 210

LOCATION NC-210 (MURCHISON RD) FROM NORTH OF HONEYCUTT RD TO BUTNER RD.

TYPE OF WORK GRADING, DRAINAGE, PAVING, SIGNALS, AND STRUCTURES.

NOTICE:

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS \$30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOT WITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING, REGARDLESS OF FUNDING SOURCES.

BIDS WILL BE RECEIVED AS SHOWN BELOW:

THIS IS A ROADWAY & STRUCTURE PROPOSAL

5% BID BOND OR BID DEPOSIT REQUIRED

**PROPOSAL FOR THE CONSTRUCTION OF
CONTRACT No. C202826 IN CUMBERLAND COUNTY, NORTH CAROLINA**

Date _____ 20 _____

**DEPARTMENT OF TRANSPORTATION,
RALEIGH, NORTH CAROLINA**

The Bidder has carefully examined the location of the proposed work to be known as Contract No. **C202826**; has carefully examined the plans and specifications, which are acknowledged to be part of the proposal, the special provisions, the proposal, the form of contract, and the forms of contract payment bond and contract performance bond; and thoroughly understands the stipulations, requirements and provisions. The undersigned bidder agrees to bound upon his execution of the bid and subsequent award to him by the Board of Transportation in accordance with this proposal to provide the necessary contract payment bond and contract performance bond within fourteen days after the written notice of award is received by him. The undersigned Bidder further agrees to provide all necessary machinery, tools, labor, and other means of construction; and to do all the work and to furnish all materials, except as otherwise noted, necessary to perform and complete the said contract in accordance with *the 2012 Standard Specifications for Roads and Structures* by the dates(s) specified in the Project Special Provisions and in accordance with the requirements of the Engineer, and at the unit or lump sum prices, as the case may be, for the various items given on the sheets contained herein.

The Bidder shall provide and furnish all the materials, machinery, implements, appliances and tools, and perform the work and required labor to construct and complete State Highway Contract No. **C202826 in Cumberland County**, for the unit or lump sum prices, as the case may be, bid by the Bidder in his bid and according to the proposal, plans, and specifications prepared by said Department, which proposal, plans, and specifications show the details covering this project, and hereby become a part of this contract.

The published volume entitled *North Carolina Department of Transportation, Raleigh, Standard Specifications for Roads and Structures, January 2012* with all amendments and supplements thereto, is by reference incorporated into and made a part of this contract; that, except as herein modified, all the construction and work included in this contract is to be done in accordance with the specifications contained in said volume, and amendments and supplements thereto, under the direction of the Engineer.

If the proposal is accepted and the award is made, the contract is valid only when signed either by the Contract Officer or such other person as may be designated by the Secretary to sign for the Department of Transportation. The conditions and provisions herein cannot be changed except over the signature of the said Contract Officer.

The quantities shown in the itemized proposal for the project are considered to be approximate only and are given as the basis for comparison of bids. The Department of Transportation may increase or decrease the quantity of any item or portion of the work as may be deemed necessary or expedient.

An increase or decrease in the quantity of an item will not be regarded as sufficient ground for an increase or decrease in the unit prices, nor in the time allowed for the completion of the work, except as provided for the contract.

Accompanying this bid is a bid bond secured by a corporate surety, or certified check payable to the order of the Department of Transportation, for five percent of the total bid price, which deposit is to be forfeited as liquidated damages in case this bid is accepted and the Bidder shall fail to provide the required payment and performance bonds with the Department of Transportation, under the condition of this proposal, within 14 calendar days after the written notice of award is received by him, as provided in the *Standard Specifications*; otherwise said deposit will be returned to the Bidder.



State Contract Officer

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PROJECT SPECIAL PROVISIONS**GENERAL****CONTRACT TIME AND LIQUIDATED DAMAGES:**

(8-15-00) (Rev. 12-18-07)

108

SPI G07 A

The date of availability for this contract is **November 26, 2012**, except that work in jurisdictional waters and wetlands shall not begin until a meeting between the DOT, Regulatory Agencies, and the Contractor is held as stipulated in the permits contained elsewhere in this proposal. This delay in availability has been considered in determining the contract time for this project.

The completion date for this contract is **May 13, 2016**.

Except where otherwise provided by the contract, observation periods required by the contract will not be a part of the work to be completed by the completion date and/or intermediate contract times stated in the contract. The acceptable completion of the observation periods that extend beyond the final completion date shall be a part of the work covered by the performance and payment bonds.

The liquidated damages for this contract are **Two Hundred Dollars (\$200.00)** per calendar day. These liquidated damages will not be cumulative with any liquidated damages which may become chargeable under Intermediate Contract Time Number 1.

INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES:

(7-1-95) (Rev. 2-21-12)

108

SPI G13 A

Except for that work required under the Project Special Provisions entitled *Planting, Reforestation* and/or *Permanent Vegetation Establishment*, included elsewhere in this proposal, the Contractor will be required to complete all work included in this contract and shall place and maintain traffic on same.

The date of availability for this intermediate contract time is **November 26, 2012**.

The completion date for this intermediate contract time is **November 15, 2015**.

The liquidated damages for this intermediate contract time are **Two Thousand Eight Hundred Dollars (\$2,800.00)** per calendar day.

Upon apparent completion of all the work required to be completed by this intermediate date, a final inspection will be held in accordance with Article 105-17 and upon acceptance, the Department will assume responsibility for the maintenance of all work except *Planting, Reforestation* and/or *Permanent Vegetation Establishment*. The Contractor will be responsible for and shall make corrections of all damages to the completed roadway caused by his planting operations, whether occurring prior to or after placing traffic through the project.

INTERMEDIATE CONTRACT TIME NUMBER 2 AND LIQUIDATED DAMAGES:

(2-20-07)

108

SPI G14 A

The Contractor shall complete the required work of installing, maintaining, and removing the traffic control devices for lane closures and restoring traffic to the existing traffic pattern. The Contractor shall not close or narrow a lane of traffic on **Bragg Boulevard (-L-)** during the following time restrictions:

DAY AND TIME RESTRICTIONS

**Monday through Sunday
from 5:30 A.M. to 8:00 P.M.**

In addition, the Contractor shall not close or narrow a lane of traffic on **Bragg Boulevard (-L-)**, detain and/or alter the traffic flow on or during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy, including the following schedules:

HOLIDAY AND HOLIDAY WEEKEND LANE CLOSURE RESTRICTIONS

1. For **unexpected occurrence** that creates unusually high traffic volumes, as directed by the Engineer.
2. For **New Year's Day**, between the hours of **5:30 a.m.** December 31st and **8:00 p.m.** January 2nd. If New Year's Day is on a Friday, Saturday, Sunday or Monday, then until **8:00 p.m.** the following Tuesday.
3. For **Easter**, between the hours of **5:30 a.m.** Thursday and **8:00 p.m.** Monday.
4. For **Memorial Day**, between the hours of **5:30 a.m.** Friday and **8:00 p.m.** Tuesday.
5. For **Independence Day**, between the hours of **5:30 a.m.** the day before Independence Day and **8:00 p.m.** the day after Independence Day.

If **Independence Day** is on a Friday, Saturday, Sunday or Monday, then between the hours of **5:30 a.m.** the Thursday before Independence Day and **8:00 p.m.** the Tuesday after Independence Day.
6. For **Labor Day**, between the hours of **5:30 a.m.** Friday and **8:00 p.m.** Tuesday.
7. For **Thanksgiving Day**, between the hours of **5:30 a.m.** Tuesday and **8:00 p.m.** Monday.
8. For **Christmas**, between the hours of **5:30 a.m.** the Friday before the week of Christmas Day and **8:00 p.m.** the following Tuesday after the week of Christmas Day.
9. For **Springfest and Octoberfest**, between the hours of **5:30 a.m.** the day before the start of the event to **8:00 p.m.** the day after the event.

10. For any special event occurring on Fort Bragg and Pope AAF from four (4) hours before the start until four (4) hours after the conclusion of the event.

Holidays and holiday weekends shall include New Year's, Easter, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas. The Contractor shall schedule his work so that lane closures will not be required during these periods, unless otherwise directed by the Engineer.

The time of availability for this intermediate contract work shall be the time the Contractor begins to install all traffic control devices for lane closures according to the time restrictions listed herein.

The completion time for this intermediate contract work shall be the time the Contractor is required to complete the removal of all traffic control devices for lane closures according to the time restrictions stated above and place traffic in the existing traffic pattern.

The liquidated damages are Five Thousand Dollars (\$5,000.00) per thirty (30) minutes.

INTERMEDIATE CONTRACT TIME NUMBER 3 AND LIQUIDATED DAMAGES:

(2-20-07)

108

SPI G14 A

The Contractor shall complete the required work of installing, maintaining, and removing the traffic control devices for lane closures and restoring traffic to the existing traffic pattern. The Contractor shall not close or narrow a lane of traffic on **Murchison Road (-L-)** or **Randolph Street (-Y3-)** during the following time restrictions:

DAY AND TIME RESTRICTIONS

**Monday through Friday
from 5:30 A.M. to 8:00 A.M.
and
4:00 P.M. to 6:00 P.M.**

In addition, the Contractor shall not close or narrow a lane of traffic on **Murchison Road (-L-)** or **Randolph Street (-Y3-)**, detain and/or alter the traffic flow on or during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy, including the following schedules:

HOLIDAY AND HOLIDAY WEEKEND LANE CLOSURE RESTRICTIONS

1. For **unexpected occurrence** that creates unusually high traffic volumes, as directed by the Engineer.
2. For **New Year's Day**, between the hours of **5:30 a.m.** December 31st and **8:00 p.m.** January 2nd. If New Year's Day is on a Friday, Saturday, Sunday or Monday, then until **8:00 p.m.** the following Tuesday.

3. For **Easter**, between the hours of **5:30 a.m.** Thursday and **8:00 p.m.** Monday.
4. For **Memorial Day**, between the hours of **5:30 a.m.** Friday and **8:00 p.m.** Tuesday.
5. For **Independence Day**, between the hours of **5:30 a.m.** the day before Independence Day and **8:00 p.m.** the day after Independence Day.

If **Independence Day** is on a Friday, Saturday, Sunday or Monday, then between the hours of **5:30 a.m.** the Thursday before Independence Day and **8:00 p.m.** the Tuesday after Independence Day.
6. For **Labor Day**, between the hours of **5:30 a.m.** Friday and **8:00 p.m.** Tuesday.
7. For **Thanksgiving Day**, between the hours of **5:30 a.m.** Tuesday and **8:00 p.m.** Monday.
8. For **Christmas**, between the hours of **5:30 a.m.** the Friday before the week of Christmas Day and **8:00 p.m.** the following Tuesday after the week of Christmas Day.
9. For **Springfest and Octoberfest**, between the hours of **5:30 a.m.** the day before the start of the event to **8:00 p.m.** the day after the event.
10. For any special event occurring on **Fort Bragg and Pope AAF**, from four (4) hours before the start until four (4) hours after the conclusion of the event.

Holidays and holiday weekends shall include New Year's, Easter, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas. The Contractor shall schedule his work so that lane closures will not be required during these periods, unless otherwise directed by the Engineer.

The time of availability for this intermediate contract work shall be the time the Contractor begins to install all traffic control devices for lane closures according to the time restrictions listed herein.

The completion time for this intermediate contract work shall be the time the Contractor is required to complete the removal of all traffic control devices for lane closures according to the time restrictions stated above and place traffic in the existing traffic pattern.

The liquidated damages are **Two Hundred and Fifty Dollars (\$250.00)** per **fifteen (15) minutes**.

INTERMEDIATE CONTRACT TIME NUMBER 4 AND LIQUIDATED DAMAGES:

(2-20-07)

108

SPI G14 D

The Contractor shall complete the required work of installing, maintaining and removing the traffic control devices for road closures and restoring traffic to the existing traffic pattern. The Contractor **shall not close Murchison Road (-L-) for the purpose of overhead structure work**

for the proposed -Y3- structure over Murchison Road (-L-) during the following time restrictions:

DAY AND TIME RESTRICTIONS

**Monday through Sunday
from 5:00 AM to 10:00 PM**

The time of availability for this intermediate contract time will be the time the Contractor begins to install traffic control devices required for road closures according to the time restrictions stated herein.

The completion time for this intermediate contract time will be the time the Contractor is required to complete the removal of traffic control devices required for the road closures according to the time restrictions stated herein and restore traffic to the existing traffic pattern

The liquidated damages are **Two Thousand Five Hundred Dollars (\$2,500.00)** per **fifteen (15) minutes**.

INTERMEDIATE CONTRACT TIME NUMBER 5 AND LIQUIDATED DAMAGES:

(2-20-07)

108

SP1 G14 E

The Contractor shall complete the required work of installing, maintaining and removing the traffic control devices for road closures and restoring traffic to the existing traffic pattern. The Contractor shall not stop Bragg Boulevard (-L-) for the purpose of overhead structure work for the proposed -Y6C- structure over Bragg Boulevard (-L-) or the proposed rail crossing of Bragg Boulevard (-Y4-) at -Y4- Station 20+10± during the following time restrictions:

DAY AND TIME RESTRICTIONS

**Monday through Sunday
5:00 AM to 10:00 PM**

The maximum allowable time for stopping Bragg Boulevard (-L-) for the purpose of overhead structure work for the proposed -Y6C- structure over Bragg Boulevard (-L-) or the proposed rail crossing of Bragg Boulevard (-Y4-) at -Y4- Station 20+10± is THIRTY (30) MINUTES for Bragg Boulevard (-L-)(-Y4-). The Contractor shall reopen the travel lanes to traffic until the existing traffic queue is depleted.

The time of availability for this intermediate contract time will be the time the Contractor begins to install traffic control devices required for the road closures according to the time restrictions stated herein.

The completion time for this intermediate contract time will be the time the Contractor is required to complete the removal of traffic control devices required for the road closures according to the time restrictions stated herein and restore traffic to the existing traffic pattern.

The liquidated damages are **Two Thousand Five Hundred Dollars (\$2,500.00)** per **fifteen (15)-minute** time period.

INTERMEDIATE CONTRACT TIME NUMBER 6 AND LIQUIDATED DAMAGES:

(2-20-07)

108

SP1 G14 H

The Contractor shall complete the work required of **PHASE II, STEP 4 as shown on Sheet TMP-3** and shall place and maintain traffic on same.

The date of availability for this intermediate contract time **will be** the date the Contractor elects to begin the work.

The completion date for this intermediate contract time **will be** the date which is **ONE HUNDRED AND FIVE (105) CONSECUTIVE CALENDAR DAYS** after and including the date the Contractor begins this work.

The liquidated damages are **One Thousand Dollars (\$1,000.00)** per calendar day.

INTERMEDIATE CONTRACT TIME NUMBER 7 AND LIQUIDATED DAMAGES:

(2-20-07)

108

SP1 G14 H

The Contractor shall complete the work required of **PHASE IV, STEP 3 as shown on Sheet TMP-3A** and shall place and maintain traffic on same.

The date of availability for this intermediate contract time **will be** the date the Contractor elects to begin the work.

The completion date for this intermediate contract time **will be** the date which is **EIGHT (8) CONSECUTIVE CALENDAR DAYS** after and including the date the Contractor begins this work.

The liquidated damages are **Five Hundred Dollars (\$500.00)** per calendar day.

PERMANENT VEGETATION ESTABLISHMENT:

(2-16-12)

104

SP1 G16

Establish a permanent stand of the vegetation mixture shown in the contract. During the period between initial vegetation planting and final project acceptance, perform all work necessary to establish 80% coverage of permanent vegetation within the project limits, as well as, in borrow and waste pits. This work shall include erosion control device maintenance and installation, repair seeding and mulching, supplemental seeding and mulching, mowing, and fertilizer topdressing, as directed. All work shall be performed in accordance with the applicable section of the *2012 Standard Specifications*.

Once the Engineer has determined that 80% coverage of permanent vegetation has been established, the Contractor will be notified to remove the remaining erosion control devices that are no longer needed. The Contractor will be responsible for, and shall correct any areas disturbed by operations performed in permanent vegetation establishment and the removal of temporary erosion control measures, whether occurring prior to or after placing traffic on the project.

Payment for *Response for Erosion Control, Seeding and Mulching, Repair Seeding, Supplemental Seeding, Mowing, Fertilizer Topdressing, Silt Excavation, and Stone for Erosion Control* will be made at contract unit prices for the affected items. Work required that is not represented by contract line items will be paid in accordance with Articles 104-7 or 104-3 of the *2012 Standard Specifications*. No additional compensation will be made for maintenance and removal of temporary erosion control items.

DELAY IN RIGHT OF ENTRY:

(7-1-95)

108

SPI G22 B(Rev)

The Contractor will not be allowed right of entry to the following parcels prior to the listed dates unless otherwise permitted by the Engineer.

<u>Parcel No.</u>	<u>Property Owner</u>	<u>Date</u>
U-4444AB 002	State of NC Veteran Affairs	01/01/13
U-4444AB 002A	McCauley & McDonald Investment	02/28/13
U-4444AB 003 & 023	Four W's Inc.	01/01/13
U-4444AB 008 & 013	McDonald's USA LLC	01/01/13
U-4444AB 015	Clarence Daniels (Waymon Parker)	01/01/13
U-4444AB 017	Ada Lewis	01/01/13
U-4444AB 020	Dunbar Corporation	01/01/13
U-4444AB 022	Sukcha LLC	01/01/13
U-4444B 003	James Johnson	01/01/13
U-4444B 004	Christine Jones	02/28/13
U-4444B 007	Liborio Picart	02/28/13
U-4444B 010	Roy Byrd	02/28/13
U-4444B 011	Tasios Hasapis	01/01/13
U-4444B 016 & 017	Branch Banking & Trust	02/28/13
U-4444B 019	Claude Meachum	02/28/13
U-4444B 020 & 021	Bill Pappas	02/28/13
U-4444B 022 & 023	George Ferrell	02/28/13
U-4444B 025	WS Realty Inc.	12/01/12
U-4444B 026	Ruby Tuesday Inc.	02/28/13
U-4444B 027	WC Powers (Peggy Powers)	02/28/13
U-4444B 028	Stuart Lewis, et al (JW Lewis)	02/28/13
U-4444B 029	WC Powers (CC Powers, Jr.)	02/28/13
U-4444B 030	WC Powers (CC Powers, Jr.)	02/28/13
U-4444B 031	WC Powers (CC Powers, Jr.)	02/28/13
U-4444B 036	Diane Howard	12/01/12
U-4444B 039	Marie Cato	02/28/13
U-4444B 043	Cumberland County ABC Board	02/28/13
U-4444B 044	JK Food Enterprises LLC	02/28/13
U-4444B 045	Amy Matthews	02/28/13
U-4444B 046	Spring Lake Methodist Church	02/28/13
U-4444B 047	Dianne Howard	02/28/13
U-4444B 049	Matthews Oil Company, Inc.	02/28/13

U-4444B 051	John Darden Heirs	02/28/13
U-4444B 053	Lot 2 JRB Investment Group	02/28/13
U-4444B 054	Spring Lake Shopping Center	02/28/13
U-4444B 055	WC Jones Investment Co.	02/28/13
U-4444B 056	Skyland Inc.	02/28/13
U-4444B 057	Ellenwood Properties LLC	02/28/13
U-4444B 058	Cathy Huskisson	02/28/13
U-4444B 061	Evelyn P. Esworthy	02/28/13
U-4444B 062	Paul Benjamin II	01/01/13
U-4444B 063	Sarah Gilfillan	02/28/13
U-4444B 069	R&S Matthews Properties LLC	02/28/13
U-4444B 070	Michael David Nepstad	02/28/13
U-4444B 071 & 072	Hollandale Advent Christian Church	02/28/13
U-4444B 073	BNP Realty LLC	02/28/13
U-4444B 082	Richusjavor Allen	12/01/12

MAJOR CONTRACT ITEMS:

(2-19-02)

104

SP1 G28

The following listed items are the major contract items for this contract (see Article 104-5 of the 2012 Standard Specifications):

Line #	Description
8	Borrow Excavation
52	Asphalt Concrete Base Course, Type B25.0C
53	Asphalt Concrete Intermediate Course, Type I19.0C
55	Asphalt Concrete Surface Course, Type S9.5C

SPECIALTY ITEMS:

(7-1-95)(Rev. 1-17-12)

108-6

SP1 G37

Items listed below will be the specialty items for this contract (see Article 108-6 of the 2012 Standard Specifications).

Line #	Description
108 thru 118	Guardrail
119 thru 135, 363	Fencing
143 thru 175	Signing
196 thru 208	Long-Life Pavement Markings
209	Removable Tape
218 thru 219	Permanent Pavement Markers
220 thru 243	Lighting
245 thru 269	Utility Construction
270 thru 297, 299	Erosion Control
298	Reforestation
300 thru 338	Signals/ITS System
139 thru 142	Railroad Items

FUEL PRICE ADJUSTMENT:

(11-15-05) (Rev. 1-17-12)

109-8

SP1 G43

Revise the *2012 Standard Specifications* as follows:

Page 1-83, Article 109-8, Fuel Price Adjustments, add the following:

The base index price for DIESEL #2 FUEL is **\$3.4238** per gallon. Where any of the following are included as pay items in the contract, they will be eligible for fuel price adjustment.

The pay items and the fuel factor used in calculating adjustments to be made will be as follows:

Description	Units	Fuel Usage Factor Diesel
Unclassified Excavation	Gal/CY	0.29
Borrow Excavation	Gal/CY	0.29
Class IV Subgrade Stabilization	Gal/Ton	0.55
Aggregate Base Course	Gal/Ton	0.55
Asphalt Concrete Base Course, Type _____	Gal/Ton	2.90
Asphalt Concrete Intermediate Course, Type _____	Gal/Ton	2.90
Asphalt Concrete Surface Course, Type _____	Gal/Ton	2.90
Open-Graded Asphalt Friction Course	Gal/Ton	2.90
Sand Asphalt Surface Course, Type _____	Gal/Ton	2.90
Aggregate for Cement Treated Base Course	Gal/Ton	0.55
Portland Cement for Cement Treated Base Course	Gal/Ton	0.55
____ " Portland Cement Concrete Pavement	Gal/SY	0.245
Concrete Shoulders Adjacent to ____ " Pavement	Gal/SY	0.245

SCHEDULE OF ESTIMATED COMPLETION PROGRESS:

(7-15-08) (Rev. 6-19-12)

108-2

SP1 G58

The Contractor's attention is directed to the Standard Special Provision entitled *Availability of Funds Termination of Contracts* included elsewhere in this proposal. The Department of Transportation's schedule of estimated completion progress for this project as required by that Standard Special Provision is as follows:

Fiscal Year	Progress (% of Dollar Value)
2013 (7/01/12 - 6/30/13)	29% of Total Amount Bid
2014 (7/01/13 - 6/30/14)	39% of Total Amount Bid
2015 (7/01/14 - 6/30/15)	26% of Total Amount Bid
2016 (7/01/15- 6/30/16)	6% of Total Amount Bid

The Contractor shall also furnish his own progress schedule in accordance with Article 108-2 of the *2012 Standard Specifications*. Any acceleration of the progress as shown by the Contractor's progress schedule over the progress as shown above shall be subject to the approval of the Engineer.

DISADVANTAGED BUSINESS ENTERPRISE:

(10-16-07)(Rev. 1-17-12)

102-15(J)

SP1 G61

Description

The purpose of this Special Provision is to carry out the U.S. Department of Transportation's policy of ensuring nondiscrimination in the award and administration of contracts financed in whole or in part with Federal funds. This provision is guided by 49 CFR Part 26.

Definitions

Additional DBE Subcontractors - Any DBE submitted at the time of bid that will not be used to meet the DBE goal. No submittal of a Letter of Intent is required.

Committed DBE Subcontractor - Any DBE submitted at the time of bid that is being used to meet the DBE goal by submission of a Letter of Intent. Or any DBE used as a replacement for a previously committed DBE firm.

Contract Goal Requirement - The approved DBE participation at time of award, but not greater than the advertised contract goal.

DBE Goal - A portion of the total contract, expressed as a percentage, that is to be performed by committed DBE subcontractor(s).

Disadvantaged Business Enterprise (DBE) - A firm certified as a Disadvantaged Business Enterprise through the North Carolina Unified Certification Program.

Goal Confirmation Letter - Written documentation from the Department to the bidder confirming the Contractor's approved, committed DBE participation along with a listing of the committed DBE firms.

Manufacturer - A firm that operates or maintains a factory or establishment that produces on the premises, the materials or supplies obtained by the Contractor.

Regular Dealer - A firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold to the public in the usual course of business. A regular dealer engages in, as its principal business and in its own name, the purchase and sale or lease of the products in question. A regular dealer in such bulk items as steel, cement, gravel, stone, and petroleum products need not keep such products in stock, if it owns and operates distribution equipment for the products. Brokers and packagers are not regarded as manufacturers or regular dealers within the meaning of this section.

North Carolina Unified Certification Program (NCUCP) - A program that provides comprehensive services and information to applicants for DBE certification, such that an applicant is required to apply only once for a DBE certification that will be honored by all recipients of USDOT funds in the state and not limited to the Department of Transportation only. The Certification Program is in accordance with 49 CFR Part 26.

United States Department of Transportation (USDOT) - Federal agency responsible for issuing regulations (49 CFR Part 26) and official guidance for the DBE program.

Forms and Websites Referenced in this Provision

DBE Payment Tracking System - On-line system in which the Contractor enters the payments made to DBE subcontractors who have performed work on the project.
<https://apps.dot.state.nc.us/Vendor/PaymentTracking/>

DBE-IS Subcontractor Payment Information - Form for reporting the payments made to all DBE firms working on the project. This form is for paper bid projects only.
<http://www.ncdot.org/doh/forms/files/DBE-IS.xls>

RF-1 DBE Replacement Request Form - Form for replacing a committed DBE.
https://apps.dot.state.nc.us/_includes/download/external.html?pdf=http%3A//www.ncdot.gov/doh/forms/files/RF-1.pdf

SAF Subcontract Approval Form - Form required for approval to sublet the contract.
http://www.ncdot.org/doh/operations/dp_chief_eng/constructionunit/saf.xls

JC-1 Joint Check Notification Form - Form and procedures for joint check notification. The form acts as a written joint check agreement among the parties providing full and prompt disclosure of the expected use of joint checks.
https://apps.dot.state.nc.us/_includes/download/external.html?pdf=http%3A//www.ncdot.gov/doh/forms/files/JC-1.pdf

Letter of Intent - Form signed by the Contractor and the DBE subcontractor, manufacturer or regular dealer that affirms that a portion of said contract is going to be performed by the signed DBE for the amount listed at the time of bid.
<http://www.ncdot.org/doh/preconstruct/ps/contracts/letterofintent.pdf>

Listing of DBE Subcontractors Form - Form for entering DBE subcontractors on a project that will meet this DBE goal. This form is for paper bids only.
<http://www.ncdot.gov/doh/preconstruct/ps/word/MISC2.doc>

Subcontractor Quote Comparison Sheet - Spreadsheet for showing all subcontractor quotes in the work areas where DBEs quoted on the project. This sheet is submitted with good faith effort packages.
http://www.ncdot.gov/business/ocs/goodfaith/excel/Ex_Subcontractor_Quote_Comparison.xls

DBE Goal

The following DBE goal for participation by Disadvantaged Business Enterprises is established for this contract:

Disadvantaged Business Enterprises **13.0%**

- (A) *If the DBE goal is more than zero*, the Contractor shall exercise all necessary and reasonable steps to ensure that DBEs participate in at least the percent of the contract as set forth above as the DBE goal.

- (B) *If the DBE goal is zero*, the Contractor shall make an effort to recruit and use DBEs during the performance of the contract. Any DBE participation obtained shall be reported to the Department.

Directory of Transportation Firms (Directory)

Real-time information is available about firms doing business with the Department and firms that are certified through NCUCP in the Directory of Transportation Firms. Only firms identified in the Directory as DBE certified shall be used to meet the DBE goal. The Directory can be found at the following link. <https://partner.ncdot.gov/VendorDirectory/default.html>

The listing of an individual firm in the directory shall not be construed as an endorsement of the firm's capability to perform certain work.

Listing of DBE Subcontractors

At the time of bid, bidders shall submit all DBE participation that they anticipate to use during the life of the contract. Only those identified to meet the DBE goal will be considered committed, even though the listing shall include both committed DBE subcontractors and additional DBE subcontractors. Additional DBE subcontractor participation submitted at the time of bid will be used toward the Department's overall race-neutral goal. Only those firms with current DBE certification at the time of bid opening will be acceptable for listing in the bidder's submittal of DBE participation. The Contractor shall indicate the following required information:

(A) Electronic Bids

Bidders shall submit a listing of DBE participation in the appropriate section of Expedite, the bidding software of Bid Express[®].

- (1) Submit the names and addresses of DBE firms identified to participate in the contract. If the bidder uses the updated listing of DBE firms shown in Expedite, the bidder may use the dropdown menu to access the name and address of the DBE firm.
- (2) Submit the contract line numbers of work to be performed by each DBE firm. When no figures or firms are entered, the bidder will be considered to have no DBE participation.
- (3) The bidder shall be responsible for ensuring that the DBE is certified at the time of bid by checking the Directory of Transportation Firms. If the firm is not certified at the time of the bid-letting, that DBE's participation will not count towards achieving the DBE goal.

(B) Paper Bids

Blank forms will not be deemed to represent zero participation. Bids submitted that do not have DBE participation indicated on the appropriate form will not be read publicly during the opening of bids. The Department will not consider these bids for award and the proposal will be rejected.

- (1) *If the DBE goal is more than zero,*
 - (a) Bidders, at the time the bid proposal is submitted, shall submit a listing of DBE participation, including the names and addresses on *Listing of DBE Subcontractors* contained elsewhere in the contract documents in order for the bid to be considered responsive. Bidders shall indicate the total dollar value of the DBE participation for the contract.
 - (b) If bidders have no DBE participation, they shall indicate this on the *Listing of DBE Subcontractors* by entering the word "None" or the number "0." This form shall be completed in its entirety.
 - (c) The bidder shall be responsible for ensuring that the DBE is certified at the time of bid by checking the Directory of Transportation Firms. If the firm is not certified at the time of the bid-letting, that DBE's participation will not count towards achieving the DBE goal.
- (2) *If the DBE goal is zero,* bidders, at the time the bid proposal is submitted, shall enter the word "None"; or the number "0"; or if there is participation, add the value on the *Listing of DBE Subcontractors* contained elsewhere in the contract documents.

DBE Prime Contractor

When a certified DBE firm bids on a contract that contains a DBE goal, the DBE firm is responsible for meeting the goal or making good faith efforts to meet the goal, just like any other bidder. In most cases, a DBE bidder on a contract will meet the DBE goal by virtue of the work it performs on the contract with its own forces. However, all the work that is performed by the DBE bidder and any other DBE subcontractors will count toward the DBE goal. The DBE bidder shall list itself along with any DBE subcontractors, if any, in order to receive credit toward the DBE goal.

For example, if the DBE goal is 45% and the DBE bidder will only perform 40% of the contract work, the prime will list itself at 40%, and the additional 5% shall be obtained through additional DBE participation with DBE subcontractors or documented through a good faith effort.

DBE prime contractors shall also follow Sections A and B listed under *Listing of DBE Subcontractor* just as a non-DBE bidder would.

Written Documentation – Letter of Intent

The bidder shall submit written documentation for each DBE that will be used to meet the DBE goal of the contract, indicating the bidder's commitment to use the DBE in the contract. This documentation shall be submitted on the Department's form titled *Letter of Intent*.

The documentation shall be received in the office of the State Contractor Utilization Engineer or at DBE@ncdot.gov no later than 12:00 noon of the sixth calendar day following opening of bids, unless the sixth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 12:00 noon on the next official state business day.

If the bidder fails to submit the Letter of Intent from each committed DBE to be used toward the DBE goal, or if the form is incomplete (i.e. both signatures are not present), the DBE participation will not count toward meeting the DBE goal. If the lack of this participation drops the commitment below the DBE goal, the Contractor shall submit evidence of good faith efforts, completed in its entirety, to the State Contractor Utilization Engineer or DBE@ncdot.gov no later than 12:00 noon on the eighth calendar day following opening of bids, unless the eighth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 12:00 noon on the next official state business day.

Submission of Good Faith Effort

If the bidder fails to meet or exceed the DBE goal, the apparent lowest responsive bidder shall submit to the Department documentation of adequate good faith efforts made to reach the DBE goal.

A hard copy and an electronic copy of this information shall be received in the office of the State Contractor Utilization Engineer or at DBE@ncdot.gov no later than 12:00 noon of the sixth calendar day following opening of bids unless the sixth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer the next official state business day. If the contractor cannot send the information electronically, then one complete set and 9 copies of this information shall be received under the same time constraints above.

Note: Where the information submitted includes repetitious solicitation letters, it will be acceptable to submit a representative letter along with a distribution list of the firms that were solicited. Documentation of DBE quotations shall be a part of the good faith effort submittal. This documentation may include written subcontractor quotations, telephone log notations of verbal quotations, or other types of quotation documentation.

Consideration of Good Faith Effort for Projects with DBE Goals More Than Zero

Adequate good faith efforts mean that the bidder took all necessary and reasonable steps to achieve the goal which, by their scope, intensity, and appropriateness, could reasonably be

expected to obtain sufficient DBE participation. Adequate good faith efforts also mean that the bidder actively and aggressively sought DBE participation. Mere *pro forma* efforts are not considered good faith efforts.

The Department will consider the quality, quantity, and intensity of the different kinds of efforts a bidder has made. Listed below are examples of the types of actions a bidder will take in making a good faith effort to meet the goal and are not intended to be exclusive or exhaustive, nor is it intended to be a mandatory checklist.

- (A) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices through the use of the NCDOT Directory of Transportation Firms) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within at least 10 days prior to bid opening to allow the DBEs to respond to the solicitation. Solicitation shall provide the opportunity to DBEs within the Division and surrounding Divisions where the project is located. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.
- (B) Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.
- (C) Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.
- (D)
 - (1) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.
 - (2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidding contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

- (E) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associates and political or social affiliations (for example, union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.
- (F) Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or bidder.
- (G) Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.
- (H) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; Federal, State, and local minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs. Contact within 7 days from the bid opening the Business Development Manager in the Business Opportunity and Work Force Development Unit to give notification of the bidder's inability to get DBE quotes.
- (I) Any other evidence that the bidder submits which shows that the bidder has made reasonable good faith efforts to meet the DBE goal.

In addition, the Department may take into account the following:

- (1) Whether the bidder's documentation reflects a clear and realistic plan for achieving the DBE goal.
- (2) The bidders' past performance in meeting the DBE goals.
- (3) The performance of other bidders in meeting the DBE goal. For example, when the apparent successful bidder fails to meet the DBE goal, but others meet it, you may reasonably raise the question of whether, with additional reasonable efforts the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the DBE goal, but meets or exceeds the average DBE participation obtained by other bidders, the Department may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made a good faith effort.

If the Department does not award the contract to the apparent lowest responsive bidder, the Department reserves the right to award the contract to the next lowest responsive bidder that can satisfy to the Department that the DBE goal can be met or that an adequate good faith effort has been made to meet the DBE goal.

Non-Good Faith Appeal

The State Contractor Utilization Engineer will notify the contractor verbally and in writing of non-good faith. A contractor may appeal a determination of non-good faith made by the Goal Compliance Committee. If a contractor wishes to appeal the determination made by the Committee, they shall provide written notification to the State Contractual Services Engineer or at DBE@ncdot.gov. The appeal shall be made within 2 business days of notification of the determination of non-good faith.

Counting DBE Participation Toward Meeting DBE Goal**(A) Participation**

The total dollar value of the participation by a committed DBE will be counted toward the contract goal requirement. The total dollar value of participation by a committed DBE will be based upon the value of work actually performed by the DBE and the actual payments to DBE firms by the Contractor.

(B) Joint Checks

Prior notification of joint check use shall be required when counting DBE participation for services or purchases that involves the use of a joint check. Notification shall be through submission of Form JC-1 (*Joint Check Notification Form*) and the use of joint checks shall be in accordance with the Department's Joint Check Procedures.

(C) Subcontracts (Non-Trucking)

A DBE may enter into subcontracts. Work that a DBE subcontracts to another DBE firm may be counted toward the contract goal requirement. Work that a DBE subcontracts to a non-DBE firm does not count toward the contract goal requirement. If a DBE contractor or subcontractor subcontracts a significantly greater portion of the work of the contract than would be expected on the basis of standard industry practices, it shall be presumed that the DBE is not performing a commercially useful function. The DBE may present evidence to rebut this presumption to the Department. The Department's decision on the rebuttal of this presumption is subject to review by the Federal Highway Administration but is not administratively appealable to USDOT.

(D) Joint Venture

When a DBE performs as a participant in a joint venture, the Contractor may count toward its contract goal requirement a portion of the total value of participation with the DBE in the joint venture, that portion of the total dollar value being a distinct clearly defined portion of work that the DBE performs with its forces.

(E) Suppliers

A contractor may count toward its DBE requirement 60 percent of its expenditures for materials and supplies required to complete the contract and obtained from a DBE regular dealer and 100 percent of such expenditures from a DBE manufacturer.

(F) Manufacturers and Regular Dealers

A contractor may count toward its DBE requirement the following expenditures to DBE firms that are not manufacturers or regular dealers:

- (1) The fees or commissions charged by a DBE firm for providing a *bona fide* service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, provided the fees or commissions are determined to be reasonable and not excessive as compared with fees and commissions customarily allowed for similar services.
- (2) With respect to materials or supplies purchased from a DBE, which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site (but not the cost of the materials and supplies themselves), provided the fees are determined to be reasonable and not excessive as compared with fees customarily allowed for similar services.

Commercially Useful Function**(A) DBE Utilization**

The Contractor may count toward its contract goal requirement only expenditures to DBEs that perform a commercially useful function in the work of a contract. A DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. To perform a commercially useful function, the DBE shall also be responsible with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material and installing (where applicable) and paying for the material itself. To determine whether a DBE is performing a commercially useful function, the Department will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work, and any other relevant factors.

(B) DBE Utilization in Trucking

The following factors will be used to determine if a DBE trucking firm is performing a commercially useful function:

- (1) The DBE shall be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there shall not be a contrived arrangement for the purpose of meeting DBE goals.
- (2) The DBE shall itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

- (3) The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
- (4) The DBE may subcontract the work to another DBE firm, including an owner-operator who is certified as a DBE. The DBE who subcontracts work to another DBE receives credit for the total value of the transportation services the subcontracted DBE provides on the contract.
- (5) The DBE may also subcontract the work to a non-DBE firm, including from an owner-operator. The DBE who subcontracts the work to a non-DBE is entitled to credit for the total value of transportation services provided by the non-DBE subcontractor not to exceed the value of transportation services provided by DBE-owned trucks on the contract. Additional participation by non-DBE subcontractors receives credit only for the fee or commission it receives as a result of the subcontract arrangement. The value of services performed under subcontract agreements between the DBE and the Contractor will not count towards the DBE contract requirement.
- (6) A DBE may lease truck(s) from an established equipment leasing business open to the general public. The lease must indicate that the DBE has exclusive use of and control over the truck. This requirement does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. This type of lease may count toward the DBE's credit as long as the driver is under the DBE's payroll.
- (7) Subcontracted/leased trucks shall display clearly on the dashboard the name of the DBE that they are subcontracted/leased to and their own company name if it is not identified on the truck itself. Magnetic door signs are not permitted.

DBE Replacement

When a Contractor has relied on a commitment to a DBE firm (or an approved substitute DBE firm) to meet all or part of a contract goal requirement, the contractor shall not terminate the DBE for convenience. This includes, but is not limited to, instances in which the Contractor seeks to perform the work of the terminated subcontractor with another DBE subcontractor, a non-DBE subcontractor, or with the Contractor's own forces or those of an affiliate. A DBE may only be terminated after receiving the Engineer's written approval based upon a finding of good cause for the termination.

All requests for replacement of a committed DBE firm shall be submitted to the Engineer for approval on Form RF-1 (*DBE Replacement Request*). If the Contractor fails to follow this procedure, the Contractor may be disqualified from further bidding for a period of up to 6 months.

The Contractor shall comply with the following for replacement of a committed DBE:

(A) Performance Related Replacement

When a committed DBE is terminated for good cause as stated above, an additional DBE that was submitted at the time of bid may be used to fulfill the DBE commitment. A good faith effort will only be required for removing a committed DBE if there were no additional DBEs submitted at the time of bid to cover the same amount of work as the DBE that was terminated.

If a replacement DBE is not found that can perform at least the same amount of work as the terminated DBE, the Contractor shall submit a good faith effort documenting the steps taken. Such documentation shall include, but not be limited to, the following:

- (1) Copies of written notification to DBEs that their interest is solicited in contracting the work defaulted by the previous DBE or in subcontracting other items of work in the contract.
- (2) Efforts to negotiate with DBEs for specific subbids including, at a minimum:
 - (a) The names, addresses, and telephone numbers of DBEs who were contacted.
 - (b) A description of the information provided to DBEs regarding the plans and specifications for portions of the work to be performed.
- (3) A list of reasons why DBE quotes were not accepted.
- (4) Efforts made to assist the DBEs contacted, if needed, in obtaining bonding or insurance required by the Contractor.

(B) Decertification Replacement

- (1) When a committed DBE is decertified by the Department after the SAF (*Subcontract Approval Form*) has been received by the Department, the Department will not require the Contractor to solicit replacement DBE participation equal to the remaining work to be performed by the decertified firm. The participation equal to the remaining work performed by the decertified firm will count toward the contract goal requirement.
- (2) When a committed DBE is decertified prior to the Department receiving the SAF (*Subcontract Approval Form*) for the named DBE firm, the Contractor shall take all necessary and reasonable steps to replace the DBE subcontractor with another DBE subcontractor to perform at least the same amount of work to meet the DBE goal requirement. If a DBE firm is not found to do the same amount of work, a good faith effort must be submitted to NCDOT (see A herein for required documentation).

Changes in the Work

When the Engineer makes changes that result in the reduction or elimination of work to be performed by a committed DBE, the Contractor will not be required to seek additional participation. When the Engineer makes changes that result in additional work to be performed by a DBE based upon the Contractor's commitment, the DBE shall participate in additional work to the same extent as the DBE participated in the original contract work.

When the Engineer makes changes that result in extra work, which has more than a minimal impact on the contract amount, the Contractor shall seek additional participation by DBEs unless otherwise approved by the Engineer.

When the Engineer makes changes that result in an alteration of plans or details of construction, and a portion or all of the work had been expected to be performed by a committed DBE, the Contractor shall seek participation by DBEs unless otherwise approved by the Engineer.

When the Contractor requests changes in the work that result in the reduction or elimination of work that the Contractor committed to be performed by a DBE, the Contractor shall seek additional participation by DBEs equal to the reduced DBE participation caused by the changes.

Reports and Documentation

A SAF (*Subcontract Approval Form*) shall be submitted for all work which is to be performed by a DBE subcontractor. The Department reserves the right to require copies of actual subcontract agreements involving DBE subcontractors.

When using transportation services to meet the contract commitment, the Contractor shall submit a proposed trucking plan in addition to the SAF. The plan shall be submitted prior to beginning construction on the project. The plan shall include the names of all trucking firms proposed for use, their certification type(s), the number of trucks owned by the firm, as well as the individual truck identification numbers, and the line item(s) being performed.

Within 30 calendar days of entering into an agreement with a DBE for materials, supplies or services, not otherwise documented by the SAF as specified above, the Contractor shall furnish the Engineer a copy of the agreement. The documentation shall also indicate the percentage (60% or 100%) of expenditures claimed for DBE credit.

Reporting Disadvantaged Business Enterprise Participation

The Contractor shall provide the Engineer with an accounting of payments made to all DBE firms, including material suppliers and contractors at all levels (prime, subcontractor, or second tier subcontractor). This accounting shall be furnished to the Engineer for any given

month by the end of the following month. Failure to submit this information accordingly may result in the following action:

- (A) Withholding of money due in the next partial pay estimate; or
- (B) Removal of an approved contractor from the prequalified bidders' list or the removal of other entities from the approved subcontractors list.

While each contractor (prime, subcontractor, 2nd tier subcontractor) is responsible for accurate accounting of payments to DBEs, it shall be the prime contractor's responsibility to report all monthly and final payment information in the correct reporting manner.

Failure on the part of the Contractor to submit the required information in the time frame specified may result in the disqualification of that contractor and any affiliate companies from further bidding until the required information is submitted.

Failure on the part of any subcontractor to submit the required information in the time frame specified may result in the disqualification of that contractor and any affiliate companies from being approved for work on future DOT projects until the required information is submitted.

Contractors reporting transportation services provided by non-DBE lessees shall evaluate the value of services provided during the month of the reporting period only.

At any time, the Engineer can request written verification of subcontractor payments.

- (A) Electronic Bids Reporting

The Contractor shall report the accounting of payments through the Department's DBE Payment Tracking System.

- (B) Paper Bids Reporting

The Contractor shall report the accounting of payments on the Department's DBE-IS (*Subcontractor Payment Information*) with each invoice. Invoices will not be processed for payment until the DBE-IS is received.

Failure to Meet Contract Requirements

Failure to meet contract requirements in accordance with Subarticle 102-15(J) of the *2012 Standard Specifications* may be cause to disqualify the Contractor.

CERTIFICATION FOR FEDERAL-AID CONTRACTS:

(3-21-90)

SP1 G85

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (A) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (B) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, *Disclosure Form to Report Lobbying*, in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by *Section 1352, Title 31, U.S. Code*. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such subrecipients shall certify and disclose accordingly.

CONTRACTOR'S LICENSE REQUIREMENTS:

(7-1-95)

102-14

SP1 G88

If the successful bidder does not hold the proper license to perform any plumbing, heating, air conditioning, or electrical work in this contract, he will be required to sublet such work to a contractor properly licensed in accordance with *Article 2 of Chapter 87 of the General Statutes* (licensing of heating, plumbing, and air conditioning contractors) and *Article 4 of Chapter 87 of the General Statutes* (licensing of electrical contractors).

U.S. DEPARTMENT OF TRANSPORTATION HOTLINE:

(11-22-94)

108-5

SP1 G100

To report bid rigging activities call: **1-800-424-9071**

The U.S. Department of Transportation (DOT) operates the above toll-free hotline Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid

rigging, bidder collusion, or other fraudulent activities should use the hotline to report such activities.

The hotline is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

SUBSURFACE INFORMATION:

(7-1-95)

450

SP1 G112 D

Subsurface information is available on the roadway and structure portions of this project.

LOCATING EXISTING UNDERGROUND UTILITIES:

(3-20-12)

105

SP1 G115

Revise the *2012 Standard Specifications* as follows:

Page 1-43, Article 105-8, line 28, after the first sentence, add the following:

Identify excavation locations by means of pre-marking with white paint, flags, or stakes or provide a specific written description of the location in the locate request.

PORTABLE CONCRETE BARRIER - (Partial Payments for Materials):

(7-1-95) (Rev. 8-16-11)

1170-4

SP1 G121

When so authorized by the Engineer, partial materials payments will be made up to 95 percent of the delivered cost of portable concrete barrier, provided that these materials have been delivered on the project and stored in an acceptable manner, and further provided the documents listed in Subarticle 109-5(C) of the *2012 Standard Specifications* have been furnished to the Engineer.

The provisions of Subarticle 109-5(B) of the *2012 Standard Specifications* will apply to the portable concrete barrier.

MAINTENANCE OF THE PROJECT:

(11-20-07) (Rev. 1-17-12)

104-10

SP1 G125

Revise the *2012 Standard Specifications* as follows:

Page 1-35, Article 104-10 Maintenance of the Project, line 25, add the following after the first sentence of the first paragraph:

All guardrail/guiderail within the project limits shall be included in this maintenance.

Page 1-35, Article 104-10 Maintenance of the Project, line 30, add the following as the last sentence of the first paragraph:

The Contractor shall perform weekly inspections of guardrail and guiderail and shall report damages to the Engineer on the same day of the weekly inspection. *Where damaged guardrail or guiderail is repaired or replaced as a result of maintaining the project in accordance with this*

article, such repair or replacement shall be performed within 7 consecutive calendar days of such inspection report.

Page 1-35, Article 104-10 Maintenance of the Project, lines 42-44, replace the last sentence of the last paragraph with the following:

The Contractor will not be directly compensated for any maintenance operations necessary, except for maintenance of guardrail/guiderail, as this work will be considered incidental to the work covered by the various contract items. The provisions of Article 104-7, Extra Work, and Article 104-8, Compensation and Record Keeping will apply to authorized maintenance of guardrail/guiderail. Performance of weekly inspections of guardrail/guiderail, and the damage reports required as described above, will be considered to be an incidental part of the work being paid for by the various contract items.

COOPERATION BETWEEN CONTRACTORS:

(7-1-95)

105-7

SP1 G133

The Contractor's attention is directed to Article 105-7 of the *2012 Standard Specifications*.

U-4444AA, Cumberland County is currently under construction located on the south end of this project and will not be completed during the contract time of U-4444AB/BB.

The Contractor on this project shall cooperate with the Contractor working within or adjacent to the limits of this project to the extent that the work can be carried out to the best advantage of all concerned.

BID DOCUMENTATION:

(1-1-02) (Rev. 9-18-12)

103

SP1 G142

General

The successful Bidder (Contractor) shall submit the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation used to prepare the bid for this contract to the Department within 10 days after receipt of notice of award of contract. Such documentation shall be placed in escrow with a banking institution or other bonded document storage facility selected by the Department.

The Department will not execute the contract until the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation has been received by the Department.

Terms

Bid Documentation - Bid Documentation shall mean all written information, working papers, computer printouts, electronic media, charts, and all other data compilations which contain or reflect information, data, and calculations used by the Bidder in the preparation of the bid. The term *bid documentation* includes, but is not limited to, contractor equipment rates, contractor overhead rates, labor rates, efficiency or productivity factors, arithmetical calculations, and

quotations from subcontractors and material suppliers to the extent that such rates and quotations were used by the Bidder in formulating and determining the bid. The term *bid documentation* also includes any manuals, which are standard to the industry used by the Bidder in determining the bid. Such manuals may be included in the bid documentation by reference. Such reference shall include the name and date of the publication and the publisher. *Bid Documentation* does not include bid documents provided by the Department for use by the Bidder in bidding on this project.

Contractor's Representative - Officer of the Contractor's company; if not an officer, the Contractor shall supply a letter signed and notarized by an officer of the Contractor's company, granting permission for the representative to sign the escrow agreement on behalf of the Contractor.

Escrow Agent - Officer of the select banking institution or other bonded document storage facility authorized to receive and release bid documentation.

Escrow Agreement Information

A copy of the Escrow Agreement will be mailed to the Bidder with the notice of award for informational purposes. The Bidder and Department will sign the actual Escrow Agreement at the time the bid documentation is delivered to the escrow agent.

Failure to Provide Bid Documentation

The Bidder's failure to provide the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation within 10 days after the notice of award is received by him may be just cause for rescinding the award of the contract and may result in the removal of the Bidder from the Department's list of qualified bidders for a period of up to 180 days. Award may then be made to the next lowest responsible bidder or the work may be readvertised and constructed under the contract or otherwise, as the Department may decide.

Submittal of Bid Documentation

- (A) Appointment – Email specs@ncdot.gov or call 919.707.6900 to schedule an appointment.
- (B) Delivery - A representative of the Bidder shall deliver the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation to the Department, in a container suitable for sealing, within 10 days after the notice of award is received by him. Bid documentation will be considered a certified copy if the Bidder includes a letter to the Department from a chief officer of the company stating that the enclosed documentation is an *EXACT* copy of the original documentation. The letter shall be signed by a chief officer of the company, have the person's name and title typed below the signature, and the signature shall be notarized at the bottom of the letter.

- (C) Packaging – The container shall be no larger than 15.5 inches in length by 12 inches wide by 11 inches high and shall be water resistant. The container shall be clearly marked on the face and the back of the container with the following information: Bid Documentation, Bidder's Name, Bidder's Address, Date of Escrow Submittal, Contract Number, TIP Number if applicable, and County.

Affidavit

In addition to the bid documentation, an affidavit signed under oath by an individual authorized by the Bidder to execute the bid shall be included. The affidavit shall list each bid document with sufficient specificity so a comparison may be made between the list and the bid documentation to ensure that all of the bid documentation listed in the affidavit has been enclosed. The affidavit shall attest that the affiant has personally examined the bid documentation, that the affidavit lists all of the documents used by the Bidder to determine the bid for this project, and that all such bid documentation has been included.

Verification

Upon delivery of the bid documentation, the Department's Contract Officer and the Bidder's representative will verify the accuracy and completeness of the bid documentation compared to the affidavit. Should a discrepancy exist, the Bidder's representative shall immediately furnish the Department's Contract Officer with any other needed bid documentation. The Department's Contract Officer upon determining that the bid documentation is complete will, in the presence of the Bidder's representative, immediately place the complete bid documentation and affidavit in the container and seal it. Both parties will deliver the sealed container to the escrow agent for placement in a safety deposit box, vault, or other secure accommodation.

Confidentiality of Bid Documentation

The bid documentation and affidavit in escrow are, and will remain, the property of the Bidder. The Department has no interest in, or right to, the bid documentation and affidavit other than to verify the contents and legibility of the bid documentation unless the Contractor gives written notice of intent to file a claim, files a written claim, files a written and verified claim, or initiates litigation against the Department. In the event of such written notice of intent to file a claim, filing of a written claim, filing a written and verified claim, or initiation of litigation against the Department, or receipt of a letter from the Contractor authorizing release, the bid documentation and affidavit may become the property of the Department for use in considering any claim or in litigation as the Department may deem appropriate.

Any portion or portions of the bid documentation designated by the Bidder as a *trade secret* at the time the bid documentation is delivered to the Department's Contract Officer shall be protected from disclosure as provided by *G.S. 132-1.2*.

Duration and Use

The bid documentation and affidavit shall remain in escrow until 60 calendar days from the time the Contractor receives the final estimate; or until such time as the Contractor:

- (A) Gives written notice of intent to file a claim,
- (B) Files a written claim,
- (C) Files a written and verified claim,
- (D) Initiates litigation against the Department related to the contract; or
- (E) Authorizes in writing its release.

Upon the giving of written notice of intent to file a claim, filing a written claim, filing a written and verified claim, or the initiation of litigation by the Contractor against the Department, or receipt of a letter from the Contractor authorizing release, the Department may obtain the release and custody of the bid documentation.

The Bidder certifies and agrees that the sealed container placed in escrow contains all of the bid documentation used to determine the bid and that no other bid documentation shall be relevant or material in litigation over claims brought by the Contractor arising out of this contract.

Release of Bid Documentation to the Contractor

If the bid documentation remains in escrow 60 calendar days after the time the Contractor receives the final estimate and the Contractor has not filed a written claim, filed a written and verified claim, or has not initiated litigation against the Department related to the contract, the Department will instruct the escrow agent to release the sealed container to the Contractor.

The Contractor will be notified by certified letter from the escrow agent that the bid documentation will be released to the Contractor. The Contractor or his representative shall retrieve the bid documentation from the escrow agent within 30 days of the receipt of the certified letter. If the Contractor does not receive the documents within 30 days of the receipt of the certified letter, the Department will contact the Contractor to determine final disposition of the bid documentation.

Payment

The cost of the escrow will be borne by the Department. There will be no separate payment for all costs of compilation of the data, container, or verification of the bid documentation. Payment at the various contract unit or lump sum prices in the contract will be full compensation for all such costs.

TWELVE MONTH GUARANTEE:

(7-15-03)

108

SP1 G145

- (A) The Contractor shall guarantee materials and workmanship against latent and patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve months following the date of final acceptance of the work for maintenance and

shall replace such defective materials and workmanship without cost to the Department. The Contractor will not be responsible for damage due to faulty design, normal wear and tear, for negligence on the part of the Department, and/or for use in excess of the design.

- (B) Where items of equipment or material carry a manufacturer's guarantee for any period in excess of twelve months, then the manufacturer's guarantee shall apply for that particular piece of equipment or material. The Department's first remedy shall be through the manufacturer although the Contractor is responsible for invoking the warranted repair work with the manufacturer. The Contractor's responsibility shall be limited to the term of the manufacturer's guarantee. NCDOT would be afforded the same warranty as provided by the Manufacturer.

This guarantee provision shall be invoked only for major components of work in which the Contractor would be wholly responsible for under the terms of the contract. Examples would include pavement structures, bridge components, and sign structures. This provision will not be used as a mechanism to force the Contractor to return to the project to make repairs or perform additional work that the Department would normally compensate the Contractor for. In addition, routine maintenance activities (i.e. mowing grass, debris removal, ruts in earth shoulders,) are not parts of this guarantee.

Appropriate provisions of the payment and/or performance bonds shall cover this guarantee for the project.

To ensure uniform application statewide the Division Engineer will forward details regarding the circumstances surrounding any proposed guarantee repairs to the Chief Engineer for review and approval prior to the work being performed.

GIFTS FROM VENDORS AND CONTRACTORS:

(12-15-09)

107-1

SP1 G152

By Executive Order 24, issued by Governor Perdue, and *N.C.G.S. § 133-32*, it is unlawful for any vendor or contractor (i.e. architect, bidder, contractor, construction manager, design professional, engineer, landlord, offeror, seller, subcontractor, supplier, or vendor), to make gifts or to give favors to any State employee of the Governor's Cabinet Agencies (i.e. Administration, Commerce, Correction, Crime Control and Public Safety, Cultural Resources, Environment and Natural Resources, Health and Human Services, Juvenile Justice and Delinquency Prevention, Revenue, Transportation, and the Office of the Governor). This prohibition covers those vendors and contractors who:

- (A) Have a contract with a governmental agency; or
- (B) Have performed under such a contract within the past year; or
- (C) Anticipate bidding on such a contract in the future.

For additional information regarding the specific requirements and exemptions, vendors and contractors are encouraged to review Executive Order 24 and *N.C.G.S. § 133-32*.

Executive Order 24 also encouraged and invited other State Agencies to implement the requirements and prohibitions of the Executive Order to their agencies. Vendors and contractors

should contact other State Agencies to determine if those agencies have adopted Executive Order 24.

EROSION AND SEDIMENT CONTROL/STORMWATER CERTIFICATION:

(1-16-07) (Rev 9-18-12)

105-16, 225-2, 16

SP1 G180

General

Schedule and conduct construction activities in a manner that will minimize soil erosion and the resulting sedimentation and turbidity of surface waters. Comply with the requirements herein regardless of whether or not a National Pollution discharge Elimination System (NPDES) permit for the work is required.

Establish a chain of responsibility for operations and subcontractors' operations to ensure that the *Erosion and Sediment Control/Stormwater Pollution Prevention Plan* is implemented and maintained over the life of the contract.

- (A) *Certified Supervisor* - Provide a certified Erosion and Sediment Control/Stormwater Supervisor to manage the Contractor and subcontractor operations, insure compliance with Federal, State and Local ordinances and regulations, and manage the Quality Control Program.
- (B) *Certified Foreman* - Provide a certified, trained foreman for each construction operation that increases the potential for soil erosion or the possible sedimentation and turbidity of surface waters.
- (C) *Certified Installer* - Provide a certified installer to install or direct the installation for erosion or sediment/stormwater control practices.
- (D) *Certified Designer* - Provide a certified designer for the design of the erosion and sediment control/stormwater component of reclamation plans and, if applicable, for the design of the project erosion and sediment control/stormwater plan.

Roles and Responsibilities

- (A) *Certified Erosion and Sediment Control/Stormwater Supervisor* - The Certified Supervisor shall be Level II and responsible for ensuring the erosion and sediment control/stormwater plan is adequately implemented and maintained on the project and for conducting the quality control program. The Certified Supervisor shall be on the project within 24 hours notice from initial exposure of an erodible surface to the project's final acceptance. Perform the following duties:
 - (1) *Manage Operations* - Coordinate and schedule the work of subcontractors so that erosion and sediment control/stormwater measures are fully executed for each operation and in a timely manner over the duration of the contract.
 - (a) Oversee the work of subcontractors so that appropriate erosion and sediment control/stormwater preventive measures are conformed to at each stage of the work.

- (b) Prepare the required National Pollutant Discharge Elimination System (NPDES) Inspection Record and submit to the Engineer.
 - (c) Attend all weekly or monthly construction meetings to discuss the findings of the NPDES inspection and other related issues.
 - (d) Implement the erosion and sediment control/stormwater site plans requested.
 - (e) Provide any needed erosion and sediment control/stormwater practices for the Contractor's temporary work not shown on the plans, such as, but not limited to work platforms, temporary construction, pumping operations, plant and storage yards, and cofferdams.
 - (f) Acquire applicable permits and comply with requirements for borrow pits, dewatering, and any temporary work conducted by the Contractor in jurisdictional areas.
 - (g) Conduct all erosion and sediment control/stormwater work in a timely and workmanlike manner.
 - (h) Fully perform and install erosion and sediment control/stormwater work prior to any suspension of the work.
 - (i) Coordinate with Department, Federal, State and Local Regulatory agencies on resolution of erosion and sediment control/stormwater issues due to the Contractor's operations.
 - (j) Ensure that proper cleanup occurs from vehicle tracking on paved surfaces or any location where sediment leaves the Right-of-Way.
 - (k) Have available a set of erosion and sediment control/stormwater plans that are initialed and include the installation date of Best Management Practices. These practices shall include temporary and permanent groundcover and be properly updated to reflect necessary plan and field changes for use and review by Department personnel as well as regulatory agencies.
- (2) Requirements set forth under the NPDES Permit - The Department's NPDES Stormwater permit (NCS000250) outlines certain objectives and management measures pertaining to construction activities. The permit references *NCG010000, General Permit to Discharge Stormwater* under the NPDES, and states that the Department shall incorporate the applicable requirements into its delegated Erosion and Sediment Control Program for construction activities disturbing one or more acres of land. The Department further incorporates these requirements on all contracted bridge and culvert work at jurisdictional waters, regardless of size. Some of the requirements are, but are not limited to:
- (a) Control project site waste to prevent contamination of surface or ground waters of the state, i.e. from equipment operation/maintenance, construction materials, concrete washout, chemicals, litter, fuels, lubricants, coolants, hydraulic fluids, any other petroleum products, and sanitary waste.
 - (b) Inspect erosion and sediment control/stormwater devices and stormwater discharge outfalls at least once every 7 calendar days, twice weekly for construction related *Federal Clean Water Act, Section 303(d)* impaired

- streams with turbidity violations, and within 24 hours after a significant rainfall event of 0.5 inch that occurs within a 24 hour period.
- (c) Maintain an onsite rain gauge or use the Department's Multi-Sensor Precipitation Estimate website to maintain a daily record of rainfall amounts and dates.
 - (d) Maintain erosion and sediment control/stormwater inspection records for review by Department and Regulatory personnel upon request.
 - (e) Implement approved reclamation plans on all borrow pits, waste sites and staging areas.
 - (f) Maintain a log of turbidity test results as outlined in the Department's Procedure for Monitoring Borrow Pit Discharge.
 - (g) Provide secondary containment for bulk storage of liquid materials.
 - (h) Provide training for employees concerning general erosion and sediment control/stormwater awareness, the Department's NPDES Stormwater Permit NCS000250 requirements, and the applicable requirements of the *General Permit, NCG010000*.
 - (i) Report violations of the NPDES permit to the Engineer immediately who will notify the Division of Water Quality Regional Office within 24 hours of becoming aware of the violation.
- (3) Quality Control Program - Maintain a quality control program to control erosion, prevent sedimentation and follow provisions/conditions of permits. The quality control program shall:
- (a) Follow permit requirements related to the Contractor and subcontractors' construction activities.
 - (b) Ensure that all operators and subcontractors on site have the proper erosion and sediment control/stormwater certification.
 - (c) Notify the Engineer when the required certified erosion and sediment control/stormwater personnel are not available on the job site when needed.
 - (d) Conduct the inspections required by the NPDES permit.
 - (e) Take corrective actions in the proper timeframe as required by the NPDES permit for problem areas identified during the NPDES inspections.
 - (f) Incorporate erosion control into the work in a timely manner and stabilize disturbed areas with mulch/seed or vegetative cover on a section-by-section basis.
 - (g) Use flocculants approved by state regulatory authorities where appropriate and where required for turbidity and sedimentation reduction.
 - (h) Ensure proper installation and maintenance of temporary erosion and sediment control devices.
 - (i) Remove temporary erosion or sediment control devices when they are no longer necessary as agreed upon by the Engineer.
 - (j) The Contractor's quality control and inspection procedures shall be subject to review by the Engineer. Maintain NPDES inspection records and make records available at all times for verification by the Engineer.

- (B) *Certified Foreman* - At least one Certified Foreman shall be onsite for each type of work listed herein during the respective construction activities to control erosion, prevent sedimentation and follow permit provisions:

- (1) Foreman in charge of grading activities
- (2) Foreman in charge of bridge or culvert construction over jurisdictional areas
- (3) Foreman in charge of utility activities

The Contractor may request to use the same person as the Level II Supervisor and Level II Foreman. This person shall be onsite whenever construction activities as described above are taking place. This request shall be approved by the Engineer prior to work beginning.

The Contractor may request to name a single Level II Foreman to oversee multiple construction activities on small bridge or culvert replacement projects. This request shall be approved by the Engineer prior to work beginning.

- (C) *Certified Installers* - Provide at least one onsite, Level I Certified Installer for each of the following erosion and sediment control/stormwater crew:

- (1) Seeding and Mulching
- (2) Temporary Seeding
- (3) Temporary Mulching
- (4) Sodding
- (5) Silt fence or other perimeter erosion/sediment control device installations
- (6) Erosion control blanket installation
- (7) Hydraulic tackifier installation
- (8) Turbidity curtain installation
- (9) Rock ditch check/sediment dam installation
- (10) Ditch liner/matting installation
- (11) Inlet protection
- (12) Riprap placement
- (13) Stormwater BMP installations (such as but not limited to level spreaders, retention/detention devices)
- (14) Pipe installations within jurisdictional areas

If a Level I *Certified Installer* is not onsite, the Contractor may substitute a Level II Foreman for a Level I Installer, provided the Level II Foreman is not tasked to another crew requiring Level II Foreman oversight.

- (D) *Certified Designer* - Include the certification number of the Level III-B Certified Designer on the erosion and sediment control/stormwater component of all reclamation plans and if applicable, the certification number of the Level III-A Certified Designer on the design of the project erosion and sediment control/stormwater plan.

Preconstruction Meeting

Furnish the names of the *Certified Erosion and Sediment Control/Stormwater Supervisor*, *Certified Foremen*, *Certified Installers* and *Certified Designer* and notify the Engineer of changes in certified personnel over the life of the contract within 2 days of change.

Ethical Responsibility

Any company performing work for the North Carolina Department of Transportation has the ethical responsibility to fully disclose any reprimand or dismissal of an employee resulting from improper testing or falsification of records.

Revocation or Suspension of Certification

Upon recommendation of the Chief Engineer to the certification entity, certification for *Supervisor*, *Certified Foremen*, *Certified Installers* and *Certified Designer* may be revoked or suspended with the issuance of an *Immediate Corrective Action (ICA)*, *Notice of Violation (NOV)*, or *Cease and Desist Order* for erosion and sediment control/stormwater related issues.

The Chief Engineer may recommend suspension or permanent revocation of certification due to the following:

- (A) Failure to adequately perform the duties as defined within this certification provision.
- (B) Issuance of an ICA, NOV, or Cease and Desist Order.
- (C) Failure to fully perform environmental commitments as detailed within the permit conditions and specifications.
- (D) Demonstration of erroneous documentation or reporting techniques.
- (E) Cheating or copying another candidate's work on an examination.
- (F) Intentional falsification of records.
- (G) Directing a subordinate under direct or indirect supervision to perform any of the above actions.
- (H) Dismissal from a company for any of the above reasons.
- (I) Suspension or revocation of one's certification by another entity.

Suspension or revocation of a certification will be sent by certified mail to the certificant and the Corporate Head of the company that employs the certificant.

A certificant has the right to appeal any adverse action which results in suspension or permanent revocation of certification by responding, in writing, to the Chief Engineer within 10 calendar days after receiving notice of the proposed adverse action.

Chief Engineer
1536 Mail Service Center
Raleigh, NC 27699-1536

Failure to appeal within 10 calendar days will result in the proposed adverse action becoming effective on the date specified on the certified notice. Failure to appeal within the time specified will result in a waiver of all future appeal rights regarding the adverse action taken. The certificant will not be allowed to perform duties associated with the certification during the appeal process.

The Chief Engineer will hear the appeal and make a decision within 7 days of hearing the appeal. Decision of the Chief Engineer will be final and will be made in writing to the certificant.

If a certification is temporarily suspended, the certificant shall pass any applicable written examination and any proficiency examination, at the conclusion of the specified suspension period, prior to having the certification reinstated.

Measurement and Payment

Certified Erosion and Sediment Control/Stormwater Supervisor, Certified Foremen, Certified Installers and Certified Designer will be incidental to the project for which no direct compensation will be made.

PROCEDURE FOR MONITORING BORROW PIT DISCHARGE:

(2-20-07)

105-16, 230, 801

SP1 G181

Water discharge from borrow pit sites shall not cause surface waters to exceed 50 NTUs (nephelometric turbidity unit) in streams not designated as trout waters and 10 NTUs in streams, lakes or reservoirs designated as trout waters. For lakes and reservoirs not designated as trout waters, the turbidity shall not exceed 25 NTUs. If the turbidity exceeds these levels due to natural background conditions, the existing turbidity level shall not be increased.

If during any operating day, the downstream water quality exceeds the standard, the Contractor shall do all of the following:

- (A) Either cease discharge or modify the discharge volume or turbidity levels to bring the downstream turbidity levels into compliance, or
- (B) Evaluate the upstream conditions to determine if the exceedance of the standard is due to natural background conditions. If the background turbidity measurements exceed the standard, operation of the pit and discharge can continue as long as the stream turbidity levels are not increased due to the discharge.
- (C) Measure and record the turbidity test results (time, date and sampler) at all defined sampling locations 30 minutes after startup and at a minimum, one additional sampling of all sampling locations during that 24-hour period in which the borrow pit is discharging.
- (D) Notify DWQ within 24 hours of any stream turbidity standard exceedances that are not brought into compliance.

During the Environmental Assessment required by Article 230-4 of the *2012 Standard Specifications*, the Contractor shall define the point at which the discharge enters into the State's surface waters and the appropriate sampling locations. Sampling locations shall include points upstream and downstream from the point at which the discharge enters these waters. Upstream sampling location shall be located so that it is not influenced by backwater conditions and represents natural background conditions. Downstream sampling location shall be located at the point where complete mixing of the discharge and receiving water has occurred.

The discharge shall be closely monitored when water from the dewatering activities is introduced into jurisdictional wetlands. Any time visible sedimentation (deposition of sediment) on the wetland surface is observed, the dewatering activity will be suspended until turbidity levels in the stilling basin can be reduced to a level where sediment deposition does not occur. Staining of wetland surfaces from suspended clay particles, occurring after evaporation or infiltration, does not constitute sedimentation. No activities shall occur in wetlands that adversely affect the functioning of a wetland. Visible sedimentation will be considered an indication of possible adverse impacts on wetland use.

The Engineer will perform independent turbidity tests on a random basis. These results will be maintained in a log within the project records. Records will include, at a minimum, turbidity test results, time, date and name of sampler. Should the Department's test results exceed those of the Contractor's test results, an immediate test shall be performed jointly with the results superseding the previous test results of both the Department and the Contractor.

The Contractor shall use the *NCDOT Turbidity Reduction Options for Borrow Pits Matrix*, available at <http://www.ncdot.org/doh/preconstruct/ps/contracts/letting.html> to plan, design, construct, and maintain BMPs to address water quality standards. Tier I Methods include stilling basins which are standard compensatory BMPs. Other Tier I methods are noncompensatory and shall be used when needed to meet the stream turbidity standards. Tier II Methods are also noncompensatory and are options that may be needed for protection of rare or unique resources or where special environmental conditions exist at the site which have led to additional requirements being placed in the DWQ's 401 Certifications and approval letters, Isolated Wetland Permits, Riparian Buffer Authorization or a DOT Reclamation Plan's Environmental Assessment for the specific site. Should the Contractor exhaust all Tier I Methods on a site exclusive of rare or unique resources or special environmental conditions, Tier II Methods may be required by regulators on a case by case basis per supplemental agreement.

The Contractor may use cation exchange capacity (CEC) values from proposed site borings to plan and develop the bid for the project. CEC values exceeding 15 milliequivalents per 100 grams of soil may indicate a high potential for turbidity and should be avoided when dewatering into surface water is proposed.

No additional compensation for monitoring borrow pit discharge will be paid.

EMPLOYMENT:

(11-15-11) (Rev. 1-17-12)

108, 102

SP1 G184

Revise the *2012 Standard Specifications* as follows:

Page 1-20, Subarticle 102-15(O), delete and replace with the following:

(O) Failure to restrict a former Department employee as prohibited by Article 108-5.

Page 1-65, Article 108-5 Character of Workmen, Methods, and Equipment, line 32, delete all of line 32, the first sentence of the second paragraph and the first word of the second sentence of the second paragraph.

STATE HIGHWAY ADMINISTRATOR TITLE CHANGE:

(9-18-12)

SP1 G185

Revise the *2012 Standard Specifications* as follows:

Replace all references to “State Highway Administrator” with “Chief Engineer”.

NOTE TO CONTRACTOR (Fort Bragg Security Fence):

Fort Bragg’s perimeter must always be protected. A breach of the property is not allowed. Proposed security fence shall be installed prior to removing existing fence or working adjacent to Fort Bragg property.

NOTE TO CONTRACTOR (Median Barrier Removal):

The Contractor’s attention is directed to the fact that there is approximately 667 feet of existing median barrier from approximate Station 107+00.00 to 113+67.21. The Contractor shall remove and dispose of this existing median barrier as well as the existing impact attenuator in accordance with Section 802 of the Standard Specifications. All costs associated with the work of satisfactorily removing and disposing of existing median barrier and impact attenuator shall be included in the contract lump sum price for “Removal and Disposal of Existing Median Barrier”.

PROJECT SPECIAL PROVISIONS**ROADWAY****CLEARING AND GRUBBING METHODS:**

Perform clearing on this project to the limits established by Method "II" shown on Standard Drawing No. 200.02 of the *2012 Roadway Standard Drawings* at the following locations:

Randolph St. and all wetland areas

Perform clearing on this project to the limits established by Method "III" shown on Standard Drawing No. 200.03 of the *2012 Roadway Standard Drawings* at the following locations:

-L- line outside of wetland areas**BURNING RESTRICTIONS:**

(7-1-95)

200, 210, 215

SP2 R05

Open burning is not permitted on any portion of the right-of-way limits established for this project. Do not burn the clearing, grubbing or demolition debris designated for disposal and generated from the project at locations within the project limits, off the project limits or at any waste or borrow sites in this county. Dispose of the clearing, grubbing and demolition debris by means other than burning, according to state or local rules and regulations.

BUILDING AND UNDERGROUND STORAGE TANK REMOVAL (U-4444AB):

(1-1-02) (Rev. 1-17-12)

215

SP2 R15 B

Remove the buildings, underground storage tanks and appurtenances listed below in accordance with Section 215 of the *2012 Standard Specifications*:

Building Removal Number 1

**Parcel 002A – Left of Survey Station 151+80, Line -L-
One-Story Metal Business**

Building Removal Number 2

**Parcel 002A – Left of Survey Station 152+80, Line -L-
Metal Canopy**

Building Removal Number 3

**Parcel 016 – Right of Survey Station 10+00, Line -Y5-
One-Story Metal Business**

Building Removal Number 4

**Parcel 019 – Left of Survey Station 27+00, Line -Y6-
One-Story Brick Business – Partially Outside of PUE and/or Construction Line**

This item was appraised as a "cut-of" item and only first three (3) bays are to be removed.

When the description of the work for an item requires a portion of the building to be cut off, that portion of the buildings and appurtenances located within the right of way and/or construction area shall be cut off by the Contractor and disposed of by him. The Engineer will denote on the building, the line where the building is to be cut off. The Contractor will be required to cut the building off on a neat line along the construction line or right of way boundary designated by the Engineer. The Contractor will not be required to do any repairing to that portion of the building located outside the right of way or construction area or to shore it up in any respect. All of the Contractor's work shall be confined to the right of way and construction area designated by the Engineer. **(This paragraph pertains to Item No. 4)**

BUILDING AND UNDERGROUND STORAGE TANK REMOVAL (U-4444B):

(1-1-02) (Rev. 1-17-12)

215

SP2 R15 C

Remove the buildings, underground storage tanks and appurtenances listed below in accordance with Section 215 of the *2012 Standard Specifications*:

Building Removal Number 1

Parcel 005 – Right of Survey Station 27+20, Line -Y6-

One-Story Frame Dwelling – Partially Outside of PUE and/or Construction Line

Building Removal Number 2

Parcel 011 – Left of Survey Station 170+00, Line -L-

One-Story Brick Business – Partially Outside of PUE and/or Construction Line

Building Removal Number 3

Parcel 024– Center Line of Survey Station 15+00, Line -Y6C-

One-Story Metal Business

Building Removal Number 4

Parcel 034 – Right of Survey Station 18+10, Line -Y6C-

One-Story Frame Dwelling

Building Removal Number 5

Parcel 035 – Right of Survey Station 18+65, Line -Y6C-

One-Story Frame Dwelling – Partially Outside of PUE and/or Construction Line

Building Removal Number 6

Parcel 080 – Right of Survey Station 19+15, Line -Y6C-

One-Story Frame Dwelling – Partially Outside of PUE and/or Construction Line

Building Removal Number 7

Parcel 075 – Left of Survey Station 21+25, Line -Y10-

One-Story Brick Dwelling – Partially Outside of PUE and/or Construction Line

When the description of the work for an item indicates a building partially inside and partially outside the right of way and/or construction area, but does not require the building to be cut off, the entire building shall be removed. **(This paragraph pertains to item No.'s 1, 2, 5, 6 and 7).**

TEMPORARY DETOURS:

(7-1-95) (Rev. 4-15-08)

1101

SP2 R30 A

Construct temporary detours required on this project in accordance with the typical sections in the plans or as directed.

After the detours have served their purpose, remove the portions deemed unsuitable for use as a permanent part of the project as directed by the Engineer. Salvage and stockpile the aggregate base course removed from the detours at locations within the right of way, as directed by the Engineer, for removal by State Forces. Place pavement and earth material removed from the detour in embankments or dispose of in waste areas furnished by the Contractor.

Aggregate base course and earth material that is removed will be measured and will be paid at the contract unit price per cubic yard for *Unclassified Excavation*. Pavement that is removed will be measured and will be paid at the contract unit price per square yard for *Removal of Existing Pavement*. Pipe culverts removed from the detours remain the property of the Contractor. Pipe culverts that are removed will be measured and will be paid at the contract unit price per linear foot for *Pipe Removal*. Payment for the construction of the detours will be made at the contract unit prices for the various items involved.

Such prices and payments will be full compensation for constructing the detours and for the work of removing, salvaging, and stockpiling aggregate base course; removing pipe culverts; and for placing earth material and pavement in embankments or disposing of earth material and pavement in waste areas.

SHOULDER AND FILL SLOPE MATERIAL:

(5-21-02)

235, 560

SP2 R45 B

Description

Perform the required shoulder and slope construction for this project in accordance with the applicable requirements of Section 560 and Section 235 of the *2012 Standard Specifications*.

Measurement and Payment

When the Contractor elects to obtain material from an area located beneath a proposed fill sections which does not require excavation for any reason other than to generate acceptable shoulder and fill slope material, the work of performing the excavation will be considered incidental to the item of *Borrow Excavation* or *Shoulder Borrow*. If there is no pay item for *Borrow* or *Shoulder Borrow* in the contract, this work will be considered incidental to *Unclassified Excavation*. Stockpile the excavated material in a manner to facilitate measurement by the Engineer. Fill the void created by the excavation of the shoulder and fill slope material with suitable material. Payment for material used from the stockpile will be made at the contract unit price for *Borrow Excavation* or *Shoulder Borrow*. If there is no pay item for *Borrow Excavation* or *Shoulder Borrow*, then the material will be paid for at the contract unit price for *Unclassified Excavation*. The material used to fill the void created by the excavation of the shoulder and fill slope material will be made at the contract unit price for *Unclassified Excavation*, *Borrow Excavation*, or *Shoulder Borrow*, depending on the source of the material.

Material generated from undercut excavation, unclassified excavation or clearing and grubbing operations that is placed directly on shoulders or slope areas, will not be measured separately for payment, as payment for the work requiring the excavation will be considered adequate compensation for depositing and grading the material on the shoulders or slopes.

When undercut excavation is performed at the direction of the Engineer and the material excavated is found to be suitable for use as shoulder and fill slope material, and there is no area on the project currently prepared to receive the material generated by the undercut operation, the Contractor may construct a stockpile for use as borrow at a later date. Payment for the material used from the stockpile will be made at the contract unit price for *Borrow Excavation* or *Shoulder Borrow*.

When shoulder material is obtained from borrow sources or from stockpiled material, payment for the work of shoulder construction will be made at the contract unit price per cubic yard for *Borrow Excavation* or *Shoulder Borrow* in accordance with the applicable provisions of Section 230 or Section 560 of the *2012 Standard Specifications*.

SELECT GRANULAR MATERIAL:

(3-16-10) (Rev. 1-17-12)

265

SP2 R80

Revise the *2012 Standard Specifications* as follows:

Page 2-28, Article 265-2 MATERIALS, add the following:

Use only Class III select material for select granular material.

Page 2-28, Article 265-4 MEASUREMENT AND PAYMENT, lines 13-30, replace all occurrences of *Select Granular Material* with *Select Granular Material, Class III*.

Page 2-28, Article 265-4 MEASUREMENT AND PAYMENT, after line 31, delete the pay item and replace with the following:

Payment will be made under:

Pay Item

Select Granular Material, Class III

Pay Unit

Cubic Yard

**15" WELDED STEEL PIPE UNDER THE TRACKS OF
CAPE FEAR RAILROAD AT STATION -Y15- 30+84.19:**

The 15" welded steel pipe required under the tracks of Cape Fear Railroad shall conform with Section 330 of the *Standard Specifications*. The thickness of the wall shall be 0.5 inches.

The pipe shall be installed by dry boring and jacking under the tracks as shown in the plans. The pipe shall be carefully dry bored true to the line and grade given. The bore shall be held to a minimum to insure that there will be no settlement. Pipe which has been damaged due to the

Contractor's operation shall be removed and replaced at the Contractor's expense. All voids around the outside of the pipe shall be completely filled to the satisfaction of the Engineer.

The Contractor shall notify Nick Darnell, Superintendent, Cape Fear Railways, (910) 396-7683/Office, (910) 409-6629/Cell, charles.n.darnell.ctr@mail.mil) 15 days before any work is begun on the railroad's right of way. This will enable them to have a representative present, if they so desire, while the work is being performed to determine if the work is being performed in accordance with the approved plans and Special Provisions. The railroad will advise the Contractor when the work is to be done between trains and provide a flagman, if required.

The quantity of pipe to be paid for will be the actual number of linear feet of pipe which has been incorporated in the completed and accepted work. Measurement will be made by counting the number of joints used and multiplying by the length of the joint. Where partial joints are used, measurement will be made along the longest length of the partial joint to the nearest 0.1 of a foot.

The quantity of pipe measured as provided for above will be paid for at the contract unit price per linear foot for 15" *Welded Steel Pipe, 0.500" Thick, Grade B, (Under RR)*. Such price and payment will be full compensation for all work described herein including dry boring, jacking, tools, materials, labor, workmanship and all other incidentals necessary to complete the work.

The Contractor shall submit two (2) sets of detailed plans and a written description of his proposed method of pipe installation for approval by the Engineer and the Railway Company. Plans should include the size and location of any required jacking pits and shoring for support of the railroad roadbed if necessary.

FLOWABLE FILL:

(9-17-02) (Rev 1-17-12)

300, 340, 450, 1000, 1530, 1540, 1550

SP3 R30

Description

This work consists of all work necessary to place flowable fill in accordance with these provisions, the plans, and as directed.

Materials

Refer to Division 10 of the *2012 Standard Specifications*.

Item

Flowable Fill

Section

1000-6

Construction Methods

Discharge flowable fill material directly from the truck into the space to be filled, or by other approved methods. The mix may be placed full depth or in lifts as site conditions dictate. The Contractor shall provide a method to plug the ends of the existing pipe in order to contain the flowable fill.

Measurement and Payment

At locations where flowable fill is called for on the plans and a pay item for flowable fill is included in the contract, *Flowable Fill* will be measured in cubic yards and paid as the actual number of cubic yards that have been satisfactorily placed and accepted. Such price and payment will be full compensation for all work covered by this provision including, but not limited to, the mix design, furnishing, hauling, placing and containing the flowable fill.

Payment will be made under:

Pay Item	Pay Unit
Flowable Fill	Cubic Yard

BRIDGE APPROACH FILLS:

(10-19-10) (Rev. 1-17-12)

422

SP4 R02

Description

Bridge approach fills include bridge approach fills for sub regional tier bridges and reinforced bridge approach fills. Construct bridge approach fills in accordance with the contract and Standard Drawing No. 422.10 or 422.11 of the *2012 Roadway Standard Drawings*. Define “geosynthetics” as geotextiles or geomembranes.

Materials

Refer to Division 10 of the *2012 Standard Specifications*.

Item	Section
Anchor Pins	1056-2
Geotextiles	1056
Portland Cement Concrete	1000
Select Material	1016
Subsurface Drainage Materials	1044
Wire Staples	1060-8(D)

For bridge approach fills for sub regional tier bridges, provide Type 1 geotextile for filtration geotextiles. For reinforced bridge approach fills, provide Type 5 geotextile for geotextile reinforcement and Type 1 geotextile and No. 78M stone for drains. Use Class B concrete for concrete pads.

Use Class III or V select material for reinforced bridge approach fills and only Class V select material (standard size No. 78M stone) for bridge approach fills for sub regional tier bridges. Provide PVC pipes, fittings and outlet pipes for subsurface drainage materials. For drains and PVC pipes behind end bents, use pipes with perforations that meet AASHTO M 278.

Use PVC, HDPE or linear low density polyethylene (LLDPE) geomembranes for reinforced bridge approach fills. For PVC geomembranes, provide grade PVC30 geomembranes that meet ASTM D7176. For HDPE and LLDPE geomembranes, use geomembranes with a nominal thickness of at least 30 mils that meet Geosynthetic Research Institute Standard Specifications GM13 or GM17, respectively. Handle and store geomembranes in accordance with Article 1056-2 of the *2012 Standard Specifications*. Provide material certifications for geomembranes in accordance with Article 1056-3 of the *2012 Standard Specifications*.

Construction Methods

Excavate as necessary for bridge approach fills in accordance with the contract. Notify the Engineer when foundation excavation is complete. Do not place geomembranes or filtration geotextiles until excavation dimensions and foundation material are approved. Attach geomembranes and filtration geotextiles to end bent cap back and wing walls with adhesives, tapes or other approved methods. Glue or weld geomembrane seams to prevent leakage.

For reinforced bridge approach fills, place geotextile reinforcement within 3" of locations shown in Standard Drawing No. 422.10 of the *2012 Roadway Standard Drawings* and in slight tension free of kinks, folds, wrinkles or creases. Install geotextile reinforcement with the orientation, dimensions and number of layers shown in Standard Drawing No. 422.10 of the *2012 Roadway Standard Drawings*. Place first layer of geotextile reinforcement directly on geomembranes with no void or material in between. Install geotextile reinforcement with the machine direction (MD) parallel to the roadway centerline. The MD is the direction of the length or long dimension of the geotextile roll. Do not splice or overlap geotextile reinforcement in the MD so seams are perpendicular to the roadway centerline. Wrap geotextile reinforcement at end bent cap back and wing walls as shown in Standard Drawing No. 422.10 of the *2012 Roadway Standard Drawings* and directed by the Engineer. Extend geotextile reinforcement at least 4 ft back behind end bent cap back and wing walls into select material.

Overlap adjacent geotextiles at least 18" with seams oriented parallel to the roadway centerline. Hold geotextiles in place with wire staples or anchor pins as needed. Contact the Engineer when existing or future obstructions such as foundations, pavements, pipes, inlets or utilities will interfere with geosynthetics.

For reinforced bridge approach fills, construct one foot square drains consisting of 4" diameter continuous perforated PVC pipes surrounded by No. 78M stone wrapped in Type 1 geotextiles. Install drains in accordance with Standard Drawing No. 422.10 of the *2012 Roadway Standard Drawings*. For bridge approach fills for sub regional tier bridges, install 4" diameter continuous perforated PVC drain pipes in accordance with Standard Drawing No. 422.11 of the *2012 Roadway Standard Drawings*.

Use solvent cement to connect PVC pipes so joints do not leak. Connect perforated pipes to outlet pipes just behind wing walls. Provide drain pipes and drains with positive drainage towards outlets. Place pipe sleeves in or under wing walls for outlet pipes so positive drainage is maintained. Use sleeves that can withstand wing wall loads.

Place select material in 8" to 10" thick lifts. Use only hand operated compaction equipment to compact select material for bridge approach fills. Compact Class III select material in accordance with Subarticle 235-3(C) of the *2012 Standard Specifications*. Compact No. 78M stone with a vibratory compactor to the satisfaction of the Engineer. Do not displace or damage geosynthetics, drain pipes or drains when placing and compacting select material. End dumping directly on geosynthetics is not permitted. Do not operate heavy equipment on geosynthetics, drain pipes or drains until they are covered with at least 8" of select material. Replace any damaged geosynthetics, drain pipes or drains to the satisfaction of the Engineer.

Cover open ends of outlet pipes with rodent screens as shown in Standard Drawing No. 815.03 of the *2012 Roadway Standard Drawings*. Connect ends of outlet pipes to concrete pads or existing drainage structures as directed by the Engineer. Construct concrete pads with an Ordinary surface finish that meets Subarticle 825-6(B) of the *2012 Standard Specifications*.

Measurement and Payment

Reinforced Bridge Approach Fill, Station ____ will be paid at the contract lump sum price. The contract lump sum price for *Reinforced Bridge Approach Fill, Station ____* will be full compensation for labor, tools, equipment and reinforced bridge approach fill materials, excavating, backfilling, hauling and removing excavated materials, compacting select material, connecting outlet pipes to existing drainage structures and supplying select materials, geosynthetics, drains, pipe sleeves and outlet components and any incidentals necessary to construct all reinforced bridge approach fills at each bridge.

Bridge Approach Fill - Sub Regional Tier, Station ____ will be paid at the contract lump sum price. The contract lump sum price for *Bridge Approach Fill - Sub Regional Tier, Station ____* will be full compensation for labor, tools, equipment and bridge approach fill materials, excavating, backfilling, hauling and removing excavated materials, compacting No. 78M stone, connecting outlet pipes to existing drainage structures and supplying No. 78M stone, filtration geotextiles, drain pipes, pipe sleeves and outlet components and any incidentals necessary to construct all bridge approach fills at each sub regional tier bridge.

Payment will be made under:

Pay Item	Pay Unit
Reinforced Bridge Approach Fill, Station ____	Lump Sum
Bridge Approach Fill - Sub Regional Tier, Station ____	Lump Sum

ASPHALT PAVEMENTS - SUPERPAVE:

(6-19-12)

605

SP6 R01

Revise the 2012 Standard Specifications as follows:

Page 6-3, Article 605-7 APPLICATION RATES AND TEMPERATURES, replace this article, including Table 601-1, with the following:

Apply tack coat uniformly across the existing surface at target application rates shown in Table 605-1.

**TABLE 605-1
APPLICATION RATES FOR TACK COAT**

Existing Surface	Target Rate (gal/sy)
	Emulsified Asphalt
New Asphalt	0.04 ± 0.01
Oxidized or Milled Asphalt	0.06 ± 0.01
Concrete	0.08 ± 0.01

Apply tack coat at a temperature within the ranges shown in Table 605-2. Tack coat shall not be overheated during storage, transport or at application.

**TABLE 605-2
APPLICATION TEMPERATURE FOR TACK COAT**

Asphalt Material	Temperature Range
Asphalt Binder, Grade PG 64-22	350 - 400°F
Emulsified Asphalt, Grade RS-1H	130 - 160°F
Emulsified Asphalt, Grade CRS-1	130 - 160°F
Emulsified Asphalt, Grade CRS-1H	130 - 160°F
Emulsified Asphalt, Grade HFMS-1	130 - 160°F
Emulsified Asphalt, Grade CRS-2	130 - 160°F

Page 6-18, Article 610-1 DESCRIPTION, lines 40-41, delete the last sentence of the last paragraph.

Page 6-19, Subarticle 610-3(A) Mix Design-General, line 5, add the following as the first paragraph:

Warm mix asphalt (WMA) is allowed for use at the Contractor's option in accordance with the NCDOT Approved Products List for WMA Technologies available at:

<http://www.ncdot.org/doh/operations/materials/pdf/wma.pdf>.

ASPHALT BINDER CONTENT OF ASPHALT PLANT MIXES:

(11-21-00) (Rev. 7-17-12)

609

SP6 R15

The approximate asphalt binder content of the asphalt concrete plant mixtures used on this project will be as follows:

Asphalt Concrete Base Course	Type B 25.0	4.4%
Asphalt Concrete Intermediate Course	Type I 19.0	4.8%
Asphalt Concrete Surface Course	Type S 4.75A	6.8%
Asphalt Concrete Surface Course	Type SA-1	6.8%
Asphalt Concrete Surface Course	Type SF 9.5A	6.7%
Asphalt Concrete Surface Course	Type S 9.5	6.0%
Asphalt Concrete Surface Course	Type S 12.5	5.6%

The actual asphalt binder content will be established during construction by the Engineer within the limits established in the *2012 Standard Specifications*.

ASPHALT PLANT MIXTURES:

(7-1-95)

609

SP6 R20

Place asphalt concrete base course material in trench sections with asphalt pavement spreaders made for the purpose or with other equipment approved by the Engineer.

MATERIAL TRANSFER VEHICLE:

Use a Material Transfer Vehicle (MTV) when placing all intermediate and surface course asphalt concrete plant mix pavements, in accordance with the applicable requirements of Section 610-8 of the Standard Specifications.

PRICE ADJUSTMENT - ASPHALT BINDER FOR PLANT MIX:

(11-21-00)

620

SP6 R25

Price adjustments for asphalt binder for plant mix will be made in accordance with Section 620 of the *2012 Standard Specifications*.

The base price index for asphalt binder for plant mix is **\$568.67** per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **September 1, 2012**.

MEDIAN HAZARD PROTECTION:**Description**

Construct Median Hazard Protection at locations indicated in the plans in accordance with the detail in the plans and as directed by the Engineer.

Measurement and Payment

Median Hazard Protection will be measured and paid for per linear feet that are completed and accepted. Such price and payment will be full compensation for all labor, materials (including, but not limited to, concrete barrier, earth material, #57 stone, concrete cover, galvanized bar and grout) and incidentals necessary construct the Median Hazard Protection.

Payment will be made under:

Pay Item

Median Hazard Protection

Pay Unit

Linear Foot

GUARDRAIL ANCHOR UNITS, TYPE M-350:

(4-20-04) (Rev. 1-17-12)

862

SP8 R60

Description

Furnish and install guardrail anchor units in accordance with the details in the plans, the applicable requirements of Section 862 of the *2012 Standard Specifications*, and at locations shown in the plans.

Materials

The Contractor may, at his option, furnish any one of the following guardrail anchor units or approved equal.

The guardrail anchor unit (SRT-350) as manufactured by:

Trinity Industries, Inc.
2525 N. Stemmons Freeway
Dallas, Texas 75207
Telephone: 800-644-7976

The guardrail anchor unit (FLEAT) as manufactured by:

Road Systems, Inc.
3616 Old Howard County Airport
Big Springs, Texas 79720
Telephone: 915-263-2435

The guardrail anchor unit (REGENT) as manufactured by:

Energy Absorption Systems, Inc.
One East Wacker Drive
Chicago, Illinois 60601-2076
Telephone: 888-32-ENERGY

Prior to installation the Contractor shall submit to the Engineer:

- (A) FHWA acceptance letter for each guardrail anchor unit certifying it meets the requirements of NCHRP Report 350, Test Level 3, in accordance with Article 106-2 of the *2012 Standard Specifications*.
- (B) Certified working drawings and assembling instructions from the manufacturer for each guardrail anchor unit in accordance with Article 105-2 of the *2012 Standard Specifications*.

No modifications shall be made to the guardrail anchor unit without the express written permission from the manufacturer. Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

Construction Methods

Guardrail end delineation shall be required on all approach and trailing end sections for both temporary and permanent installations. Guardrail end delineation consists of yellow reflective sheeting applied to the entire end section of the guardrail in accordance with Article 1088-3 of the *2012 Standard Specifications* and is incidental to the cost of the guardrail anchor unit.

Measurement and Payment

Measurement and payment will be made in accordance with Article 862-6 of the *2012 Standard Specifications*.

Payment will be made under:

Pay Item	Pay Unit
Guardrail Anchor Units, Type M-350	Each

GUARDRAIL ANCHOR UNITS, TYPE 350:

(4-20-04) (Rev. 8-16-11)

862

SP8 R65

Description

Furnish and install guardrail anchor units in accordance with the details in the plans, the applicable requirements of Section 862 of the *2012 Standard Specifications*, and at locations shown in the plans.

Materials

The Contractor may at his option, furnish any one of the guardrail anchor units or approved equal.

Guardrail anchor unit (ET-Plus) as manufactured by:

Trinity Industries, Inc.
2525 N. Stemmons Freeway
Dallas, Texas 75207
Telephone: 800-644-7976

The guardrail anchor unit (SKT 350) as manufactured by:

Road Systems, Inc.
3616 Old Howard County Airport
Big Spring, Texas 79720
Telephone: 915-263-2435

Prior to installation the Contractor shall submit to the Engineer:

- (A) FHWA acceptance letter for each guardrail anchor unit certifying it meets the requirements of NCHRP Report 350, Test Level 3, in accordance with Article 106-2 of the *2012 Standard Specifications*.
- (B) Certified working drawings and assembling instructions from the manufacturer for each guardrail anchor unit in accordance with Article 105-2 of the *2012 Standard Specifications*.

No modifications shall be made to the guardrail anchor unit without the express written permission from the manufacturer. Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

Construction Methods

Guardrail end delineation is required on all approach and trailing end sections for both temporary and permanent installations. Guardrail end delineation consists of yellow reflective sheeting applied to the entire end section of the guardrail in accordance with Article 1088-3 of the *2012 Standard Specifications* and is incidental to the cost of the guardrail anchor unit.

Measurement and Payment

Measurement and payment will be made in accordance with Article 862-6 of the *2012 Standard Specifications*.

Payment will be made under:

Pay Item
Guardrail Anchor Units, Type 350

Pay Unit
Each

IMPACT ATTENUATOR UNITS, TYPE 350:

(4-20-04) (Rev. 1-17-12)

SP8 R75

Description

Furnish and install impact attenuator units and any components necessary to connect the impact attenuator units in accordance with the manufacturer's requirement, the details in the plans and at locations shown in the plans.

Materials

The Contractor may at his option, furnish any one of the **NON-GATING** impact attenuator units or approved equal:

The impact attenuator unit (QUADGUARD) as manufactured by:

Energy Absorption Systems, Inc.
One East Wacker Drive
Chicago, Illinois 60601-2076
Telephone: 312-467-6750

The impact attenuator unit (TRACC) as manufactured by:

Trinity Industries, Inc.
2525 N. Stemmons Freeway
Dallas, Texas 75207
Telephone: 800-644-7976

The Contractor may at his option, furnish any one of the **GATING** impact attenuator units or approved equal:

The impact attenuator unit (BRAKEMASTER) as manufactured by:

Energy Absorption Systems, Inc.
One East Wacker Drive
Chicago, Illinois 60601-2076
Telephone: 312-467-6750

The impact attenuator unit (CAT) as manufactured by:

Trinity Industries, Inc.
2525 N. Stemmons Freeway
Dallas, Texas 75207
Telephone: 800-644-7976

Prior to installation the Contractor shall submit to the Engineer:

- (A) FHWA acceptance letter for each impact attenuator unit certifying it meets the requirements of NCHRP Report 350, Test Level 3, in accordance with Article 106-2 of the *2012 Standard Specifications*.
- (B) Certified working drawings and assembling instructions from the manufacturer for each impact attenuator unit in accordance with Article 105-2 of the *2012 Standard Specifications*.

No modifications shall be made to the impact attenuator unit without the express written permission from the manufacturer. Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

Construction Methods

If the median width is 40 feet or less, the Contractor shall supply one of the NON-GATING Impact Attenuator Units listed in the Materials Section herein.

If the median width is greater than 40 feet, the Contractor may use any of the GATING or NON-GATING Impact Attenuator Units listed in the Materials Section herein.

Measurement and Payment

Impact Attenuator Unit, Type 350 will be measured and paid at the contract unit price per each. Such prices and payment will be full compensation for all work covered by this provision including, but not limited to, furnishing, installing and all incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Impact Attenuator Units, Type 350	Each

84" CHAIN LINK SECURITY FENCE:

Description

Construct 84" chain link security fence at locations indicated in the plans, in accordance with the detail in the plans, this provision and as directed by the Engineer.

Construction Methods

Construct 84" chain link security fence in accordance with the detail in the plans and the applicable requirements of Section 866 of the *Standard Specifications*.

Measurement and Payment

84" Chain Link Security Fence will be measured and paid for per linear foot of fence that has been completed and accepted. Such price and payment shall include, but not be limited to all materials, hardware, labor, tools and incidentals necessary to satisfactorily complete the work. Line posts, terminal posts and gates will be measured and paid for separately.

Payment will be made under:

Pay Item	Pay Unit
84" Chain Link Security Fence	Linear Foot

DETECTABLE WARNINGS FOR PROPOSED CURB RAMPS:

(6-15-10) (Rev. 8-16-11)

848

SP8 R126

Description

Construct detectable warnings consisting of integrated raised truncated domes on proposed concrete curb ramps in accordance with the *2012 Standard Specifications*, plan details, the requirements of the *28 CFR Part 36 ADA Standards for Accessible Design* and this provision.

Materials

Detectable warning for proposed curb ramps shall consist of integrated raised truncated domes. The description, size and spacing shall conform to Section 848 of the *2012 Standard Specifications*.

Use material for detectable warning systems as shown herein. Material and coating specifications must be stated in the Manufacturers Type 3 Certification and all Detectable Warning systems must be on the NCDOT Approved Products List.

Install detectable warnings created from one of the following materials: precast concrete blocks or bricks, clay paving brick, gray or ductile iron castings, mild steel, stainless steel, and engineered plastics, rubber or composite tile. Only one material type for detectable warning will be permitted per project, unless otherwise approved by the Engineer.

- (A) Detectable Warnings shall consist of a base with integrated raised truncated domes, and when constructed of precast concrete they shall conform to the material requirements of Article 848-2 of the *2012 Standard Specifications*.
- (B) Detectable Warnings shall consist of a base with integrated raised truncated domes, and may be comprised of other materials including, but not limited, to clay paving brick, gray iron or ductile iron castings, mild steel, stainless steel, and engineered plastics, rubber or composite tile, which are cast into the concrete of the curb ramps. The material shall have an integral color throughout the thickness of the material. The detectable warning shall include fasteners or anchors for attachment in the concrete and shall be furnished as a system from the manufacturer.

Prior to installation, the Contractor shall submit to the Engineer assembling instructions from the manufacturer for each type of system used in accordance with Article 105-2 of the *2012 Standard Specifications*. The system shall be furnished as a kit containing all consumable materials and consumable tools, required for the application. They shall be capable of being affixed to or anchored in the concrete curb ramp, including green concrete (concrete that has set but not appreciably hardened). The system shall be solvent free and contain no volatile organic compounds (VOC). The static coefficient of friction shall be 0.8 or greater when measured on top of the truncated domes and when measured between the domes in accordance with ASTM C1028 (dry and wet). The system shall be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to degradation by motor fuels, lubricants and antifreeze.

- (C) When steel or gray iron or ductile iron casting products are provided, only products that meet the requirements of Subarticle 106-1(B) of the *2012 Standard Specifications* may be used. Submit to the Engineer a Type 6 Certification, catalog cuts and installation procedures at least 30 days prior to installation for all.

Construction Methods

- (A) Prior to placing detectable warnings in proposed concrete curb ramps, adjust the existing subgrade to the proper grade and in accordance with Article 848-3 of the *2012 Standard Specifications*.
- (B) Install all detectable warning in proposed concrete curb ramps in accordance with the manufacturer's recommendations.

Measurement and Payment

Detectable Warnings installed for construction of proposed curb ramps will not be paid for separately. Such payment will be included in the price bid for *Concrete Curb Ramps*.

STREET SIGNS AND MARKERS AND ROUTE MARKERS:

(7-1-95)

900

SP9 R02

Move any existing street signs, markers, and route markers out of the construction limits of the project and install the street signs and markers and route markers so that they will be visible to the traveling public if there is sufficient right of way for these signs and markers outside of the construction limits.

Near the completion of the project and when so directed by the Engineer, move the signs and markers and install them in their proper location in regard to the finished pavement of the project.

Stockpile any signs or markers that cannot be relocated due to lack of right of way, or any signs and markers that will no longer be applicable after the construction of the project, at locations directed by the Engineer for removal by others.

The Contractor shall be responsible to the owners for any damage to any street signs and markers or route markers during the above described operations.

No direct payment will be made for relocating, reinstalling, and/or stockpiling the street signs and markers and route markers as such work shall be considered incidental to other work being paid for by the various items in the contract.

FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES:

(1-17-12) (Rev. 8-21-12)

9, 14, 17

SP9 R05

Description

Foundations for metal poles include foundations for signals, cameras, overhead and dynamic message signs (DMS) and high mount and low level light standards supported by metal poles or upright trusses. Foundations consist of footings with pedestals and drilled piers with or without grade beams or wings. Anchor rod assemblies consist of anchor rods (also called anchor bolts) with nuts and washers on the exposed ends of rods and nuts and a plate or washers on the other ends of rods embedded in the foundation.

Construct concrete foundations with the required resistances and dimensions and install anchor rod assemblies in accordance with the contract and accepted submittals. Construct drilled piers consisting of cast-in-place reinforced concrete cylindrical sections in excavated holes. Provide temporary casings or polymer slurry as needed to stabilize drilled pier excavations. Use a prequalified Drilled Pier Contractor to construct drilled piers for metal poles. Define “excavation” and “hole” as a drilled pier excavation and “pier” as a drilled pier.

This provision does not apply to materials and anchor rod assemblies for standard foundations for low level light standards. See Section 1405 of the *2012 Standard Specifications* and Standard Drawing No. 1405.01 of the *2012 Roadway Standard Drawings* for materials and anchor rod assemblies for standard foundations. For construction of standard foundations for low level light standards, standard foundations are considered footings in this provision.

This provision does not apply to foundations for signal pedestals; see Section 1743 of the *2012 Standard Specifications* and Standard Drawing No. 1743.01 of the *2012 Roadway Standard Drawings*.

Materials

Refer to the *2012 Standard Specifications*.

Item	Section
Conduit	1091-3
Grout, Nonshrink	1003
Polymer Slurry	411-2(B)
Portland Cement Concrete	1000
Reinforcing Steel	1070
Rollers and Chairs	411-2(C)
Temporary Casings	411-2(A)

Provide Type 3 material certifications in accordance with Article 106-3 of the *2012 Standard Specifications* for conduit, rollers, chairs and anchor rod assemblies. Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Load, transport, unload and store foundation and anchor rod assembly materials so materials are kept clean and free of damage. Damaged or deformed materials will be rejected.

Use conduit type in accordance with the contract. Use Class A concrete for footings and pedestals, Class Drilled Pier concrete for drilled piers and Class AA concrete for grade beams and wings including portions of drilled piers above bottom of wings elevations. Corrugated temporary casings may be accepted at the discretion of the Engineer. A list of approved polymer slurry products is available from:

www.ncdot.org/doh/preconstruct/highway/geotech/leftmenu/Polymer.html

Provide anchor rod assemblies in accordance with the contract consisting of the following:

- (A) Straight anchor rods,
- (B) Heavy hex top and leveling nuts and flat washers on exposed ends of rods, and
- (C) Nuts and either flat plates or washers on the other ends of anchor rods embedded in foundations.

Do not use lock washers. Use steel anchor rods, nuts and washers that meet ASTM F1554 for Grade 55 rods and Grade A nuts. Use steel plates and washers embedded in concrete with a thickness of at least 1/4". Galvanize anchor rods and exposed nuts and washers in accordance with Article 1076-4 of the *2012 Standard Specifications*. It is not necessary to galvanize nuts, plates and washers embedded in concrete.

Construction Methods

Install the required size and number of conduits in foundations in accordance with the plans and accepted submittals. Construct top of piers, footings, pedestals, grade beams and wings flat, level and within 1" of elevations shown in the plans or approved by the Engineer. Provide an Ordinary Surface finish in accordance with Subarticle 825-6(B) of the *2012 Standard Specifications* for portions of foundations exposed above finished grade. Do not remove anchor bolt templates or pedestal or grade beam forms or erect metal poles or upright trusses onto foundations until concrete attains a compressive strength of at least 3,000 psi.

(A) Drilled Piers

Before starting drilled pier construction, hold a predrill meeting to discuss the installation, monitoring and inspection of the drilled piers. Schedule this meeting after the Drilled Pier Contractor has mobilized to the site. The Resident or Division Traffic Engineer, Contractor and Drilled Pier Contractor Superintendent will attend this predrill meeting.

Do not excavate holes, install piles or allow equipment wheel loads or vibrations within 20 ft of completed piers until 16 hours after Drilled Pier concrete reaches initial set.

Check for correct drilled pier alignment and location before beginning drilling. Check plumbness of holes frequently during drilling.

Construct drilled piers with the minimum required diameters shown in the plans. Install piers with tip elevations no higher than shown in the plans or approved by the Engineer.

Excavate holes with equipment of the sizes required to construct drilled piers. Depending on the subsurface conditions encountered, drilling through rock and boulders may be required. Do not use blasting for drilled pier excavations.

Contain and dispose of drilling spoils and waste concrete as directed and in accordance with Section 802 of the *2012 Standard Specifications*. Drilling spoils consist of all materials and fluids removed from excavations.

If unstable, caving or sloughing materials are anticipated or encountered, stabilize holes with temporary casings and/or polymer slurry. Do not use telescoping temporary casings. If it becomes necessary to replace a temporary casing during drilling, backfill the excavation, insert a larger casing around the casing to be replaced or stabilize the excavation with polymer slurry before removing the temporary casing.

If temporary casings become stuck or the Contractor proposes leaving casings in place, temporary casings should be installed against undisturbed material. Unless otherwise approved, do not leave temporary casings in place for mast arm poles and cantilever signs. The Engineer will determine if casings may remain in place. If the Contractor proposes leaving temporary casings in place, do not begin drilling until a casing installation method is approved.

Use polymer slurry and additives to stabilize holes in accordance with the slurry manufacturer's recommendations. Provide mixing water and equipment suitable for polymer slurry. Maintain polymer slurry at all times so slurry meets Table 411-3 of the *2012 Standard Specifications* except for sand content.

Define a "sample set" as slurry samples collected from mid-height and within 2 ft of the bottom of holes. Take sample sets from excavations to test polymer slurry immediately after filling holes with slurry, at least every 4 hours thereafter and immediately before placing concrete. Do not place Drilled Pier concrete until both slurry samples from an excavation meet the required polymer slurry properties. If any slurry test results do not meet the requirements, the Engineer may suspend drilling until both samples from a sample set meet the required slurry properties.

Remove soft and loose material from bottom of holes using augers to the satisfaction of the Engineer. Assemble rebar cages and place cages and Drilled Pier concrete in accordance with Subarticle 411-4(E) of the *2012 Standard Specifications* except for the following:

- (1) Inspections for tip resistance and bottom cleanliness are not required,
- (2) Temporary casings may remain in place if approved, and
- (3) Concrete placement may be paused near the top of pier elevations for anchor rod assembly installation and conduit placement or
- (4) If applicable, concrete placement may be stopped at bottom of grade beam or wings elevations for grade beam or wing construction.

If wet placement of concrete is anticipated or encountered, do not place Drilled Pier concrete until a concrete placement procedure is approved. If applicable, temporary casings and fluids may be removed when concrete placement is paused or stopped in accordance with the exceptions above provided holes are stable. Remove contaminated concrete from exposed Drilled Pier concrete after removing casings and fluids. If holes are unstable, do not remove temporary casings until a procedure for placing anchor rod assemblies and conduit or constructing grade beams or wings is approved.

Use collars to extend drilled piers above finished grade. Remove collars after Drilled Pier concrete sets and round top edges of piers.

If drilled piers are questionable, pile integrity testing (PIT) and further investigation may be required in accordance with Article 411-5 of the *2012 Standard Specifications*. A drilled pier will be considered defective in accordance with Subarticle 411-5(D) of the *2012 Standard Specifications* and drilled pier acceptance is based in part on the criteria in Article 411-6 of the *2012 Standard Specifications* except for the top of pier tolerances in Subarticle 411-6(C) of the *2012 Standard Specifications*.

If a drilled pier is under further investigation, do not grout core holes, backfill around the pier or perform any work on the drilled pier until the Engineer accepts the pier. If the drilled pier is accepted, dewater and grout core holes and backfill around the pier with approved material to finished grade. If the Engineer determines a pier is unacceptable, remediation is required in accordance with Article 411-6 of the *2012 Standard Specifications*. No extension of completion date or time will be allowed for remediation of unacceptable drilled piers or post repair testing.

Permanently embed a plate in or mark top of piers with the pier diameter and depth, size and number of vertical reinforcing bars and the minimum compressive strength of the concrete mix at 28 days.

(B) Footings, Pedestals, Grade Beams and Wings

Excavate as necessary for footings, grade beams and wings in accordance with the plans, accepted submittals and Section 410 of the *2012 Standard Specifications*. If unstable,

caving or sloughing materials are anticipated or encountered, shore foundation excavations as needed with an approved method. Notify the Engineer when foundation excavation is complete. Do not place concrete or reinforcing steel until excavation dimensions and foundation material are approved.

Construct cast-in-place reinforced concrete footings, pedestals, grade beams and wings with the dimensions shown in the plans and in accordance with Section 825 of the *2012 Standard Specifications*. Use forms to construct portions of pedestals and grade beams protruding above finished grade. Provide a chamfer with a 3/4" horizontal width for pedestal and grade beam edges exposed above finished grade. Backfill and fill in accordance with Article 410-8 of the *2012 Standard Specifications*. Proper compaction around footings and wings is critical for foundations to resist uplift and torsion forces. Place concrete against undisturbed soil and do not use forms for standard foundations for low level light standards.

(C) Anchor Rod Assemblies

Size anchor rods for design and the required projection above top of foundations. Determine required anchor rod projections from nut, washer and base plate thicknesses, the protrusion of 3 to 5 anchor rod threads above top nuts after tightening and the distance of one nut thickness between top of foundations and bottom of leveling nuts.

Protect anchor rod threads from damage during storage and installation of anchor rod assemblies. Before placing anchor rods in foundations, turn nuts onto and off rods past leveling nut locations. Turn nuts with the effort of one workman using an ordinary wrench without a cheater bar. Report any thread damage to the Engineer that requires extra effort to turn nuts.

Arrange anchor rods symmetrically about center of base plate locations as shown in the plans. Set anchor rod elevations based on required projections above top of foundations. Securely brace and hold rods in the correct position, orientation and alignment with a steel template. Do not weld to reinforcing steel, temporary casings or anchor rods.

Install top and leveling (bottom) nuts, washers and the base plate for each anchor rod assembly in accordance with the following procedure:

- (1) Turn leveling nuts onto anchor rods to a distance of one nut thickness between the top of foundation and bottom of leveling nuts. Place washers over anchor rods on top of leveling nuts.
- (2) Determine if nuts are level using a flat rigid template on top of washers. If necessary, lower leveling nuts to level the template in all directions or if applicable, lower nuts to tilt the template so the metal pole or upright truss will lean as shown in the plans. If leveling nuts and washers are not in full contact with the template, replace washers with galvanized beveled washers.
- (3) Verify the distance between the foundation and leveling nuts is no more than one nut thickness.

- (4) Place base plate with metal pole or upright truss over anchor rods on top of washers. High mount luminaires may be attached before erecting metal poles but do not attach cables, mast arms or trusses to metal poles or upright trusses at this time.
- (5) Place washers over anchor rods on top of base plate. Lubricate top nut bearing surfaces and exposed anchor rod threads above washers with beeswax, paraffin or other approved lubricant.
- (6) Turn top nuts onto anchor rods. If nuts are not in full contact with washers or washers are not in full contact with the base plate, replace washers with galvanized beveled washers.
- (7) Tighten top nuts to snug-tight with the full effort of one workman using a 12" wrench. Do not tighten any nut all at once. Turn top nuts in increments. Follow a star pattern cycling through each nut at least twice.
- (8) Repeat (7) for leveling nuts.
- (9) Replace washers above and below the base plate with galvanized beveled washers if the slope of any base plate face exceeds 1:20 (5%), any washer is not in firm contact with the base plate or any nut is not in firm contact with a washer. If any washers are replaced, repeat (7) and (8).
- (10) With top and leveling nuts snug-tight, mark each top nut on a corner at the intersection of 2 flats and a corresponding reference mark on the base plate. Mark top nuts and base plate with ink or paint that is not water-soluble. Use the turn-of-nut method for pretensioning. Do not pretension any nut all at once. Turn top nuts in increments for a total turn that meets the following nut rotation requirements:

NUT ROTATION REQUIREMENTS (Turn-of-Nut Pretensioning Method)	
Anchor Rod Diameter, inch	Requirement
$\leq 1\ 1/2$	1/3 turn (2 flats)
$> 1\ 1/2$	1/6 turn (1 flat)

Follow a star pattern cycling through each top nut at least twice.

- (11) Ensure nuts, washers and base plate are in firm contact with each other for each anchor rod. Cables, mast arms and trusses may now be attached to metal poles and upright trusses.

- (12) Between 4 and 14 days after pretensioning top nuts, use a torque wrench calibrated within the last 12 months to check nuts in the presence of the Engineer. Completely erect mast arm poles and cantilever signs and attach any hardware before checking top nuts for these structures. Check that top nuts meet the following torque requirements:

TORQUE REQUIREMENTS	
Anchor Rod Diameter, inch	Requirement, ft-lb
7/8	180
1	270
1 1/8	380
1 1/4	420
$\geq 1\ 1/2$	600

If necessary, retighten top nuts in the presence of the Engineer with a calibrated torque wrench to within ± 10 ft-lb of the required torque. Do not overtighten top nuts.

- (13) Do not grout under base plate.

Measurement and Payment

Foundations and anchor rod assemblies for metal poles and upright trusses will be measured and paid for elsewhere in the contract.

No payment will be made for temporary casings that remain in drilled pier excavations. No payment will be made for PIT. No payment will be made for further investigation of defective piers. Further investigation of piers that are not defective will be paid as extra work in accordance with Article 104-7 of the *2012 Standard Specifications*. No payment will be made for remediation of unacceptable drilled piers or post repair testing.

RIPRAP ENERGY DISSIPATOR BASIN:

Description

This work consists of the construction and maintenance of an armored outlet structure located at culvert outlets or ditch termini.

Materials

Refer to Division 10 of the *Standard Specifications*.

Item

Class I Riprap
Filter Fabric for Drainage, Type 2

Section

Section 1042
Section 1056

Construction Methods

Riprap energy dissipators shall be constructed in accordance with the detail shown in the plans or as directed. From the outlet, invert of a culvert or bottom of a ditch excavation will drop to a specified depth. Excavation will continue to widen through the dissipator. Riprap shall be placed along the banks and bottom of the dissipator and along the apron.

Excavate ditch in accordance with Section 240 of the *Standard Specifications*.

The quantity of energy dissipator material may be affected by site conditions during construction of the project. The quantity of materials may be increased, decreased, or eliminated at the direction of the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Measurement and Payment

Energy Dissipator Basin will be paid for on a per each basis. Such price and payment will be full compensation for all work covered by this section, including, but not limited to furnishing and placing stone, filter fabric, materials, labor, tools, equipment, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item

Energy Dissipator Basin

Pay Unit

Each

MATERIALS:

(2-21-12) (Rev. 9-18-12)

1005, 1081, 1092

SP10 R01

Revise the 2012 *Standard Specifications* as follows:

Page 10-5, Table 1000-1, REQUIREMENTS FOR CONCRETE, replace with the following:

TABLE 1000-1 REQUIREMENTS FOR CONCRETE											
Class of Concrete	Min. Comp. Strength at 28 days	Maximum Water-Cement Ratio				Consistency Max. Slump		Cement Content			
		Air-Entrained Concrete		Non Air- Entrained Concrete		Vibrated	Non- Vibrated	Vibrated		Non- Vibrated	
		Rounded Aggre-gate	Angular Aggre- gate	Rounded Aggre-gate	Angular Aggre- gate			Min.	Max.	Min.	Max.
<i>Units</i>	<i>psi</i>					<i>inch</i>	<i>inch</i>	<i>lb/cy</i>	<i>lb/cy</i>	<i>lb/cy</i>	<i>lb/cy</i>
AA	4,500	0.381	0.426	-	-	3.5	-	639	715	-	-
AA Slip Form	4,500	0.381	0.426	-	-	1.5	-	639	715	-	-
Drilled Pier	4,500	-	-	0.450	0.450	-	5-7 dry 7-9 wet	-	-	640	800
A	3,000	0.488	0.532	0.550	0.594	3.5	4	564	-	602	-
B	2,500	0.488	0.567	0.559	0.630	2.5	4	508	-	545	-
B Slip Formed	2,500	0.488	0.567	-	-	1.5	-	508	-	-	-
Sand Light- weight	4,500	-	0.420	-	-	4	-	715	-	-	-
Latex Modified	3,000 7 day	0.400	0.400	-	-	6	-	658	-	-	-
Flowable Fill excavatable	150 max. at 56 days	as needed	as needed	as needed	as needed	-	Flow- able	-	-	40	100
Flowable Fill non-excavatable	125	as needed	as needed	as needed	as needed	-	Flow- able	-	-	100	as needed
Pavement	4,500 design, field 650 flexural, design only	0.559	0.559	-	-	1.5 slip form 3.0 hand place	-	526	-	-	-
Precast	See Table 1077-1	as needed	as needed	-	-	6	as needed	as needed	as needed	as needed	as needed
Prestress	per contract	See Table 1078-1	See Table 1078-1	-	-	8	-	564	as needed	-	-

Page 10-23, Table 1005-1, AGGREGATE GRADATION-COARSE AGGREGATE, replace with the following:

TABLE 1005-1
AGGREGATE GRADATION - COARSE AGGREGATE

Std. Size #	Percentage of Total by Weight Passing													Remarks
	2"	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#10	#16	#40	#200		
4	100	90-100	20-55	0-15	-	0-5	-	-	-	-	-	A	Asphalt Plant Mix	
467M	100	95-100	-	35-70	-	0-30	0-5	-	-	-	-	A	Asphalt Plant Mix	
5	-	100	90-100	20-55	0-10	0-5	-	-	-	-	-	A	AST, Sediment Control Stone	
57	-	100	95-100	-	25-60	-	0-10	0-5	-	-	-	A	AST, Str. Concrete, Shoulder Drain, Sediment Control Stone	
57M	-	100	95-100	-	25-45	-	0-10	0-5	-	-	-	A	AST, Concrete Pavement	
6M	-	-	100	90-100	20-55	0-20	0-8	-	-	-	-	A	AST	
67	-	-	100	90-100	-	20-55	0-10	0-5	-	-	-	A	AST, Str. Concrete, Asphalt Plant Mix	
78M	-	-	-	100	98-100	75-100	20-45	0-15	-	-	-	A	Asphalt Plant Mix, AST, Str. Conc, Weep Hole Drains	
14M	-	-	-	-	-	100	35-70	5-20	-	0-8	-	A	Asphalt Plant Mix, AST, Weep Hole Drains, Str. Concrete	
9	-	-	-	-	-	100	85-100	10-40	-	0-10	-	A	AST	
ABC	-	100	75-97	-	55-80	-	35-55	-	25-45	-	14-30	4-12 ^B	Aggregate Base Course, Aggregate Stabilization	
ABC (M)	-	100	75-100	-	45-79	-	20-40	-	0-25	-	-	0-12 ^B	Maintenance Stabilization	
Light-weight ^C	-	-	-	-	100	80-100	5-40	0-20	-	0-10	-	0-2.5	AST	

A. See Subarticle 1005-4(A).
 B. See Subarticle 1005-4(B).
 C. For Lightweight Aggregate used in Structural Concrete, see Subarticle 1014-2(E)(6).

Page 10-126, Table 1078-1, REQUIREMENTS FOR CONCRETE, replace with the following:

**TABLE 1078-1
REQUIREMENTS FOR CONCRETE**

Property	28 Day Design Compressive Strength 6,000 psi or less	28 Day Design Compressive Strength greater than 6,000 psi
Maximum Water/Cementitious Material Ratio	0.45	0.40
Maximum Slump without HRWR	3.5"	3.5"
Maximum Slump with HRWR	8"	8"
Air Content (upon discharge into forms)	5 + 2%	5 + 2%

Page 10-162, Subarticle 1081-1(A) Classifications, lines 4-7, delete the second and third sentences of the description for Type 3A.

Page 10-162, Subarticle 1081-1(B) Requirements, lines 26-30, replace the second paragraph with the following:

For epoxy resin systems used for embedding dowel bars, threaded rods, rebar, anchor bolts and other fixtures in hardened concrete, the manufacturer shall submit test results showing that the bonding system will obtain 125% of the specified required yield strength of the fixture. Furnish certification that, for the particular bolt grade, diameter and embedment depth required, the anchor system will not fail by adhesive failure and that there is no movement of the anchor bolt. For certification and anchorage, use 3,000 psi as the minimum Portland cement concrete compressive strength used in this test. Use adhesives that meet Section 1081.

List the properties of the adhesive on the container and include density, minimum and maximum temperature application, setting time, shelf life, pot life, shear strength and compressive strength.

Page 10-169, Subarticle 1081-3(G) Anchor Bolt Adhesives, delete this subarticle.

Page 10-204, Subarticle 1092-2(A) Performance and Test Requirements, replace Table 1092-3 Minimum Coefficient of Retroreflection for NC Grade A with the following:

**TABLE 1092-3
MINIMUM COEFFICIENT OF RETROREFLECTION FOR NC GRADE A
(Candelas Per Lux Per Square Meter)**

Observation Angle, degrees	Entrance Angle, degrees	White	Yellow	Green	Red	Blue	Fluorescent Yellow Green	Fluorescent Yellow
0.2	-4.0	525	395	52	95	30	420	315
0.2	30.0	215	162	22	43	10	170	130
0.5	-4.0	310	230	31	56	18	245	185
0.5	30.0	135	100	14	27	6	110	81
1.0	-4.0	120	60	8	16	3.6	64	48
1.0	30.0	45	34	4.5	9	2	36	27

HIGH STRENGTH CONCRETE FOR DRIVEWAYS:

(11-21-00) (Rev. 1-17-12)

848

SP10 R02

Use high early strength concrete for all driveways shown in the plans and as directed by the Engineer. Provide high early strength concrete that meets the requirements of Article 1000-5 of the *2012 Standard Specifications*.

Measurement and payment will be in accordance with Section 848 of the *2012 Standard Specifications*.

SELECT MATERIAL, CLASS III, TYPE 3:

(1-17-12)

1016, 1044

SP10 R05

Revise the *2012 Standard Specifications* as follows:

Page 10-39, Article 1016-3, CLASS III, add the following after line 14:

Type 3 Select Material

Type 3 select material is a natural or manufactured fine aggregate material meeting the following gradation requirements and as described in Sections 1005 and 1006:

Percentage of Total by Weight Passing							
3/8"	#4	#8	#16	#30	#50	#100	#200
100	95-100	65-100	35-95	15-75	5-35	0-25	0-8

Page 10-39, Article 1016-3, CLASS III, line 15, replace “either type” with “Type 1, Type 2 or Type 3”.

Page 10-62, Article 1044-1, line 36, delete the sentence and replace with the following:

Subdrain fine aggregate shall meet Class III select material, Type 1 or Type 3.

Page 10-63, Article 1044-2, line 2, delete the sentence and replace with the following:

Subdrain coarse aggregate shall meet Class V select material.

#57 STONE:

7-18-06

SP10 -1

Description

The Contractor shall place #57 stone in the in accordance with the details in the plans and the following provision.

Materials

Item	Section
# 57 Stone	1005

Construction Methods

The stone shall be placed and compacted as directed by the Engineer.

Measurement and Payment

#57 stone will be measured and paid for in tons that are completed and accepted. The stone will be measured by being weighed in trucks on certified platform scales or other certified weighing devices. The price and payment will be full compensation for furnishing, hauling, placing, and all incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
#57 Stone	Ton

TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS:

(8-21-12)

1101.02

SP11 R10

Revise the *2012 Roadway Standard Drawings* as follows:

Drawing No. 1101.02, Sheet 12, TEMPORARY LANE CLOSURES, replace General Note #11 with the following:

11- TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS (TMCMS) USED ON SHADOW VEHICLES FOR "IN LANE" ACTIVITIES SHALL BE A MINIMUM OF 43" X 73". THE DISPLAY PANEL SHALL HAVE FULL MATRIX CAPABILITY WITH THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

12- TMCMS USED FOR ADVANCED WARNING ON VEHICLES LOCATED ON THE SHOULDER MAY BE SMALLER THAN 43" X 73". THE DISPLAY PANEL SHALL HAVE THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

Drawing No. 1101.02, Sheet 13, TEMPORARY LANE CLOSURES, replace General Note #12 with the following:

12- TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS (TMCMS) USED ON SHADOW VEHICLES FOR "IN LANE" ACTIVITIES SHALL BE A MINIMUM OF

43" X 73". THE DISPLAY PANEL SHALL HAVE FULL MATRIX CAPABILITY WITH THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

13- TMCMS USED FOR ADVANCED WARNING ON VEHICLES LOCATED ON THE SHOULDER MAY BE SMALLER THAN 43" X 73". THE DISPLAY PANEL SHALL HAVE THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

PERMANENT SEEDING AND MULCHING:

(7-1-95)

1660

SP16 R02

The Department desires that permanent seeding and mulching be established on this project as soon as practical after slopes or portions of slopes have been graded. As an incentive to obtain an early stand of vegetation on this project, the Contractor's attention is called to the following:

For all permanent seeding and mulching that is satisfactorily completed in accordance with the requirements of Section 1660 in the *2012 Standard Specifications* and within the following percentages of elapsed contract times, an additional payment will be made to the Contractor as an incentive additive. The incentive additive will be determined by multiplying the number of acres of seeding and mulching satisfactorily completed times the contract unit bid price per acre for Seeding and Mulching times the appropriate percentage additive.

Percentage of Elapsed Contract Time	Percentage Additive
0% - 30%	30%
30.01% - 50%	15%

Percentage of elapsed contract time is defined as the number of calendar days from the date of availability of the contract to the date the permanent seeding and mulching is acceptably completed divided by the total original contract time.

CONTAMINATED SOIL (8-24-2012)

The Contractor's attention is directed to the fact that soil contaminated with petroleum hydrocarbon compounds exists within the project area. The known areas of contamination are indicated on corresponding plan sheets. Information relating to these contaminated areas, sample locations, and investigation reports are available at the web address below:

Navigate to the correct letting year and month then select, "Plans and Proposals", "Cumberland U-4444AB", "GeoEnvironmental":

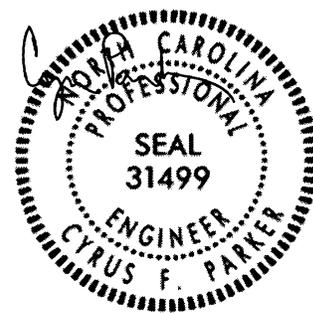
<http://dotw-xfer01.dot.state.nc.us/dsplan/>

The Contractor shall notify the Geotechnical Engineering Unit two weeks prior to excavating in areas of known contamination. The Geotechnical Engineering Unit will hire a specialty contractor to haul and dispose of the contaminated soil. The Engineer will determine if soil is contaminated based on petroleum odors and unusual soil staining.

The Contractor shall excavate only those soils that the Engineer designates necessary to complete a particular task. Contaminated soil not required to be excavated is to remain in place and undisturbed. The Contractor shall be responsible for excavating and loading the contaminated soil into trucks provided by the Department's specialty contractor.

Excavation of contaminated soil will be paid either as *Unclassified Excavation* or as *Undercut Excavation* depending on the location from which it is removed. No additional payment will be made for loading the material on trucks for disposal by the Department's specialty contractor as the cost will be considered incidental to the excavation item.

The Department will be responsible for the hauling and disposal of contaminated soil.





OVERHEAD AND DYNAMIC MESSAGE SIGN FOUNDATIONS:

Description

Sign foundations include foundations for overhead and dynamic message signs (DMS) supported by metal poles or upright trusses. Sign foundations consist of footings with pedestals or drilled piers with or without grade beams or wings, conduit and anchor rod assemblies. Construct sign foundations in accordance with the contract and accepted submittals. Define “cantilever sign” as an overhead cantilever sign support in accordance with Figure 1-1 of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*.

Materials

Use sign foundation materials that meet the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

Assumed Subsurface Conditions

Assume the following soil parameters and groundwater elevation for sign foundations unless these subsurface conditions are not applicable to sign locations:

- (A) Unit weight (γ) = 120 lb/cf,
- (B) Friction angle (ϕ) = 30°,
- (C) Cohesion (c) = 0 lb/sf, and
- (D) Groundwater 7 ft below finished grade.

A subsurface investigation is required if the Engineer determines these assumed subsurface conditions do not apply to a sign location and the sign cannot be moved. Subsurface conditions requiring a subsurface investigation include but are not limited to weathered or hard rock, boulders, very soft or loose soil, muck or shallow groundwater. No extension of completion date or time will be allowed for subsurface investigations.

Subsurface Investigations

Use a prequalified geotechnical consultant to perform one standard penetration test (SPT) boring in accordance with ASTM D1586 at each sign location requiring a subsurface investigation. Rough grade sign locations to within 2 ft of finished grade before beginning drilling. Drill borings to 2 drilled pier diameters below anticipated pier tip elevations or refusal, whichever is higher.

Use the computer software gINT version 8.0 or later manufactured by Bentley Systems, Inc. with the current NCDOT gINT library and data template to produce SPT boring logs. Provide boring logs sealed by a geologist or engineer licensed in the state of North Carolina.

Sign Foundation Designs

Design sign foundations for the wind zone and clearances shown in the plans and the slope of finished grade at each sign location. Use the assumed soil parameters and groundwater elevation above for sign foundation designs unless a subsurface investigation is required. For sign locations requiring a subsurface investigation, design sign foundations for the subsurface conditions at each sign location. Design footings, pedestals, drilled piers, grade beams and wings in accordance with the 4th Edition of the *AASHTO Standard Specifications for Structural*

Supports for Highway Signs, Luminaires and Traffic Signals. In some instances, conflicts with drainage structures may dictate sign foundation types.

Design footings in accordance with Section 4.4 of the *AASHTO Standard Specifications for Highway Bridges*. Do not use an allowable bearing pressure of more than 3,000 lb/sf for footings.

Design drilled piers for side resistance only in accordance with Section 4.6 of the *AASHTO Standard Specifications for Highway Bridges* except reduce ultimate side resistance by 25% for uplift. Use the computer software LPILE version 5.0 or later manufactured by Ensoft, Inc. to analyze drilled piers. Provide drilled pier designs with a horizontal deflection of less than 1" at top of piers. For cantilever signs with single drilled pier foundations supporting metal poles, use wings to resist torsion forces. Provide drilled pier designs with a factor of safety of at least 2.0 for torsion.

For drilled pier sign foundations supporting upright trusses, use dual drilled piers connected with a grade beam having a moment of inertia approximately equal to that of either pier. The Broms' method is acceptable to analyze drilled piers with grade beams instead of LPILE. Use a safety factor of at least 3.5 for the Broms' design method in accordance with C13.6.1.1 of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*.

Submit boring logs, if any, working drawings and design calculations for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing plan views, required foundation dimensions and elevations and typical sections with reinforcement, conduit and anchor rod assembly details. Include all boring logs, design calculations and LPILE output for sign foundation design submittals. Have sign foundations designed, detailed and sealed by an engineer licensed in the state of North Carolina.

Construction Methods

Construct footings, pedestals, drilled piers, grade beams and wings and install anchor rod assemblies for sign foundations in accordance with the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

Measurement and Payment

Overhead Footings will be measured and paid in cubic yards. Sign foundations will be measured as the cubic yards of foundation concrete for footings, pedestals, drilled piers, grade beams and wings shown on the accepted submittals. The contract unit price for *Overhead Footings* will be full compensation for providing labor, tools, equipment and foundation materials, stabilizing or shoring excavations and supplying concrete, reinforcing steel, conduit, anchor rod assemblies and any incidentals necessary to construct sign foundations. Subsurface investigations required by the Engineer will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*.

Payment will be made under:

Pay Item
Overhead Footings

Pay Unit
Cubic Yard



OVERHEAD SIGN SUPPORTS

DESCRIPTION

Design, fabricate, furnish and erect various types of overhead sign assemblies with maintenance walkways, when specified in the plans, in accordance with the requirements of the plans. Fabricate supporting structures using tubular members of either aluminum or steel. Tubular members made of aluminum are not allowed for Dynamic Message Sign (DMS) structures. Only one type of material may be used throughout the project. The types of overhead sign assemblies included in this specification are span structures, cantilever structures, and sign structures attached to bridges.

MATERIALS

Structural Steel.....	Section 1072
Overhead Structures.....	Section 1096
Signing Materials	Section 1092
Organic Zinc Repair Paint	Article 1080-9
Reinforcing Steel	Section 1070

CONSTRUCTION METHODS

A. General

Fabricate overhead sign assemblies in accordance with the details shown in the approved working drawings and the requirements of these specifications.

No welding, cutting, or drilling in any manner will be permitted in the field, unless approved by the Engineer.

Drill bolt holes and slots to finished size. Holes may also be punched to finished size, provided the diameter of the punched holes is at least twice the thickness of the metal being punched. Flame cutting of bolt holes and slots will not be permitted.

Erect sign panels in accordance with the requirements for Type A or B signs as indicated in the plans or roadway standard drawings. Field drill two holes per connection in the Z bars for attaching signs to overhead structures. Use two bolts at each connection.

Use two coats of a zinc-rich paint to touch up minor scars on all galvanized materials.

B. Shop Drawings

Design the overhead sign supports, including foundations, prior to fabrication. Submit computations and working drawings for the designs to the Engineer for review and acceptance.

Have a professional engineer registered in the State of North Carolina perform the computations and render a set of sealed, signed, and dated drawings detailing the construction of each structure.

Submit to the Engineer for review and acceptance complete design and fabrication details for each overhead sign assembly, including foundations and brackets for supporting the signs, maintenance walkways (when specified in the plans), electrical control boxes, and lighting luminaires. Base design upon the revised structure line drawings, wind load area and the wind speed shown in the plans, and in accordance with the "Standard Specifications for Structural Structures for Highway Signs, Luminaires and Traffic Signals".

Submit thirteen (13) copies of completely detailed working drawings and one (1) copy of the design computations including all design assumptions for each overhead sign assembly to the Engineer for approval prior to fabrication. Working drawings include complete design and fabrication details (including foundations); provisions for attaching signs, maintenance walkways (when applicable), lighting luminaires to supporting structures; applicable material specifications, and any other information necessary for procuring and replacing any part of the complete overhead sign assembly.

Allow 40 days for initial working drawing review after the Engineer receives them. If revisions to working drawings are required, additional time will be required for review and approval of final working drawings.

Approval of working drawings by the Engineer will not relieve the Contractor of responsibility for the correctness of the drawings, or for the fit of all shop and field connections and anchors.

C. Design and Fabrication

The following criteria governs the design of overhead sign assemblies:

Design shall be in accordance with the Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 4th Edition, 2001, and the latest Interim Specifications.

Within this Specification, there are several design criteria that are owner specified. They include:

- The wind pressure map that is developed from the 3-second gust speeds, as provided in Article 3.8, shall be used.
- Overhead cantilever sign structures shall include galloping loads (exclude four-chord horizontal trusses), truck-induced gust loading and natural wind gust loading in the fatigue design, as provided for in Article 11.7.1, 11.7.4 and 11.7.3 respectively.
- The natural wind gust speed in North Carolina shall be assumed to be 5 meters per second or 11.6 mph for inland areas, and 7 meters per second or 15.7 mph for coastal areas. The coastal area shall be defined as any area within 2 miles from the

waterfront facing the ocean or sound and all area where the design basic wind speed is above 120 mph, as shown in Figure 3-2.

- The fatigue importance category used in the design, for each type of structure, as provided for in Article 11.6, Fatigue Importance Factors, shall be Category II unless otherwise shown on the contract plans.
- Wind drag coefficient for Dynamic Message Sign enclosures shall be 1.7.

The following Specification interpretations or criteria shall be used in the design of overhead sign assemblies:

- For design of supporting upright posts or columns, the effective length factor for columns “K”, as provided for in Appendix B, Section B.5, shall be taken as the following, unless otherwise approved by the Engineer:

Case 1 For a single upright post of cantilever or span type overhead sign structure, the effective column length factor, “K”, shall be taken as 2.0.

Case 2 For twin post truss-type upright post with the post connected to one chord of a horizontal truss, the effective column length factor for that column shall be taken as 2.0.

Case 3 For twin post truss-type upright post with the post connected to two truss chords of a horizontal tri-chord or box truss, the effective column length factor for that column shall be taken as 1.65

- For twin post truss-type upright post, the unbraced length shall be from the chord to post connection to the top of base plate.
- For twin post truss-type upright post, that is subject to axial compression, bending moment, shear, and torsion the post shall satisfy Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals Equations 5-17, 5-18 and 5-19. To reduce the effects of secondary bending, in lieu of Equation 5-18, the following equation may be used:

$$\frac{f_a}{F_a} + \frac{f_b}{\left(1 - \frac{0.6f_a}{F_e}\right)F_b} + \left(\frac{f_v}{F_v}\right) \leq 1.0$$

Where

f_a = Computed axial compression stress at base of post

- The base plate thickness for all uprights and poles shall be a minimum of 2” but not less than that determined by the following criteria and design.

Case 1 Circular or rectangular solid base plates with the upright pole welded to the top surface of base plate with full penetration butt weld, and where no stiffeners are provided. A base plate with a small center hole, which is less than 1/5 of the upright diameter, and located concentrically with the upright pole, may be considered as a solid base plate.

The magnitude of bending moment in the base plate, induced by the anchoring force of each anchor bolt shall be, $M = (P \times D_1) / 2$.

Case 2 Circular or rectangular base plate with the upright pole socketed into and attached to the base plate with two lines of fillet weld, and where no stiffeners are provided, or any base plate with a center hole that is larger in diameter than 1/5 of the upright diameter

The magnitude of bending moment induced by the anchoring force of each anchor bolt shall be $M = P \times D_2$.

- M, bending moment at the critical section of the base plate induced by one anchor bolt
 - P, anchoring force of each anchor bolt
 - D_1 , horizontal distance between the center of the anchor bolt and the outer face of the upright, or the difference between the radius of the bolt circle and the outside radius of the upright
 - D_2 , horizontal distance between the face of the upright and the face of the anchor bolt nut
- The critical section shall be located at the face of the anchor bolt and perpendicular to the radius of the bolt circle. The overlapped part of two adjacent critical sections shall be considered ineffective.
 - The thickness of base plate of Case 1 shall not be less than that calculated based on formula for Case 2.
 - Uprights, foundations, and trusses that support overhead signs or dynamic message signs shall be designed in accordance with the Overhead Sign Foundation Special Provision for the effects of torsion. Torsion shall be considered from dead load eccentricity of these attachments, as well as for attachments such as walkways, supporting brackets, lights, etc., that add to the torsion in the assembly. Truss vertical and horizontal truss diagonals in particular and any other assembly members shall be appropriately sized for these loads.

- Uprights, foundations, and trusses that support overhead mounted signs or dynamic message signs shall be designed for the proposed sign wind area and future wind areas. The design shall consider the effect of torsion induced by the eccentric force location of the center of wind force above (or below) the center of the supporting truss. Truss vertical and horizontal truss diagonals in particular and any other assembly members shall be appropriately sized for these loads.

Fabricate all overhead sign assemblies, including foundations in accordance with the details shown in the approved shop drawings and with the requirements of these specifications.

Fabricate the span and cantilever supporting structures using tubular members of either aluminum or steel, using only one type of material throughout the project. Sign support structures that are to be attached to bridges may be fabricated using other structural shapes.

Horizontal components of the supporting structures for overhead signs may be of a truss design or a design using singular (monotube) horizontal members to support the sign panels. Singular (monotube) horizontal members will not be allowed for DMS signs. Truss or singular member centerline must coincide with centerline of sign design area shown on the structure line drawing. Provide permanent camber in addition to dead load camber in accordance with the "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals". Indicate on the shop drawings the amount of camber provided and the method employed in the fabrication of the support to obtain the camber.

For all U-bolt connections of hanger beams to overhead assembly truss chords, provide all U-bolts with a flat washer, a lock washer and double nuts at each end of the U-bolts. All double nuts that are on any U-bolt shall be the same thickness and weight. When assembled, the double nuts shall be brought tight against each other by the use of two wrenches.

Use cantilever sign structures that meet the following design criteria:

- a. Do not exceed an $L/150$ vertical dead load deflection at the end of the arm due to distortions in the arm and vertical support, where L is the length of the arm from the center of the vertical support to the outer edge of the sign.
- b. Do not exceed an $L/40$ horizontal deflection at the end of the arm due to distortions in the arm and vertical support, as a result of design wind load.

Attach the overhead sign assemblies to concrete foundations by the use of galvanized anchor bolts with galvanized nuts, flat washers, and lock washers. For cantilever structure use a minimum of eight anchor bolts. Provide anchor bolts that have an anchor plate with nut at the end to be embedded in concrete.

Fabricate attachment assemblies for mounting signs in a manner that allows easy removal of sign panels for repair. Provide adequate supporting frames for mounting the lighting luminaires in the positions shown in the plans or approved shop drawings for all overhead sign assemblies to be illuminated.

MAINTENANCE WALKWAYS

When plans require maintenance walkways, provide maintenance walkways with an open, skid-resistant surface, and safety railings on all overhead structures unless specifically stated otherwise in the plans. Requirements for design and fabrication of the walkways are shown in the plans. Provide a walkway that is continuous and extends from 3 feet (1m) outside the edge of pavement over the shoulder to the farthest edge of any sign on the structure. If a sign is to be located such that it extends more than three feet outside the edge of pavement, extend the walkway for the full length of that sign. Provide walkways with a safety railing along the front side that can be folded, when not in use, to a horizontal position that will not obscure the signs.

To accommodate lighting luminaires, (when required by the plans), extend supports for the walkways in front of the walkway and railing. If external ballast is required, make provisions adjacent to the walkway and between the walkway and sign to accommodate ballast boxes for lighting circuits in a manner readily accessible from the walkway. Provide ballast box, brackets, and fastening devices which will withstand the loading requirements for the walkway, and mount so that the top of the box will be flush with the top of the walkway.

The walkway sections are to be connected rigidly where sections join to avoid an uneven walking surface. Attach the walkway directly to the walkway brackets.

Install a 4-inch x 4-inch safety angle in back of and parallel to the walkway and extend it the entire length of the walkway, except in the area occupied by ballast boxes. Design the safety angle to withstand a loading in keeping with the walkway.

Fabricate folding safety railing in lengths not exceeding 10 feet and install for the full length of the walkway. Join each folding safety railing post to walkway supports through a hinge support of appropriate design that will rotate freely. Provide a hinge support that has a locking or latching device and holds the railing in a steady manner, free of movement while in the raised position. Maximum allowable displacement from vertical at the top of the railing will be 1 inch.

Install fixed safety railing along the sign side of the walkway from the beginning of the walkway to the edge of the first sign. Provide fixed safety rails between signs when they are greater than 12 inches apart. Provide one fixed safety rail below any sign having a clearance between the bottom of the sign and the walkway grating of greater than 24 inches and less than 42 inches. Provide two fixed rails when the clearance between the bottom of a sign and the walkway exceeds 42 inches.

Provide a walkway in which the open ends have a galvanized steel coil safety chain attached on one end near the top of the safety railing, and on the other end to the walkway hanger, or other fixed member of the structure. When the railing is folded, the chain must not hang below the walkway bracket.

Where offsets in the walkway and safety railing are necessitated by variable luminaires provide safety chains between the offset handrail sections.

Anchor Rod Assembly

Attach the overhead sign structure to concrete foundations by the use of straight galvanized anchor bolts with galvanized heavy hex nuts and flat washers. The rods and nuts shall be galvanized in accordance with AASHTO M232. The washers shall be galvanized in accordance with AASHTO M298 Class C. For cantilever structures, use a minimum of eight anchor rods. Provide anchor rods that have an anchor plate with nut at the end to be embedded in concrete.

Ensure material used in steel anchor rods conforms to AASHTO M 314 or ASTM F1554, and the specified yield strength does not exceed 55,000 psi. Compute the required projection of the anchor rod above the foundation top. Compute the total projection based on the following:

- Provide between 3 and 5 threads of anchor rod projection above the top nut after tightening is complete. Avoid any additional projection, or a normal depth socket torque wrench shall not be used on top nuts.
- Include the sum of the thickness of top nut, top nut flat washer or top nut beveled washers, base plate, leveling nut flat washer or leveling nut beveled washers, leveling nut.
- Set the maximum distance between the bottom of the leveling nut and the foundation top to one nut height to avoid excessive bending stresses in the anchor rod under service conditions.
- Do not use lock washers.

ANCHOR ROD NUT TIGHTENING REQUIREMENTS

Prior to installation:

1. Protect the anchor rod threads from damage prior to and during installation.
2. Prior to installation of the rods in the foundation, turn nuts onto and off the rods, well past the elevation of the bottom of the leveling nuts. Turn by the effort of one worker using an ordinary wrench without a cheater bar. Report to the Engineer thread damage requiring unusually large effort.

During installation:

1. Place leveling nuts (bottom nuts) on the anchor rod.
2. Place leveling nut washers on top of the anchor rod leveling nuts.
3. Place a rigid template on top of the leveling nuts to check the level of the nuts. If the anchor nut and washer cannot be brought into firm contact with the template, then beveled washers shall be used.
4. Verify that the distance between the bottom of the leveling nut and the top of the concrete foundation is no more than one anchor rod diameter. If an upright is required to be back-raked, then the distance between the bottom of the leveling nut and the top of the concrete foundation shall be no more than one anchor rod diameter, averaged over the anchor rod group.
5. Place the base plate and structural element to which it is attached. However, do not attach to the upright element, during tightening of the anchor nuts, cantilever beams or arms with span in excess of 10 feet. Luminaire arms and fixtures may be attached prior to standing the pole on the foundation.
6. Place top nut washers.
7. Do not use lock washers.
8. Lubricate threads and bearing surfaces of top nuts. Lubricant shall be beeswax, stick paraffin, or other lubricant approved by the Engineer.
9. Place top nuts. If the anchor nut and washer cannot be brought into firm contact with the base plate, then beveled washers shall be used.
10. Tighten top nuts to snug-tight. A snug-tight condition is defined as the washer and nut being in full contact with the base plate, and the application of the full effort of a workman on a 12-inch wrench. Turn top nuts in increments following a star pattern (using at least two full tightening cycles).

11. To ensure proper pretensioning, after all top nuts have been brought to snug-tight condition, repeat the procedure on the leveling nuts. Turn leveling nuts in increments following a star pattern (using at least two full tightening cycles).
12. At this point, verify if beveled washers are required. Beveled washers shall be required under the leveling nut or top nut if any face of the base plate has a slope greater than 1:20 and / or any nut can not be brought into firm contact with the base plate.
13. Before further nut turning, mark the reference position of the nut in the snug-tight condition with a suitable marking (ink or paint that is not water-soluble). Mark on the corner at the intersection of two flats with a corresponding reference mark on the base plate at each nut. After tightening, verify the nut rotation.
14. Achieve pretensioning by turn-of-nut method. Turn the top nuts to 1/6 of a turn. Do so in a star pattern using at least two full-tightening cycles.
15. After installation, ensure that firm contact exists between the anchor rod nuts, washers, and base plate on any anchor rod installed.
16. For overhead sign assemblies: The span type truss or the cantilever truss may be placed on the uprights or attached to the upright at this time. For signal support structures: The span wires or mast arms may be attached to the upright at this time.
17. After a period of no less than 4 days, and no more than 2 weeks, and in the presence of the Engineer, use a torque wrench to verify that a torque at least equal to 600 foot-pounds is provided on each top nut. For cantilever structures, verify the torque after erection of the remainder of the structure and any heavy attachments to the structure.
18. If any top nut torque reveals less than 600 foot-pounds of effort is required to move the nut, then tighten the nut to no less than 600 foot-pounds.
19. Calibrate the torque indicator, and obtain corresponding certification, for all torque wrenches used for anchor nut tightening. The calibration and certification shall have occurred no more than 12 months prior to use of the torque wrench. Torque wrenches that were calibrated and certified more than twelve months prior to anchor nut tightening shall be re-calibrated and re-certified prior to use. Provide the Engineer a certification of such calibration.
20. Because inspection or re-tightening of the leveling nuts would be prevented, and to reduce moisture retention and associated corrosion, grout shall not be allowed under the base plate.

COMPENSATION

The work covered by this section will be paid for at the contract lump sum for each Overhead Structure “_____”. Such price will be full compensation for all work covered by this specification includes all design, fabrication, construction, transportation, and erection of the complete overhead sign structure, supporting structure, hardware, lighting support brackets, preparing and furnishing shop drawings, and attaching the signs to the overhead assembly.

Payment will be made under:

Supports, Overhead Sign Structure @ Station 93+00 -L-	Lump Sum
Supports, Overhead Sign Structure @ Station 102+50 -L-	Lump Sum
Supports, Overhead Sign Structure @ Station 120+00 -L-	Lump Sum
Supports, Overhead Sign Structure @ Station 132+00 -L-	Lump Sum
Supports, Overhead Sign Structure @ Station 149+50 -L-	Lump Sum
Supports, Overhead Sign Structure @ Station 166+00 -L-	Lump Sum
Supports, Overhead Sign Structure @ Station 182+00 -L-	Lump Sum
Supports, Overhead Sign Structure @ Station 191+45 -L-	Lump Sum
Supports, Overhead Sign Structure @ Station 19+50 -Y3-	Lump Sum
Supports, Overhead Sign Structure @ Station 26+00 -Y3-	Lump Sum
Supports, Overhead Sign Structure @ Station 23+50 -Y3RPA-	Lump Sum
Supports, Overhead Sign Structure @ Station 22+00 -Y4-	Lump Sum
Supports, Overhead Sign Structure @ Station 15+00 -Y7-	Lump Sum

Law Enforcement:

2-19-09

SPI

Description

Furnish Law Enforcement Officers and marked Law Enforcement vehicles to direct traffic in accordance with the contract.

Construction Methods

Use uniformed Law Enforcement Officers and marked Law Enforcement vehicles equipped with blue lights mounted on top of the vehicle, and Law Enforcement vehicle emblems to direct or control traffic as required by the plans or by the Engineer.

Measurement and Payment

Law Enforcement will be measured and paid for in the actual number of hours that each Law Enforcement Officer is provided during the life of the project as approved by the Engineer. There will be no direct payment for marked Law Enforcement vehicles as they are considered incidental to the pay item.

Payment will be made under:

Pay Item

Law Enforcement

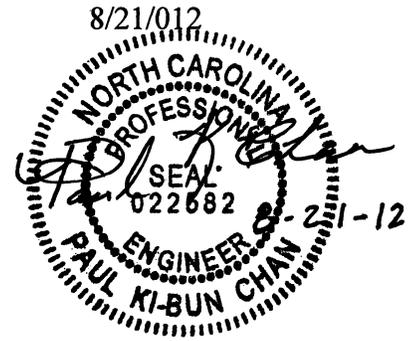
Pay Unit

Hour



John B. Kite, Jr.
7/3/12

PROJECT SPECIAL PROVISIONS
LIGHTING



1.00 DESCRIPTION

The work covered by this Section consists of furnishing, installing, connecting, and placing into satisfactory operating condition roadway lighting at locations shown on the plans. Perform all work in accordance with these Special Provisions, the Plans, the National Electrical Code, and North Carolina Department of Transportation "Standard Specifications for Roads and Structures" (Standard Specifications).

Perform all work in conformance with Division 14 of the Standard Specifications except as modified or added to by these Special Provisions. Install all bore pits outside the clear zone, as defined in the AASHTO Roadside Design Guide or as directed by the Engineer.

In addition to the requirements of Division 1400, other specific Sections of the Standard Specifications applicable to the work on this project are listed below.

Section 1401	High Mount Standard and Portable Drive Unit
Section 1403	High Mount Luminaires
Section 1407	Electric Service Pole and Lateral
Section 1408	Light Control System
Section 1409	Electrical Duct
Section 1410	Feeder Circuits
Section 1411	Electrical Junction Boxes

2.00 HIGH MOUNT FOUNDATIONS

2.10 DESCRIPTION

High mount foundations for high mount standards consist of drilled piers or footings with pedestals, conduit and anchor rod assemblies. Construct high mount foundations in accordance with the contract and either *Roadway Standard Drawings* No. 1402.01 or the accepted submittals. Define "high mount standard foundation" as a drilled pier including the conduit and anchor rod assembly that meets Standard Drawing No. 1402.01.

2.20 MATERIALS

Use high mount foundation materials that meet the *Foundations and Anchor Rod Assemblies for Metal Poles* provision found in the Roadway Project Special Provisions.

2.30 HIGH MOUNT STANDARD FOUNDATIONS

Construct high mount standard foundations for the wind zone and high mount heights shown in the plans unless the following assumed site conditions are not applicable to high mount locations:

- A. Soil with unit weight (γ) \geq 120 lb/cf and friction angle (ϕ) \geq 30°,
- B. Groundwater at least 7 ft below finished grade and
- C. Slope of finished grade 6:1 (H:V) or flatter.

A subsurface investigation and high mount foundation design are required if the Engineer determines these assumed site conditions do not apply to a high mount location and the high mount cannot be moved. Subsurface conditions requiring a high mount foundation design include but are not limited to weathered or hard rock, boulders, very soft or loose soil, muck or shallow groundwater. No extension of completion date or time will be allowed for subsurface investigations or high mount foundation designs.

2.40 SUBSURFACE INVESTIGATIONS

Use a prequalified geotechnical consultant to perform one standard penetration test (SPT) boring in accordance with ASTM D1586 at each high mount location requiring a subsurface investigation. Rough grade high mount locations to within 2 ft of finished grade before beginning drilling. Drill borings to 2 drilled pier diameters below anticipated pier tip elevations or refusal, whichever is higher.

Use the computer software gINT version 8.0 or later manufactured by Bentley Systems, Inc. with the current NCDOT gINT library and data template to produce SPT boring logs. Provide boring logs sealed by a geologist or engineer licensed in the state of North Carolina.

2.50 HIGH MOUNT FOUNDATION DESIGNS

Design high mount foundations for the wind zone and high mount heights shown in the plans and the slope of finished grade and subsurface conditions at each high mount location. Design drilled piers, footings and pedestals in accordance with the 4th Edition of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*.

Design drilled piers for side resistance only in accordance with Section 4.6 of the *AASHTO Standard Specifications for Highway Bridges*. Use the computer software LPILE version 5.0 or later manufactured by Ensoft, Inc. to analyze drilled piers. Provide drilled pier designs with a horizontal deflection of less than 0.5" at top of piers.

Design footings in accordance with Section 4.4 of the *AASHTO Standard Specifications for Highway Bridges*. Do not use an allowable bearing pressure of more than 3,000 lb/sf for footings.

Submit boring logs, working drawings and design calculations for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing plan views, required foundation dimensions and elevations and typical sections with reinforcement, conduit and anchor rod assembly details. Include all boring logs, design calculations and LPILE output for high mount foundation design submittals. Have high mount foundations designed, detailed and sealed by an engineer licensed in the state of North Carolina.

2.60 CONSTRUCTION METHODS

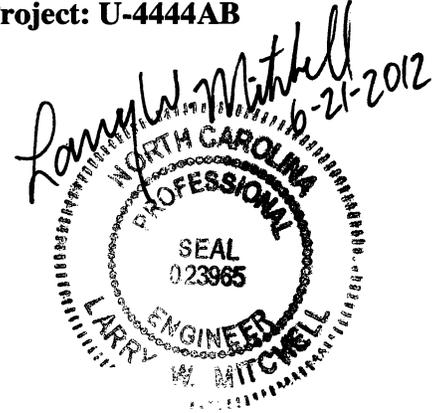
Grade a 3 ft diameter level work area around high mount locations with cut and fill slopes as shown on Standard Drawing No. 1402.01. Construct drilled piers, footings and pedestals and install anchor rod assemblies for high mount foundations in accordance with the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

2.70 MEASUREMENT AND PAYMENT

High Mount Foundations will be measured and paid in cubic yards. High mount standard foundations will be measured as the cubic yards of concrete shown on Standard Drawing No. 1402.01 for the high mount height and wind zone shown in the plans. All other high mount foundations will be measured as the cubic yards of foundation concrete for drilled piers, footings and pedestals shown on the accepted submittals. The contract unit price for *High Mount Foundations* will be full compensation for providing labor, tools, equipment and foundation materials, stabilizing or shoring excavations and supplying concrete, reinforcing steel, conduit, anchor rod assemblies and any incidentals necessary to construct high mount foundations. Subsurface investigations and high mount foundation designs required by the Engineer will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*.

Payment will be made under:

High Mount Foundations.....Cubic Yard

PROJECT SPECIAL PROVISIONS**Utility Construction****I. GENERAL CONSTRUCTION REQUIREMENTS:****Specifications:**

The proposed utility construction shall meet the applicable requirements of the NC Department of Transportation's "Standard Specifications for Roads and Structures" dated January 2012, and the details as shown on the plans, as outlined in the following provisions, or as directed by the Engineer.

Owner and Owner's Requirements:

The existing utility vault to be removed is owned by The City of Fayetteville PWC and serves The Town of Spring Lake. The existing valve vault to be relocated is privately owned. The Contractor shall provide access for the owners' representatives to all phases of construction. The owners shall be notified two weeks prior to commencement of any work and one week prior to service interruption. Only authorized personnel of the owners shall operate valves in the existing water distribution or sewer collection systems.

Remove Utility Vault:

Existing utility vault and appurtenances shall be located and removed as indicated on plans. Existing piping inlet and outlet shall be capped outside the vault. Remaining void shall be tamped and backfilled.

Relocate Valve Vault:

Existing valve vault and appurtenances shall be relocated and reconnected as indicated on plans. Abandoned piping inlet and outlet shall be capped. Remaining void shall be tamped and backfilled.

II. MEASUREMENT AND PAYMENT:

Remove Utility Vault: will be measured and paid for per each utility vault removed and void backfilled. Payment will be inclusive of all work, materials, and equipment to include, but not limited to, #57 stone, caps, and select backfill.

Relocate Valve Vault: will be measured and paid for per each valve vault relocated and void backfilled. Payment will be inclusive of all work, materials, and equipment to include, but not limited to, #57 stone, caps, and select backfill.

PROJECT SPECIAL PROVISIONS**UTILITIES BY OTHERS:**

General:

The following utility companies have facilities that will be in conflict with the construction of this project:

- A) Progress Energy – Power Distribution and Transmission**
- B) Sandhills Utility Services – Power Distribution**
- C) CenturyLink – Telecommunications**
- D) Time Warner Cable - Cable Television**
- E) Old North Utility Services**

The conflicting facilities of these concerns will be adjusted prior to the date of availability, unless otherwise noted and are therefore listed in these special provisions for the benefit of the Contractor. All utility work listed herein will be done by the utility owner or his Contractor. All utilities are shown on the plans from the best available information.

The Contractor's attention is directed to Article 105-8 of the Standard Specifications.

Utilities Requiring Adjustment:

- A) Progress Energy – Power Distribution and Transmission**
 - See Utilities by Others Plans for details. Project let date is October 16, 2012. All work to be completed by December 1, 2012.
 - Contact Ms. Sheila Talton @ 919-481-6126

B) Sandhills Utility Services – Power Distribution

- See Utilities by Others Plans for details. Project let date is October 16, 2012. All work to be completed by December 1, 2012.
- Contact Mr. Bill Cannon @ 910-497-7399 x 255

C) CenturyLink – Telecommunications

- See Utilities by Others Plans for details. Project let date is October 16, 2012. All work to be completed by December 1, 2012.
- Contact Mr. Kevin Godwin @ 910-366-2142

D) Time Warner Cable – Cable Television

- See Utilities by Others Plans for details. Project let date is October 16, 2012. All work to be completed by December 1, 2012.
- Contact Mr. Tony Mlynski @ 910-401-5088

E) Old North Utility Services –Force Main Sewer

- See Utilities by Others Plans for details. Project let date is October 16, 2012. All work to be completed by December 1, 2012.
- Contact Mr. Charles Karpa @ 910-495-1311

U-4444AA & AB

**Project Special Provisions
Erosion Control**

Cumberland County**STABILIZATION REQUIREMENTS:**

Stabilization for this project shall comply with the time frame guidelines as specified by the NCG-010000 general construction permit effective August 3, 2011 issued by the North Carolina Department of Environment and Natural Resources Division of Water Quality. Temporary or permanent ground cover stabilization shall occur within 7 calendar days from the last land-disturbing activity, with the following exceptions in which temporary or permanent ground cover shall be provided in 14 calendar days from the last land-disturbing activity:

- Slopes between 2:1 and 3:1, with a slope length of 10 ft. or less
- Slopes 3:1 or flatter, with a slope of length of 50 ft. or less
- Slopes 4:1 or flatter

The stabilization timeframe for High Quality Water (HQW) Zones shall be 7 calendar days with no exceptions for slope grades or lengths. High Quality Water Zones (HQW) Zones are defined by North Carolina Administrative Code 15A NCAC 04A.0105 (25). Temporary and permanent ground cover stabilization shall be achieved in accordance with the provisions in this contract and as directed.

SEEDING AND MULCHING:**(East)**

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined. All rates are in pounds per acre.

All Roadway Areas

March 1 - August 31		September 1 - February 28	
50#	Tall Fescue	50#	Tall Fescue
10#	Centipede	10#	Centipede
25#	Bermudagrass (hulled)	35#	Bermudagrass (unhulled)
500#	Fertilizer	500#	Fertilizer
4000#	Limestone	4000#	Limestone

Waste and Borrow Locations

March 1 - August 31		September 1 - February 28	
75#	Tall Fescue	75#	Tall Fescue
25#	Bermudagrass (hulled)	35#	Bermudagrass (unhulled)
500#	Fertilizer	500#	Fertilizer
4000#	Limestone	4000#	Limestone

Note: 50# of Bahiagrass may be substituted for either Centipede or Bermudagrass only upon Engineer's request.

Approved Tall Fescue Cultivars

2 nd Millennium	Duster	Magellan	Rendition
Avenger	Endeavor	Masterpiece	Scorpion
Barlexas	Escalade	Matador	Shelby
Barlexas II	Falcon II, III, IV & V	Matador GT	Signia
Barrera	Fidelity	Millennium	Silverstar
Barrington	Finesse II	Montauk	Southern Choice II
Biltmore	Firebird	Mustang 3	Stetson
Bingo	Focus	Olympic Gold	Tarheel
Bravo	Grande II	Padre	Titan Ltd
Cayenne	Greenkeeper	Paraiso	Titanium
Chapel Hill	Greystone	Picasso	Tomahawk
Chesapeake	Inferno	Piedmont	Tacer
Constitution	Justice	Pure Gold	Trooper
Chipper	Jaguar 3	Prospect	Turbo
Coronado	Kalahari	Quest	Ultimate
Coyote	Kentucky 31	Rebel Exeda	Watchdog
Davinci	Kitty Hawk	Rebel Sentry	Wolfpack
Dynasty	Kitty Hawk 2000	Regiment II	
Dominion	Lexington	Rembrandt	

On cut and fill slopes 2:1 or steeper Centipede shall be applied at the rate of 5 pounds per acre and add 20# of Sericea Lespedeza from January 1 - December 31.

Fertilizer shall be 10-20-20 analysis. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis and as directed.

Native Grass Seeding and Mulching**(East)**

Native Grass Seeding and Mulching shall be performed on the disturbed areas of wetlands and riparian areas, and adjacent to Stream Relocation construction within a 50 foot zone on both sides of the stream or depression, measured from top of stream bank or center of depression. The stream bank of the stream relocation shall be seeded by a method that does not alter the typical cross section of the stream bank. Native Grass Seeding and Mulching shall also be performed in the permanent soil reinforcement mat section of preformed scour holes, and in other areas as directed.

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined. All rates are in pounds per acre.

March 1 - August 31

18# Creeping Red Fescue
6# Indiangrass

September 1 - February 28

18# Creeping Red Fescue
6# Indiangrass

8#	Little Bluestem	8#	Little Bluestem
4#	Switchgrass	4#	Switchgrass
25#	Browntop Millet	35#	Rye Grain
500#	Fertilizer	500#	Fertilizer
4000#	Limestone	4000#	Limestone

Approved Creeping Red Fescue Cultivars:

Aberdeen Boreal Epic Cindy Lou

Fertilizer shall be 10-20-20 analysis. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis and as directed.

Native Grass Seeding and Mulching shall be performed in accordance with Section 1660 of the *Standard Specifications* and vegetative cover sufficient to restrain erosion shall be installed immediately following grade establishment.

Measurement and Payment

Native Grass *Seeding and Mulching* will be measured and paid for in accordance with Article 1660-8 of the *Standard Specifications*.

All areas seeded and mulched shall be tacked with asphalt. Crimping of straw in lieu of asphalt tack shall not be allowed on this project.

CRIMPING STRAW MULCH:

Crimping shall be required on this project adjacent to any section of roadway where traffic is to be maintained or allowed during construction. In areas within six feet of the edge of pavement, straw is to be applied and then crimped. After the crimping operation is complete, an additional application of straw shall be applied and immediately tacked with a sufficient amount of undiluted emulsified asphalt.

Straw mulch shall be of sufficient length and quality to withstand the crimping operation.

Crimping equipment including power source shall be subject to the approval of the Engineer providing that maximum spacing of crimper blades shall not exceed 8".

TEMPORARY SEEDING:

Fertilizer shall be the same analysis as specified for *Seeding and Mulching* and applied at the rate of 400 pounds and seeded at the rate of 50 pounds per acre. Sweet Sudan Grass, German Millet or Browntop Millet shall be used in summer months and Rye Grain during the remainder of the year. The Engineer will determine the exact dates for using each kind of seed.

FERTILIZER TOPDRESSING:

Fertilizer used for topdressing on all roadway areas except slopes 2:1 and steeper shall be 10-20-20 grade and shall be applied at the rate of 500 pounds per acre. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 10-20-20 analysis and as directed.

Fertilizer used for topdressing on slopes 2:1 and steeper and waste and borrow areas shall be 16-8-8 grade and shall be applied at the rate of 500 pounds per acre. A different analysis of fertilizer may be used provided the 2-1-1 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 16-8-8 analysis and as directed.

SUPPLEMENTAL SEEDING:

The kinds of seed and proportions shall be the same as specified for *Seeding and Mulching*, with the exception that no centipede seed will be used in the seed mix for supplemental seeding. The rate of application for supplemental seeding may vary from 25# to 75# per acre. The actual rate per acre will be determined prior to the time of topdressing and the Contractor will be notified in writing of the rate per acre, total quantity needed, and areas on which to apply the supplemental seed. Minimum tillage equipment, consisting of a sod seeder shall be used for incorporating seed into the soil as to prevent disturbance of existing vegetation. A clodbuster (ball and chain) may be used where degree of slope prevents the use of a sod seeder.

MOWING:

The minimum mowing height on this project shall be 4 inches.

LAWN TYPE APPEARANCE:

All areas adjacent to lawns must be hand finished as directed to give a lawn type appearance. Remove all trash, debris, and stones $\frac{3}{4}$ " and larger in diameter or other obstructions that could interfere with providing a smooth lawn type appearance. These areas shall be reseeded to match their original vegetative conditions, unless directed otherwise by the Field Operations Engineer.

REFORESTATION:**Description**

Reforestation will be planted within interchanges and along the outside borders of the road, in areas of pavement removal and in other areas as directed. *Reforestation* is not shown on the plan sheets. See the Reforestation Detail Sheet.

All non-maintained riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated with native woody species.

The entire *Reforestation* operation shall comply with the requirements of Section 1670 of the *Standard Specifications*.

Materials

Reforestation shall be bare root seedlings 12"-18" tall.

Construction Methods

Reforestation shall be planted as soon as practical following permanent *Seeding and Mulching*. The seedlings shall be planted in a 16-foot wide swath adjacent to mowing pattern line, or as directed.

Root dip: The roots of reforestation seedlings shall be coated with a slurry of water, and either a fine clay (kaolin) or a superabsorbent that is designated as a bare root dip. The type, mixture ratio, method of application, and the time of application shall be submitted to the Engineer for approval.

With the approval of the Engineer, seedlings may be coated before delivery to the job or at the time of planting, but at no time shall the roots of the seedlings be allowed to dry out. The roots shall be moistened immediately prior to planting.

Seasonal Limitations: *Reforestation* shall be planted from November 15 through March 15.

Measurement and Payment

Reforestation will be measured and paid for in accordance with Article 1670-17 of the *Standard Specifications*.

RESPONSE FOR EROSION CONTROL:

Description

Furnish the labor, materials, tools and equipment necessary to move personnel, equipment, and supplies to the project necessary for the pursuit of any or all of the following work as shown herein, by an approved subcontractor.

Section	Erosion Control Item	Unit
1605	Temporary Silt Fence	LF
1606	Special Sediment Control Fence	LF/TON
1615	Temporary Mulching	ACR
1620	Seed - Temporary Seeding	LB
1620	Fertilizer - Temporary Seeding	TN
1631	Matting for Erosion Control	SY

SP	Coir Fiber Mat	SY
1640	Coir Fiber Baffles	LF
SP	Permanent Soil Reinforcement Mat	SY
1660	Seeding and Mulching	ACR
1661	Seed - Repair Seeding	LB
1661	Fertilizer - Repair Seeding	TON
1662	Seed - Supplemental Seeding	LB
1665	Fertilizer Topdressing	TON
SP	Safety/Highly Visible Fencing	LF
SP	Response for Erosion Control	EA

Construction Methods

Provide an approved subcontractor who performs an erosion control action as described in the NPDES Inspection Form SPPP30. Each erosion control action may include one or more of the above work items.

Measurement and Payment

Response for Erosion Control will be measured and paid for by counting the actual number of times the subcontractor moves onto the project, including borrow and waste sites, and satisfactorily completes an erosion control action described in Form 1675. The provisions of Article 104-5 of the *Standard Specifications* will not apply to this item of work.

Payment will be made under:

Pay Item	Pay Unit
Response for Erosion Control	Each

MINIMIZE REMOVAL OF VEGETATION:

The Contractor shall minimize removal of vegetation at stream banks and disturbed areas within the project limits as directed.

STOCKPILE AREAS:

The Contractor shall install and maintain erosion control devices sufficient to contain sediment around any erodible material stockpile areas as directed.

ACCESS AND HAUL ROADS:

At the end of each working day, the Contractor shall install or re-establish temporary diversions or earth berms across access/haul roads to direct runoff into sediment devices. Silt fence sections that are temporarily removed shall be reinstalled across access/haul roads at the end of each working day.

WASTE AND BORROW SOURCES:

Payment for temporary erosion control measures, except those made necessary by the Contractor's own negligence or for his own convenience, will be paid for at the appropriate contract unit price for the devices or measures utilized in borrow sources and waste areas.

No additional payment will be made for erosion control devices or permanent seeding and mulching in any commercial borrow or waste pit. All erosion and sediment control practices that may be required on a commercial borrow or waste site will be done at the Contractor's expense.

TEMPORARY DIVERSION:

This work consists of installation, maintenance, and cleanout of *Temporary Diversions* in accordance with Section 1630 of the *Standard Specifications*. The quantity of excavation for installation and cleanout will be measured and paid for as *Silt Excavation* in accordance with Article 1630-4 of the *Standard Specifications*.

SAFETY FENCE AND JURISDICTIONAL FLAGGING:**Description**

Safety Fence shall consist of furnishing materials, installing and maintaining polyethylene or polypropylene fence along the outside riparian buffer, wetland, or water boundary, or other boundaries located within the construction corridor to mark the areas that have been approved to infringe within the buffer, wetland, endangered vegetation, culturally sensitive areas or water. The fence shall be installed prior to any land disturbing activities.

Interior boundaries for jurisdictional areas noted above shall be delineated by stakes and highly visible flagging.

Jurisdictional boundaries at staging areas, waste sites, or borrow pits, whether considered outside or interior boundaries shall be delineated by stakes and highly visible flagging.

Materials**(A) Safety Fencing**

Polyethylene or polypropylene fence shall be a highly visible preconstructed safety fence approved by the Engineer. The fence material shall have an ultraviolet coating.

Either wood posts or steel posts may be used. Wood posts shall be hardwood with a wedge or pencil tip at one end, and shall be at least 5 ft. in length with a minimum nominal 2" x 2" cross section. Steel posts shall be at least 5 ft. in length, and have a minimum weight of 0.85 lb/ft of length.

(B) Boundary Flagging

Wooden stakes shall be 4 feet in length with a minimum nominal 3/4" x 1-3/4" cross section. The flagging shall be at least 1" in width. The flagging material shall be vinyl and shall be orange in color and highly visible.

Construction Methods

No additional clearing and grubbing is anticipated for the installation of this fence. The fence shall be erected to conform to the general contour of the ground.

(A) Safety Fencing

Posts shall be set at a maximum spacing of 10 ft., maintained in a vertical position and hand set or set with a post driver. If hand set, all backfill material shall be thoroughly tamped. Wood posts may be sharpened to a dull point if power driven. Posts damaged by power driving shall be removed and replaced prior to final acceptance. The tops of all wood posts shall be cut at a 30-degree angle. The wood posts may, at the option of the Contractor, be cut at this angle either before or after the posts are erected.

The fence geotextile shall be attached to the wood posts with one 2" galvanized wire staple across each cable or to the steel posts with wire or other acceptable means.

Place construction stakes to establish the location of the safety fence in accordance with Article 105-9 or Article 801-1 of the *Standard Specifications*. No direct pay will be made for the staking of the safety fence. All stakeouts for safety fence shall be considered incidental to the work being paid for as "Construction Surveying", except that where there is no pay item for construction surveying, all safety fence stakeout will be performed by state forces.

The Contractor shall be required to maintain the safety fence in a satisfactory condition for the duration of the project as determined by the Engineer.

(B) Boundary Flagging

Boundary flagging delineation of interior boundaries shall consist of wooden stakes on 25 feet maximum intervals with highly visible orange flagging attached. Stakes shall be installed a minimum of 6" into the ground. Interior boundaries may be staked on a tangent that runs parallel to buffer but must not encroach on the buffer at any location. Interior boundaries of hand clearing shall be identified with a different colored flagging to distinguish it from mechanized clearing.

Boundary flagging delineation of interior boundaries will be placed in accordance with Article 105-9 or Article 801-1 of the *Standard Specifications*. No direct pay will be made for delineation of the interior boundaries. This delineation will be considered incidental to the work being paid for as *Construction Surveying*, except that where there is no pay item or construction surveying the cost of boundary flagging delineation shall be included in the unit prices bid for the various items in the contract. Installation for delineation of all jurisdictional boundaries at staging areas, waste sites, or borrow pits shall consist of wooden stakes on 25 feet maximum intervals with highly visible orange flagging attached. Stakes shall be installed a minimum of 6" into the ground. Additional flagging may be placed on overhanging vegetation to enhance visibility but does not substitute for installation of stakes.

Installation of boundary flagging for delineation of all jurisdictional boundaries at staging areas, waste sites, or borrow pits shall be performed in accordance with Subarticle 230-4(B)(3)(d) or Subarticle 802-2(F) of the *Standard Specifications*. No direct pay will be made for this delineation, as the cost of same shall be included in the unit prices bid for the various items in the contract.

The Contractor shall be required to maintain alternative stakes and highly visible flagging in a satisfactory condition for the duration of the project as determined by the Engineer.

Measurement and Payment

Safety Fence will be measured and paid as the actual number of linear feet of polyethylene or polypropylene fence installed in place and accepted. Such payment will be full compensation including but not limited to furnishing and installing fence geotextile with necessary posts and post bracing, staples, tie wires, tools, equipment and incidentals necessary to complete this work.

Payment will be made under:

Pay Item	Pay Unit
Safety Fence	Linear Foot

PERMANENT SOIL REINFORCEMENT MAT:

Description

This work consists of furnishing and placing *Permanent Soil Reinforcement Mat*, of the type specified, over previously prepared areas as directed.

Materials

The product shall be a permanent erosion control reinforcement mat and shall be constructed of synthetic or a combination of coconut and synthetic fibers evenly distributed throughout the mat between a bottom UV stabilized netting and a heavy duty UV stabilized top net. The matting shall be stitched together with UV stabilized polypropylene thread to form a permanent three-dimensional structure. The mat shall have the following minimum physical properties:

Property	Test Method	Value	Unit
Light Penetration	ASTM D6567	9	%
Thickness	ASTM D6525	0.40	in
Mass Per Unit Area	ASTM D6566	0.55	lb/sy
Tensile Strength	ASTM D6818	385	lb/ft
Elongation (Maximum)	ASTM D6818	49	%
Resiliency	ASTM D1777	>70	%
UV Stability *	ASTM D4355	≥80	%
Porosity (Permanent Net)	ECTC Guidelines	≥85	%
Maximum Permissible Shear Stress (Vegetated)	Performance Bench Test	≥8.0	lb/ft ²
Maximum Allowable Velocity (Vegetated)	Performance Bench Test	≥16.0	ft/s

*ASTM D1682 Tensile Strength and % strength retention of material after 1000 hours of exposure.

Submit a certification (Type 1, 2, or 3) from the manufacturer showing:

- (A) the chemical and physical properties of the mat used, and
- (B) conformance of the mat with this specification.

Construction Methods

Matting shall be installed in accordance with Subarticle 1631-3(B) of the *Standard Specifications*.

All areas to be protected with the mat shall be brought to final grade and seeded in accordance with Section 1660 of the *Standard Specifications*. The surface of the soil shall be smooth, firm, stable and free of rocks, clods, roots or other obstructions that would prevent the mat from lying in direct contact with the soil surface. Areas where the mat is to be placed will not need to be mulched.

Measurement and Payment

Permanent Soil Reinforcement Mat will be measured and paid for as the actual number of square yards measured along the surface of the ground over which Permanent Soil Reinforcement Mat is installed and accepted. Overlaps will not be included in the measurement, and will be considered as incidental to the work. Such payment shall be full compensation for furnishing and installing the mat, including overlaps, and for all required maintenance.

Payment will be made under:

Pay Item	Pay Unit
Permanent Soil Reinforcement Mat	Square Yard

SKIMMER BASIN WITH BAFFLES:**Description**

Provide a skimmer basin to remove sediment from construction site runoff at locations shown in the erosion control plans. See the Skimmer Basin with Baffles Detail sheet provided in the erosion control plans. Work includes constructing sediment basin, installation of temporary slope drain pipe and coir fiber baffles, furnishing, installation and cleanout of Faircloth Skimmers or other approved equivalent device, providing and placing stone pad on bottom of basin underneath skimmer device, providing and placing a geotextile emergency spillway liner, providing coir fiber mat stabilization for the skimmer outlet, disposing of excess materials, removing temporary slope drain, coir fiber baffles, geotextile liner and skimmer device, backfilling basin area with suitable material and providing proper drainage when basin area is abandoned.

Materials

Item	Section
Stone for Erosion Control, Class B	1042
Geotextile for Soil Stabilization, Type 4	1056
Fertilizer for Temporary Seeding	1060-2
Seed for Temporary Seeding	1060-4
Seeding and Mulching	1060-4
Matting for Erosion Control	1060-8
Staples	1060-8
Coir Fiber Mat	1060-14
Temporary Slope Drain	1622-2
Coir Fiber Baffle	1640

Provide appropriately sized Faircloth skimmer or other approved equivalent device.

Provide Schedule 40 PVC pipe with a length of 6 ft. to attach to the skimmer and the coupling connection to serve as the arm pipe. For skimmer sizes of 2.5 in. and smaller, the arm pipe diameter shall be 1.5 inches. For skimmer sizes of 3 in. and larger, refer to manufacturer recommendation.

Provide 4" diameter Schedule 40 PVC pipe to attach to coupling connection of Faircloth skimmer to serve as the barrel pipe through the earthen dam.

Anchors: Staples, stakes, or reinforcement bars shall be used as anchors.

Wooden Stakes:

Provide hardwood stakes 12"- 24" long with a 2" x 2" nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving through the coir fiber mat and down into the underlying soil. The other end of the stake needs to have a 1"- 2" long head at the top with a 1"- 2" notch following to catch and secure the coir fiber mat.

Steel Reinforcement Bars:

Provide uncoated #10 steel reinforcement bars 24" nominal length. The bars shall have a 4" diameter bend at one end with a 4" straight section at the tip to catch and secure the coir fiber mat.

Staples:

Provide staples made of 0.125" diameter new steel wire formed into a *u* shape not less than 12" in length with a throat of 1" in width.

Construction Methods

Excavate basin according to the erosion control plans with basin surface free of obstructions, debris, and pockets of low-density material. Install temporary slope drain pipe and construct the emergency spillway according to the Skimmer Basin with Baffles Detail sheet in the erosion control plans. Temporary slope drain pipe at inlet of basin may be replaced by geotextile as directed. Construct the coir fiber baffles according to *Roadway Standard Drawings* No. 1640.01 and Section 1640 of the *Standard Specifications*.

Install Faircloth skimmer or other approved equivalent device according to manufacturer recommendations. Install 4" Schedule 40 PVC pipe into dam on the lower side of basin 1 ft. from the bottom of the basin and according to the detail, and attach the 6 ft. arm pipe to the coupling connection and Faircloth skimmer according to manufacturer recommendations. Attach the rope included with the skimmer to the tee between the vent socket and the tube inlet, and the other end to a wooden stake or metal post. Clean out skimmer device when it becomes clogged with sediment and/or debris and is unable to float at the top of water in skimmer basin. Take appropriate measures to avoid ice accumulation in the skimmer device. Construct a stone pad of Class B stone directly underneath the skimmer device at bottom of basin. The pad shall be a minimum of 12" in height, and shall have a minimum cross sectional area of 4 ft. by 4 ft.

Line emergency spillway with geotextile unrolled in the direction of flow and lay smoothly but loosely on soil surface without creases. Bury edges of geotextile in a trench at least 5" deep and tamp firmly. If geotextile for the emergency spillway is not one continuous piece of material, make horizontal overlaps a minimum of 18" with upstream geotextile overlapping the downstream geotextile. Secure geotextile with eleven gauge wire staples shaped into a *u* shape with a length of not less than 12" and a throat not less than 1" in width. Place staples along outer edges and throughout the geotextile a maximum of 3 ft. horizontally and vertically. Geotextile shall be placed to the bottom and across the entire width of the basin according to the Skimmer Basin with Baffles detail.

At the skimmer outlet, provide a smooth soil surface free from stones, clods, or debris that will prevent contact of the coir fiber matting with the soil. Unroll the matting and apply without stretching such that it will lie smoothly but loosely on the soil surface. Wooden stakes, reinforcement bars, or staples may be used as anchors in accordance with the details in the plans and as directed. Place anchors across the matting at the ends approximately 1 ft. apart. Place anchors along the outer edges and down the center of the matting 3 ft. apart.

All bare side slope sections of the skimmer basin shall be seeded with a temporary or permanent seed mix as directed and in accordance with Articles 1620-3, 1620-4, 1620-5, 1660-4, 1660-5 and 1660-7 of the *Standard Specifications*. Straw or excelsior matting shall be installed on all bare side slope sections immediately upon the completion of seeding and in accordance with Article 1631-3 of the *Standard Specifications*.

Measurement and Payment

Silt Excavation will be measured and paid for in accordance with Article 1630-4 of the *Standard Specifications*, as calculated from the typical section throughout the length of the basin as shown on the final approved plans.

Geotextile for Soil Stabilization will be measured and paid for in accordance with Article 270-4 of the *Standard Specifications*.

Coir Fiber Baffles will be measured and paid for in accordance with Article 1640-4 of the *Standard Specifications*.

___" *Skimmer* will be measured in units of each. ___" *Skimmer* will be measured and paid for as the maximum number of each size skimmer acceptably installed and in use at any one time during the life of the project. Barrel and arm pipe, cleanout, relocation and reinstallation of ___" *Skimmer* is considered incidental to the measurement of the quantity of ___" *Skimmer* and no separate payment will be made. No separate payment shall be made if ___" *Skimmer*, barrel and/or arm pipe(s) are damaged by ice accumulation.

Coir Fiber Mat will be measured and paid for as the actual number of square yards measured along the surface of the ground over which coir fiber mat is installed and accepted.

Temporary Slope Drain will be measured and paid for in accordance with Article 1622-4 of the *Standard Specifications*.

Stone for Erosion Control, Class ___ will be measured and paid for in accordance with Article 1610-4 of the *Standard Specifications*.

Seeding and Mulching will be measured and paid for in accordance with Article 1660-8 of the *Standard Specifications*.

Seed for Temporary Seeding will be measured and paid for in accordance with Article 1620-6 of the *Standard Specifications*.

Fertilizer for Temporary Seeding will be measured and paid for in accordance with Article 1620-6 of the *Standard Specifications*.

Matting for Erosion Control will be measured and paid for in accordance with Article 1631-4 of the *Standard Specifications*.

No measurement will be made for other items or for over excavation or stockpiling.

Payment will be made under:

Pay Item	Pay Unit
___" Skimmer	Each
Coir Fiber Mat	Square Yard

TIERED SKIMMER BASIN WITH BAFFLES:

Description

Provide a tiered skimmer basin to remove sediment from construction site runoff at locations shown in the erosion control plans. See the Tiered Skimmer Basin Detail sheet provided in the erosion control plans. Tiered Skimmer Basins shall be installed in areas where topography creates a large elevation difference between the inlet and outlet of a single skimmer basin. Work includes constructing sediment basins, installation of coir fiber baffles, installation of temporary slope drains, furnishing, installation and cleanout of Faircloth Skimmers or other approved equivalent device, providing and placing stone pad on bottom of basin underneath skimmer device, providing and placing geotextile emergency spillway liners, providing coir fiber mat stabilization for the skimmer outlet, disposing of excess materials, removing temporary slope drains, coir fiber baffles, geotextile liner and skimmer device, backfilling basin area with suitable material and providing proper drainage when basin area is abandoned.

Materials

Item	Section
Stone for Erosion Control, Class B	1042
Geotextile for Soil Stabilization, Type 4	1056
Fertilizer for Temporary Seeding	1060-2
Seed for Temporary Seeding	1060-4
Seeding and Mulching	1060-4
Matting for Erosion Control	1060-8
Staples	1060-8
Coir Fiber Mat	1060-14
Temporary Slope Drain	1622-2
Coir Fiber Baffle	1640

Provide appropriately sized Faircloth skimmer or other approved equivalent device.

Provide Schedule 40 PVC pipe with a length of 6 ft. to attach to the skimmer and the coupling connection to serve as the arm pipe. For skimmer sizes of 2.5 in. and smaller, the arm pipe diameter shall be 1.5 inches. For skimmer sizes of 3 in. and larger, refer to manufacturer recommendation.

Provide 4" diameter Schedule 40 PVC pipe to attach to coupling connection of Faircloth skimmer to serve as the barrel pipe through the earthen dam.

Anchors: Staples, stakes, or reinforcement bars shall be used as anchors.

Wooden Stakes:

Provide hardwood stakes 12"- 24" long with a 2" x 2" nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving through the coir fiber mat and down into the underlying soil. The other end of the stake needs to have a 1"- 2" long head at the top with a 1"- 2" notch following to catch and secure the coir fiber mat.

Steel Reinforcement Bars:

Provide uncoated #10 steel reinforcement bars 24" nominal length. The bars shall have a 4" diameter bend at one end with a 4" straight section at the tip to catch and secure the coir fiber mat.

Staples:

Provide staples made of 0.125" diameter new steel wire formed into a *u* shape not less than 12" in length with a throat of 1" in width.

Construction Methods

Excavate basins according to the erosion control plans with basin surface free of obstructions, debris, and pockets of low-density material. Install temporary slope drains and construct the emergency spillways according to the Tiered Skimmer Basin Detail sheet in the erosion control plans. Construct the coir fiber baffles according to *Roadway Standard Drawings* No. 1640.01 and Section 1640 of the *Standard Specifications*. Multiple upper basins, or Modified Silt Basins Type 'B' as labeled on the detail, may be required based on site conditions and as directed.

Install Faircloth skimmer or other approved equivalent device according to manufacturer recommendations. Install 4" Schedule 40 PVC pipe into dam on the lower side of basin 1 ft. from the bottom of the basin and according to the detail, and attach the 6 ft. arm pipe to the coupling connection and Faircloth skimmer according to manufacturer recommendations. Attach the rope included with the skimmer to the tee between the vent socket and the tube inlet, and the other end to a wooden stake or metal post. Clean out skimmer device when it becomes clogged with sediment and/or debris and is unable to float at the top of water in skimmer basin. Take appropriate measures to avoid ice accumulation in the skimmer device. Construct a stone pad of Class B stone directly underneath the skimmer device at bottom of basin. The pad shall be a minimum of 12" in height, and shall have a minimum cross sectional area of 4 ft. by 4 ft.

Install a minimum of 2 (two) temporary slope drains to dewater the upper basin to the lower basin. The slope drains shall be installed a minimum of 6 inches, or one radius width of the temporary slope drain pipe, below the base of the emergency spillway section of the upper basin. The outlet of the slope drains shall be placed on the bottom elevation of the lower basin.

Line emergency spillways with geotextile unrolled in the direction of flow and lay smoothly but loosely on soil surface without creases. Bury edges of geotextile in a trench at least 5" deep and

tamp firmly. If geotextile for emergency spillways is not one continuous piece of material, make horizontal overlaps a minimum of 18" with upstream geotextile overlapping the downstream geotextile. Secure geotextile with eleven gauge wire staples shaped into a *u* shape with a length of not less than 12" and a throat not less than 1" in width. Place staples along outer edges and throughout the geotextile a maximum of 3 ft. horizontally and vertically. Geotextile shall be placed to the bottom and across the entire width of the basin according to the Tiered Skimmer Basin with Baffles detail.

At the skimmer outlet, provide a smooth soil surface free from stones, clods, or debris that will prevent contact of the coir fiber matting with the soil. Unroll the matting and apply without stretching such that it will lie smoothly but loosely on the soil surface. Wooden stakes, reinforcement bars, or staples may be used as anchors in accordance with the details in the plans and as directed. Place anchors across the matting at the ends approximately 1 ft. apart. Place anchors along the outer edges and down the center of the matting 3 ft. apart.

All bare side slope sections of the skimmer basin shall be seeded with a temporary or permanent seed mix as directed and in accordance with Articles 1620-3, 1620-4, 1620-5, 1660-4, 1660-5 and 1660-7 of the *Standard Specifications*. Straw or excelsior matting shall be installed on all bare side slope sections immediately upon the completion of seeding and in accordance with Article 1631-3 of the *Standard Specifications*.

Measurement and Payment

Silt Excavation will be measured and paid for in accordance with Article 1630-4 of the *Standard Specifications*, as calculated from the typical section throughout the length of the basin as shown on the final approved plans.

Geotextile for Soil Stabilization will be measured and paid for in accordance with Article 270-4 of the *Standard Specifications*.

Coir Fiber Baffles will be measured and paid for in accordance with Article 1640-4 of the *Standard Specifications*.

___" *Skimmer* will be measured in units of each. ___" *Skimmer* will be measured and paid for as the maximum number of each size skimmer acceptably installed and in use at any one time during the life of the project. Barrel and arm pipe, cleanout, relocation and reinstallation of ___" *Skimmer* is considered incidental to the measurement of the quantity of ___" *Skimmer* and no separate payment will be made. No separate payment shall be made if ___" *Skimmer*, barrel and/or arm pipe(s) are damaged by ice accumulation.

Coir Fiber Mat will be measured and paid for as the actual number of square yards measured along the surface of the ground over which coir fiber mat is installed and accepted.

Temporary Slope Drain will be measured and paid for in accordance with Article 1622-4 of the *Standard Specifications*.

Stone for Erosion Control, Class __ will be measured and paid for in accordance with Article 1610-4 of the *Standard Specifications*.

Seeding and Mulching will be measured and paid for in accordance with Article 1660-8 of the *Standard Specifications*.

Seed for Temporary Seeding will be measured and paid for in accordance with Article 1620-6 of the *Standard Specifications*.

Fertilizer for Temporary Seeding will be measured and paid for in accordance with Article 1620-6 of the *Standard Specifications*.

Matting for Erosion Control will be measured and paid for in accordance with Article 1631-4 of the *Standard Specifications*.

No measurement will be made for other items or for over excavation or stockpiling.

Payment will be made under:

Pay Item	Pay Unit
__" Skimmer	Each
Coir Fiber Mat	Square Yard

EARTHEN DAM WITH SKIMMER:

Description

Provide an earthen dam with a skimmer attached to a barrel pipe at the outlet of a proposed roadway ditch to remove sediment from construction site runoff at locations shown in the erosion control plans. See the Earthen Dam with Skimmer Detail sheet provided in the erosion control plans. Work includes constructing earthen dam, installation of coir fiber baffles, furnishing, installation and cleanout of Faircloth Skimmer or other approved equivalent device, providing and placing stone pad on bottom of ditch underneath skimmer device, providing and placing geotextile emergency spillway liner, providing coir fiber mat stabilization for the skimmer outlet, removing earthen dam, coir fiber baffles, geotextile liner and skimmer device, and disposing of excess materials.

Materials

Item	Section
Stone for Erosion Control, Class B	1042
Geotextile for Soil Stabilization, Type 4	1056
Staples	1060-8
Coir Fiber Mat	1060-14
Coir Fiber Baffle	1640

Provide appropriately sized Faircloth skimmer or other approved equivalent device.

Provide Schedule 40 PVC pipe with a length of 6 ft. to attach to the skimmer and the coupling connection to serve as the arm pipe. For skimmer sizes of 2.5 in. and smaller, the arm pipe diameter shall be 1.5 inches. For skimmer sizes of 3 in. and larger, refer to manufacturer recommendation.

Provide 4" diameter Schedule 40 PVC pipe to attach to coupling connection of Faircloth skimmer to serve as the barrel pipe through the earthen dam.

Anchors: Staples, stakes, or reinforcement bars shall be used as anchors.

Wooden Stakes:

Provide hardwood stakes 12"- 24" long with a 2" x 2" nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving through the coir fiber mat and down into the underlying soil. The other end of the stake needs to have a 1"- 2" long head at the top with a 1"- 2" notch following to catch and secure the coir fiber mat.

Steel Reinforcement Bars:

Provide uncoated #10 steel reinforcement bars 24" nominal length. The bars shall have a 4" diameter bend at one end with a 4" straight section at the tip to catch and secure the coir fiber mat.

Staples:

Provide staples made of 0.125" diameter new steel wire formed into a *u* shape not less than 12" in length with a throat of 1" in width.

Construction Methods

Excavate proposed ditch according to the roadway plans and cross sections with ditch surface free of obstructions, debris, and pockets of low-density material. Construct earthen dam and install the emergency spillway according to the Earthen Dam with Skimmer Detail sheet in the erosion control plans. Construct the coir fiber baffles according to *Roadway Standard Drawings* No. 1640.01 and Section 1640 of the *Standard Specifications*. Accumulated silt behind the earthen dam and baffles shall be removed regularly and as directed.

Install Faircloth skimmer or other approved equivalent device according to manufacturer recommendations. Install 4" Schedule 40 PVC pipe into dam on the lower side of basin 1 ft. from the bottom of the basin and according to the detail, and attach the 6 ft. arm pipe to the coupling connection and Faircloth skimmer according to manufacturer recommendations. Attach the rope included with the skimmer to the tee between the vent socket and the tube inlet, and the other end to a wooden stake or metal post. Clean out skimmer device when it becomes clogged with sediment and/or debris and is unable to float at the top of water impounded in the ditch. Take appropriate measures to avoid ice accumulation in the skimmer device. Construct a stone pad of Class B stone directly underneath the skimmer device at bottom of ditch. The pad

shall be a minimum of 12" in height, and shall have a minimum cross sectional area of 4 ft. by 4 ft.

Line emergency spillway with geotextile unrolled in the direction of flow and lay smoothly but loosely on soil surface without creases. Bury edges of geotextile in a trench at least 5" deep and tamp firmly. If geotextile for the emergency spillway is not one continuous piece of material, make horizontal overlaps a minimum of 18" with upstream geotextile overlapping the downstream geotextile. Secure geotextile with eleven gauge wire staples shaped into a *u* shape with a length of not less than 12" and a throat not less than 1" in width. Place staples along outer edges and throughout the geotextile a maximum of 3 ft. horizontally and vertically. Geotextile shall be placed to the bottom and across the entire width of the ditch according to the Earthen Dam with Skimmer Detail.

At the skimmer outlet, provide a smooth soil surface free from stones, clods, or debris that will prevent contact of the coir fiber matting with the soil. Unroll the matting and apply without stretching such that it will lie smoothly but loosely on the soil surface. Wooden stakes, reinforcement bars, or staples may be used as anchors in accordance with the details in the plans and as directed. Place anchors across the matting at the ends approximately 1 ft. apart. Place anchors along the outer edges and down the center of the matting 3 ft. apart.

Measurement and Payment

The construction of the earthen dam will be paid for as *Borrow Excavation* as provided in Section 230 of the *Standard Specifications* or included in the lump sum price for grading.

Silt Excavation will be measured and paid for in accordance with Article 1630-4 of the *Standard Specifications*, as calculated from the typical section throughout the length of the ditch as shown on the final approved plans.

Geotextile for Soil Stabilization will be measured and paid for in accordance with Article 270-4 of the *Standard Specifications*.

Coir Fiber Baffles will be measured and paid for in accordance with Article 1640-4 of the *Standard Specifications*.

___" *Skimmer* will be measured in units of each. ___" *Skimmer* will be measured and paid for as the maximum number of each size skimmer acceptably installed and in use at any one time during the life of the project. Barrel and arm pipe, cleanout, relocation and reinstallation of ___" *Skimmer* is considered incidental to the measurement of the quantity of ___" *Skimmer* and no separate payment will be made. No separate payment shall be made if ___" *Skimmer*, barrel and/or arm pipe(s) are damaged by ice accumulation.

Coir Fiber Mat will be measured and paid for as the actual number of square yards measured along the surface of the ground over which coir fiber mat is installed and accepted.

Stone for Erosion Control, Class ___ will be measured and paid for in accordance with Article 1610-4 of the *Standard Specifications*.

No measurement will be made for other items or for over excavation or stockpiling.

Payment will be made under:

Pay Item	Pay Unit
___" Skimmer	Each
Coir Fiber Mat	Square Yard

WATTLES WITH POLYACRYLAMIDE (PAM):

Description

Wattles are tubular products consisting of excelsior fibers encased in synthetic netting. Wattles are used on slopes or channels to intercept runoff and act as a velocity break. Wattles are to be placed at locations shown on the plans or as directed. Installation shall follow the detail provided in the plans and as directed. Work includes furnishing materials, installation of wattles, matting installation, PAM application, and removing wattles.

Materials

Wattle shall meet the following specifications:

100% Curled Wood(Excelsior) Fibers	
Minimum Diameter	12 in.
Minimum Density	2.5 lb/ft ³ +/- 10%
Net Material	Synthetic
Net Openings	1 in. x 1 in.
Net Configuration	Totally Encased
Minimum Weight	20 lb. +/- 10% per 10 ft. length

Anchors: Stakes shall be used as anchors.

Wooden Stakes:

Provide hardwood stakes a minimum of 2-ft. long with a 2 in. x 2 in. nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving down into the underlying soil.

Matting shall meet the requirements of Article 1060-8 of the *Standard Specifications*, or shall meet specifications provided elsewhere in this contract.

Provide staples made of 0.125" diameter new steel wire formed into a *u* shape not less than 12" in length with a throat of 1" in width.

Polyacrylamide (PAM) shall be applied in powder form and shall be anionic or neutrally charged. Soil samples shall be obtained in areas where the wattles will be placed, and from

offsite material used to construct the roadway, and analyzed for the appropriate PAM flocculant to be utilized with each wattle. The PAM product used shall be listed on the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Water Quality (DWQ) web site as an approved PAM product for use in North Carolina.

Construction Methods

Wattles shall be secured to the soil by wire staples approximately every 1 linear foot and at the end of each section of wattle. A minimum of 4 stakes shall be installed on the downstream side of the wattle with a maximum spacing of 2 linear feet along the wattle, and according to the detail. Install a minimum of 2 stakes on the upstream side of the wattle according to the detail provided in the plans. Stakes shall be driven into the ground a minimum of 10 in. with no more than 2 in. projecting from the top of the wattle. Drive stakes at an angle according to the detail provided in the plans.

Only install wattle(s) to a height in ditch so flow will not wash around wattle and scour ditch slopes and according to the detail provided in the plans and as directed. Overlap adjoining sections of wattles a minimum of 6 in.

Installation of matting shall be in accordance with the detail provided in the plans, and in accordance with Article 1631-3 of the *Standard Specifications*, or in accordance with specifications provided elsewhere in this contract.

Apply PAM over the lower center portion of the wattle where the water is going to flow over at a rate of 2 ounces per wattle, and 1 ounce of PAM on matting on each side of the wattle. PAM applications shall be done during construction activities after every rainfall event that is equal to or exceeds 0.50 in.

The Contractor shall maintain the wattles until the project is accepted or until the wattles are removed, and shall remove and dispose of silt accumulations at the wattles when so directed in accordance with the requirements of Section 1630 of the *Standard Specifications*.

Measurement and Payment

Wattles will be measured and paid for by the actual number of linear feet of wattles which are installed and accepted. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the *Wattles*.

Matting will be measured and paid for in accordance with Article 1631-4 of the *Standard Specifications*, or in accordance with specifications provided elsewhere in this contract.

Polyacrylamide(PAM) will be measured and paid for by the actual weight in pounds of PAM applied to the wattles. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to apply the *Polyacrylamide(PAM)*.

Payment will be made under:

Pay Item	Pay Unit
Polyacrylamide(PAM)	Pound
Wattle	Linear Foot

TEMPORARY ROCK SILT CHECK TYPE A WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM):

Description

Temporary Rock Silt Checks Type A with Excelsior Matting and Polyacrylamide (PAM) are devices utilized in temporary and permanent ditches to reduce runoff velocity and incorporate PAM into the construction runoff to increase settling of sediment particles and reduce turbidity of runoff. Temporary Rock Silt Checks Type A with Excelsior Matting and PAM are to be placed at locations shown on the plans or as directed. Installation shall follow the detail provided in the plans and as directed. Work includes furnishing materials, installation of Temporary Rock Silt Checks Type A, matting installation, PAM application, and removing Temporary Rock Silt Checks Type A with Excelsior Matting and PAM.

Materials

Structural stone shall be class B stone that meets the requirements of Section 1042 of the *Standard Specifications* for Stone for Erosion Control, Class B.

Sediment control stone shall be #5 or #57 stone, which meets the requirements of Section 1005 of the *Standard Specifications* for these stone sizes.

Matting shall meet the requirements of Excelsior Matting in Subarticle 1060-8(B) of the *Standard Specifications*, or shall meet specifications provided elsewhere in this contract.

Polyacrylamide (PAM) shall be applied in powder form and shall be anionic or neutrally charged. Soil samples shall be obtained in areas where the Temporary Rock Silt Checks Type A with Excelsior Matting and PAM will be placed, and from offsite material used to construct the roadway, and analyzed for the appropriate PAM flocculant to be utilized with each Temporary Rock Silt Check Type A. The PAM product used shall be listed on the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Water Quality (DWQ) web site as an approved PAM product for use in North Carolina.

Construction Methods

Temporary Rock Silt Checks Type A shall be installed in accordance with Subarticle 1633-3(A) of the *Standard Specifications*, Roadway Standard Drawing No. 1633.01 and the detail provided in the plans.

Installation of matting shall be in accordance with the detail provided in the plans, and anchored by placing Class B stone on top of the matting at the upper and lower ends.

Apply PAM at a rate of 3.5 ounces over the center portion of the Temporary Rock Silt Checks Type A and matting where the water is going to flow over. PAM applications shall be done during construction activities and after every rainfall event that is equal to or exceeds 0.50 in.

The Contractor shall maintain the Temporary Rock Silt Checks Type A with Excelsior Matting and PAM until the project is accepted or until the Temporary Rock Silt Checks Type A with Excelsior Matting and PAM are removed, and shall remove and dispose of silt accumulations at the Temporary Rock Silt Checks Type A with Excelsior Matting and PAM when so directed in accordance with the requirements of Section 1630 of the *Standard Specifications*.

Measurement and Payment

Temporary Rock Silt Checks Type A will be measured and paid for in accordance with Article 1633-5 of the *Standard Specifications*, or in accordance with specifications provided elsewhere in this contract.

Matting will be measured and paid for in accordance with Article 1631-4 of the *Standard Specifications*, or in accordance with specifications provided elsewhere in this contract.

Polyacrylamide(PAM) will be measured and paid for by the actual weight in pounds of PAM applied to the Temporary Rock Silt Checks Type A. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to apply the *Polyacrylamide(PAM)*.

Payment will be made under:

Pay Item	Pay Unit
Polyacrylamide(PAM)	Pound

BORROW PIT DEWATERING BASIN:

(3-17-09) (Rev 3-2-11)

Description

Water discharge from borrow pit sites shall not cause surface waters to exceed 50 NTUs (nephelometric turbidity unit) in streams not designated as trout waters and 10 NTUs in streams, lakes or reservoirs designated as trout waters. For lakes and reservoirs not designated as trout waters, the turbidity shall not exceed 25 NTUs. If the turbidity exceeds these levels due to natural background conditions, the existing turbidity level shall not be increased.

Construct, maintain and remove earth embankments used to reduce turbidity from dewatering borrow sites. Work includes providing porous coir fiber baffle, filtration geotextile, stone and outlet structures; cleaning out, maintaining, removing and disposing of the borrow pit dewatering basin and all components; and reshaping, dressing, seeding and mulching the area.

Materials

Refer to Division 10

Item	Section
Riprap, Class A, B, 1, and 2	1042
Geotextile for Drainage, Type 2	1056
Coir Fiber Baffle	1640-2

Use suitable excavated materials, as specified in Sections 225, 230 and 240 of the *Standard Specifications* in the construction of earth embankments for borrow pit dewatering basins, except where otherwise specified.

Construction Methods

Construct borrow pit dewatering basins according to the detail in the erosion control plans, and at locations shown on Reclamation Plans or in areas as directed.

The volume of the borrow pit dewatering basin will be based on a 2 hour retention time. The pump rate shall not exceed 1,000 GPM. The Contractor, at his option, may use a greater retention time for managing turbidity.

The straight line distance between the inlet and outlet shall be divided to include a forebay chamber in the upper quarter cell. Install one porous coir fiber baffle across the full width of the basin to delineate the forebay chamber. Do not use earthen or rock baffle. Install filtration geotextile on the interior side slopes and the floor of the forebay.

The water pumped from the borrow pit into the dewatering basin shall be obtained from the top of the water column and shall be discharged into the forebay in a non-erodible manner.

The borrow pit dewatering basin outlet shall be a vertical non-perforated riser pipe or flash board riser attached with a watertight connection to a barrel that carries the water through the embankment.

Maintenance and Removal

Maintain the borrow pit dewatering basin, coir fiber baffle, and remove and dispose of silt accumulations in accordance with Article 1630-3 of the *Standard Specifications*. The Contractor may include a drain device for maintenance and removal at his discretion.

Remove the borrow pit dewatering basin once dewatering operations are completed. Grade, seed, and mulch the area after removal of the borrow pit dewatering basin in accordance with Section 1660 of the *Standard Specifications*. The area shall be stabilized with an approved groundcover before final acceptance of the site.

Measurement and Payment

No direct payment will be made for borrow pit dewatering basins with the exception of the work of silt removal during dewatering basin operation and the work of seeding and mulching after removal of the dewatering basin. All other work and materials required for installation, maintenance and removal of borrow pit dewatering basins shall be incidental to *Borrow Excavation*. Such price and payments will be full compensation for the work of constructing, maintaining and removing the borrow pit dewatering basin including, but not limited to, the construction and removal of the borrow pit dewatering basin; furnishing of the outlet structure, baffle, filtration geotextile, stone and optional drain devices; and removal of all such items once dewatering operations are completed.

Removal and disposal of silt accumulations during dewatering operations will be measured and paid at the contract unit price per cubic yard for *Silt Excavation* in accordance with Article 1630-4 of the *Standard Specifications*.

Grading, seeding, and mulching the area after removal of the borrow pit dewatering basin will be measured and paid at the contract unit price per acre for *Seeding and Mulching* in accordance with Section 1660-8 of the *Standard Specifications*.

IMPERVIOUS DIKE:

Description

This work consists of furnishing, installing, maintaining, and removing an *Impervious Dike* for the purpose of diverting normal stream flow around the construction site. The Contractor shall construct an impervious dike in such a manner approved by the Engineer. The impervious dike shall not permit seepage of water into the construction site or contribute to siltation of the stream. The impervious dike shall be constructed of an acceptable material in the locations noted on the plans or as directed.

Materials

Acceptable materials shall include but not be limited to sheet piles, sandbags, and/or the placement of an acceptable size stone lined with polypropylene or other impervious geotextile.

Earth material shall not be used to construct an impervious dike when it is in direct contact with the stream unless vegetation can be established before contact with the stream takes place.

Measurement and Payment

Impervious Dike will be measured and paid as the actual number of linear feet of impervious dike(s) constructed, measured in place from end to end of each separate installation that has been completed and accepted. Such price and payment will be full compensation for all work including but not limited to furnishing materials, construction, maintenance, and removal of the impervious dike.

Payment will be made under:

Pay Item

Impervious Dike

Pay Unit

Linear Foot

COIR FIBER MAT:

Description

Furnish material, install and maintain coir fiber mat in locations shown on the plans or in locations as directed. Work includes providing all materials, excavating and backfilling, and placing and securing coir fiber mat with stakes, steel reinforcement bars or staples as directed.

Materials

Item

Coir Fiber Mat

Section

1060-14

Anchors: Stakes, reinforcement bars, or staples shall be used as anchors.

Wooden Stakes:

Provide hardwood stakes 12"- 24" long with a 2" x 2" nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving through the coir fiber mat and down into the underlying soil. The other end of the stake needs to have a 1"- 2" long head at the top with a 1"- 2" notch following to catch and secure the coir fiber mat.

Steel Reinforcement Bars:

Provide uncoated #10 steel reinforcement bars 24" nominal length. The bars shall have a 4" diameter bend at one end with a 4" straight section at the tip to catch and secure the coir fiber mat.

Staples:

Provide staples made of 0.125" diameter new steel wire formed into a *u* shape not less than 12" in length with a throat of 1" in width.

Construction Methods

Place the coir fiber mat immediately upon final grading. Provide a smooth soil surface free from stones, clods, or debris that will prevent the contact of the mat with the soil. Unroll the mat and apply without stretching such that it will lie smoothly but loosely on the soil surface.

For stream relocation applications, take care to preserve the required line, grade, and cross section of the area covered. Bury the top slope end of each piece of mat in a narrow trench at least 6 in. deep and tamp firmly. Where one roll of matting ends and a second roll begins,

overlap the end of the upper roll over the buried end of the second roll so there is a 6 in. overlap. Construct check trenches at least 12 in. deep every 50 ft. longitudinally along the edges of the mat or as directed. Fold over and bury mat to the full depth of the trench, close and tamp firmly. Overlap mat at least 6 in. where 2 or more widths of mat are installed side by side.

Place anchors across the mat at the ends approximately 1 ft. apart. Place anchors along the outer edges and down the center of the mat 3 ft. apart.

Adjustments in the trenching or anchoring requirements to fit individual site conditions may be required.

Measurement and Payment

Coir Fiber Mat will be measured and paid for as the actual number of square yards measured along the surface of the ground over which coir fiber mat is installed and accepted.

No measurement will be made for anchor items.

Payment will be made under:

Pay Item	Pay Unit
Coir Fiber Mat	Square Yard

FABRIC INSERT INLET PROTECTION DEVICE

Description

This work shall consist of installing, maintaining, and removing “Fabric Insert Inlet Protection Device,” of the type specified, in inlet structures (catch basins, drop inlets, etc) in areas where asphalt or concrete may not be fully removed in lieu Rock Inlet Sediment Traps type ‘C’ or as directed by the engineer.

Materials

The product shall be a fabric inlet protection device composed of a fitted woven polypropylene geotextile double sewn with nylon thread. The Fabric Insert Inlet Protection Device shall be manufactured to fit the opening of the catch basin or drop inlet and will have two dump straps attached at the bottom to facilitate the emptying of the device and shall have lifting loops for lifting the device from the basin. The Fabric insert Inlet Protection Device shall have a restraint cord approximately halfway up the bag to keep the sides away from the catch basin walls.

The stitching shall meet the following physical properties:

Physical	Test Method	English
Average Wide Width Strength	ASTM D-4884	165 lb/in

The fitted filter assembly shall have the following physical properties:

Physical	Test Method	English
Grab Tensile	ASTM D-4632	315 x 300 lbs
Grab Elongation	ASTM D-4632	15 x 15 %
Minimum Puncture Strength	ASTM D-4833	125 lbs
Mullen Burst	ASTM D-3786	650 PSI
Minimum UV Resistance	ASTM D-4355	90 %.
Flow Rate	ASTM D-4491	40 gal/min/ft ²
Apparent Opening	ASTM D-4751	40 US Sieve
Permittivity	ASTM D-4491	0.55 sec ⁻¹

Construction Methods

Strictly comply with manufacturer’s installation instructions and recommendations. Maintenance shall include regular daily inspections and after each qualifying rain event. The Fabric Insert Inlet Protection Device shall be emptied, cleaned and placed back into the basin when it reaches 50% capacity or as required by the engineer.

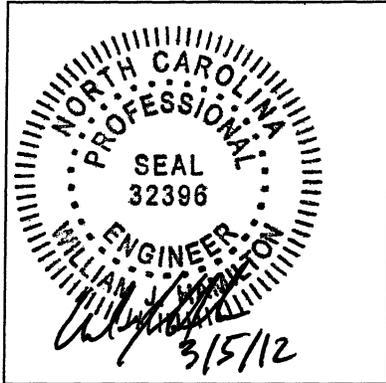
Measurement and Payment

This work will be paid for at the contract unit price per “Fabric Insert Inlet Protection Device” of the type specified, complete in place and accepted. Such payment shall be full compensation for furnishing and installing the fabric insert inlet protection device in accordance with this specification and for all required maintenance.

Cleanout of the device shall be paid for by *Silt Excavation* as provided elsewhere in the contract.

Payment will be made under:

Pay Item	Pay Unit
Fabric Insert Inlet Protection Device	Each



Project Special Provisions (Version 12.1) Signals and Intelligent Transportation Systems

Prepared By: *WJH*
 5-Mar-12

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1. SIGNAL HEADS

1.1 MATERIALS

A. General:

Fabricate vehicle signal head housings and end caps from die-cast aluminum. Fabricate 12-inch and 16-inch pedestrian signal head housings and end caps from die-cast aluminum. Fabricate 9-inch pedestrian signal head housings, end caps, and visors from virgin polycarbonate material. Provide visor mounting screws, door latches, and hinge pins fabricated from stainless steel. Provide interior screws, fasteners, and metal parts fabricated from stainless steel or corrosion resistant material.

Fabricate tunnel and traditional visors from sheet aluminum.

Paint all surfaces inside and outside of signal housings and doors. Paint outside surfaces of tunnel and traditional visors, messenger cable mounting assemblies, pole and pedestal mounting assemblies, and pedestrian pushbutton housings. Have electrostatically-applied, fused-polyester paint in highway yellow (Federal Standard 595C, Color Chip Number 13538) a minimum of 2.5 to 3.5 mils thick. Do not apply paint to the latching hardware or rigid vehicle signal head mounting brackets for mast-arm attachments.

Have the interior surfaces of tunnel and traditional visors painted an alkyd urea black synthetic baking enamel with a minimum gloss reflectance and meeting the requirements of MIL-E-10169, "Enamel Heat Resisting, Instrument Black."

For pole mounting, provide side of pole mounting assemblies with framework and all other hardware necessary to make complete, watertight connections of the signal heads to the poles and pedestals. Fabricate the mounting assemblies and frames from aluminum with all necessary hardware, screws, washers, etc. to be stainless steel. Provide mounting fittings that match the positive locking device on the signal head with the serrations integrally cast into the brackets. Provide upper and lower pole plates that have a 1 ¼-inch vertical conduit entrance hubs with the hubs capped on the lower plate and 1 ½-inch horizontal hubs. Ensure that the assemblies provide rigid attachments to poles and pedestals so as to allow no twisting or swaying of the signal heads. Ensure that all raceways are free of sharp edges and protrusions, and can accommodate a minimum of ten Number 14 AWG conductors.

For pedestal mounting, provide a post-top slipfitter mounting assembly that matches the positive locking device on the signal head with serrations integrally cast into the slipfitter. Provide stainless steel hardware, screws, washers, etc. Provide a minimum of six 3/8 X 3/4-inch long square head bolts for attachment to pedestal. Provide a center post for multi-way slipfitters.

For light emitting diode (LED) traffic signal modules, provide the following requirements for inclusion on the Department's Qualified Products List for traffic signal equipment.

1. Sample submittal,
2. Third-party independent laboratory testing results for each submitted module with evidence of testing and conformance with all of the Design Qualification Testing specified in section 6.4 of each of the following Institute of Transportation Engineers (ITE) specifications:
 - Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement
 - Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement

- Pedestrian Traffic Control Signal Indications –Light Emitting Diode (LED) Signal Modules.

(Note: The Department currently recognizes two approved independent testing laboratories. They are Intertek ETL Semko and Light Metrics, Incorporated with Garwood Laboratories. Independent laboratory tests from other laboratories may be considered as part of the QPL submittal at the discretion of the Department,

3. Evidence of conformance with the requirements of these specifications,
4. A manufacturer's warranty statement in accordance with the required warranty, and
5. Submittal of manufacturer's design and production documentation for the model, including but not limited to, electrical schematics, electronic component values, proprietary part numbers, bill of materials, and production electrical and photometric test parameters.
6. Evidence of approval of the product to bear the Intertek ETL Verified product label for LED traffic signal modules.

In addition to meeting the performance requirements for the minimum period of 60 months, provide a written warranty against defects in materials and workmanship for the modules for a period of 60 months after installation of the modules. During the warranty period, the manufacturer must provide new replacement modules within 45 days of receipt of modules that have failed at no cost to the State. Repaired or refurbished modules may not be used to fulfill the manufacturer's warranty obligations. Provide manufacturer's warranty documentation to the Department during evaluation of product for inclusion on Qualified Products List (QPL).

B. Vehicle Signal Heads:

Comply with the ITE standard "Vehicle Traffic Control Signal Heads". Provide housings with provisions for attaching backplates.

Provide visors that are 8 inches in length for 8-inch vehicle signal head sections. Provide visors that are 10 inches in length for 12-inch vehicle signal heads.

Provide a termination block with one empty terminal for field wiring for each indication plus one empty terminal for the neutral conductor. Have all signal sections wired to the termination block. Provide barriers between the terminals that have terminal screws with a minimum Number 8 thread size and that will accommodate and secure spade lugs sized for a Number 10 terminal screw.

Mount termination blocks in the yellow signal head sections on all in-line vehicle signal heads. Mount the termination block in the red section on five-section vehicle signal heads.

Furnish vehicle signal head interconnecting brackets. Provide one-piece aluminum brackets less than 4.5 inches in height and with no threaded pipe connections. Provide hand holes on the bottom of the brackets to aid in installing wires to the signal heads. Lower brackets that carry no wires and are used only for connecting the bottom signal sections together may be flat in construction.

For messenger cable mounting, provide messenger cable hangers, wire outlet bodies, balance adjusters, bottom caps, wire entrance fitting brackets, and all other hardware necessary to make complete, watertight connections of the vehicle signal heads to the messenger cable. Fabricate mounting assemblies from malleable iron or steel and provide serrated rings made of aluminum. Provide messenger cable hangers and balance adjusters that are galvanized before being painted. Fabricate balance adjuster eyebolt and eyebolt nut from stainless steel or galvanized malleable iron. Provide messenger cable hangers with U-bolt clamps. Fabricate washers, screws, bolts, clevis pins, cotter pins, nuts, and U-bolt clamps from stainless steel.

For mast-arm mounting, provide rigid vehicle signal head mounting brackets and all other hardware necessary to make complete, watertight connections of the vehicle signal heads to the mast

arms and to provide a means for vertically adjusting the vehicle signal heads to proper alignment. Fabricate the mounting assemblies from aluminum, and provide serrated rings made of aluminum. Provide stainless steel cable attachment assemblies to secure the brackets to the mast arms. Ensure all fastening hardware and fasteners are fabricated from stainless steel.

Provide LED vehicular traffic signal modules (hereafter referred to as modules) that consist of an assembly that uses LEDs as the light source in lieu of an incandescent lamp for use in traffic signal sections. Use LEDs that are aluminum indium gallium phosphorus (AlInGaP) technology for red and yellow indications and indium gallium nitride (InGaN) for green indications. Install the ultra bright type LEDs that are rated for 100,000 hours of continuous operation from -40°F to +165°F. Design modules to have a minimum useful life of 60 months and to meet all parameters of this specification during this period of useful life.

For the modules, provide spade terminals crimped to the lead wires and sized for a #10 screw connection to the existing terminal block in a standard signal head. Do not provide other types of crimped terminals with a spade adapter.

Ensure the power supply is integral to the module assembly. On the back of the module, permanently mark the date of manufacture (month & year) or some other method of identifying date of manufacture.

Tint the red, yellow and green lenses to correspond with the wavelength (chromaticity) of the LED. Transparent tinting films are unacceptable. Provide a lens that is integral to the unit with a smooth outer surface.

1. LED Circular Signal Modules:

Provide modules in the following configurations: 12-inch circular sections, and 8-inch circular sections. All makes and models of LED modules purchased for use on the State Highway System shall appear on the current NCDOT Traffic Signal Qualified Products List (QPL).

Provide the manufacturer’s model number and the product number (assigned by the Department) for each module that appears on the 2012 or most recent Qualified Products List. In addition, provide manufacturer’s certification in accordance with Article 106-3 of the *Standard Specifications*, that each module meets or exceeds the ITE “Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement” dated June 27, 2005 (hereafter referred to as VTCSH Circular Supplement) and other requirements stated in this specification.

Provide modules that meet the following requirements when tested under the procedures outlined in the VTCSH Circular Supplement:

Module Type	Max. Wattage at 165° F	Nominal Wattage at 77° F
12-inch red circular	17	11
8-inch red circular	13	8
12-inch green circular	15	15
8-inch green circular	12	12

For yellow circular signal modules, provide modules tested under the procedures outlined in the VTCSH Circular Supplement to insure power required at 77° F is 22 Watts or less for the 12-inch circular module and 13 Watts or less for the 8-inch circular module.

Note: Use a wattmeter having an accuracy of ±1% to measure the nominal wattage and maximum wattage of a circular traffic signal module. Power may also be derived from voltage, current and power factor measurements.

2. LED Arrow Signal Modules

Provide 12-inch omnidirectional arrow signal modules. All makes and models of LED modules purchased for use on the State Highway System shall appear on the current NCDOT Traffic Signal Qualified Products List (QPL).

Provide the manufacturer’s model number and the product number (assigned by the Department) for each module that appears on the 2012 or most recent Qualified Products List. In addition, provide manufacturer’s certification in accordance with Article 106-3 of the *Standard Specifications*, that each module meets or exceeds the requirements for 12-inch omnidirectional modules specified in the ITE “Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement” dated July 1, 2007 (hereafter referred to as VTCSH Arrow Supplement) and other requirements stated in this specification.

Provide modules that meet the following requirements when tested under the procedures outlined in the VTCSH Arrow Supplement:

Module Type	Max. Wattage at 165° F	Nominal Wattage at 77° F
12-inch red arrow	12	9
12-inch green arrow	11	11

For yellow arrow signal modules, provide modules tested under the procedures outlined in the VTCSH Arrow Supplement to insure power required at 77° F is 12 Watts or less.

Note: Use a wattmeter having an accuracy of ±1% to measure the nominal wattage and maximum wattage of an arrow traffic signal module. Power may also be derived from voltage, current and power factor measurements.

C. Pedestrian Signal Heads:

Provide pedestrian signal heads with international symbols that meet the MUTCD. Do not provide letter indications.

Comply with the ITE standard for “Pedestrian Traffic Control Signal Indications” and the following sections of the ITE standard for “Vehicle Traffic Control Signal Heads” in effect on the date of advertisement:

- Section 3.00 - “Physical and Mechanical Requirements”
- Section 4.01 - “Housing, Door, and Visor: General”
- Section 4.04 - “Housing, Door, and Visor: Materials and Fabrication”
- Section 7.00 - “Exterior Finish”

Provide a double-row termination block with three empty terminals and number 10 screws for field wiring. Provide barriers between the terminals that accommodate a spade lug sized for number 10 terminal screws. Mount the termination block in the hand section. Wire all signal sections to the terminal block.

Where required by the plans, provide 16-inch pedestrian signal heads with traditional three-sided, rectangular visors, 6 inches long. Where required by the plans, provide 12-inch pedestrian signal heads with traditional three-sided, rectangular visors, 8 inches long.

Provide 2-inch diameter pedestrian push-buttons with weather-tight housings fabricated from die-cast aluminum and threading in compliance with the NEC for rigid metal conduit. Provide a weep hole in the housing bottom and ensure that the unit is vandal resistant.

Provide push-button housings that are suitable for mounting on flat or curved surfaces and that will accept 1/2-inch conduit installed in the top. Provide units that have a heavy duty push-button

assembly with a sturdy, momentary, normally-open switch. Have contacts that are electrically insulated from the housing and push-button. Ensure that the push-buttons are rated for a minimum of 5 mA at 24 volts DC and 250 mA at 12 volts AC.

Provide standard R10-3 signs with mounting hardware that comply with the MUTCD in effect on the date of advertisement. Provide R10-3E signs for countdown pedestrian heads and R10-3B for non-countdown pedestrian heads.

Design the LED pedestrian traffic signal modules (hereafter referred to as modules) for installation into standard pedestrian traffic signal sections that do not contain the incandescent signal section reflector, lens, eggcrate visor, gasket, or socket. Provide modules that consist of an assembly that uses LEDs as the light source in lieu of an incandescent lamp. Use LEDs that are of the latest aluminum indium gallium phosphorus (AlInGaP) technology for the Portland Orange hand and countdown displays. Use LEDs that are of the latest indium gallium nitride (InGaN) technology for the Lunar White walking man displays. Install the ultra-bright type LEDs that are rated for 100,000 hours of continuous operation from -40°F to +165°F. Design modules to have a minimum useful life of 60 months and to meet all parameters of this specification during this period of useful life.

Design all modules to operate using a standard 3 - wire field installation. Provide spade terminals crimped to the lead wires and sized for a #10 screw connection to the existing terminal block in a standard pedestrian signal housing. Do not provide other types of crimped terminals with a spade adapter.

Ensure the power supply is integral to the module assembly. On the back of the module, permanently mark the date of manufacture (month & year) or some other method of identifying date of manufacture.

Provide modules in the following configuration: 16-inch displays which have the solid hand/walking man overlay on the left and the countdown on the right, and 12-inch displays which have the solid hand/walking man module as an overlay. All makes and models of LED modules purchased for use on the State Highway System shall appear on the current NCDOT Traffic Signal Qualified Products List (QPL).

Provide the manufacturer’s model number and the product number (assigned by the Department) for each module that appears on the 2012 or most recent Qualified Products List. In addition, provide manufacturer’s certification in accordance with Article 106-3 of the *Standard Specifications*, that each module meets or exceeds the ITE “Pedestrian Traffic Control Signal Indicators - Light Emitting Diode (LED) Signal Modules” dated August 04, 2010 (hereafter referred to as PTCSI Pedestrian Standard) and other requirements stated in this specification.

Provide modules that meet the following requirements when tested under the procedures outlined in the PTCSI Pedestrian Standard:

Module Type	Max. Wattage at 165° F	Nominal Wattage at 77° F
Hand Indication	16	13
Walking Man Indication	12	9
Countdown Indication	16	13

Note: Use a wattmeter having an accuracy of ±1% to measure the nominal wattage and maximum wattage of a circular traffic signal module. Power may also be derived from voltage, current and power factor measurements.

Provide module lens that is hard coated or otherwise made to comply with the material exposure and weathering effects requirements of the Society of Automotive Engineers (SAE) J576. Ensure all

exposed components of the module are suitable for prolonged exposure to the environment, without appreciable degradation that would interfere with function or appearance.

Ensure the countdown display continuously monitors the traffic controller to automatically learn the pedestrian phase time and update for subsequent changes to the pedestrian phase time.

Ensure the countdown display begins normal operation upon the completion of the preemption sequence and no more than one pedestrian clearance cycle.

D. Signal Cable:

Furnish 16-4 and 16-7 signal cable that complies with IMSA specification 20-1 except provide the following conductor insulation colors:

- For 16-4 cable: white, yellow, red, and green
- For 16-7 cable: white, yellow, red, green, yellow with black stripe tracer, red with black stripe tracer, and green with black stripe tracer. Apply continuous stripe tracer on conductor insulation with a longitudinal or spiral pattern.

Provide a ripcord to allow the cable jacket to be opened without using a cutter. IMSA specification 19-1 will not be acceptable. Provide a cable jacket labeled with the IMSA specification number and provide conductors constructed of stranded copper.

2. TRAFFIC SIGNAL SUPPORTS

2.1 METAL TRAFFIC SIGNAL SUPPORTS – ALL POLES

A. General:

Furnish and install metal strain poles and metal poles with mast arms, grounding systems, and all necessary hardware. The work covered by this special provision includes requirements for the design, fabrication, and installation of both standard and custom/site specifically designed metal traffic signal supports and associated foundations.

Provide metal traffic signal support systems that contain no guy assemblies, struts, or stay braces. Provide designs of completed assemblies with hardware that equals or exceeds AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals* 4th Edition, 2001 (hereafter called 4th Edition AASHTO), including the latest interim specifications. Provide assemblies with a round or near-round (18 sides or more) cross-section, or a multi sided cross section with no less than six sides. The sides may be straight, convex, or concave.

Pole heights shown on signal plans are estimated from available data for bid purposes. Prior to furnishing metal signal poles, use field measurements and adjusted cross-sections to determine whether pole heights are sufficient to obtain required clearances. If pole heights are not sufficient, the Contractor should immediately notify the Engineer of the required revised pole heights.

Ensure that metal signal poles permit cables to be installed inside poles and any required mast arms. For holes in the poles and arms used to accommodate cables, provide full-circumference grommets. Arm flange plate wire access holes should be deburred, non grommets, and oversized to fit around the 2" diameter grommets shaft flange plate wire access hole.

After fabrication, have steel poles, required mast arms, and all parts used in the assembly hot-dip galvanized per section 1076. Design structural assemblies with weep holes large enough and properly located to drain molten zinc during galvanization process. Provide hot-dip galvanizing on structures that meets or exceeds ASTM Standard A-123. Provide galvanizing on hardware that meets or exceeds ASTM Standard A-153. Ensure that threaded material is brushed and retapped as

necessary after galvanizing. Perform repair of damaged galvanizing that complies with the following:

Repair of Galvanizing.....Article 1076-6

Standard Drawings for Metal Poles are available that supplement these project special provisions. These drawings are located on the Department’s website:

<http://www.ncdot.gov/doh/preconstruct/traffic/ITSS/ws/mpoles/poles.html>

Comply with article 1098-1B “General Requirements” of the 2012 STANDARD SPECIFICATIONS FOR ROADS & STRUCTURES, hereinafter referred to as the *Standard Specifications* for submittal requirements. Furnish shop drawings for approval. Provide the copies of detailed shop drawings for each type of structure as summarized below. Ensure that shop drawings include material specifications for each component and identify welds by type and size on the drawing details, not in table format. Do not release structures for fabrication until shop drawings have been approved by NCDOT. Provide an itemized bill of materials for all structural components and associated connecting hardware on the drawings.

Comply with article 1098-1A “General Requirements” of the *Standard Specifications* for Qualified Products List (QPL) submittals. All shop drawings must include project location description, signal inventory number(s) and a project number or work order number on the drawings.

Summary of information required for metal pole review submittal:

Item	Hardcopy Submittal	Electronic Submittal	Comments / Special Instructions
Sealed, Approved Signal Plan/Loading Diagram	1	1	All structure design information needs to reflect the latest approved signal plans
Custom Pole Shop Drawings	4 sets	1 set	Submit drawings on 11” x 17” format media Show NCDOT inventory number(s) in or above the title block
Standard Pole Shop Drawings (from the QPL)	4 sets	1 set	Submit drawings on 11” x 17” format media Show NCDOT inventory number(s) in or above the title block
Structure Calculations	1 set	1 set	Not required for Standard QPL Poles
Standard Pole Foundation Drawings	1 set	1 set	Submit drawings on 11” x 17” format media. Submit a completed Standard Foundation Selection form for each pole using foundation table on Metal Pole Drawing M-8.
Custom Foundation Drawings	4 sets	1 set	Submit drawings on 11” x 17” format media. If QPL Poles are used, include the corresponding QPL pole shop drawings with this submittal.
Foundation Calculations	1	1	Not required for Standard QPL Poles
Soil Boring Logs and Report	1	1	Report should include a location plan and a soil classification report including soil capacity, water level, hammer efficiency, soil bearing pressure, soil density, etc. for each pole.

NOTE – All shop drawings and custom foundation design drawings must be sealed by a professional Engineer licensed in the state of North Carolina. All geotechnical information must be sealed by either a Professional Engineer or geologist licensed in the state of North Carolina. Include a title block and revision block on the shop drawings and foundation designs showing the NCDOT inventory number.

Shop drawings and foundation drawings may be submitted together or separately for approval. However, shop drawings must be approved before foundations can be reviewed. Foundation designs

will be returned without review if the associated shop drawing has not been approved. Incomplete submittals will be returned without review.

B. Materials:

Fabricate metal pole and arm shaft from coil or plate steel to meet the requirements of ASTM A 595 Grade A tubes. For structural steel shapes, plates and bars use A572 Gr 50 min or ASTM A709 Gr 50 min.. Provide pole and arm shafts that are round in cross section or multisided tubular shapes and have a uniform linear taper of 0.14 in/ft. Construct shafts from one piece of single ply plate or coil so there are no circumferential weld splices. Galvanize in accordance with AASHTO M 111 and/or ASTM A 123 or an approved equivalent.

Use the submerged arc process or other NCDOT previously approved process suitable for pole shaft and arms to continuously weld pole shafts and arm shafts along their entire length. The longitudinal seam weld will be finished flush to the outside contour of the base metal. Ensure shafts have no circumferential welds except at the lower end joining the shaft to the pole base and arm base. Provide welding that conforms to Article 1072-20 of the *Standard Specifications*, except that no field welding on any part of the pole will be permitted unless approved by a qualified engineer.

Refer to Metal Pole Standard Drawing Sheets M2 through M5 for fabrication details. Fabricate anchor bases from plate steel meeting, as a minimum, the requirements of ASTM A 36M or cast steel meeting the requirements of ASTM A 27M Grade 485-250, AASHTO M270 Gr 36 or an approved equivalent. Conform to the applicable bolt pattern and orientation as shown on Metal Pole Standard Drawing Sheet M2.

Ensure all hardware is galvanized steel or stainless steel. The Contractor is responsible for ensuring that the designer/fabricator specifies connecting hardware and/or materials that do not create a dissimilar metal corrosive reaction.

Unless otherwise required by the design, ensure each anchor rod is 2" diameter and 60" length. Provide 10" minimum thread projection at the top of the rod, and 8" minimum at the bottom of the rod. Use anchor rod assembly and drilled pier foundation materials that meet the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

For each structural bolt and other steel hardware, hot dip galvanizing shall conform to the requirements of AASHTO M 232 (ASTM A 153). Ensure end caps for poles or mast arms are constructed of cast aluminum conforming to Aluminum Alloy 356.0F.

Provide a circular anchor bolt lock plate that will be secured to the anchor bolts at the embedded end with 2 washers and 2 nuts. Provide a base plate template that matches the bolt circle diameter of the anchor bolt lock plate. Construct plates and templates from 1/4" minimum thick steel with a minimum width of 4". Galvanizing is not required.

Provide 4 heavy hex nuts and 4 flat washers for each anchor bolt. For nuts, use AASHTO M291 grade 2H, DH, or DH3 or equivalent material. For flat washers, use AASHTO M293 or equivalent material.

C. Construction Methods:

Erect signal support poles only after concrete has attained a minimum allowable compressive strength of 3000 psi. Install anchor rod assemblies in accordance with the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

For further construction methods, see construction methods for Metal Strain Pole, or Metal Pole with Mast Arm.

Connect poles to grounding electrodes and bond them to the electrical service grounding electrodes.

For holes in the poles used to accommodate cables, install grommets before wiring pole or arm. Do not cut or split grommets.

Attach the terminal compartment cover to the pole by a sturdy chain or cable. Ensure the chain or cable is long enough to permit the cover to hang clear of the compartment opening when the cover is removed, and is strong enough to prevent vandalism. Ensure the chain or cable will not interfere with service to the cables in the pole base.

Attach cap to pole with a sturdy chain or cable. Ensure the chain or cable is long enough to permit the cap to hang clear of the opening when the cap is removed.

Perform repair of damaged galvanizing that complies with the *Standard Specifications*, Article 1076-6 "Repair of Galvanizing."

Install galvanized wire mesh around the perimeter of the base plate to cover the gap between the base plate and top of foundation for debris and pest control.

Install a ¼" thick plate for concrete foundation tag to include: concrete grade, depth, diameter, and reinforcement sizes of the installed foundation.

2.2 METAL STRAIN POLE

A. Materials:

Provide either steel or aluminum poles as indicated on the plans.

Comply with the following for Aluminum Poles:

- Have poles fabricated from Aluminum Association Alloy 6061-T6, 6063-T6, or approved equivalent. The structural requirement does not pertain to castings that are decorative only.
- Have shafts tapered by spinning and cold-working a seamless extruded tube of the aluminum alloy.
- Have shafts with no circumferential welds except at the lower end joining the shaft to the base.
- Ensure aluminum poles are properly protected from damage prior to shipment.
- Have bases of the shaft fabricated in accordance with the Aluminum Association Alloy 356.0-T6, and of adequate strength, shape and size, and capable of withstanding the design load of the shaft.
- Have aluminum surfaces in contact with concrete or dissimilar metal coated with bituminous paint.

Comply with the following for Steel Poles:

- Have shafts of the tapered tubular type and fabricated of steel conforming to ASTM A-595 Grade A or an approved equivalent.
- Have galvanization in accordance with AASHTO M 111 (ASTM A 123).
- Have shafts that are continuously welded for the entire length by the submerged arc process, and with exposed welds ground or rolled smooth and flush with the base metal.

Provide welding that conforms to Article 1072-20 per *Standard Specification* except that no field welding on any part of the pole will be permitted.

- Have anchor bases for steel poles fabricated from plate steel meeting as a minimum the requirements of ASTM A 36M or cast steel meeting the requirements of ASTM A 27M Grade 485-250 or an approved equivalent.

For each strain pole, provide 2 messenger cable (span wire) clamps and associated hardware for attachment of support cable of the messenger cable suspension. Ensure that diameter of the clamp is appropriate to its location on the pole and that the diameter of the clamps is appropriately designed to be adjustable from 1'-6" below the top, down to 6'-6" below the top of the pole. Do not attach more than one support cable to a messenger cable clamp.

For strain poles, provide a minimum of three (3) 2 inch (50 mm) holes equipped with an associated coupling and weatherhead on the messenger cable load side of the pole to accommodate passage of signal cables from inside the pole to the suspension. Provide galvanized threaded plugs for all unused couplings at pole entrance points. Refer to Metal Pole Standard Drawing Sheet M3 for fabrication details.

Provide a grounding lug(s) in the approximate vicinity of the messenger cable clamp for bonding and grounding messenger cable. Lugs must accept #4 or #6 AWG wire to bond messenger cables to the pole in order to provide an effective ground fault circuit path. Refer to Metal Pole Standard Drawing Sheet M6 for construction details.

Have poles permanently stamped above the hand holes with the identification tag details as shown on Metal Pole Standard Drawing Sheet M2.

Provide liquid tight flexible metal conduit (Type LFMC), liquid tight flexible nonmetallic conduit (Type LFNC), high density polyethylene conduit (Type HDPE), or approved equivalent to isolate conductors feeding luminaires.

Fabricate poles from a single piece of steel or aluminum with single line seam weld with no transverse butt welds. Fabrication of two ply pole shafts is unacceptable with the exception of fluted shafts. Provide tapers for all shafts that begin at base and that have diameters which decrease uniformly at the rate of not more than 0.14 inch per foot (11.7 millimeters per meter) of length.

Ensure that allowable pole deflection does not exceed that allowed per 4th Edition AASHTO. For messenger cable poles (with primarily transverse loads), ensure that maximum deflection at the top of the pole does not exceed 2.5 percent of the pole height. For mast arm poles (with primarily moment loads), ensure that maximum angular rotation of the top of the pole does not exceed 1° 40'.

Provide four anchor nuts and four washers for each anchor bolt. Ensure that anchor bolts have required diameters, lengths, and positions, and will develop strengths comparable to their respective poles.

Provide a terminal compartment with cover and screws in each pole that encompasses the hand hole and contains a 12-terminal barrier type terminal block. Provide two terminal screws with a removable shorting bar between them for each termination. Furnish terminal compartment covers attached to the pole by a sturdy chain or cable approved by the Engineer. Ensure that the chain or cable is long enough to permit the cover to hang clear of the compartment opening when the cover is removed, and is strong enough to prevent vandals from being able to disconnect the cover from the pole. Ensure that the chain or cable will not interfere with service to the cables in the pole base.

Install grounding lugs that will accept #4 or #6 AWG wire to electrically bond messenger cables to the pole. Refer to Metal Pole Standard Drawing Sheet M6 for construction details.

For each pole, provide a 1/2 inch minimum thread diameter, coarse thread stud and nut for grounding which will accommodate #6 AWG ground wire. Ensure that the lug is electrically bonded to the pole and is conveniently located inside the pole at the hand hole.

Provide a removable pole cap with stainless steel attachment screws for the top of each pole. Ensure that the cap is cast aluminum conforming to Aluminum Association Alloy 356.0F. Furnish cap attached to the pole with a sturdy chain or cable approved by the Engineer. Ensure that the chain or cable is long enough to permit the cap to hang clear of the pole-top opening when the cap is removed.

When required by the plans, furnish couplings 42 inches above the bottom of the base for mounting of pedestrian pushbuttons. Provide mounting points consisting of 1-1/2 inch internally threaded half-couplings that comply with the NEC and that are mounted within the poles. Ensure that couplings are essentially flush with the outside surfaces of the poles and are installed before any required galvanizing. Provide a threaded plug in each mounting point. Ensure that the surface of the plug is essentially flush with the outer end of the mounting point when installed and has a recessed hole to accommodate a standard wrench.

B. Construction Methods:

Install metal poles, hardware, and fittings as shown on the manufacturer's installation drawings. Install metal poles so that when the pole is fully loaded it is within 2 degrees of vertical. Install poles with the manufacturer's recommended "rake." Use threaded leveling nuts to establish rake if required.

2.3 DRILLED PIER FOUNDATIONS FOR METAL TRAFFIC SIGNAL POLES

Analysis procedures and formulas shall be based on AASHTO, ACI code and per FHWA manuals. Design methods based on engineering publications or research papers needs to have prior approval from NCDOT. The Department reserves the right to accept or disapprove any method used for the analysis.

Use a Factor of Safety of 1.33 for torsion and 2.0 for bending for the foundation design.

Foundation design for lateral load shall not exceed 1" lateral deflection at top of foundation.

Design all custom foundations to carry the maximum capacity of each metal pole. For standard case strain poles only, if a custom foundation is designed, use the actual moment reactions from the Standard Foundation Selection Table shown on Standard Drawing No. M8.

When poor soil conditions are encountered which could create an excessively large foundation design, consideration may be given to allowing an exemption to the maximum capacity design. The contractor must gain approval from the engineer before reducing a foundation's capacity. On projects where poor soil is known to be present, it is advisable that the contractor consider getting foundations approved before releasing poles for fabrication.

A. Description:

Furnish and install foundations for NCDOT metal poles with all necessary hardware in accordance with the plans and specifications.

Metal Pole Standards have been developed and implemented by NCDOT for use at signalized intersections in North Carolina. If the plans call for a standard pole, then a standard foundation may be selected from the plans. However, the Contractor is not required to use a standard foundation. If the Contractor chooses to design a non-standard site-specific foundation for a standard pole or if the plans call for a non-standard site-specific pole, design the foundation to conform to the applicable provisions in the NCDOT Metal Pole Standards and Section B4 (Non-Standard Foundation Design) below. If non-standard site specific foundations are designed for standard QPL approved strain poles, the foundation designer must use the design moment specified by load case on Metal Pole Standard Drawing Sheet M8. Failure to conform to this requirement will be grounds for rejection of the design.

If the Contractor chooses to design a non-standard foundation for a standard pole and the soil test results indicate a standard foundation is feasible for the site, the Contractor will be paid the cost of the standard foundation (drilled pier and wing wall, if applicable). Any additional costs associated with a non-standard site-specific foundation including additional materials, labor and equipment will be considered incidental to the cost of the standard foundation. All costs for the non-standard foundation design will also be considered incidental to the cost of the standard foundation.

B. Soil Test and Foundation Determination:**1. General:**

Drilled piers are reinforced concrete sections, cast-in-place against in situ, undisturbed material. Drilled piers are of straight shaft type and vertical.

Some standard drilled piers for supporting poles with mast arms may require wing walls to resist torsional rotation. Based upon this provision and the results of the required soil test, a drilled pier length and wing wall requirement may be determined and constructed in accordance with the plans.

For non-standard site-specific poles, the contractor-selected pole fabricator will determine if the addition of wing walls is necessary for the supporting foundations.

2. Soil Test:

Perform a soil test at each proposed metal pole location. Complete all required fill placement and excavation at each signal pole location to finished grade before drilling each boring. Soil tests performed that are not in compliance with this requirement may be rejected and will not be paid. Drill one boring to a depth of 26 feet within a 25 foot radius of each proposed foundation.

Perform standard penetration tests (SPT) in accordance with ASTM D 1586 at depths of 1, 2.5, 5, 7.5, 10, 15, 20 and 26 feet. Discontinue the boring if one of the following occurs:

- A total of 100 blows have been applied in any 2 consecutive 6-in. intervals.
- A total of 50 blows have been applied with < 3-in. penetration.

Describe each intersection as the "Intersection of (Route or SR #), (Street Name) and (Route or SR #), (Street Name), _____ County, Signal Inventory No. _____". Label borings with "B- N, S, E, W, NE, NW, SE or SW" corresponding to the quadrant location within the intersection. Pole numbers should be made available to the Drill Contractor. Include pole numbers in the boring label if they are available. If they are not available, ensure the boring labels can be cross-referenced to corresponding pole numbers. For each boring, submit a legible (hand written or typed) boring log signed and sealed by a licensed Geologist or Professional Engineer registered in North Carolina.

Include on each boring the SPT blow counts and N-values at each depth, depth of the boring, and a general description of the soil types encountered.

3. Standard Foundation Determination:

Use the following method for determining the Design N-value:

$$N_{AVG} = \frac{(N@1' + N@2.5' + \dots + N@Deepest \text{ Boring Depth})}{\text{Total Number of N-values}}$$

$$Y = (N@1')^2 + (N@2.5')^2 + \dots + (N@Deepest \text{ Boring Depth})^2$$

$$Z = (N@1' + N@2.5' + \dots + N@Deepest \text{ Boring Depth})$$

$$N_{STD \text{ DEV}} = \left[\frac{(\text{Total Number of N-values} \times Y) - Z^2}{(\text{Total Number of N-values}) \times (\text{Total Number of N-values} - 1)} \right]^{0.5}$$

Design N-value equals lesser of the following two conditions:

$$N_{AVG} - (N_{STD \text{ DEV}} \times 0.45)$$

Or

$$\text{Average of First Four N-Values} = \frac{(N@1' + N@2.5' + N@5' + N@7.5')}{4}$$

Note: If less than 4 N-values are obtained because of criteria listed in Section 2 above, use average of N-values collected for second condition. Do not include the N-value at the deepest boring depth for above calculations if the boring is discontinued at or before the required boring depth because of criteria listed in Section 2 above. Use N-value of zero for weight of hammer or weight of rod. If N-value is greater than 50, reduce N-value to 50 for calculations.

If standard NCDOT strain poles are shown on the plans and the Contractor chooses to use standard foundations, determine a drilled pier length, "L," for each signal pole from the Standard Foundations Chart (sheet M 8) based on the Design N-value and the predominant soil type. For each standard pole location, submit a completed "Metal Pole Standard Foundation Selection Form" signed by the Contractor's representative. Signature on form is for verification purposes only. Include the Design N-value calculation and resulting drilled pier length, "L," on each form.

If non-standard site-specific poles are shown on the plans, submit completed boring logs collected in accordance with Section 2 (Soil Test) above along with pole loading diagrams from the plans to the contractor-selected pole fabricator to assist in the pole and foundation design.

If one of the following occurs, the Standard Foundations Chart shown on the plans may not be used and a non-standard foundation may be required. In such case, contact the Engineer.

- The Design N-value is less than 4.
- The drilled pier length, "L", determined from the Standard Foundations Chart, is greater than the depth of the corresponding boring.

In the case where a standard foundation cannot be used, the Department will be responsible for the additional cost of the non-standard foundation.

Foundation designs are based on level ground around the traffic signal pole. If the slope around the edge of the drilled pier is steeper than 8:1 (H:V) or the proposed foundation will be less than 10 feet from the top of an embankment slope, the Contractor is responsible for providing slope information to the foundation designer and to the Engineer so it can be considered in the design.

The “Metal Pole Standard Foundation Selection Form” may be found at:

<http://www.ncdot.gov/doh/preconstruct/highway/geotech/formdet/misc/MetalPole.pdf>

If assistance is needed, contact the Engineer.

4. Non-Standard Foundation Design:

Design non-standard foundations based upon site-specific soil test information collected in accordance with Section 2 (Soil Test) above. Design drilled piers for side resistance only in accordance with Section 4.6 of the *AASHTO Standard Specifications for Highway Bridges*. Use the computer software LPILE version 5.0 or later manufactured by Ensoft, Inc. to analyze drilled piers. Use the computer software gINT version 8.0 or later manufactured by Bentley Systems, Inc. with the current NCDOT gINT library and data template to produce SPT boring logs. Provide a drilled pier foundation for each pole with a length and diameter that result in a horizontal lateral movement of less than 1 inch at the top of the pier and a horizontal rotational movement of less than 1 inch at the edge of the pier. Contact the Engineer for pole loading diagrams for standard poles to be used for non-standard foundation designs. Submit any non-standard foundation designs including drawings, calculations, and soil boring logs to the Engineer for review and approval before construction.

C. Drilled Pier Construction:

Construct drilled pier foundations in accordance with the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

2.4 METAL SIGNAL POLE REMOVALS

A. Description:

Remove and dispose of existing metal signal poles including mast arms, and remove and dispose of existing foundations, associated anchor bolts, electrical wires and connections.

B. Construction Methods:

5. Foundations:

Remove and promptly dispose of the metal signal pole foundations including reinforcing steel, electrical wires, and anchor bolts to a minimum depth of two feet below the finished ground elevation. At the Contractor's option, remove the complete foundation.

6. Metal Poles:

Assume ownership of the metal signal poles, remove the metal signal poles, and promptly transport the metal signal poles from the project. Use methods to remove the metal signal poles and attached traffic signal equipment that will not result in damage to other portions of the project or facility. Repair damages that are a result of the Contractor's actions at no additional cost to the Department.

Transport and properly dispose of the materials.

Backfill and compact disturbed areas to match the finished ground elevation. Seed unpaved areas.

Use methods to remove the foundations that will not result in damage to other portions of the project or facility. Repair damages that are a result of the Contractor's actions at no cost to the Department.

2.5 POLE NUMBERING SYSTEM

A. New Poles

Attach an identification tag to each pole shaft and mast arm section as shown on Metal Pole Standard Drawing Sheet M2 “Typical Fabrication Details Common To All Metal Poles”.

2.6 MEASUREMENT AND PAYMENT

Actual number of metal strain signal poles (without regard to height or load capacity) furnished, installed and accepted.

Actual number of soil tests with SPT borings drilled furnished and accepted.

Actual volume of concrete poured in cubic yards of drilled pier foundation furnished, installed and accepted.

Actual number of metal signal pole foundations removed and disposed.

Actual number of metal signal poles removed and disposed.

No measurement will be made for foundation designs prepared with metal pole designs, as these will be considered incidental to designing signal support structures.

Payment will be made under:

Metal Strain Signal Pole	Each
Soil Test.....	Each
Drilled Pier Foundation	Cubic Yard
Metal Pole Foundation Removal	Each
Metal Pole Removal	Each

3. CONTROLLERS WITH CABINETS

3.1 MATERIALS – TYPE 2070L CONTROLLERS

Conform to CALTRANS *Transportation Electrical Equipment Specifications (TEES)* (dated August 16, 2002, plus Errata 1 dated October 27, 2003 and Errata 2 dated June 08, 2004) except as required herein.

Furnish Model 2070L controllers. Ensure that removal of the CPU module from the controller will place the intersection into flash.

The Department will provide software at the beginning of the burning-in period. Contractor shall give 5 working days notice before needing software. Program software provided by the Department.

Provide model 2070L controllers with the latest version of OS9 operating software and device drivers, composed of the unit chassis and at a minimum the following modules and assemblies:

- MODEL 2070 1B, CPU Module, Single Board
- MODEL 2070-2A, Field I/O Module (FI/O)
- MODEL 2070-3B, Front Panel Module (FP), Display B (8x40)
- MODEL 2070-4A, Power Supply Module, 10 AMP
- MODEL 2070-7A, Async Serial Com Module (9-pin RS-232)

Furnish one additional MODEL 2070-7A, Async Serial Com Module (9-pin RS-232) for all master controller locations.

For each master location and central control center, furnish a U.S. Robotics V.92 or approved equivalent auto-dial/auto-answer external modem to accomplish the interface to the Department-furnished microcomputers. Include all necessary hardware to ensure telecommunications.

3.2 MATERIALS – GENERAL CABINETS

Provide a moisture resistant coating on all circuit boards.

Provide one 20 mm diameter radial lead UL-recognized metal oxide varistor (MOV) between each load switch field terminal and equipment ground. Electrical performance is outlined below.

PROPERTIES OF MOV SURGE PROTECTOR	
Maximum Continuous Applied Voltage at 185° F	150 VAC (RMS) 200 VDC
Maximum Peak 8x20µs Current at 185° F	6500 A
Maximum Energy Rating at 185° F	80 J
Voltage Range 1 mA DC Test at 77° F	212-268 V
Max. Clamping Voltage 8x20µs, 100A at 77° F	395 V
Typical Capacitance (1 MHz) at 77° F	1600 pF

Provide a power line surge protector that is a two-stage device that will allow connection of the radio frequency interference filter between the stages of the device. Ensure that a maximum continuous current is at least 10A at 120V. Ensure that the device can withstand a minimum of 20 peak surge current occurrences at 20,000A for an 8x20 microsecond waveform. Provide a maximum clamp voltage of 395V at 20,000A with a nominal series inductance of 200µh. Ensure that the voltage does not exceed 395V. Provide devices that comply with the following:

Frequency (Hz)	Minimum Insertion Loss (dB)
60	0
10,000	30
50,000	55
100,000	50
500,000	50
2,000,000	60
5,000,000	40
10,000,000	20
20,000,000	25

3.3 MATERIALS – TYPE 170E CABINETS

A. Type 170 E Cabinets General:

Conform to the city of Los Angeles’ Specification No. 54-053-08, *Traffic Signal Cabinet Assembly Specification* (dated July 2008), except as required herein.

Furnish model 336S pole mounted cabinets configured for 8 vehicle phases, 4 pedestrian phases, and 6 overlaps. When overlaps are required, provide auxiliary output files for the overlaps. Do not

reassign load switches to accommodate overlaps unless shown on electrical details. Provide 336S pole mounted cabinets that are 46" high with 40" high internal rack assemblies.

Furnish model 332 base mounted cabinets configured for 8 vehicle phases, 4 pedestrian phases, and 6 overlaps. When overlaps are required, provide auxiliary output files for the overlaps. Do not reassign load switches to accommodate overlaps unless shown on electrical details.

Provide model 200 load switches, model 222 loop detector sensors, model 252 AC isolators, and model 242 DC isolators according to the electrical details. As a minimum, provide one (1) model 2018 conflict monitor, one (1) model 206L power supply unit, two (2) model 204 flashers, one (1) DC isolator (located in slot I14), and four (4) model 430 flash transfer relays (provide seven (7) model 430 flash transfer relays if auxiliary output file is installed) with each cabinet.

B. Type 170 E Cabinet Electrical Requirements:

Provide a cabinet assembly designed to ensure that upon leaving any cabinet switch or conflict monitor initiated flashing operation, the controller starts up in the programmed start up phases and start up interval.

Furnish two sets of non-fading cabinet wiring diagrams and schematics in a paper envelope or container and placed in the cabinet drawer.

All AC+ power is subject to radio frequency signal suppression.

Provide surge suppression in the cabinet for each type of cabinet device. Provide surge protection for the full capacity of the cabinet input file. Provide surge suppression devices that operate properly over a temperature range of -40° F to +185° F. Ensure the surge suppression devices provide both common and differential modes of protection.

Provide a pluggable power line surge protector that is installed on the back of the PDA (power distribution assembly) chassis to filter and absorb power line noise and switching transients. Ensure the device incorporates LEDs for failure indication and provides a dry relay contact closure for the purpose of remote sensing. Ensure the device meets the following specifications:

Peak Surge Current (Single pulse, 8x20µs).....	20,000A
Occurrences (8x20µs waveform).....	10 minimum @ 20,000A
Maximum Clamp Voltage.....	395VAC
Operating Current.....	15 amps
Response Time.....	< 5 nanoseconds

Provide a loop surge suppressor for each set of loop terminals in the cabinet. Ensure the device meets the following specifications:

Peak Surge Current (6 times, 8x20µs)	
(Differential Mode).....	400A
(Common Mode).....	1,000A
Occurrences (8x20µs waveform).....	500 min @ 200A
Maximum Clamp Voltage	
(Differential Mode @400A).....	35V
(Common Mode @1,000A).....	35V

Response Time.....< 5 nanoseconds
Maximum Capacitance.....35 pF

Provide a data communications surge suppressor for each communications line entering or leaving the cabinet. Ensure the device meets the following specifications:

Peak Surge Current (Single pulse, 8x20µs).....10,000A
Occurrences (8x20µs waveform).....100 min @ 2,000A
Maximum Clamp Voltage.....Rated for equipment protected
Response Time.....< 1 nanosecond
Maximum Capacitance.....1,500 pF
Maximum Series Resistance.....15Ω

Provide a DC signal surge suppressor for each DC input channel in the cabinet. Ensure the device meets the following specifications:

Peak Surge Current (Single pulse, 8x20µs).....10,000A
Occurrences (8x20µs waveform).....100 @ 2,000A
Maximum Clamp Voltage.....30V
Response Time.....< 1 nanosecond

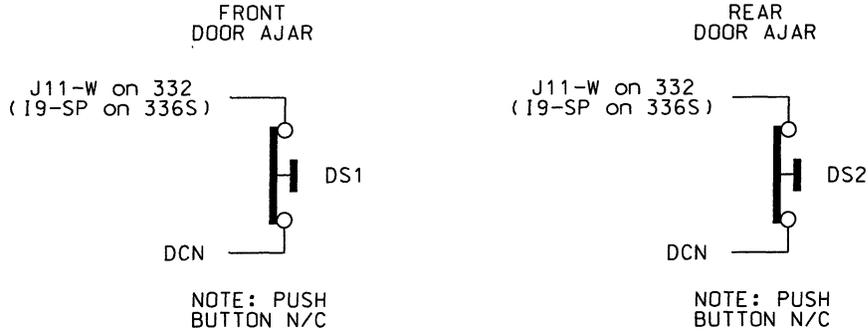
Provide a 120 VAC signal surge suppressor for each AC+ interconnect signal input. Ensure the device meets the following specifications:

Peak Surge Current (Single pulse, 8x20µs).....20,000A
Maximum Clamp Voltage.....350VAC
Response Time.....< 200 nanoseconds
Discharge Voltage.....<200 Volts @ 1,000A
Insulation Resistance.....≥100 MΩ

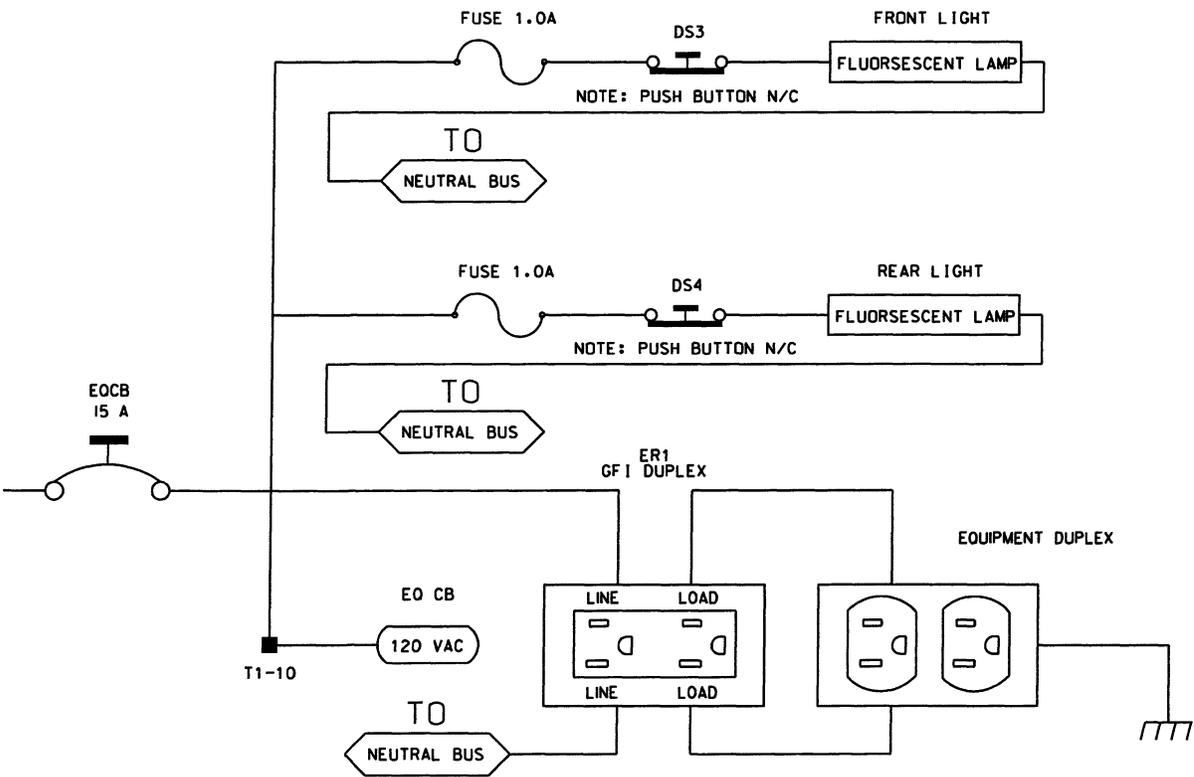
Provide conductors for surge protection wiring that are of sufficient size (ampacity) to withstand maximum overcurrents which could occur before protective device thresholds are attained and current flow is interrupted.

If additional surge protected power outlets are needed to accommodate fiber transceivers, modems, etc., install a UL listed, industrial, heavy-duty type power outlet strip with a minimum rating of 15 A / 125 VAC, 60 Hz. Provide a strip that has a minimum of 3 grounded outlets. Ensure the power outlet strip plugs into one of the controller unit receptacles located on the rear of the PDA. Ensure power outlet strip is mounted securely; provide strain relief if necessary.

Provide a door switch in the front and a door switch in the rear of the cabinet that will provide the controller unit with a Door Ajar alarm when either the front or the rear door is open. Ensure the door switches apply DC ground to the Input File when either the front door or the rear door is open.



Furnish a fluorescent fixture in the rear across the top of the cabinet and another fluorescent fixture in the front across the top of the cabinet at a minimum. Ensure that the fixtures provide sufficient light to illuminate all terminals, labels, switches, and devices in the cabinet. Conveniently locate the fixtures so as not to interfere with a technician's ability to perform work on any devices or terminals in the cabinet. Provide a protective diffuser to cover exposed bulbs. Install 16 watt T-4 lamps in the fluorescent fixtures. Provide a door switch to provide power to each fixture when the respective door is open. Wire the fluorescent fixtures to the 15 amp ECB (equipment circuit breaker).



Furnish a police panel with a police panel door. For model 336S cabinets, mount the police panel on the rear door. Ensure that the police panel door permits access to the police panel when the main door is closed. Ensure that no rainwater can enter the cabinet even with the police panel door open. Provide a police panel door hinged on the right side as viewed from the front. Provide a police panel

door lock that is keyed to a standard police/fire call box key. In addition to the requirements of LA Specification No. 54-053-08, provide the police panel with a toggle switch connected to switch the intersection operation between normal stop-and-go operation (AUTO) and manual operation (MANUAL). Ensure that manual control can be implemented using inputs and software such that the controller provides full programmed clearance times for the yellow clearance and red clearance for each phase while under manual control.

Provide a 1/4-inch locking phone jack in the police panel for a hand control to manually control the intersection. Provide sufficient room in the police panel for storage of a hand control and cord.

Ensure the 336S cabinet Input File is wired as follows:

336S Cabinet Port-Bit/C-1 Pin Assignment														
Slot #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
C-1 (Spares)	59	60	61	62	63	64	65	66	75	76	77	78	79	80
Port C-1	3-2 56	1-1 39	3-4 58	1-3 41	3-1 55	1-2 40	3-3 57	1-4 42	2-5 51	5-5 71	5-6 72	5-1 67	5-2 68	6-7 81
Port C-1	2-1 47	1-5 43	2-3 49	1-7 45	2-2 48	1-6 44	2-4 50	1-8 46	2-6 52	5-7 73	5-8 74	5-3 69	5-4 70	6-8 82

For model 332 base mounted cabinets, ensure terminals J14-E and J14-K are wired together on the rear of the Input File. Connect TB9-12 (J14 Common) on the Input Panel to T1-2 (AC-) on the rear of the PDA.

Provide detector test switches mounted at the top of the cabinet rack or other convenient location which may be used to place a call on each of eight phases based on the chart below. Provide three positions for each switch: On (place call), Off (normal detector operation), and Momentary On (place momentary call and return to normal detector operation after switch is released). Ensure that the switches are located such that the technician can read the controller display and observe the intersection.

Connect detector test switches for cabinets as follows:

336S Cabinet		332 Cabinet	
Detector Call Switches	Terminals	Detector Call Switches	Terminals
Phase 1	I1-F	Phase 1	I1-W
Phase 2	I2-F	Phase 2	I4-W
Phase 3	I3-F	Phase 3	I5-W
Phase 4	I4-F	Phase 4	I8-W
Phase 5	I5-F	Phase 5	J1-W
Phase 6	I6-F	Phase 6	J4-W
Phase 7	I7-F	Phase 7	J5-W
Phase 8	I8-F	Phase 8	J8-W

Provide the PCB 28/56 connector for the conflict monitor unit (CMU) with 28 independent contacts per side, dual-sided with 0.156 inch contact centers. Provide the PCB 28/56 connector

contacts with solder eyelet terminations. Ensure all connections to the PCB 28/56 connector are soldered to the solder eyelet terminations.

Ensure that all cabinets have the CMU connector wired according to the 332 cabinet connector pin assignments (include all wires for auxiliary output file connection). Wire pins 13, 16, R, and U of the CMU connector to a separate 4 pin plug, P1, as shown below. Provide a second plug, P2, which will mate with P1 and is wired to the auxiliary output file as shown below. Provide an additional plug, P3, which will mate with P1 and is wired to the pedestrian yellow circuits as shown below. When no auxiliary output file is installed in the cabinet, provide wires for the green and yellow inputs for channels 11, 12, 17, and 18, the red inputs for channels 17 and 18, and the wires for the P2 plug. Terminate the two-foot wires with ring type lugs, insulated, and bundled for optional use.

	P1		P2		P3	
PIN	FUNCTION	CONN TO	FUNCTION	CONN TO	FUNCTION	CONN TO
1	CH-9G	CMU-13	OLA-GRN	A123	2P-YEL	114
2	CH-9Y	CMU-16	OLA-YEL	A122	4P-YEL	105
3	CH-10G	CMU-R	OLB-GRN	A126	6P-YEL	120
4	CH-10Y	CMU-U	OLB-YEL	A125	8P-YEL	111

Connect the P20 terminal assembly (red monitor board) to a connector installed on the front of the type 2018 enhanced conflict monitor through a 3-1/2 foot 20-wire ribbon cable. Ensure that the ribbon cable connector and the connector on the conflict monitor are keyed to ensure proper connection. Ensure that removal of the P20 ribbon cable will cause the conflict monitor to recognize a latching fault condition and place the cabinet into flashing operation.

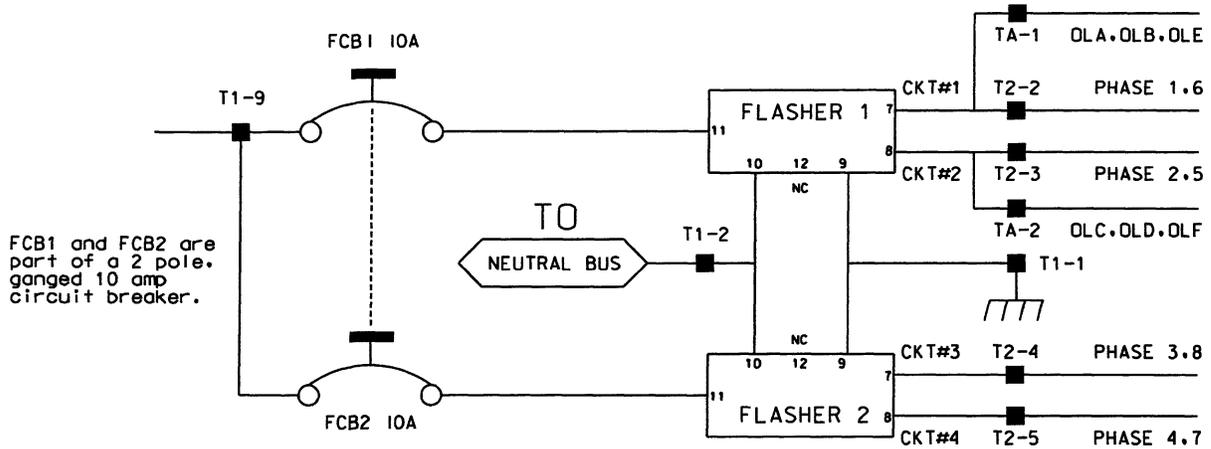
Wire the P20 connector to the traffic signal red displays to provide inputs to the conflict monitor as shown below. Ensure the pedestrian Don't Walk circuits are wired to channels 13 through 16 of the P20 connector. When no auxiliary output file is installed in the cabinet, provide wires for channels 9 through 12 reds. Terminate the two-foot wires with ring type lugs, insulated, and bundled for optional use.

Pin #	Function	Pin #	Function
1	Channel 15 Red	11	Channel 9 Red
2	Channel 16 Red	12	Channel 8 Red
3	Channel 14 Red	13	Channel 7 Red
4	GND	14	Channel 6 Red
5	Channel 13 Red	15	Channel 5 Red
6	Special Function 2	16	Channel 4 Red
7	Channel 12 Red	17	Channel 3 Red
8	Special Function 1	18	Channel 2 Red
9	Channel 10 Red	19	Channel 1 Red
10	Channel 11 Red	20	Red Enable

Ensure the controller unit outputs to the auxiliary output file are pre-wired to the C5 connector. When no auxiliary output file is installed in the cabinet, connect the C5 connector to a storage socket located on the Input Panel or on the rear of the PDA.

In addition to the requirements of LA Specification No. 54-053-08, ensure relay K1 on the Power Distribution Assembly (PDA) is a four pole relay and K2 on the PDA is a two pole relay.

Provide a two pole, ganged circuit breaker for the flash bus circuit. Ensure the flash bus circuit breaker is an inverse time circuit breaker rated for 10 amps at 120 VAC with a minimum of 10,000 RMS symmetrical amperes short circuit current rating. Do not provide the auxiliary switch feature on the flash bus circuit breaker. Ensure the ganged flash bus circuit breaker is certified by the circuit breaker manufacturer to provide gang tripping operation.



Ensure auxiliary output files are wired as follows:

AUXILIARY OUTPUT FILE TERMINAL BLOCK TA ASSIGNMENTS	
POSITION	FUNCTION
1	Flasher Unit #1, Circuit 1/FTR1 (OLA, OLB)/FTR3 (OLE)
2	Flasher Unit #1, Circuit 2/FTR2 (OLC, OLD)/FTR3 (OLF)
3	Flash Transfer Relay Coils
4	AC -
5	Power Circuit 5
6	Power Circuit 5
7	Equipment Ground Bus
8	NC

Provide four spare load resistors mounted in each cabinet. Ensure each load resistor is rated as shown in the table below. Wire one side of each load resistor to AC-. Connect the other side of each resistor to a separate terminal on a four (4) position terminal block. Mount the load resistors and terminal block either inside the back of Output File No. 1 or on the upper area of the Service Panel.

ACCEPTABLE LOAD RESISTOR VALUES	
VALUE (ohms)	WATTAGE
1.5K – 1.9 K	25W (min)
2.0K – 3.0K	10W (min)

Provide Model 200 load switches, Model 204 flashers, Model 242 DC isolators, Model 252 AC isolators, and Model 206L power supply units that conform to CALTRANS' "Transportation Electrical Equipment Specifications" dated March 12, 2009 with Erratum 1.

C. Type 170 E Cabinet Physical Requirements:

Do not mold, cast, or scribe the name "City of Los Angeles" on the outside of the cabinet door as specified in LA Specification No. 54-053-08. Do not provide a Communications Terminal Panel as specified in LA Specification No. 54-053-08. Do not provide terminal block TBB on the Service Panel. Do not provide Cabinet Verification Test Program software or associated test jigs as specified in LA Specification No. 54-053-08.

Furnish unpainted, natural, aluminum cabinet shells. Ensure that all non-aluminum hardware on the cabinet is stainless steel or a Department approved non-corrosive alternate.

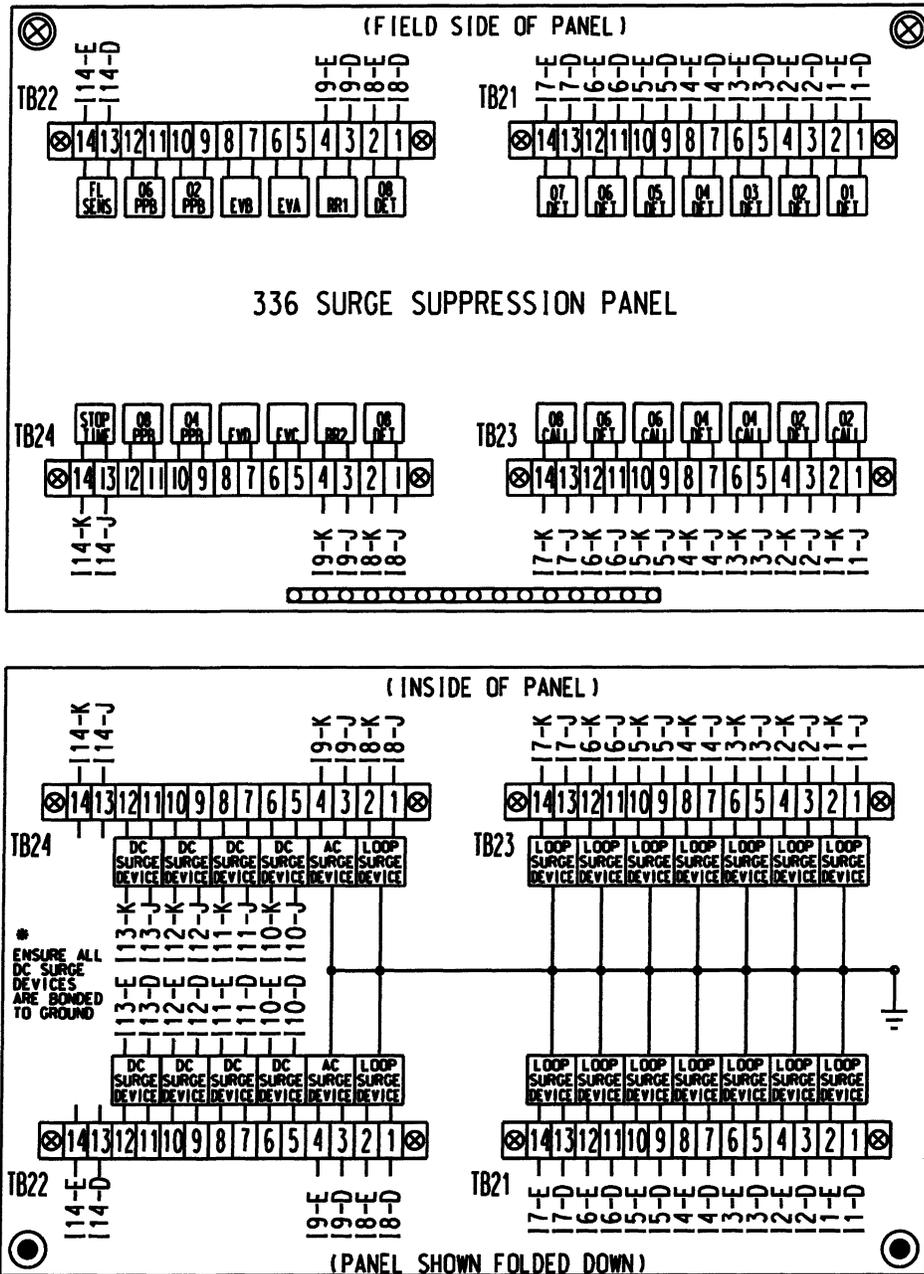
Ensure the lifting eyes, gasket channels, police panel, and all supports welded to the enclosure and doors are fabricated from 0.125 inch minimum thickness aluminum sheet and meet the same standards as the cabinet and doors.

Provide front and rear doors with latching handles that allow padlocking in the closed position. Furnish 0.75 inch minimum diameter stainless steel handles with a minimum 0.5 inch shank. Place the padlocking attachment at 4.0 inches from the handle shank center to clear the lock and key. Provide an additional 4.0 inches minimum gripping length.

Provide Corbin #2 locks on the front and rear doors. Provide one (1) Corbin #2 and one (1) police master key with each cabinet. Ensure main door locks allow removal of keys in the locked position only.

Provide a surge protection panel with 16 loop surge protection devices and designed to allow sufficient free space for wire connection/disconnection and surge protection device replacement. For model 332 cabinets, provide an additional 20 loop surge protection devices. Provide an additional two AC+ interconnect surge devices to protect one slot and eight DC surge protection devices to protect four slots. Provide no protection devices on slot I14.

For pole mounted cabinets, mount surge protection devices for the AC+ interconnect inputs, inductive loop detector inputs, and low voltage DC inputs on a swing down panel assembly fabricated from sturdy aluminum. Attach the swing down panel to the bottom rear cabinet rack assembly using thumb screws. Ensure the swing down panel allows for easy removal of the input file without removing the surge protection panel assembly or its parts. Have the surge protection devices mounted horizontally on the panel and soldered to the feed through terminals of four 14 position terminal blocks with #8 screws mounted on the other side. Ensure the top row of terminals is connected to the upper slots and the bottom row of terminals is connected to the bottom slots. Provide a 15 position copper equipment ground bus attached to the field terminal side (outside) of the swing down panel for termination of loop lead-in shield grounds. Ensure that a Number 4 AWG green wire connects the surge protection panel assembly ground bus to the main cabinet equipment ground.



For base mounted cabinets, mount surge protection panels on the left side of the cabinet as viewed from the rear. Attach each panel to the cabinet rack assembly using bolts and make it easily removable. Mount the surge protection devices in vertical rows on each panel and connect the devices to one side of 12 position, double row terminal blocks with #8 screws. For each surge protection panel, terminate all grounds from the surge protection devices on a copper equipment ground bus attached to the surge protection panel. Wire the terminals to the rear of a standard input file using spade lugs for input file protection.

Provide permanent labels that indicate the slot and the pins connected to each terminal that may be viewed from the rear cabinet door. Label and orient terminals so that each pair of inputs is next to each other. Indicate on the labeling the input file (I or J), the slot number (1-14) and the terminal pins of the input slots (either D & E for upper or J & K for lower).

Provide a minimum 14 x 16 inch pull out, hinged top shelf located immediately below controller mounting section of the cabinet. Ensure the shelf is designed to fully expose the table surface outside the controller at a height approximately even with the bottom of the controller. Ensure the shelf has a storage bin interior which is a minimum of 1 inch deep and approximately the same dimensions as the shelf. Provide an access to the storage area by lifting the hinged top of the shelf. Fabricate the shelf and slide from aluminum or stainless steel and ensure the assembly can support the 2070L controller plus 15 pounds of additional weight. Ensure shelf has a locking mechanism to secure it in the fully extended position and does not inhibit the removal of the 2070L controller or removal of cards inside the controller when fully extended. Provide a locking mechanism that is easily released when the shelf is to be returned to its non-use position directly under the controller.

D. Model 2018 Enhanced Conflict Monitor:

Furnish Model 2018 Enhanced Conflict Monitors that provide monitoring of 18 channels. Ensure each channel consists of a green, yellow, and red field signal input. Ensure that the conflict monitor meets or exceeds CALTRANS' Transportation Electrical Equipment Specifications dated March 12, 2009 with Erratum 1 (hereafter referred to as CALTRANS' 2009 TEES) for a model 210 monitor unit and other requirements stated in this specification.

Ensure the conflict monitor is provided with an 18 channel conflict programming card. Pin EE and Pin T of the conflict programming card shall be connected together. Pin 16 of the conflict programming card shall be floating. Ensure that the absence of the conflict programming card will cause the conflict monitor to trigger (enter into fault mode), and remain in the triggered state until the programming card is properly inserted and the conflict monitor is reset.

Provide a conflict monitor that incorporates LED indicators into the front panel to dynamically display the status of the monitor under normal conditions and to provide a comprehensive review of field inputs with monitor status under fault conditions. Ensure that the monitor indicates the channels that were active during a conflict condition and the channels that experienced a failure for all other per channel fault conditions detected. Ensure that these indications and the status of each channel are retained until the Conflict Monitor is reset. Furnish LED indicators for the following:

- AC Power (Green LED indicator)
- VDC Failed (Red LED indicator)
- WDT Error (Red LED indicator)
- Conflict (Red LED indicator)
- Red Fail (Red LED indicator)
- Dual Indication (Red LED indicator)
- Yellow/Clearance Failure (Red LED indicator)
- PCA/PC Ajar (Red LED indicator)
- Monitor Fail/Diagnostic Failure (Red LED indicator)
- 54 Channel Status Indicators (1 Red, 1 Yellow, and 1 Green LED indicator for each of the 18 channels)

Provide a switch to set the Red Fail fault timing. Ensure that when the switch is in the ON position the Red Fail fault timing value is set to 1350 +/- 150ms (2018 mode). Ensure that when the switch is in the OFF position the Red Fail fault timing value is set to 850 +/- 150ms (210 mode).

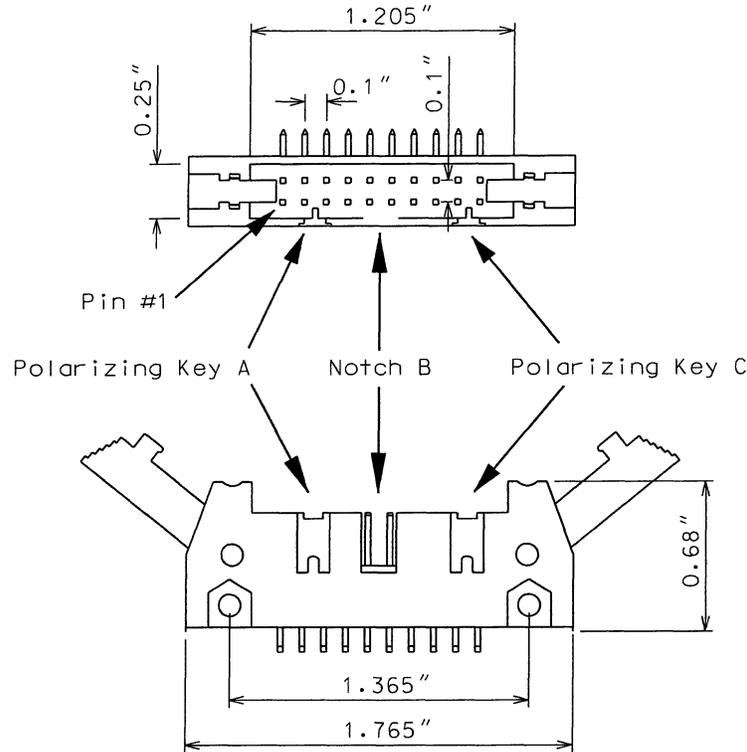
Provide a switch to set the Watchdog fault timing. Ensure that when the switch is in the ON position the Watchdog fault timing value is set to 1.0 +/- 0.1s (2018 mode). Ensure that when the switch is in the OFF position the Watchdog fault timing value is set to 1.5 +/- 0.1s (210 mode).

Provide a jumper or switch to set the AC line brown-out levels. Ensure that when the jumper is present or the switch is in the ON position the AC line dropout voltage threshold is 98 +/- 2 Vrms, the AC line restore voltage threshold is 103 +/- 2 Vrms, and the AC line brown-out timing value is set to 400 +/- 50ms (2018 mode). Ensure that when the jumper is not present or the switch is in the OFF position the AC line dropout voltage threshold is 92 +/- 2 Vrms, the AC line restore voltage threshold is 98 +/- 2 Vrms, and the AC line brown-out timing value is set to 80 +/- 17ms (210 mode).

Provide a jumper or switch that will enable and disable the Watchdog Latch function. Ensure that when the jumper is not present or the switch is in the OFF position the Watchdog Latch function is disabled. In this mode of operation, a Watchdog fault will be reset following a power loss, brownout, or power interruption. Ensure that when the jumper is present or the switch is in the ON position the Watchdog Latch function is enabled. In this mode of operation, a Watchdog fault will be retained until a Reset command is issued.

Provide a jumper that will reverse the active polarity for pin #EE (output relay common). Ensure that when the jumper is not present pin #EE (output relay common) will be considered 'Active' at a voltage greater than 70 Vrms and 'Not Active' at a voltage less than 50 Vrms (Caltrans mode). Ensure that when the jumper is present pin #EE (output relay common) will be considered 'Active' at a voltage less than 50 Vrms and 'Not Active' at a voltage greater than 70 Vrms (Failsafe mode).

In addition to the connectors required by CALTRANS' 2009 TEES, provide the conflict monitor with a red interface connector mounted on the front of the monitor. Ensure the connector is a 20 pin, right angle, male connector with latching clip locks and polarizing keys. Ensure the right angle solder tails are designed for a 0.062" thick printed circuit board. Keying of the connector shall be between pins 3 and 5, and between 17 and 19. Ensure the connector has two rows of pins with the odd numbered pins on one row and the even pins on the other row. Ensure the connector pin row spacing is 0.10" and pitch is 0.10". Ensure the mating length of the connector pins is 0.24". Ensure the pins are finished with gold plating 30μ" thick.



Ensure the red interface connector pins on the monitor have the following functions:

Pin #	Function	Pin #	Function
1	Channel 15 Red	2	Channel 16 Red
3	Channel 14 Red	4	Chassis Ground
5	Channel 13 Red	6	Special Function 2
7	Channel 12 Red	8	Special Function 1
9	Channel 10 Red	10	Channel 11 Red
11	Channel 9 Red	12	Channel 8 Red
13	Channel 7 Red	14	Channel 6 Red
15	Channel 5 Red	16	Channel 4 Red
17	Channel 3 Red	18	Channel 2 Red
19	Channel 1 Red	20	Red Enable

Ensure that the removal of the P-20 red interface ribbon cable will cause the monitor to recognize a latching fault condition and place the cabinet into flashing operation.

Provide Special Function 1 and Special Function 2 inputs to the unit which shall disable only Red Fail Monitoring when either input is sensed active. A Special Function input shall be sensed active when the input voltage exceeds 70 Vrms with a minimum duration of 550 ms. A Special Function input shall be sensed not active when the input voltage is less than 50 Vrms or the duration is less than 250 ms. A Special Function input is undefined by these specifications and may or may not be sensed active when the input voltage is between 50 Vrms and 70 Vrms or the duration is between 250 ms and 550 ms.

Ensure the conflict monitor recognizes field signal inputs for each channel that meet the following requirements:

- consider a Red input greater than 70 Vrms and with a duration of at least 500 ms as an “on” condition;
- consider a Red input less than 50 Vrms or with a duration of less than 200 ms as an “off” condition (no valid signal);
- consider a Red input between 50 Vrms and 70 Vrms or with a duration between 200 ms and 500 ms to be undefined by these specifications;
- consider a Green or Yellow input greater than 25 Vrms and with a duration of at least 500 ms as an “on” condition;
- consider a Green or Yellow input less than 15 Vrms or with a duration of less than 200 ms as an “off” condition; and
- consider a Green or Yellow input between 15 Vrms and 25 Vrms or with a duration between 200 ms and 500 ms to be undefined by these specifications.

Provide a conflict monitor that recognizes the faults specified by CALTRANS’ 2009 TEES and the following additional faults. Ensure the conflict monitor will trigger upon detection of a fault and will remain in the triggered (in fault mode) state until the unit is reset at the front panel or through the external remote reset input for the following failures:

1. **Red Monitoring or Absence of Any Indication (Red Failure):** A condition in which no “on” voltage signal is detected on any of the green, yellow, or red inputs to a given monitor channel. If a signal is not detected on at least one input (R, Y, or G) of a conflict monitor channel for a period greater than 1000 ms when used with a 170 controller and 1500 ms when used with a 2070L controller, ensure monitor will trigger and put the intersection into flash. If the absence of any indication condition lasts less than 750 ms when used with a 170 controller and 1200 ms when used with a 2070L controller, ensure conflict monitor will not trigger. Red fail monitoring shall be enabled on a per channel basis by the use of switches located on the conflict monitor. Have red monitoring occur when all of the following input conditions are in effect:
 - a) Red Enable input to monitor is active (Red Enable voltages are “on” at greater than 70 Vrms, off at less than 50 Vrms, undefined between 50 and 70 Vrms), and
 - b) Neither Special Function 1 nor Special Function 2 inputs are active.
 - c) Pin #EE (output relay common) is not active
2. **Short/Missing Yellow Indication Fault (Clearance Error):** Yellow indication following a green is missing or shorter than 2.7 seconds (with ± 0.1 -second accuracy). If a channel fails to detect an “on” signal at the Yellow input for a minimum of 2.7 seconds (± 0.1 second) following the detection of an “on” signal at a Green input for that channel, ensure that the monitor triggers and generates a clearance/short yellow error fault indication. Short/missing yellow (clearance) monitoring shall be enabled on a per channel basis by the use of switches located on the conflict monitor. This fault shall not occur when the channel is programmed for Yellow Inhibit, when the Red Enable signal is inactive or pin #EE (output relay common) is active.
3. **Dual Indications on the Same Channel:** In this condition, more than one indication (R,Y,G) is detected as “on” at the same time on the same channel. If dual indications are detected for a period greater than 500 ms, ensure that the conflict monitor triggers and displays the proper failure indication (Dual Ind fault). If this condition is detected for less

than 200 ms, ensure that the monitor does not trigger. G-Y-R dual indication monitoring shall be enabled on a per channel basis by the use of switches located on the conflict monitor. G-Y dual indication monitoring shall be enabled for all channels by use of a switch located on the conflict monitor. This fault shall not occur when the Red Enable signal is inactive or pin #EE (output relay common) is active.

4. **Configuration Settings Change:** The configuration settings are comprised of (as a minimum) the permissive diode matrix, dual indication switches, yellow disable jumpers, any option switches, any option jumpers, and the Watchdog Enable switch. Ensure the conflict monitor compares the current configuration settings with the previous stored configuration settings on power-up, on reset, and periodically during operation. If any of the configuration settings are changed, ensure that the conflict monitor triggers and causes the program card indicator to flash. Ensure that configuration change faults are only reset by depressing and holding the front panel reset button for a minimum of three seconds. Ensure the external remote reset input does not reset configuration change faults.

Ensure the conflict monitor will trigger and the AC Power indicator will flash at a rate of 2 Hz ± 20% with a 50% duty cycle when the AC Line voltage falls below the “drop-out” level. Ensure the conflict monitor will resume normal operation when the AC Line voltage returns above the “restore” level. Ensure the AC Power indicator will remain illuminated when the AC voltage returns above the “restore” level. Should an AC Line power interruption occur while the monitor is in the fault mode, then upon restoration of AC Line power, the monitor will remain in the fault mode and the correct fault and channel indicators will be displayed.

Provide a flash interval of at least 6 seconds and at most 10 seconds in duration following a power-up, an AC Line interruption, or a brownout restore. Ensure the conflict monitor will suspend all fault monitoring functions, close the Output relay contacts, and flash the AC indicator at a rate of 4 Hz ± 20% with a 50% duty cycle during this interval. Ensure the termination of the flash interval after at least 6 seconds if the Watchdog input has made 5 transitions between the True and False state and the AC Line voltage is greater than the “restore” level. If the watchdog input has not made 5 transitions between the True and False state within 10 ± 0.5 seconds, the monitor shall enter a WDT error fault condition.

Ensure the conflict monitor will monitor an intersection with a minimum of four approaches using the four-section Flashing Yellow Arrow (FYA) vehicle traffic signal as outlined by the NCHRP 3-54 research project for protected-permissive left turn signal displays. Ensure the conflict monitor will operate in the FYA mode and FYAc (Compact) mode as specified below to monitor each channel for the following fault conditions: Conflict, Red Fail, Dual Indication, and Clearance. Provide a switch to select between the FYA mode and FYAc mode. Provide a switch to select each FYA phase movement for monitoring.

FYA mode

FYA Signal Head	Phase 1	Phase 3	Phase 5	Phase 7
Red Arrow	Channel 9 Red	Channel 10 Red	Channel 11 Red	Channel 12 Red
Yellow Arrow	Channel 9 Yellow	Channel 10 Yellow	Channel 11 Yellow	Channel 12 Yellow

Flashing Yellow Arrow	Channel 9 Green	Channel 10 Green	Channel 11 Green	Channel 12 Green
Green Arrow	Channel 1 Green	Channel 3 Green	Channel 5 Green	Channel 7 Green

FYAc mode

FYA Signal Head	Phase 1	Phase 3	Phase 5	Phase 7
Red Arrow	Channel 1 Red	Channel 3 Red	Channel 5 Red	Channel 7 Red
Yellow Arrow	Channel 1 Yellow	Channel 3 Yellow	Channel 5 Yellow	Channel 7 Yellow
Flashing Yellow Arrow	Channel 1 Green	Channel 3 Green	Channel 5 Green	Channel 7 Green
Green Arrow	Channel 9 Green	Channel 9 Yellow	Channel 10 Green	Channel 10 Yellow

Ensure that the conflict monitor will log at least nine of the most recent events detected by the monitor in non-volatile EEPROM memory (or equivalent). For each event, record at a minimum the time, date, type of event, status of each field signal indication with RMS voltage, and specific channels involved with the event. Ensure the conflict monitor will log the following events: monitor reset, configuration, previous fault, and AC line. Furnish the signal sequence log that shows all channel states (Greens, Yellows, and Reds) and the Red Enable State for a minimum of 2 seconds prior to the current fault trigger point. Ensure the display resolution of the inputs for the signal sequence log is not greater than 50 ms.

Provide a RS-232C/D compliant port (DB-9 female connector) on the front panel of the conflict monitor in order to provide communications from the conflict monitor to the 170/2070L controller or to a Department-furnished laptop computer. Electrically isolate the port interface electronics from all monitor electronics, excluding Chassis Ground. Ensure that the controller can receive all event log information through a controller Asynchronous Communications Interface Adapter (Type 170E) or Async Serial Comm Module (2070L). Provide a Windows based graphic user interface software to communicate directly through the same monitor RS-232C/D compliant port to retrieve and view all event log information to a Department-furnished laptop computer. The RS-232C/D compliant port on the monitor shall allow the monitor to function as a DCE device with pin connections as follows:

Conflict Monitor RS-232C/D (DB-9 Female) Pinout		
Pin Number	Function	I/O
1	DCD	O
2	TX Data	O
3	RX Data	I
4	DTR	I
5	Ground	-
6	DSR	O
7	CTS	I
8	RTS	O
9	NC	-

MONITOR BOARD EDGE CONNECTOR

Pin #	Function (Back Side)	Pin #	Function (Component Side)
1	Channel 2 Green	A	Channel 2 Yellow
2	Channel 13 Green	B	Channel 6 Green
3	Channel 6 Yellow	C	Channel 15 Green
4	Channel 4 Green	D	Channel 4 Yellow
5	Channel 14 Green	E	Channel 8 Green
6	Channel 8 Yellow	F	Channel 16 Green
7	Channel 5 Green	H	Channel 5 Yellow
8	Channel 13 Yellow	J	Channel 1 Green
9	Channel 1 Yellow	K	Channel 15 Yellow
10	Channel 7 Green	L	Channel 7 Yellow
11	Channel 14 Yellow	M	Channel 3 Green
12	Channel 3 Yellow	N	Channel 16 Yellow
13	Channel 9 Green	P	Channel 17 Yellow
14	Channel 17 Green	R	Channel 10 Green
15	Channel 11 Yellow	S	Channel 11 Green
16	Channel 9 Yellow	T	Channel 18 Yellow
17	Channel 18 Green	U	Channel 10 Yellow
--		--	
18	Channel 12 Yellow	V	Channel 12 Green
19	Channel 17 Red	W	Channel 18 Red
20	Chassis Ground	X	Not Assigned
21	AC-	Y	DC Common
22	Watchdog Timer	Z	External Test Reset
23	+24VDC	AA	+24VDC
24	Tied to Pin 25	BB	Stop Time (Output)
25	Tied to Pin 24	CC	Not Assigned
26	Not Assigned	DD	Not Assigned
27	Relay Output, Side #3, N.O.	EE	Relay Output, Side #2, Common
28	Relay Output, Side #1, N.C.	FF	AC+

-- Slotted for keying between Pins 17/U and 18/V

CONFLICT PROGRAM CARD PIN ASSIGNMENTS

Pin #	Function (Back Side)	Pin #	Function (Component Side)
1	Channel 2 Green	A	Channel 1 Green
2	Channel 3 Green	B	Channel 2 Green
3	Channel 4 Green	C	Channel 3 Green
4	Channel 5 Green	D	Channel 4 Green
5	Channel 6 Green	E	Channel 5 Green
6	Channel 7 Green	F	Channel 6 Green
7	Channel 8 Green	H	Channel 7 Green
8	Channel 9 Green	J	Channel 8 Green
9	Channel 10 Green	K	Channel 9 Green
10	Channel 11 Green	L	Channel 10 Green
11	Channel 12 Green	M	Channel 11 Green
12	Channel 13 Green	N	Channel 12 Green
13	Channel 14 Green	P	Channel 13 Green
14	Channel 15 Green	R	Channel 14 Green
15	Channel 16 Green	S	Channel 15 Green
16	N/C	T	PC AJAR
17	Channel 1 Yellow	U	Channel 9 Yellow
18	Channel 2 Yellow	V	Channel 10 Yellow
19	Channel 3 Yellow	W	Channel 11 Yellow
20	Channel 4 Yellow	X	Channel 12 Yellow
21	Channel 5 Yellow	Y	Channel 13 Yellow
22	Channel 6 Yellow	Z	Channel 14 Yellow
23	Channel 7 Yellow	AA	Channel 15 Yellow
24	Channel 8 Yellow	BB	Channel 16 Yellow
--		--	
25	Channel 17 Green	CC	Channel 17 Yellow
26	Channel 18 Green	DD	Channel 18 Yellow
27	Channel 16 Green	EE	PC AJAR (Program Card)
28	Yellow Inhibit Common	FF	Channel 17 Green

-- Slotted for keying between Pins 24/BB and 25/CC

4.2 MATERIALS

A. General

Conform to these Project Special Provisions and the 2012 Standard Specifications for Roads and Structures (also referred to herein as the “Standard Specifications”). The current edition of these specifications and publications in effect on the date of advertisement shall apply.

Conform to the requirements of the pay items included in these Project Special Provisions. All other pay items for items not described in these Project Special Provisions are included in the Standard Specifications and must be conformed to as described in those specifications unless modified herein.

Unless otherwise stated, furnish new equipment, materials, and hardware that meet the requirements of these Project Special Provisions. Permanently inscribe the manufacturer’s name, model number, serial number, and any additional information needed for proper identification on each piece of equipment housed in a case or housing. Ensure all materials are compatible with the existing equipment as specified in these Project Special Provisions.

B. Qualified Products List

The Department has a Qualified Products List (QPL) available for the contractor’s use. The QPL web site is:

<http://www.ncdot.org/doh/preconstruct/traffic/ITSS/SMS/qpl/>

C. Submittal Requirements

Before beginning installation of any component, submit manufacturer’s specifications, catalog cut sheets, system block diagrams, and / or wiring diagrams (as applicable) for each proposed piece of equipment. The Engineer will return submittals with comments to the Contractor within forty (40) days. Once materials have been approved, the Contractor may begin installation. Provide three (3) copies of each submittal for review.

D. Warranties

Ensure all equipment and workmanship supplied is fully warranted. Unless otherwise required herein, provide manufacturer’s warranties on all Contractor-furnished equipment for material and workmanship that are customarily issued by the equipment manufacturer and that are at least one (1) year in length from the completion of the 30-day Observation Period. Include unconditional coverage for all parts and labor necessary or incidental to the repair of defective equipment or workmanship and malfunctions that arise during the warranty period. Ensure that all Contractor-furnished equipment, including hardware, firmware, software, middle-ware, internal components, and subroutines which perform any date or time data recognition function, calculation, or sequencing will support a four-digit year format for a period of at least 50 years.

Upon successful completion of the 30-day Observation Period, transfer manufacturer’s warranties with proper validation by the manufacturer to the Department or its designated maintaining agency.

E. Firmware Licensing and Upgrades

Provide the Department with an unlimited license to duplicate all central programs and remote site programs to facilitate the addition of future sites throughout North Carolina. Provide three (3) copies of all software packages on CD-ROM.

Ensure software and firmware performance upgrades that occur during the warranty period are available to the Department at no additional cost.

F. Documentation

Except for standard bound manuals, bind all 8.5 x 11-inch documentation, including 11 x 17-inch drawings folded to 8.5 x 11 inch, in logical groupings in loose-leaf binders. Use either the 3-ring or plastic slide-ring type binders. Permanently label each such bound grouping of documentation.

For documentation that exceeds 8.5 x 11 inch, furnish good quality, highly legible, reproducible drawings; however, the use of 11 x 17 inch drawings folded and bound into manuals will be acceptable.

Provide three (3) Operators' Manuals containing detailed operating instructions for all contractor-furnished equipment. Ensure manuals contain instructions for possible modification of equipment within the capability of equipment. Ensure personnel who have a clear understanding of system operation, system components, maintenance, troubleshooting, and expansion write the manuals.

Provide three (3) Maintenance Procedure manuals containing detailed preventive and corrective maintenance procedures for each type or model of equipment. Provide detailed wiring diagrams that include interconnection of equipment with pin-out configurations, pin functions, and cable parts numbers. Provide three (3) copies of the system connection diagrams showing system interconnection cables and associated terminations.

Provide detailed reproducible wiring diagrams that include interconnection of equipment with pin-out configurations, pin functions, and cable part numbers.

Provide wiring diagrams for each location in which new equipment is installed or wiring /cabling configurations are modified.

Provide real world coordinates for all field devices (including but not limited to CCTV cameras, Sign Structures, stand-alone repeater sites, junction boxes) installed and / or modified under this project. Provide the coordinates in feet units using the North Carolina State Plane coordinate system (1983 North American Datum also known as NAD '83). Furnish coordinates that do not deviate more than 1.7 feet in the horizontal plane and 3.3 feet in the vertical plane. Global positioning system (GPS) equipment able to obtain the coordinate data within these tolerances may be used. For equipment cabinets, obtain and provide the location of the cabinet.

Provide both a digital and hard copy of all information regarding the location (including but not limited to manufacturer, model number, and NCDOT inventory number) in the Microsoft spreadsheet provided by the Department, shown by example below.

Inv. #	Name	Location	Lat.	Long.	Manufacturer	Model #	Comm Media	Destination
07-1234	CCTV 1	I-40 MM 128	-78.8123	35.8625	Pelco	Spectra III	Wireless	TRTMC
07-4321	CCTV 2	I-40 MM 132	-78.8523	35.8523	Pelco	Spectra III	Wireless	TRTMC
07-9876	CCTV 3	I-40 MM 135	-77.925	35.2456	Pelco	Spectra III	Wireless	TRTMC

4.3 CONSTRUCTION METHODS

A. General

Unless otherwise stated in these Project Special Provisions, perform work that meets the requirements of the Standard Specifications and these Project Special Provisions. In the event of a conflict between these Project Special Provisions and the Standard Specifications, these Project Special Provisions shall govern.

Immediately cease work and notify the Engineer and the affected owners if damage to existing utilities, cables, or equipment occurs. Make all required repairs and replacements at no additional cost to the Department.

B. Regulations and Codes

Furnish material and workmanship conforming to the National Electric Code (NEC), the National Electric Safety Code (NESC), Underwriter’s Laboratories (UL) or other listing agencies approved by the North Carolina Department of Insurance and all local safety codes in effect on the date of advertisement. Comply with Article 4, Chapter 87 of the North Carolina General Statutes (Licensing of Electrical Contractors). Comply with the Plans, all previously referenced specifications, and all applicable local ordinances and regulations before and during all stages of electrical work.

When required by the local ordinances and governmental agencies, upon completion of the work, have all systems inspected and approved in writing by the authorized governmental electrical inspector for the area. Furnish written certification of the authorized inspector’s approval to the Engineer. Inspection by the authorized governmental electrical inspector must neither eliminate nor take the place of inspections by the Engineer. Upon the Engineer’s receipt of written certification and the Contractor’s written request for a final inspection of the installations, the Engineer will perform a final inspection.

4.4 CCTV FIELD EQUIPMENT

Furnish and install CCTV field equipment described in this Section. Furnish equipment that is compatible, interoperable, and completely interchangeable with any existing equipment currently in use by NCDOT.

A. General

Furnish and install, at the locations approved by the Engineer, new CCTV camera assemblies. Each assembly consists of the following:

- One dome style CCTV camera that contains in a single enclosed unit with the following functionality and accessories:
- CCTV color digital signal processing camera unit with zoom lens, filter, control circuit, and accessories
- Motorized pan, tilt, and zoom
- Pole-mount camera attachment assembly
 - All necessary cable, connectors and incidental hardware to make a complete and operable system
- CCTV video / PTZ transmission equipment to be installed in existing signal cabinets.
- Furnish a lightning arrestor and install in-line between the CCTV camera and the equipment cabinet components.
- Furnish a NEMA Type 3, IP 66 enclosure constructed of aluminum with a clear acrylic dome or approved equivalent Camera Unit housing.

B. Camera and Lens**1. Cameras**

Furnish new charged-coupled device (CCD) color cameras. Furnish cameras with automatic gain control (AGC) for clear images in varying light levels. Ensure the camera meets the following minimum requirements:

- Video Signal Format: NTSC composite color video output, 1-volt peak to peak
- Automatic Gain Control (AGC): 0-20 dB, peak-average adjustable
- Automatic Focus: Automatic with manual override
- WhiteBalance: Automatic through the lens with manual override
- Electronic-Shutter: dip-switch selectable electronic shutter with speed range from 1/60 of a second (off) to 1/30,000th of a second
- Overexposure Protection: Ensure the camera has built-in circuitry or a protection device to prevent any damage to the camera when pointed at strong light sources, including the sun
- Sensitivity: 1.5 lux at 90% scene reflectance
- Signal to Noise Ratio: Greater than 48 dB
- Video Output Connection: 1-volt peak to peak, 75 ohms terminated, BNC connector
- Power: 24 VAC or less

2. Zoom Lens

Furnish each camera with a motorized zoom lens that is integrated into the dome system or approved equivalent with automatic iris control with manual override and neutral density spot filter. Furnish lenses that meet the following optical specifications:

- Focal Length: 0.16" – 3.45", 35X optical zoom, 12X electronic zoom
- Preset Positioning: 64 Presets

Ensure the lens is capable of both automatic and remote manual control iris and focus override operation. Ensure the lens is equipped for remote control of zoom and focus, including automatic movement to any of the preset zoom and focus positions. Mechanical or electrical means must be provided to protect the motors from overrunning in extreme positions. Ensure the operating voltage of the lens is compatible with the outputs of the camera control.

C. Camera Housing

Furnish new dome style enclosure for the CCTV assemblies. Equip each housing with mounting assembly for attachment to the CCTV camera poles. Equip enclosures with a sunshield and that are fabricated from corrosion resistant aluminum and finished in a neutral color of weather resistant enamel. Ensure the enclosure meets or exceeds NEMA 4X ratings. The viewing area of the enclosure must be tempered glass.

D. Pan and Tilt Unit

Ensure each new dome style assembly is equipped with a pan and tilt unit. Ensure the pan and tilt unit is integrated into the dome system. The pan and tilt unit must be rated for outdoor operation, provide dynamic braking for instantaneous stopping, prevent drift, and have minimum backlash. Ensure the pan and tilt units meet or exceed the following specifications:

- Pan: continuous 360 Degrees
- Tilt: up/down 180 degrees minimum
- Input Voltage: 24 VAC 50/60Hz
- Motors: Two-phase induction type, continuous duty, instantaneous reversing
- Preset Positioning: 64 PTZ presets per camera

E. Control Receiver/Driver

Ensure each new camera unit contains a control receiver/driver that is integral to the CCTV dome assembly. The control receiver/driver must receive serial asynchronous data initiated from a camera control unit, decode the command data, perform error checking, and drive the pan/tilt unit, camera controls, and motorized lens. As a minimum, ensure the control receiver/drivers provide the following functions:

- Zoom in/out
- Automatic focus with manual override
- Tilt up/down
- Automatic iris with manual override
- Pan right/left
- Minimum 64 preset positions for pan, tilt, and zoom

In addition, each control receiver/driver must accept status information from pan/tilt unit and motorized lens for preset positioning of those components. The control receiver/driver must relay pan, tilt, zoom, and focus positions from the field to remote camera control units. The control receiver/driver must accept “goto” preset commands from the camera control unit, decode the command data, perform error checking, and drive the pan/tilt and motorized zoom lens to the correct

preset position. The preset commands from the camera control unit will consist of unique values for the desired pan, tilt, zoom, and focus positions.

F. CCTV Camera Attachment to Pole

At the location shown in the plans where a new CCTV camera is to be installed on a new metal pole, furnish an attachment assembly for the CCTV camera unit that is suitable for the particular installation method required. Use stainless steel banding straps approved by the Engineer. Submit shop drawings for review and approval by the Engineer prior to installation.

Furnish CCTV attachments that allow for the removal and replacement of the CCTV enclosure as well as providing a weatherproof, weather tight, seal that does not allow moisture to enter the enclosure.

Ensure the CCTV Camera Attachment Assembly is able to withstand wind loading at the maximum wind speed and gust factor called for in the interim revision of the 2002 *ASHTO Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals* and can support a minimum camera unit dead load of 45 pounds.

G. Surge Suppression and Cable

Furnish equipment at the top of the pole is protected by grounded metal oxide varistors connecting each power and control conductor to ground.

Ensure each coaxial cable for each camera is protected by a surge protector equivalent to a Vicon V15LP, at each end of the cable.

Furnish a composite cable that provides power connections, control wiring and video feed between the CCTV camera assembly and the camera controller. Ensure the completed cable assembly is suitable for installation in both a wet location and is UV protected for exposure to sunlight. Ensure the individual conductor pairs are shielded to prevent crosstalk and that the cable complies with EIA requirements as detailed in the EIA-232/422/485 standards.

4.5 CONSTRUCTION METHODS

A. General

CCTV camera shall be installed on metal strain pole utilized for traffic signal installation, as indicated on plan. Mount the CCTV camera unit at a height of 45 feet above ground level measured from the base of the pole.

Mount the CCTV camera unit such that a minimum 5 feet of clearance is maintained between the camera and the top of the pole or as indicated on the plans.

Mount CCTV camera on side of pole or mast arm near the intended field of view and avoid occluding the view with the pole. Obtain approval of camera orientation from the Engineer.

Mount CCTV video / PTZ transmission equipment in the existing signal cabinet.

Integrate CCTV camera unit with the video / PTZ transmission equipment, composite cabling, surge protections devices, signal cabinet, and signal cabinet power supply. Ensure that all connections are tight, water proof, and fully secure.

B. Electrical and Mechanical Requirements

Ground all equipment as called for in the Standard Specifications, these Special Provisions, and Electrical Service Grounding Detail. Install surge protectors on all ungrounded conductors entering the CCTV enclosure. House the protectors in a small, ventilated weatherproof cabinet attached near the CCTV attachment point in a manner approved by the Engineer. The air terminal ground wire must not pass through this cabinet.

4.6 MEASUREMENT AND PAYMENT

Actual number of "CCTV Assemblies" furnished, installed, integrated, and accepted. No separate measurement will be made for cabling, connectors, CCTV camera attachment assemblies, conduit, condulets, grounding equipment, air terminals, surge protectors, or any other equipment or labor required to install the CCTV assembly and integrate it with the communications equipment.

No payment will be made for 1 inch riser with weather head or conduits that runs from the signal cabinet to the CCTV camera as this will be considered incidental to furnishing and installing CCTV assemblies.

Payment will be made under:

CCTV Assembly..... Each

5. VIDEO ENCODERS

5.1 DESCRIPTION

Furnish and install Video Encoder Transmitters that encodes video for transmission over the DSL connection and decodes control data as described below in accordance with the Plans and these Project Special Provisions.

Interface the above referenced equipment with all necessary cabling required to provide a complete and fully operational system.

5.2 MATERIAL

A. Video Encoders

Furnish a 1 Channel, Video Encoder Transmitter at the CCTV camera cabinet location. Use standard coax cable with BNC (gold-plated center pin) connectors to interface the CCTV camera controller with the Video Encoder. Connect the PTZ control wires from the camera controller to the Video Encoder in accordance with manufacturer's recommended instructions.

Furnish Video Encoders that meet the following minimum requirements:

NETWORK PROTOCOLS

- Internet Configurations RTP, RTCP, UDP, TCP, HTTP, SNMP, IGMP, ICMP, ARP
- Video Compression MPEG-4, M-JPEG
- Video Frame Rate Up to 30 images/second

INTERFACES

- Video I/O 1 Channel, BNC, PAL/NTSC, 75 ohms, 1 Vp-p
- LAN Interface Ethernet 10/100BaseT autosensing, RJ-45
- LAN Data Rate 9.6Kbps to 1.5 Mbps
- Data Interface 1 RS-232/RS-422/RS-485, bi-directional

VIDEO

- Video Standard PAL, NTSC
- Video Image Size PAL
 - 352 x 288 pixels
 - 704 x 288 pixels
 - 704 x 576 pixelsNTSC
 - 352 x 240 pixels
 - 704 x 240 pixels
 - 704 x 480 pixels

OTHER

- Plug Type Power Adapter @ 12-24VDC
- Operating Temperature (32° F to 122° F)
- Operating Humidity (80% Relative humidity, non-condensing)

CERTIFICATIONS

- CE, Class B
- FCC, Class B

5.3 CONSTRUCTION METHODS**A. Video Encoder Transmitter – CCTV Field Cabinet**

Furnish and install a Video Encoder Transmitter in the CCTV Camera Cabinet. Provide all cables and connect the video encoder transmitter to the camera control unit and the phone service/modem. Use standard cables with factory assembled connectors. Install according to manufacturer's recommended instructions. Provide surge protection and power strips as necessary to protect equipment.

5.4 MEASUREMENT AND PAYMENT

Video Encoder Transmitter will be measured and paid as the actual number of Video Encoder Transmitter furnished, installed and accepted.

No measurement will be made for coaxial cables, connecting cables, electrical cables, surge protection devices, mounting hardware, nuts, bolts, brackets, and for integration of these devices to form a complete and fully operation system, as these items will be considered incidentals to furnishing and installing these devices.

Payment will be made under:

Video Encoder Transmitter Each

6. SYSTEMS OPERATIONAL TEST AND OBSERVATION PERIOD

6.1 DESCRIPTION

Once all hardware has been installed and the system integration is complete, perform a System Operational Test, which fully exercises all functions of the system including the CCTV Cameras and Closed Loop Systems. Submit a test plan a minimum of fifteen (15) days prior to the scheduled start of the test. The Engineer who, within fifteen (15) days of receipt, will either approve or indicate changes those are required for approval of the test plan.

6.2 TEST PROCEDURES

Repair or replace any components or modules, which fail the System Operational Test.

Submit, as a minimum, the System Operational Test with all necessary documentation and tests to satisfy the following:

A. CCTV Field Tests

Demonstrate the each CCTV camera installed can be controlled locally at the camera site. The test should exercise all camera functionality as noted below:

- Pan 360 degrees left and right
- Tilt 180 degrees up and down
- Zoom In / Zoom Out
- Focus near / Focus far
- Auto-focus
- Iris open / Iris close
- Auto-iris
- Record and run presets

The Contractor should supply a Laptop or PDA loaded with the appropriate CCTV control software and a portable color monitor for use during this test. The laptop or PDA is not an item to be provided to the Engineer. It is only to be supplied for the purpose of the test.

In addition, the field test will include inspection of the cabinets, electrical service, grounding system, wire & cabling, and all other components installed at the CCTV site.

B. Closed Loop Wireless Equipment Field Test

Demonstrate that all wireless equipment has been installed properly and operates as specified in these Project Special Provisions. Demonstrate from the master controller that all local intersections are being polled successfully. A 98% success rate with a minimum of 1000 uninterrupted polls will be considered acceptable.

Perform wireless system tests from the Master Cabinet location to each local controller. Record and save the signal strength data and upload/download results. Follow manufacturer's recommendations for conducting these tests. Demonstrate that each local controller's database can be uploaded and downloaded from the master controller. This data will be saved to a Division Technician's laptop computer.

The project **will not** be accepted until the final wireless tests described above have been performed.

C. Software / Central System Test

Demonstrate video management software has been modified to accommodate the new CCTV cameras installed under this project. Demonstrate all PTZ control functions (described in Section A above) using the video management software. Demonstrate PTZ control functions and preset functions for each CCTV camera site installed under this project.

Assist the Engineer in demonstrating that the Closed Loop Software has been modified and updated correctly by connecting to the Closed Loop Systems and observing the oval systems operations, and by polling and uploading of local controller databases.

Demonstrate that each component of the completed system can be activated and viewed from the Division 6 workstation computer and that these devices can be operated, viewed and controlled.

D. Halt of Systems Operational Test

In the event that any component of the system malfunctions or operates below the level specified the Systems Operational Test must be halted. The Contractor will determine and correct the problems, including repair or replacement of equipment, at no cost to the Department. Upon correction of the problems to the satisfaction of the Engineer, testing will resume.

E. 30-Day Observation Period

Upon completion of all project work, the successful completion of the System Operational Test and the correction of all known deficiencies, including minor installation items, a 30-day Observation Period will commence. This Observation Period will consist of a 30-day period of normal operation without any failures. The 30-day Observation Period will be warranted by the payment and performance bond. The purpose of this period is to ensure that all components of the system function in accordance with these Project Special Provisions over an extended length of time.

Respond to system or component failures (or reported failures) that occur during the 30-day Observation Period within 48 hours. Correct said failures within 72 hours. Failures that can not be corrected within 72 hours will suspend the timing of the 30-day Observation Period beginning at the time when the failure occurred. After the cause of such failures has been corrected, timing of the 30-day Observation Period will resume. Failures that necessitate a redesign of any major component will terminate the Observation Period. Once the components have been redesigned or replaced, the 30-Day Observation Period will be restarted from zero. Failures in any of the components exceeding a total of three (3) occurrences will terminate the 30-day Observation Period. Once the failures have been corrected, the 30-day Observation Period will be restarted from zero.

All documentation must be completed prior to the end of the 30-day Observation Period. The 30-day Observation Period will not be considered part of the contract time. Final acceptance will occur upon the successful completion of the 30-day Observation Period and after all documentation requirements have been fully satisfied.

6.3 MEASUREMENT AND PAYMENT

No separate payments will be made for Systems Operational Tests or Observation Period as these will be considered incidental to work covered elsewhere.

7. CENTRAL SOFTWARE MODIFICATIONS

7.1 DESCRIPTION

New DSL shall be provided and installed by NCDOT Division forces at the NC 24 and NC 210 intersection [SIN 06-0065]. Contractor shall integrate DSL connection and CCTV Camera Assembly with Division system software.

7.2 CONSTRUCTION METHODS

A. General

Integrate the CCTV Camera Assembly and DSL connection with Division system software. Ensure that all new hardware and software is compatible with existing Division equipment and software.

7.3 MEASUREMENT AND PAYMENT

Payment will be made under “Central Software Modifications” and will include all work associated with integrating/adding the new CCTV Camera and DSL connection to the existing Division system software. Payment will be “Lump Sum”.

No payment will be made for any hardware or work associated with installing coaxial cables, connecting cables, electrical cables, surge protection devices, mounting hardware, nuts, bolts, brackets, and for integration of these devices to form a complete and fully operation system.

Payment will be made under:

Central Software Modifications..... Lump Sum

8. WIRELESS REPEATER STANDALONE RADIO SYSTEM

8.1 GENERAL

Furnish an operational 900MHz wireless repeater radio system installed in a NEMA Type 3R enclosure for pole mounting. As a minimum, ensure the 900Mhz Wireless repeater radio meets all standard specifications

8.2 CABINET

Furnish the cabinet shell constructed from unpainted, natural aluminum. Ensure that all non-aluminum hardware on the cabinet is stainless steel or an approved non-corrosive alternate. Ensure that each exterior cabinet plane surface is constructed of a single sheet of aluminum and is seamless. Provide continuous welds made from the inside wherever possible. On the exterior, provide joints that are smooth and flush. Ensure that no screws, bolts, or rivets protrude to the outside of the cabinet shell.

Ensure that all components are arranged for easy access during servicing.

Provide sufficient size so the installed equipment will not occupy more than 60 percent of the total cabinet volume.

Provide a handle and three point latching mechanism designed to be disassembled using hand tools. Provide a shaft connecting the latching plate to the door handle by passing through the door within a bushing, bearing, or equivalent device. Provide a latching plate at least 1/8 inch thick and that mates securely with the lock bolt. Provide a lock bolt with a flat end (no bevel) and that has at least 1/4 inch of length in contact with the latching plate.

Ensure that the handle and lock are positioned so that the lock does not lie in the path of the rotating handle as the door is unlatched and that the handle points down in the latched position.

Provide a main door opening that encompasses the full frontal area of the cabinet shell. Ensure that the cabinet shell is sturdy and does not exhibit noticeable flexing, bending or distortion under normal conditions, except that a minor amount of flexing is permitted in the main door when the cabinet is open. In such case, the flexing must not result in permanent deformation of the door.

A police panel door is not required for this cabinet.

Provide a roof with a slope from front to back at a minimum ratio of 1 inch drop per 2 feet. Ensure the cabinet is vented at the top and in the door. Supply a cabinet door assembly with a louvered air vent and standard-sized fiberglass air filter.

Provide one equipment shelf in the cabinet that extends the practical width of the cabinet. Ensure that the shelf can be moved up and down within the cabinet. Do not locate permanently mounted equipment in such a way that will restrict access to terminals.

8.3 CABINET ELECTRICAL

Furnish a cabinet with two 15 Amp, single pole circuit breakers for power distribution. Ensure one 15 Amp auxiliary breaker provides the electrical circuit to accommodate a thermostatically controlled cabinet exhaust fan, door activated fluorescent light, and one GFCI convenience receptacle.

Ensure the second 15 Amp equipment breaker provides the electrical circuit to accommodate the electrical equipment installed in the cabinet with a minimum of two duplex receptacles.

Provide a two-stage power line surge protector between the electrical equipment receptacles and the 15 Amp equipment breaker. Ensure a maximum continuous current of at least 10A at 120V. Ensure that the device can withstand a minimum of 20 peak surge current occurrences at 20,000A for an 8x20 microsecond waveform. Provide a maximum clamp voltage of 280V at 20,000A with a nominal series inductance of 200µh. Ensure that the voltage does not exceed 280V. Provide devices that comply with the following:

Frequency (Hz)	Minimum Insertion Loss (dB)
60	0
10,000	30
50,000	55
100,000	50
500,000	50
2,000,000	60
5,000,000	40
10,000,000	20
20,000,000	25

Ensure the two-stage power line surge protector will allow connection of a radio frequency interference filter between the two stages of the device. Ensure the radio frequency interference filter minimizes interference generated in the cabinet in both the broadcast and aircraft frequencies. Ensure the filter(s) provide attenuation of at least 50 decibels over a frequency range of 200 kilohertz to 75 megahertz. Furnish a filter that is hermetically sealed in an insulated metal case. Ensure the filter is rated at least at the rated current of the main circuit breaker, 125-volts, 60Hz.

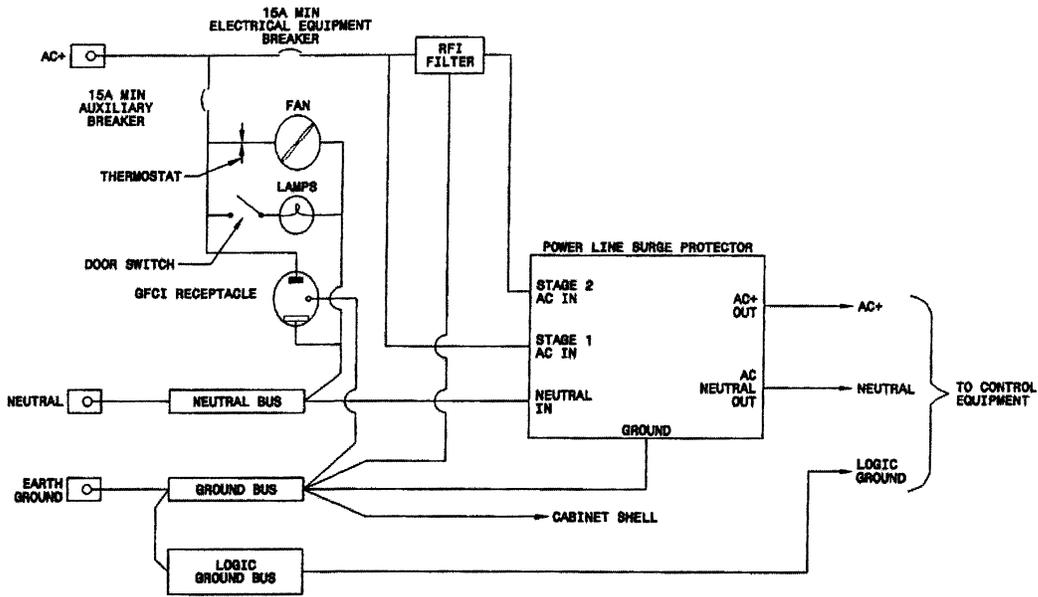
Furnish a fluorescent fixture with lamps mounted above the shelf to light the equipment area.

Fasten all wiring and harness supports to the cabinet with screws or other removable mechanical means. Do not use adhesives.

Do not locate terminals on the underside of the shelf or at other places where they are not readily visible and accessible, or where they may be a hazard to personnel. Provide a clear plastic guard for exposed 120-volt AC terminals on the power panel.

Provide a neutral that is not connected to the earth ground or the logic ground anywhere within the cabinet. Ensure that the earth ground bus and the neutral ground bus each have ten compression type terminals each of which can accommodate wires ranging from number 14 through number 4.

Furnish a cabinet wiring schematic to be placed in the cabinet. Reference the cabinet wiring schematic below for additional details:



8.4 MEASUREMENT AND PAYMENT

Actual number of 900MHz wireless repeater standalone radio systems furnished, installed and accepted.

This item includes the appropriate sized NEMA 3R cabinet, antenna(s), radio, power supplies, disconnect/snap switch, signs, decals, data interface cable/serial cable, coaxial cable, lightning arrestor, radio frequency signal jumper, coaxial cable power divider (Splitter), coaxial cable connectors, coaxial cable shield grounding system with weatherproofing, labeling and any integration, installation materials and configuration software necessary to complete this work, including the radio path Site Survey test and warranties, will be incidental.

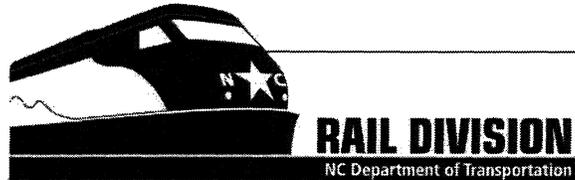
Payment will be made under:

900MHz Wireless Repeater Standalone Radio System.....Each

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL DIVISION

CUMBERLAND COUNTY, NORTH CAROLINA



PROJECT SPECIAL PROVISIONS

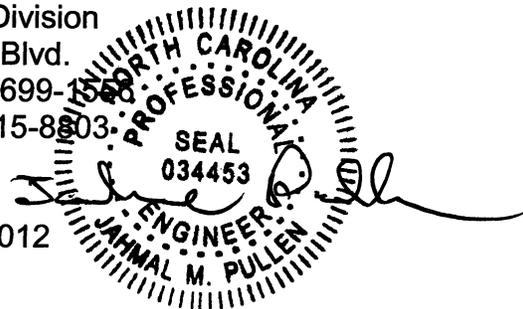
FOR

**NC DOT PROJECT U-4444AB
CAPE FEAR RAILROAD
AT GRADE CROSSING SURFACE INSTALLATIONS**

At Grade Surface Installation at:
Bragg Blvd (862 601N)
Randolph Street (930 759N)

Submitted by
NCDOT Rail Division
862 Capital Blvd.
Raleigh N. C. 27699-1560
Phone (919) 715-8803

June 20, 2012



I. General Special Provisions

The NCDOT Rail Division in conjunction with NCDOT Project U-4444AB desires to improve and widen the grade crossings along Cape Fear Railroad in Cumberland County for the following locations:

Bragg Blvd. (862 601N),

Randolph Street (930 759N)

This track is currently in service and all work will be in coordination with Cape Fear Railroad.

Bragg Blvd is an existing crossing which will be replaced with a concrete “tub” crossing as described on subsequent pages.

Randolph Street will be a new crossing surface, consisting of the same aforementioned concrete “tub” crossing.

The anticipated crossing surface work is to be completed as noted on the following pages.

The CONTRACTOR performing this work shall be able to comply with the laws and regulations of the North Carolina General Contractor’s licensing Board. CONTRACTOR is to be prequalified to perform the work presented herein.

The proposed work shall be constructed in accordance with the enclosed plans, specifications, project special provisions, the Unified Facilities Criteria (UFC_4_860_03), the American Railway Engineering and Maintenance of Way Association (AREMA) Manual for railroad engineering, and the North Carolina Department of Transportation’s “Standard Specifications for Roads and Structures”, latest editions, all hereafter known as the “Standard Specifications”.

All materials and workmanship to be furnished by the CONTRACTOR shall be in accordance with the guidelines, special provisions, and/or the Standard Specifications.

The CONTRACTOR performing this work shall have prior experience installing highway-railway “tub” style at-grade crossings in North Carolina or otherwise be able to comply with the laws and regulations of the North Carolina General Contractor’s Licensing Board.

The CONTRACTOR’s lump sum bid shall include costs associated with furnishing and installation of all materials for each crossing and provide all labor and equipment required to construct as defined on the plans and in these special provisions. Payment for furnishing of materials and labor to complete the work will only be made for the pay items shown. Costs of all other items not listed, and required to complete the project, shall be included in the costs of the various pay items shown. Cost to remove the existing Bragg Blvd crossing surface shall be included in the cost of the installation.

Quantities shown, except for lump sum pay items, are estimates and for bidding purposes only. Final payment for the work will be based on the lump sum unit costs bid.

All materials provided to the project site not meeting the specifications will be rejected and replaced by the CONTRACTOR at the CONTRACTOR’s expense. The CONTRACTOR shall guarantee materials and workmanship against latent and patent defects arising from faulty materials, faulty workmanship or

negligence for a period of twelve months following the date of final acceptance of the work for maintenance and shall replace such defective materials and workmanship without cost to the Department or Cape Fear Railroad.

Where items of equipment or material carry a manufacturer's guarantee for any period in excess of twelve months, then the manufacturer's guarantee shall apply for that particular piece of equipment or material. The Department's first remedy shall be through the manufacturer although the CONTRACTOR is responsible for invoking the warranted repair work with the manufacturer, in which case, the CONTRACTOR's responsibility shall be limited to the term of the manufacturer's guarantee. NCDOT would be afforded the same warranty period as provided by the Manufacturer.

II. Submittals

- A. Submit the following to the Engineer for approval.
1. Detailed description of construction procedures for the specific type of grade crossing to be installed.
 2. Manufacturer's brochures and other detailed descriptions of crossing materials to be furnished.
 3. Detailed shop drawings and a detailed description of the installation procedure.
 4. Detailed information of changes to the typical ballasted track construction details and/or construction methods to accommodate the crossing surfaces. Modifications may include, but are not limited to, tie spacing, tie size and length, and ballast section.
 5. Submittals should be sent to (for approval by Railroad authority):
Michael Crawford
Engineer Research and Development Center
(601) 634-3857
Mike.crawford@erdc.dren.mil

III. Products

- A. Concrete "Tub" Crossing
1. Furnish crossing surfaces of a modular full depth concrete "tub" design. Crossings shall be as manufactured by Omni Products, Inc. (TraCast), Hanson Pipe and Precast (Premier Modular Crossing), or equal as approved by the Engineer.
 2. Furnish new material (except as noted below), without modifications to the manufacturer's standard design except as approved by the Engineer.
 3. Existing rail is 115 lb/ft and may be reused at the crossing. Rail shall be welded. Use flowable fill and no new ties will be required.

IV. General Description Proposed Crossing Surface Work

The new Bragg Blvd at-grade crossing surface will consist of one (1) one hundred two and one half foot area to accommodate the travel lanes and shoulder area as shown on plans.

The CONTRACTOR will need to provide temporary asphalt during phase one to accommodate the lane widening on Bragg Blvd. The asphalt will allow for motor vehicle traffic to maintain flow over the crossing until the "tub" crossing can be installed during the fourth phase of the project. Coordination shall be made with Cape Fear Railways before this asphalt work is done.

The new Randolph Street at-grade crossing surface will consist of one (1) one hundred ninety-four foot area to accommodate the travel lanes and shoulder area as shown on plans.

Coordination will need to be made between the Contractor and NCDOT to determine the exact elevation of the crossing surface in regards to the roadway upon final layering of asphalt.

The CONTRACTOR will need to work out a schedule with Cape Fear Railroad through their track supervisor as to the availability to accommodate train traffic during the track work.

Railroad Contact: Nick Darnell
Superintendent
Cape Fear Railways
W: (910)396-7683
C: (910)409-6629
Charles.n.darnell.ctr@mail.mil

V. Safety Requirements

This work is to be conducted on or in close proximity to operating railroad tracks. The Contractor shall comply with the following Special Provisions when working on Cape Fear Railroad Property.

The Contractor shall ensure that his entire work force, including employees, agents and subcontractors comply fully with all applicable FRA RAILROAD WORKPLACE SAFETY Rules, 49 C.R.F. Part 214.

Particular attention is directed to the requirements for fall protection, protective footwear, protective head gear (hard hats) and eye and face protection equipment (safety goggles or safety eyeglasses).

VI. Interference with Railroad Traffic

General traffic patterns, including anticipated daily work windows, will be discussed at the pre-construction site meeting. The Contractor should ask any necessary questions prior to bid and then at the preconstruction meeting other details can be obtained from the railroad representative such as train data details.

No claim by the Contractor against NCDOT or Cape Fear Railroad will be allowed for hindrance or delay caused by Railway traffic; any work done by Cape Fear Railroad or other delay incident to or necessary for safe maintenance of railway traffic or for any delays due to compliance with these special provisions. Any cost incurred by the Cape Fear Railroad for repairing damaged roads, tracks or other facilities resulting from the operations of the Contractor shall be paid by the Contractor to the Railroad.

The Contractor shall assume all responsibility for any and all damages to his work, men, and equipment caused by the operations of Cape Fear Railroad.

VII. Obstructing Tracks

The track must remain in service for regular rail traffic at all times except as described during the preconstruction site meeting.

VIII. Storage of Materials and Equipment

Materials and equipment shall not be stored where they will interfere with Cape Fear Railroad operations, nor on the Railroad Right of Way without having first obtained permission from the Railroad. Such permission will be with the understanding that the Railroad will not be liable for damage to such material and equipment from any cause and that the Railroad may move, or require the Contractor to move, at the Contractor's expense, such material and equipment.

All grading or construction machinery that is left parked near the track unattended by a watchman shall be effectively immobilized so that it cannot be moved by unauthorized persons. The Contractor shall protect, defend, indemnify and save Cape Fear Railroad and any associated, controlled or affiliated corporation, harmless from and against all losses, costs, expenses, claim or liability for loss or damage to property or the loss of life or personal injury, arising out of or incident to the Contractor's failure to immobilize grading or construction machinery.

IX. Haul Across Railroad

If deemed necessary, the contractor shall be responsible for a temporary crossing regarding means of transporting materials across the railroad. The Contractor shall coordinate this temporary crossing with the Railroad, including but not limited to protection of train traffic and contractor safety. The contractor shall use materials to construct temporary crossing as instructed by the Railroad.

X. Inspection

Upon completion of the crossing the CONTRACTOR will be required, with representatives from the NCDOT's Resident Engineer's Office, Cape Fear Railroad and the Rail Division to have a final inspection. The CONTRACTOR shall give at least seven days' notice as to the date of final crossing surface inspection.

XI. Related Work

Any work not specifically mentioned in the specification, but which is necessary, both directly or indirectly, for the proper carrying out of the intent thereof, shall be required and applied by the CONTRACTOR and they shall perform all such work just as if it were particularly delineated or described.

XII. Cleanup

The CONTRACTOR shall remove from Cape Fear Railroad and NCDOT right of way all rubbish and waste resulting from construction operations. The CONTRACTOR from the meeting with Cape Fear Railroad will determine if Railroad would like to retain any existing railroad materials in the crossing construction area.

XIII. Detailed Bill of Material

Prior to furnishing and installing any equipment and materials, the CONTRACTOR must submit a detailed bill of material and cost breakdown. This shall include all required spare parts and the part number of all material proposed for use of this project.

XIV. Insurance

A. In regards to the above project the prime contractor is required to carry:

1. CONTRACTOR'S COMMERCIAL GENERAL LIABILITY INSURANCE:

The Contractor shall procure and maintain, at its expense, an original and one certified copy of the policy **to the Department** as evidence of:

- a. Statutory Worker's Compensation and Employers Liability Insurance with available limits of not less than \$1,000,000, which insurance must contain a waiver of subrogation against Fort Bragg Railroad and its Affiliates
- b. Commercial General Liability coverage (inclusive of contractual liability) with available limits of not less than \$5,000,000 in combined single limits for bodily injury and property damage and covering the contractual liabilities assumed under this Agreement
- c. Business automobile liability insurance with available limits of not less than \$1,000,000 combined single limit for bodily injury and/or property damage per occurrence

Upon request, Contractor shall provide Fort Bragg Railroad with a copy of Contractor's applicable insurance policies. A policy endorsement naming Fort Bragg Railroad and Cape Fear Railroad as **additional insured's** and specifying such coverage shall be furnished to Railroad, and the required coverage will be kept in force until all of the Contractor's obligations under this Agreement have been fully discharged and fulfilled, or until Contractor shall have been specifically released by a written instrument signed by an authorized officer of Fort Bragg Railroad

2. RAILROAD PROTECTIVE LIABILITY INSURANCE:

The Contractor shall furnish **to the Department** an original and one duplicate of the Railroad Protective Liability Insurance Policy to protect Fort Bragg Railroad in connection with

operations to be performed on or adjacent to Fort Bragg right of way. The specifications for proper evidence of insurance are as follows:

- a) The Insurer must be financially stable and rated A- or better in A. M. Best Insurance Reports.
- b) The policy must be written using the ISO/RIMA Form of Railroad Protective Insurance - Insurance Services Office (ISO) Form CG 00 35.
- c) Named Insured and Address:

U.S. Army
 Directorate of Public Works
 Real Property Accountable Officer
 2175 Reilly Road, Stop A
 Fort Bragg, NC 28310-5000

- d) **Limits of Liability: \$5,000,000 per occurrence, \$10,000,000 annual aggregate required.**
- e) Name and Address of Contractor must be shown on the Declarations page.
- f) Name and Address of the Project Sponsor must be shown on the Declarations page.

Description of operations must appear on the Declarations page and must match the project description, including project or contract identification numbers.

The Description and Designation shall read: All work performed on Railroad Right of way for NCDOT project U-4444AB, on Bragg Blvd and Randolph Street in Cumberland County, NC.

Authorized endorsements:

A. Must

- 1) **Pollution Exclusion Amendment - CG 28 31**
(Not required with CG 00 35 01 96 and newer versions)
- 2) **Delete Common Policy Conditions** – Section E. Premiums

B. Acceptable

- 1) Broad Form Nuclear Exclusion - IL 00 21
- 2) 30-day Advance Notice of Non-renewal
- 3) Required State Cancellation Endorsement
- 4) Quick Reference or Index - CL/IL 240

C. Unacceptable

- 1) Any Pollution Exclusion Endorsement except CG 28 31
- 2) Any Punitive or Exemplary Damages Exclusion
- 3) Any endorsement not named in A or B
- 4) Any type of deductible policy

You must submit the original policy, via the Department of Transportation, for our approval and filing

prior to the commencement of construction or demolition operations.

- B. Prior to entry on Fort Bragg right-of-way, the original Railroad Protective Liability Insurance Policy shall be submitted by the Prime Contractor to the Department at the address below for its review and transmittal to Fort Bragg Railroad. In addition, certificates of insurance evidencing the Prime Contractor’s Commercial General Liability Insurance shall be “issued” to Fort Bragg Railroad **and** the Department at the addresses below, and **forwarded to the Department** for its review and transmittal to Fort Bragg Railroad. No work will be permitted on Railroad’s right-of-way until it has reviewed and approved the evidence of insurance required herein.

DEPARTMENT:

Department of Transportation
 Rail Division
 C/O David Hinnant, State Railroad Agent
 1556 Mail Service Center
 Raleigh NC 27699-1556

RAILROAD:

Fort Bragg Railroad
 U.S. Army-Directorate of Public Works
 Real Property Accountable Officer
 2175 Reilly Road, Stop A
 Fort Bragg, NC 28310-5000

- C. The insurance required herein shall in no way serve to limit the liability of Department or its Contractors under the terms of this agreement.

RAILROAD SITE DATA:

The following information is provided as a convenience to the Contractor. This information is subject to change and the Contractor should contact the Railroad to verify the accuracy. Since this information is shown as a convenience to the Contractor but is subject to change, the Contractor shall have no claims whatsoever against either the Railroad or the Department of Transportation for any delays or additional costs incurred based on changes in this information.

Number of tracks	-	<u>1</u>
Number of trains per day	-	<u>1-2 per week (freight only)</u>
Maximum speed of trains	-	<u>10 mph</u>

XV. Compensation

Payment at the contract lump sum price for: “Bragg Blvd Crossing Surface Installation.”

Payment at the contract lump sum price for “Randolph Street Crossing Surface Installation.”

Payment at the above contract lump sum prices will be full compensation for all work associated with furnishing and installing complete and fully operational highway-railroad at-grade crossings.

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL DIVISION

CUMBERLAND COUNTY, NORTH CAROLINA



PROJECT SPECIAL PROVISIONS

FOR

**CAPE FEAR RAILROAD COMPANY
CROSSING SIGNAL INSTALLATIONS**

Cumberland County near Fort Bragg, NC

Signal Installations at:

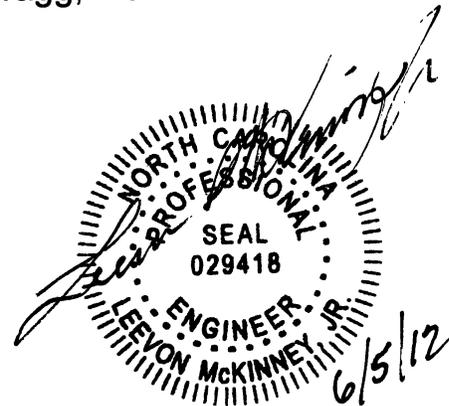
Bragg Blvd (862 601N)

Randolph Street (930 759N)

Submitted By

AECOM

NC Firm License No.: F-0342
701 Corporate Center Drive
Suite 475 Raleigh, NC 27607
Phone: 919-854-6200



June 5, 2012

I. GENERAL SPECIAL PROVISIONS:

The NCDOT RAIL DIVISION desires to upgrade and / or install highway-railroad grade crossing warning devices along the Cape Fear Railroad in Cumberland County for the following locations.

- Bragg Blvd. (862 601N),
- Randolph Street (930 759N),

This track is currently in service.

Bragg Blvd is an existing protected grade crossing which will be widened and reconfigured.

Randolph Street is an existing unprotected grade crossing which will be relocated.

The anticipated work to complete the installation of the two crossing signal systems is as noted in the following pages.

The CONTRACTOR performing this work shall be able to comply with the laws and regulations of the North Carolina General Contractor's Licensing Board. CONTRACTOR is to be prequalified to perform the work presented herein.

The proposed work shall be constructed in accordance with the enclosed plans, project special provisions, the American Railway Engineering and Maintenance of Way Association (AREMA) Signal Manual, Cape Fear Railroad Specifications, the American Railway Engineering and Maintenance-of-Way Association (AREMA) manual for railroad engineering, and the North Carolina Department of Transportation's "Standard Specifications for Roads and Structures", latest editions, all hereinafter known as the "Standard Specifications".

All materials and workmanship to be furnished by the CONTRACTOR shall be in accordance with the guidelines, special provisions, and/or the Standard Specifications.

The CONTRACTOR performing this work shall have prior experience installing highway-railway at-grade crossing signal systems in North Carolina or otherwise be able to comply with the laws and regulations of the North Carolina General Contractor's Licensing Board.

The CONTRACTOR's lump sum bid shall include costs associated with furnishing and installation of all materials for each crossing and provide all labor and equipment required to construct and activate the crossing signals for the project as defined on the plans and in these special provisions. Payment for furnishing of materials and labor to complete the work will only be made for the pay items shown. Costs of all other items not listed, and required to complete the project, shall be included in the costs of the various pay items shown. Cost to remove any existing signals, foundations, crossbucks and posts shall be included in the cost of the installation.

Quantities shown, except for lump sum pay items, are estimates and for bidding purposes only. Final payment for the work will be based on the lump sum unit costs bid.

The CONTRACTOR shall procure and install all insulated joints as shown on these Contract Drawings. The insulated joints shall meet or exceed the standards for and provide track capable of FRA Class 1 operations when completed. Insulated circuits shall be located as indicated on the plans or at the next available joint away from the crossing where the size of rail is the same on either side of the joint.

Salvage value of any items removed from the Cape Fear Railroad corridor shall be reflected in the CONTRACTOR's bid.

CONTRACTOR shall salvage existing Bragg Blvd crossing house and warning devices. CONTRACTOR shall secure and deliver this existing equipment to Cape Fear Railroad at a specified location.

All materials provided to the project site not meeting the specifications will be rejected and replaced by the CONTRACTOR at the CONTRACTOR's expense.

The CONTRACTOR shall guarantee materials and workmanship against latent and patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve months following the date of final acceptance of the work for maintenance and shall replace such defective materials and workmanship without cost to the Department or Cape Fear Railroad.

Where items of equipment or material carry a manufacturer's guarantee for any period in excess of twelve months, then the manufacturer's guarantee shall apply for that particular piece of equipment or material. The Department's first remedy shall be through the manufacturer although the CONTRACTOR is responsible for invoking the warranted repair work with the manufacturer, in which case, the CONTRACTOR's responsibility shall be limited to the term of the manufacturer's guarantee. NCDOT would be afforded the same warranty period as provided by the Manufacturer.

II. SIGNAL SPECIFICATIONS:

These specifications represent the minimum acceptable standards for the material and installation of highway crossing warning devices for the Cape Fear Railroad by CONTRACTOR. No deviation from these specifications will be permitted without notification of the intended deviation in writing to NCDOT RAIL DIVISION prior to the bid date and approval given in writing from the NCDOT RAIL DIVISION Project Manager.

References are made herein to the following specifications and drawings:

- Specification of the American Railway Engineering & Maintenance-of-Way Association, hereinafter referred to as the AREMA Signal Manual.
- Highway-Railroad Grade Crossing Rules & Regulations Governing Testing, Maintenance and Inspection (49 CFR Part 234), hereinafter referred to as the FRA Handbook.

- Manual for Uniform Traffic Control Devices, U.S. Department of Transportation, Federal Highway Administration, hereinafter referred to as the MUTCD.
- Circuit plans, hereinafter referred to as the Plans.
- Cape Fear Railroad, hereinafter referred to as Cape Fear Railroad.
- North Carolina Department of Transportation RAIL DIVISION, hereinafter referred to as RAIL DIVISION.
- The National Electric Code, National Fire Protection Association.
- American Association of State Highway and Transportation Officials Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals.

In case of discrepancies between these technical specifications and any amendments or addenda thereto, the technical specification shall take precedence and shall apply.

A. General

1. It shall be the CONTRACTOR's responsibility for a complete turnkey system including final inspection and placement of the system in operational service. The CONTRACTOR performing this work shall have prior experience installing highway-railway at-grade crossing signal systems for a class one or short line railroad. The CONTRACTOR shall provide all labor, supervision, material, tools, equipment, transportation, storage, and handling of material necessary for completion of the contract in accordance with these specifications. All material shall comply with AREMA Specifications. Approved equals may be furnished for catalog items.
2. All material shall be new and shall be guaranteed against defects in material and workmanship, damage caused by normal wear and tear excluded, for a period of one year from date of final acceptance. In the event of a manufacturer's warranty that extends beyond 1 year, such additional coverage shall be provided to NCDOT.
3. The CONTRACTOR shall be responsible for correcting any defects or malfunctions in the highway crossing protection installation resulting from poor or faulty installation, workmanship, or deviation from specified standards for a period of 180 days from the date of final acceptance.
4. The CONTRACTOR shall make such tests as may be necessary to demonstrate to the satisfaction of RAIL DIVISION and Cape Fear Railroad that the apparatus, as installed, is in accordance with the requirements of the specifications and contract. All tests shall satisfy the requirements outlined in the FRA handbook and the AREMA Signal Manual where applicable, unless otherwise directed by RAIL DIVISION and Cape Fear Railroad. The CONTRACTOR shall provide such instruments and apparatus as may be necessary for making tests. Instruments and apparatus will remain the property of the CONTRACTOR.

5. The CONTRACTOR shall be responsible for any loss or damage to equipment or material prior to date of acceptance.
6. The contract shall not be considered complete until the installation has been approved and accepted in writing by the authorized representative of RAIL DIVISION and Cape Fear Railroad. However, such acceptance does not relieve the CONTRACTOR of responsibility for guaranteeing their work and materials as detailed in paragraphs A.2 and A.3.
7. The CONTRACTOR is responsible for location and avoidance of all underground utilities.
8. The CONTRACTOR shall give the RAIL DIVISION and Cape Fear Railroad a minimum of ten working days notice prior to the date work is to begin. The CONTRACTOR shall, in the interim before work is begun, meet at the site with RAIL DIVISION and Cape Fear Railroad personnel.
9. The CONTRACTOR shall, where necessary install new insulated rail joints according to Contract Drawings.
10. The CONTRACTOR at Bragg Blvd., shall remove four sets of existing insulated rail joints.
11. The CONTRACTOR shall also replace any uninsulated rail joints, uninsulated switch rods, uninsulated gauge rods within the track circuit necessary to obtain satisfactory operation and to match existing rail with insulated joints.
12. The CONTRACTOR shall be responsible for obtaining a resistance between grounding rods and the instrument case of no greater than 10 ohms.
13. The CONTRACTOR shall obtain and pay for all licenses and/or permits that may be necessary. They shall arrange for all local inspections that may be necessary and pay all fees in connection with such inspections.
14. The CONTRACTOR shall furnish a new 240 volt, 100 amp power service, complete with pole, meter base, and all necessary attachments for each grade crossing. The Breaker Box shall be an exterior Square "D" box or approved equal with the ability to be locked with a RAIL DIVISION and Cape Fear Railroad approved lock. The service shall conform to the standards of the National Electric Code and any state and/or local codes that may apply. It shall also be the responsibility of the CONTRACTOR to provide and connect the power service to the instrument house. Responsibility for applying for service from the power company and for paying any service charges and/or deposits will be by others. The CONTRACTOR shall inform RAIL DIVISION and Cape Fear Railroad upon installation and approval of electrical services by the approving authority.
15. The CONTRACTOR shall not disturb the ballast line while working in the area. If ballast line is disturbed, the CONTRACTOR shall be responsible for returning the ballast line back to its original state.
16. The CONTRACTOR will furnish two sets of marked plans reflecting the exact location of all underground cable, track wire, conduit and any changes in the location of wayside equipment. One set to remain at the project crossing instrument shelter and one set to be located at the RAIL DIVISION office.

17. "AS IN SERVICE" plans shall be provided to the RAIL DIVISION and Cape Fear Railroad within 30 days of completion of project. Two sets of hard copies and one electronic data copy. All circuit plans shall be designed and printed on 11" x 17" paper.
18. The CONTRACTOR shall be responsible for repair of all damages caused by their work including but not limited to track damage, tie damage, roadway and crossing surface damage, damage to drainage, damage to utilities, and damage to landscape.
19. All roadway traffic control signing will be by others except CONTRACTOR is responsible for necessary crossbucks.
20. The CONTRACTOR shall adhere to requirements of the traffic safety plan for grade crossing outages.
21. The CONTRACTOR shall not interfere with the existing grade crossing warning system without prior written approval of the RAIL DIVISION and Cape Fear Railroad.

B. Instrument House Material

1. The instrument houses are as follows:
 - a. The Bragg Blvd instrument house shall be a minimum of 6' wide x 8' long with a door in the front for entry and a door for access to underground cable and rear of terminal boards. It shall be constructed of 0.100 aluminum and have adjustable foundations.

Instrument house shall be manufactured by PTMW or equivalent supplier.
 - b. The Randolph instrument house shall be a minimum of 6' wide x 8' long with a door in the front for entry and a door for access to underground cable and rear of terminal boards. It shall be constructed of 0.100 aluminum and have adjustable foundations.

Instrument house shall be manufactured by PTMW or equivalent supplier.
 - c. The instrument houses shall have sufficient structural strength without additional bracing to permit lifting by overhead crane for loading, unloading, and placement on foundation piers or pad with all equipment except fragile apparatus installed and wired. Lifting lugs or engineering approved equal shall be included to permit lifting by overhead crane.
 - d. The doors shall be hinged and have gaskets so that they will provide a dustproof and weatherproof seal. Doors shall be provided with handles, hasps, and a three-point locking device securing the doors at the top, bottom, and center. Doors shall be provided with a two-position retaining device to hold doors at 90 degrees and 180 degrees when door is open. Doors shall be equipped with louvers for ventilation. Louvers shall be equipped with a sponge type or pleated paper air filter and a means for closing off the louver. A provision shall be made on each handle for attaching a railroad signal lock.

- e. The hinges shall be equipped with a bronze or stainless steel hinge pin and pressure lubricating fittings and shall be lubricated by the manufacturer before the house is shipped.
 - f. Each instrument house shall have two aerial cable entrance knockouts in each corner and floor knockouts for underground cable. Underground cable knockouts are to be located behind the terminal board.
 - g. The terminal board shall consist of 3/4" exterior grade plywood. Plastic wire race is to be provided on the back of the terminal board for running internal wiring.
 - h. The entire floor shall be covered with rubber matting.
 - i. A light switch with 110V (15A) duplex outlet shall be mounted by the main access door. One fluorescent lighting fixture with safety cover shall be mounted in the ceiling.
2. Battery chargers shall be the self-regulating constant voltage type with temperature compensation. They shall meet the requirements of the AREMA Signal Manual.

Battery chargers shall be manufactured by National Railway Supply, Inc., (Models NRS-12/20, and NRS-12/40) or approved supplier.

3. Train detection shall be provided with a Safetran Systems Type "C" track circuit model CXP-3 AC Generator or approved equal.

Solid State Crossing Controller shall be provided using the Safetran Systems model SSCIII PLUS. This system shall contain electronic stick type logic, stuck stick prevention, loss of shunt timers, delayed approach starts for each track circuit and two track directional stick extended delay MCF application. Safetran Systems model SSCIII PLUS, Solid State Crossing Controller or approved equal.

Event Recording shall be provided using the Safetran Systems SEAR II Event Recorder, or approved equal.

Surge and lightning protector for the Type "C" system shall be a Safetran Protection Network Model SP-19-2A between each track lead and ground, and a Safetran Heavy Duty Equalizer Model 700-1 between each pair of track leads or approved equal.

4. All relays shall be vital, direct current, plug-in type. All relays shall meet the requirements of the AREMA Signal Manual.

All relays shall be manufactured by Alstom or approved supplier.

5. Lighting resistors shall be installed on each light circuit.

Resistors shall be the adjustable type, 15 watts, manufactured by Safetran, WCH or approved supplier.

6. A hermetically sealed, pre-ionized spark gap lightning arrester shall be installed across the input AC power. This arrester shall be a Model SDSA-1175 as manufactured by Square "D" or approved equal.

7. Three banks of batteries shall be provided at Randolph Street. One bank will provide power for the crossing control and indication circuit. The other two banks will be used for signal lighting and crossing gate power.

All banks shall be low maintenance GNB 475AH model 50A19, manufactured by GNB Industrial Power or approved equal.

8. Three banks of batteries shall be provided at Bragg Blvd. One bank will provide power for the crossing control and indication circuit. The other two banks will be used for signal lighting and crossing gate power.

All banks shall be low maintenance GNB 475AH model 50A19, manufactured by GNB Industrial Power or approved equal.

9. Instrument house wires shall be No. 6 AWG 19 Strand, No. 10 AWG 19 Strand, No. 14 AWG 19 Strand, and No. 16 AWG 19 Strand.

Instrument house wires shall be manufactured by The Okonite Company or approved supplier.

10. All wires and cable shall be terminated using molded two-post and multiple unit terminal blocks per AREMA Signal Manual.

11. All stranded wire shall be fitted with an approved type of terminal at all points where the wires are to be terminated on terminal posts.

The terminations shall be an insulated solderless type of terminal as manufactured by AMP Special Industries or approved supplier.

The terminal shall be attached to the wire with a tool made by the same manufacturer of the terminal and recommended by them for the terminal being used. The tool shall be equipped with a ratchet device to ensure proper crimping of the terminal.

12. Each wire termination shall be tagged with a white tube type wire marker. Each wire shall be imprinted with the circuit start point, circuit name, and end point.

13. All wires not inside plastic wirerace shall be neatly laced using plastic wire ties.

14. A test link consisting of a 2-3/8" insulated test link and terminal block shall be provided for testing the signal system. The test link shall be labeled "MAINTAINERS TEST" located inside a NEMA 4x box with key locks, mounted on the outside the instrument house facing roadside. This locked box shall also include "OUT OF SERVICE or KEYOUT" latching switch that allows the crossing to be taken out of service when necessary.

15. The instrument house shall be equipped with a thermostatically controlled fan (minimum capacity of 150 CFM) for venting.

16. One internal power off light shall be installed in each end of the instrument house such that the lights can be viewed from either approach direction to the crossing.

17. A Circuit Breaker Box shall be provided for the AC Power to be disconnected with the devices in the Instrument House.

Breaker Box shall be Square "D" or approved supplier.

18. Two additional spare Safetran Model SSCCIII Plus, Solid State Crossing Controllers or approved equal shall be provided. One installed in each crossing house.

C. Foundations

1. Flasher Foundations

Flasher foundations shall be made of precast concrete and shall have a bolt spacing of 9 – 1/2 inches by 9 – 1/2 inches, for attaching signal mast, and be 4 feet - 6 inches in height. The signal foundation is to extend from material of sufficient bearing capacity to not more than three inches above the ground except for those foundations placed in or adjacent to sidewalks which shall be flush with the sidewalk.

2. Gate Foundations

Gate foundations shall be made of precast concrete and shall have a bolt spacing of 11 – 11/16 and 11- 11/16 inches, for attaching signal mast, and be 4 feet - 6 inches in height. The gate foundation is to extend from material of sufficient bearing capacity to not more than three inches above the ground except for those foundations placed in or adjacent to sidewalks which shall be flush with the sidewalk.

3. Cantilever Foundations

Cantilever foundations shall be made of precast concrete or poured in place concrete with steel rebar and galvanized hook bolts meeting the requirements of the cantilever manufacturer for the size cantilever required for the project per the engineering plans. The cantilever foundation is to extend from material of sufficient bearing capacity to not more than three inches above the ground except for those foundations placed in or adjacent to sidewalks which will be flush with the sidewalk.

4. House Foundations

Steel foundations shall be constructed of steel angle and plate welded together. Foundations shall be constructed of 2-1/2 inch by 2-1/2 inch by 1/4-inch steel angle and 1/4-inch steel plate. All foundations to be furnished and installed shall be complete with galvanized bolts, washers, nuts, and associated hardware. Galvanizing shall conform to Specifications Section 13579 and AREMA C&S Manual, Part 15.3.1. Bolt spacing shall be to manufacturer's standards for the equipment to be supported by the foundation. House foundations shall be mounted at a minimum of 12" above grade or even with top of rail. Ballast shall be deposited and tapered extending 4' beyond house area.

5. Excavations

All holes excavated for foundations shall be backfilled in layers of soil approximately six inches in depth and each layer tamped before the next layer is placed. Any disturbed curb or sidewalk must be recast and any grassed areas disturbed must be reseeded.

D. Signals

1. Flasher Assembly Masts and Bases

Mast for flashing light signals shall be four inch inside diameter aluminum. Where only one lamp unit assembly is required, the mast shall be 13'6" in length. Where two or more lamp unit assemblies are required, the mast shall be 15'10" in length. Bases for flashing light signals shall be of the junction box type and of cast aluminum construction with bolt spacing of 9-1/2" x 9-1/2".

The bases shall be Progress Rail part number 9420000100 or approved equal.

2. Gate Assembly Masts and Bases

Mast for flashing light signals shall be five inch inside diameter aluminum. Where only one lamp unit assembly is required, the mast shall be 13 feet – 6 inches in length. Where two or more lamp unit assemblies are required to be stacked on top of each other, the mast shall be 15 feet – 10 inches in length. Bases for flashing light gate signals shall be of the junction box type and of cast aluminum construction with bolt spacing of 11-11/16 inches x 11-11/16 inches.

The gate mechanism shall be Safetran Model S60 or approved equal.

3. Cantilever Assembly Masts and Bases

Cantilevers shall be all aluminum structures with an arm length as shown on the plans. The walkway and handrail shall be full length along the back side of the arm. A ladder is to be provided which includes a guard to discourage unauthorized access with fall arrest protection conforming to all applicable AREMA and AASH specifications for a railroad highway grade crossing flashing light cantilever structure with walkway. The mast is to be sufficient to support the length of arm required using a double mast when necessary to meet AREMA specifications. An external junction box is to be provided containing a sufficient number of AREMA type terminals for both signal and underground wiring. The roadway clearance must meet the requirements of the AREMA Signal Manual, RAIL DIVISION and Cape Fear Railroad.

4. Bells

The bell shall be mounted on top of the gate mast and be parallel to the highway. The bell shall be rated for approximately 8-16 VDC and be 12" diameter or electronic equivalent. The bell shall meet the specification of the AREMA Signal Manual.

5. Signal Lamp Units

Flashing lights shall be LED type. Hoods and backgrounds shall be aluminum. Back-ground shall be 24". Array assembly shall be 12" diameter. Seven pairs of spare LED light assemblies shall be provided. Design and fabrication shall conform to the specifications of the AREMA Signal Manual.

6. **Railroad Crossing Sign**

Shall meet the specification of the AREMA Signal Manual.

7. **Gate Arm**

The gate arm shall be manufactured by NEG or approved equal.

The gate shall be striped on both sides with 16 inch alternate diagonal reflectorized stripes of red and white in accordance with the M.U.T.C.D.

Each gate shall be equipped with three LED gate light units per the specification of the AREMA Signal Manual.

Gate Keepers shall be installed on each gate and shall meet FRA standards for gate length.

E. Underground Cable

1. Gate lighting and control cable shall consist of one - 7 conductor No. 6 AWG armored underground cable and one - 12 conductor No. 14 AWG armored underground cable conforming to the specification of the AREMA Signal Manual.
2. Cantilever lighting cable shall consist of one - 7 conductor No. 6 AWG armored underground cable conforming to the specification of the AREMA Signal Manual.
3. AC power cable shall be 3 conductor No. 2 AWG(with No. 6 AWG ground) armored underground cable conforming to the specification of the AREMA Signal Manual.
4. Track cable shall be 2 conductor No. 6 AWG twisted pair neoprene sheathed underground cable conforming to the specification of the AREMA Signal Manual.
5. All cable shall be free of splices and installed a minimum of 36 inches below grade. Where cable crosses under the track or highway, it shall be carried in 4 inch rigid galvanized conduit, or 4 inch PVC Schedule 80, cut in and laid, bored or pushed under roadway, and installed a minimum of 48 inches below the bottom of the ties. All cables shall enter the relay house through 4 inch schedule 80 PVC conduit or 4 inch rigid galvanized or aluminum conduit.
6. After installation and before final hook-up, each conductor in each cable shall be tested with a megger and shall read infinity resistance between other conductors in the cable and between each conductor and earth ground. A record of the resistance test on the cables (2 copies) shall be turned over to the RAIL DIVISION and Cape Fear Railroad for their use.
7. Trenches shall be backfilled with 6" of fine soil from which all rock over 1-1/2" in diameter has been removed before any soil is replaced in the trench. Soil shall be backfilled in all trenches in layers of approximately 6" and each layer tamped before the next layer is placed.

F. Track Materials

1. All non-insulated joints shall be double bonded with one exothermically welded signal bond and one single conductor, stranded, plug type rail web bond. Bonds shall conform to the AREMA Signal Manual.
 - a. Bonds of the welded type shall be applied in accordance with the manufacturer's instructions. The rail must be cleaned for the full area of the weld. Welded bonds must not be applied during rain, snow, or on a wet rail. Welded bonds shall be applied to the rail on the same day the weld area is cleaned. Welded type bonds must have a brush coat of No-ox-id applied after application to the rail. The No-ox-id may be applied immediately, but in no case may it be applied later than two days after installation of the bond.

Weld type bonds shall be the Cadweld tab style minimum 6.5"x 3/16" manufactured by Erico, Model SB-SB20112 or approved equal.
 - b. Plug type bonds shall be Dwight and Wilson Company Models S-5T or approved equal.
 - c. Track circuit connectors shall be Dwight and Wilson Company Model S-8PT or approved equal. The track end of the track circuit connector shall be installed as specified herein, at a maximum distance of 3 inches from the end of the insulated joint.
 - d. Ring-10 diodes shall be installed below the ballast line between the rails in locations shown on the Contract Drawings.

G. Locks

Locks shall be supplied for all instrument housings, junction boxes, gate mechanisms and other items which require locking for security. The locks shall be the RAIL DIVISION and Cap Fear Railroad standard make so existing keys will operate them.

Locks shall be Safetran Model 030399-13X, or approved equal.

H. Sealants

Sealants must be waterproof, remain pliable and must not shrink, crack or dry out.

I. Completion

The CONTRACTOR may work in any order they wish, but any location on which work is started and left incomplete or with the lights inoperative shall be left in a neat and safe condition. Inoperative lights shall be covered with black plastic over covered with burlap bags for protection or other suitable covering and not left in excess of seven days.

J. Inspection

Upon completion of the project, an inspection will be required with representatives from the RAIL DIVISION, NCDOT Division of Highways, the CONTRACTOR and a representative of the railroad. The CONTRACTOR shall give at least seven days notice to the RAIL DIVISION and Cape Fear Railroad as to the date the installation will be ready for inspection. Meter readings will be required to

indicate that the voltage is within tolerance throughout the circuits. All possible train movements will be simulated by the use of shunts on the track and the CONTRACTOR shall have available at least three effective shunts (0.06 ohm) for this purpose. The CONTRACTOR shall focus the lights as shown on the plans or as directed by RAIL DIVISION. Signal testing shall be recorded in accordance with FRA regulations and furnished 2 copies to RAIL DIVISION and Cape Fear Railroad for their records.

K. Related Work

Any work not specifically mentioned in the specification, but which is necessary, either directly or indirectly, for the proper carrying out of the intent thereof, shall be required and applied by the CONTRACTOR and they shall perform all such work just as if it were particularly delineated or described.

L. Cleanup, Seeding and Painting

The CONTRACTOR shall remove from Cape Fear property, and NCDOT right-of-way all rubbish and waste resulting from construction operations. RAIL DIVISION may require existing materials to be loaded on NCDOT trucks for relocation.

Any metal part of the installation which is not aluminum shall be painted with one primer coat and at least two coats of aluminum paint or be galvanized coated metal.

M. Circuit Drawing Changes

If the CONTRACTOR changes the circuit drawings furnished in this package in any way, he is responsible to design and furnish new wiring diagrams and circuit drawings for the equipment being furnished by him. The CONTRACTOR shall be solely responsible for the correctness of the wiring diagrams and circuit drawings he designs.

If changes have been made, typical circuit drawings with his quotation must be submitted in order to be considered. He must be prepared to submit his final drawings within 30 days after receipt of the order, for RAIL DIVISION and Cape Fear Railroad approval.

N. Detailed Bill of Material

Prior to furnishing and installing any equipment and materials, the CONTRACTOR must submit a detailed bill of material and cost breakdown. This shall include all required spare parts and the part number of all material proposed for use of this project.

O. Tests

1. The CONTRACTOR shall make necessary tests to demonstrate that all material and equipment has been installed in accordance with the requirements of the specifications and contract. These tests shall be as listed in the AREMA Signal Manual. Two copies of recorded tests will be provided to RAIL DIVISION and Cape Fear Railroad upon completion of installation and testing.

2. Upon completion of all tests specified herein, Contractor shall submit a certified letter signed by an authorized representative, attesting that all tests have been performed and completed successfully.
3. Test reports shall document the calibration date of each instrument used during the test. Calibration of each instrument shall be certified by a recognized testing facility. Re-certification shall be conducted every 90 days or less. Out-of-date instruments will be considered non-certified. Tests conducted with non-certified instruments will be rejected.
4. All in-service field tests shall be conducted with RAIL DIVISION and Cape Fear Railroad as witness, and shall be subject to their acceptance.

III. MEASUREMENT AND PAYMENT

Payment at the contract lump sum price for "Bragg Blvd Crossing Signal Installation."

Payment at the contract lump sum price for "Randolph Street Crossing Signal Installation."

Payment at the above contract lump sum prices will be full compensation for all work associated with furnishing and installing complete and fully operational highway-railroad at-grade crossing warning devices including, but not limited to, mobilization/demobilization, preparatory work and operations, movement of personnel, furnishing and installing equipment, supplies, and incidentals to the project site.

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Project Special Provisions
Structures

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PROJECT SPECIAL PROVISIONS
STRUCTURES

PROJECTS U-4444AB/U-4444B

CUMBERLAND COUNTY

MAINTENANCE AND PROTECTION OF TRAFFIC
BENEATH PROPOSED STRUCTURE AT STATION 132+79.28 -L-

(8-13-04)

1.0 GENERAL

Maintain traffic on NC 210 as shown in Traffic Control Plans and as directed by the Engineer.

Provide a minimum temporary vertical clearance of 16'-6 3/16" at all times during construction.

Submit plans and calculations for review and approval for protecting traffic and bracing girders, as described herein, at the above station before beginning work at this location. Have the drawings and design calculations prepared, signed, and sealed by a North Carolina Registered Professional Engineer. The approval of the Engineer will not relieve the Contractor of the responsibility for the safety of the method or equipment.

2.0 PROTECTION OF TRAFFIC

Protect traffic from any operation that affords the opportunity for construction materials, equipment, tools, etc. to be dropped into the path of traffic beneath the structure. Based on Contractor means and methods determine and clearly define all dead and live loads for this system, which, at a minimum, shall be installed between beams or girders over any travelway or shoulder area where traffic is maintained. Install the protective system before beginning any construction operations over traffic. In addition, for these same areas, keep the overhang falsework in place until after the rails have been poured.

3.0 BRACING GIRDERS

Brace girders to resist wind forces, weight of forms and other temporary loads, especially those eccentric to the vertical axis of the member during all stages of erection and construction. Before casting of intermediate diaphragms, decks, or connecting steel diaphragms do not allow the horizontal movement of girders to exceed 1/2 inch.

4.0 BASIS OF PAYMENT

Payment at the contract unit prices for the various pay items will be full compensation for the above work.

MAINTENANCE AND PROTECTION OF TRAFFIC
BENEATH PROPOSED STRUCTURE AT STATION 172+95.63 -L-

(8-13-04)

1.0 GENERAL

Maintain traffic on NC 24/87/210 as shown in Traffic Control Plans and as directed by the Engineer.

Provide a minimum temporary vertical clearance of 17'-3 7/16" at all times during construction.

Submit plans and calculations for review and approval for protecting traffic and bracing girders, as described herein, at the above station before beginning work at this location. Have the drawings and design calculations prepared, signed, and sealed by a North Carolina Registered Professional Engineer. The approval of the Engineer will not relieve the Contractor of the responsibility for the safety of the method or equipment.

2.0 PROTECTION OF TRAFFIC

Protect traffic from any operation that affords the opportunity for construction materials, equipment, tools, etc. to be dropped into the path of traffic beneath the structure. Based on Contractor means and methods determine and clearly define all dead and live loads for this system, which, at a minimum, shall be installed between beams or girders over any travelway or shoulder area where traffic is maintained. Install the protective system before beginning any construction operations over traffic. In addition, for these same areas, keep the overhang falsework in place until after the rails have been poured.

3.0 BRACING GIRDERS

Brace girders to resist wind forces, weight of forms and other temporary loads, especially those eccentric to the vertical axis of the member during all stages of erection and construction. Before casting of intermediate diaphragms, decks, or connecting steel diaphragms do not allow the horizontal movement of girders to exceed ½ inch.

4.0 BASIS OF PAYMENT

Payment at the contract unit prices for the various pay items will be full compensation for the above work.

TEMPORARY BENTS

(9-30-11)

When girder erection requires the use of temporary bents, design, construct, maintain and afterwards remove the temporary bents in accordance with the Standard Specifications and this Special Provision. For the purpose of this Special Provision, the term "temporary bents" includes girder erection temporary bents, vertical shoring and proprietary shoring systems.

Temporary bents for structures over railroads shall maintain a minimum horizontal clearance of 25' from center of track.

Design temporary bents in accordance with the 1995 AASHTO Guide Design Specification for Bridge Temporary Works (including the 2008 Interim Revisions) and the Project Special Provision entitled "Falsework and Formwork". The design calculations and detailed drawings of the structural components shall be signed and sealed by a North Carolina Registered Professional Engineer.

Submit design calculations and detailed drawings of temporary bents to the Engineer for review and approval. The detailed drawings shall show the position of the temporary bents in relationship to the existing travel way, the location of the temporary bents with respect to the ends of the girders, the top of support elevations for setting girders in the cambered position, and a girder erection procedure. For stream crossings, determine the bent stability assuming a scour depth equal to 250% of the pile diameter or width below the existing bed elevation. The Engineer may require a more detailed analysis of scour depth for temporary bents containing more than a single row of piles.

Include all material specifications for new and used materials in the detail drawings. In addition, show the location of the used materials indicating condition of the material, the location and geometry of existing but unused holes, attachments left over from previous use and any other irregularities in the material. Account for the condition of all used materials in the design calculations.

For all manufactured components, provide engineering data supplied by the manufacturer. For proprietary shoring systems, evaluate differential leg loading.

Provide access to all new and used materials for inspection prior to assembly.

Before the temporary bent is loaded, the contractor shall inspect the bent in the presence of the Engineer, and submit a written statement certifying that the erected bent complies with the approved detailed drawings. Any condition or material that does not comply with the accepted drawings, or any other condition deemed unsatisfactory by the Engineer, is cause for rejection until corrections are made.

Remove temporary bents in such a manner as to permit the structure to uniformly and gradually take the stresses due to its own weight. During removal do not disturb or otherwise damage the finished work.

Unless otherwise specified, temporary bents will not be directly measured. Payment will be full compensation at the contract unit prices for the various pay items requiring temporary bents.

POT BEARINGS

(9-30-11)

1.0 GENERAL

This item consists of furnishing, fabrication and installation of pot bearings in accordance with AASHTO LRFD Bridge Design Specifications, the Standard Specifications, the recommendations of the manufacturer and the details shown on the plans and as specified herein.

Fixed pot bearings consist of a sole plate, a disc of elastomer in a steel cylinder with a snug fitting steel piston, masonry plate, anchor bolts, nuts and washers. Expansion pot bearings consist of a sole plate, a top steel plate with a polished stainless steel sheet facing bearing on a fixed pot bearing with a layer of virgin polytetrafluoroethylene (PTFE) material on its top, masonry plate, anchor bolt assembly which includes anchor bolts, nuts, washers, pipe sleeves, a closure plate, grout and various sizes of standard pipe and any other necessary material as detailed on the plans.

2.0 MATERIALS

Use pot bearings produced by the same manufacturer.

Use AASHTO M270 Grade 50W (345W) for all steel in the pot bearings. Clean, coat, and seal the plates in the pot bearing assemblies except for the areas with special facings and the internal surfaces of pot, in accordance with the Special Provision for "Thermal Sprayed Coatings (Metallization)". Metallization of the internal surfaces of the pot is permitted provided these surfaces are then polished to a surface smoother than 60 micro inches. The surfaces shall be coated to a thickness of 8 mils minimum on all external parts. Repair surfaces that are abraded or damaged after the application of metallizing in accordance with the Special Provision for "Thermal Sprayed Coatings (Metallization)".

Galvanize all fill plates specified on the plans. Provide anchor bolts and nuts in accordance with the Standard Specifications.

When the maximum plan dimension of the sheet is 12" or less, provide a stainless steel sheet in expansion pot bearings that is at least 16 gage or 1/16". When the maximum plan dimension is greater than 12", provide a stainless steel sheet that is at least 11 gage or 1/8". Ensure that all stainless steel sheets are in conformance with ASTM A240/A167 Type 304 and polished to a minimum #8 mirror surface finish.

Blast clean the surface of the plate that will be attached to the stainless sheet to a near white condition in accordance with the Standard Specifications. Position and clamp the back of the stainless sheet that is to be in contact with the steel plate on the steel plate. Apply the stainless steel to the blast cleaned surface of the steel plate as soon as possible after blasting and before any visible oxidation of the blast cleaned surface occurs. Weld the stainless sheet continuously around its perimeter using a tungsten inert gas, wire-fed welder.

For the PTFE sheet, used as a mating surface for the stainless sheet, provide an unfilled virgin PTFE Sheet (Recessed) or a glass-fiber filled PTFE sheet, resulting from skiving billets formed under hydraulic pressure and heat. Provide resin that conforms to the requirements of ASTM D4894 or D4895.

To bond the PTFE and the piston, use heat cured high temperature epoxy capable of withstanding temperature of -320°F to 500°F.

Provide a neoprene or natural rubber elastomer with a durometer hardness of 50 that allows for a minimum rotation of 0.02 radians. Place a 1/64" thick unfilled PTFE disc or other approved lubricant that is not detrimental to the elastomer on either side of the elastomer inside the bearing. Use a brass sealing ring with the neoprene or natural rubber elastomer.

3.0 DESIGN

Have the manufacturer design the pot bearings for the loads and movements shown on the contract plans. However, use the anchor bolt size, length, spacing and masonry plate thickness as shown on the contract plans and provide an overall height of the bearing assembly that is at least the height shown on the contract plans, but no more than 1/2 inch greater than this height. Either combine, cast as a single piece, or weld together the sole plate and top plate/piston and the cylinder with the masonry plate.

When designing the bearings, use the following allowable bearing stresses:

- On confined elastomer: 3500 psi
- On PTFE Sliding Surface, filled or unfilled PTFE (recessed): 3500 psi

Submit eight sets of shop drawings and one set of design calculations for review, comments and acceptance. Have a North Carolina Registered Professional Engineer check and seal the shop drawings and design calculations.

After the Engineer reviews the drawings and, if necessary, corrections are made, submit one 22" x 34" reproducible set of the working drawings.

4.0 SAMPLING AND TESTING

A. Sampling

The manufacturer is responsible for randomly selecting and testing sample bearings from completed lots of bearings. The manufacturer is also responsible for certifying that the completed bearings and their components have been tested and are in compliance with the requirements of this Special Provision. The manufacturer shall furnish results of the tests to the Materials and Tests Engineer.

B. Testing

1. Proof Load Test

Load a test bearing to 150% of the bearing's rated design capacity and simultaneously subject it to a rotational range of 0.02 radians (1.146°) for a period of 1 hour.

Have the bearing visually examined both during the test and upon disassembly after the test. Any resultant visual defects, such as extruded or deformed elastomer or PTFE, damaged seals or rings, or cracked steel is cause for rejection.

Keep the steel bearing plate and steel piston in continuous and uniform contact for the duration of the test. Any observed lift-off is cause for rejection.

2. Sliding Coefficient of Friction

For all guided and non-guided expansion type bearings, measure the sliding coefficient of friction at the bearing's design capacity in accordance with the test method described below, and on the fifth and fiftieth cycles, at a sliding speed of 1 in/min.

Calculate the sliding coefficient of friction as the horizontal load required to maintain continuous sliding of one bearing, divided by the bearing's vertical design capacity.

The test results are evaluated as follows:

- A maximum measured sliding coefficients of friction of 3%.
- A visual examination both during and after the test. Any resultant visual defects, such as bond failure, physical destruction, cold flow of PTFE to the point of debonding, or damaged components is cause for rejection of the lot.

Using undamaged test bearings in the work is permitted.

3. Test Method

For the test method and equipment, meet the following requirements:

- a. Arrange the test to determine the coefficient of friction on the first movement of the manufactured bearing.
- b. Clean the bearing surface prior to testing.
- c. Conduct the test at maximum working stress for the PTFE surface with the test load applied continuously for 12 hours prior to measuring friction.

- d. Determine the first movement static and dynamic coefficient of friction of the test bearing at a sliding speed of less than 1 in/min, not to exceed:
- | | |
|------|---------------|
| 0.04 | unfilled PTFE |
| 0.08 | filled PTFE |
- e. Subject the bearing specimen to 100 movements of at least 1 inch of relative movement and, if the test facility permits, the full design movement at a speed of less than 1 ft/min. Following this test determine the static and kinetic coefficient of friction again. The specimen is considered a failure if it exceeds the values measured in (d) above or if it shows any signs of bond failure or other defects.

Bearings represented by test specimens passing the above requirements are approved for use in the structure subject to on-site inspection for visible defects.

5.0 INSTALLATION

Prior to shipment, seal the joint between the steel piston and the steel cylinder with a bead of caulk. Store pot bearings delivered to the bridge site under cover on a platform above the ground surface. Protect the bearings from injury at all times and, before placing the bearings, dry and clean all dirt, oil, grease or other foreign substances from the bearing. Do not disassemble the bearings during installation, except at the manufacturer's direction. Place the bearings in accordance with the recommendations of the manufacturer, Contract Drawings, and as directed by the Engineer. If there is any discrepancy between the recommendations of the manufacturer, Special Provisions, and Contract Drawings, the Engineer is the sole judge in reconciling any such discrepancy.

Provide preformed bearing pads under the masonry plates in accordance with Article 1079-1 of the Standard Specifications.

Do not install any bearing before the Engineer approves it.

6.0 BASIS OF PAYMENT

Payment will be at the lump sum contract price bid for "Pot Bearings" which price will be full compensation for furnishing all labor, materials, tools, equipment and incidentals required to complete the work in accordance with the Standard Specifications, this Special Provision, the manufacturer's requirements and as directed by the Engineer.

OPTIONAL DISC BEARINGS

(9-30-11)

1.0 GENERAL

This item consists of furnishing, fabrication and installation of disc bearings in accordance with AASHTO LRFD Bridge Design Specifications, the Standard Specifications, the recommendations of the manufacturer and as specified herein. In addition, all plan notes

pertaining to furnishing and installing pot bearing assemblies shall also apply to disc bearing assemblies, except as noted herein.

Disc Bearings consist of a polyether urethane structural element (disc) confined by upper and lower steel bearing plates. Equip disc bearings with a shear restriction mechanism to prevent movement of the disc. Supply disc bearings as fixed bearings and guided expansion bearings as designated by the Contract Documents.

Fixed disc bearings allow rotation but no longitudinal or transverse movement in the bearing plane. Fixed bearings consist of a sole plate, an elastomer disc, upper bearing plate, lower bearing plate, masonry plate, anchor bolts, nuts and washers.

Guided expansion disc bearings allow rotation and only longitudinal movement in the bearing plane. Guided expansion disc bearings consist of a sole plate, a top steel plate with a polished stainless steel sheet facing bearing on a fixed disc bearing with a layer of virgin polytetrafluoroethylene (PTFE) material on its top, masonry plate, anchor bolt assembly which includes anchor bolts, nuts, washers, pipe sleeves, a closure plate, grout and various sizes of standard pipe and any other necessary material as detailed on the plans. To allow longitudinal movement, bond a polytetrafluoroethylene (PTFE) sheet to the upper steel bearing plate. Support a sliding steel top bearing plate with the upper steel bearing plate. Face the mating surface of the sliding steel top bearing plate with polished stainless steel. Use either a guide bar or keyway system to restrict transverse movement. Face the sliding surfaces of the guide bar or keyway systems with either PTFE sheets or stainless steel.

2.0 MATERIALS

Use disc bearings produced by the same manufacturer.

Use AASHTO M270 Grade 50W (345W) for all steel in the disc bearings. Clean, coat, and seal the plates in the disc bearing assemblies except for the areas with special facings and the areas that come in contact with the elastomer disc, in accordance with the Special Provision for "Thermal Sprayed Coatings (Metallization)". The surfaces shall be coated to a thickness of 8 mils minimum on all external parts. Repair surfaces that are abraded or damaged after the application of metallizing in accordance with the Special Provision for "Thermal Sprayed Coatings (Metallization)".

Provide anchor bolts and nuts in accordance with the Standard Specifications.

When the maximum plan dimension of the sheet is 12" or less, provide a stainless steel sheet in expansion disc bearings that is at least 16 gage or 1/16". When the maximum plan dimension is greater than 12", provide a stainless steel sheet that is at least 11 gage or 1/8". Ensure that all stainless steel sheets are in conformance with ASTM A240/A167 Type 304 and polished to a minimum #8 mirror surface finish.

Blast clean the surface of the plate that will be attached to the stainless sheet to a near white condition in accordance with the Standard Specifications. Position and clamp the back of the stainless sheet that is to be in contact with the steel plate on the steel plate. Apply the stainless steel to the blast cleaned surface of the steel plate as soon as possible after blasting

and before any visible oxidation of the blast cleaned surface occurs. Weld the stainless sheet continuously around its perimeter using a tungsten inert gas, wire-fed welder.

For the PTFE sheet, used as a mating surface for the stainless sheet, provide an unfilled virgin PTFE Sheet (Recessed) or a glass-fiber filled PTFE sheet, resulting from skiving billets formed under hydraulic pressure and heat. Provide resin that conforms to the requirements of ASTM D4894 or D4895.

To bond the PTFE and the bearing plate, use heat cured high temperature epoxy capable of withstanding temperature of -320°F to 500°F.

Mold the polyether urethane structural element from a polyether urethane compound. Conform the physical properties of the polyether urethane to the following requirements:

Physical Property	ASTM Test Method	Requirements	
		Min.	Max.
Hardness, Type D Durometer	D2240	60	64
Tensile Stress psi At 100% elongation At 200% elongation	D412	2000 3700	----
Tensile Strength psi	D412	5000	----
Ultimate Elongation %	D412	220	----
Compression Set % 22 hrs. at 158°F	D395	----	40

3.0 DESIGN

Design the disc bearings for the loads and movements shown on the contract plans. However, use the anchor bolt size, length, spacing and masonry plate thickness as shown on the contract plans and provide an overall height of the bearing assembly that is at least the height shown on the contract plans, but no more than 1/2 inch greater than this height. Either combine and cast the sole plate and top plate/upper bearing plate and the lower bearing plate and masonry plate as a single unit or weld together prior to the installation of the disc.

When designing the bearings, use the following allowable bearing stresses:

- On polyether urethane structural element: 5000 psi
- On PTFE Sliding Surface, filled or unfilled PTFE (recessed): 3500 psi

Submit eight sets of shop drawings and one set of design calculations for review, comments and acceptance. Have a North Carolina Registered Professional Engineer check and seal the shop drawings and design calculations.

After the Engineer reviews the drawings and, if necessary, corrections are made, submit one 22" x 34" reproducible set of the working drawings.

4.0 SAMPLING AND TESTING

A. Sampling

The manufacturer is responsible for randomly selecting and testing sample bearings from completed lots of bearings. The manufacturer is also responsible for certifying that the completed bearings and their components have been tested and are in compliance with the requirements of this Special Provision. The manufacturer shall furnish the results of the tests to the Materials and Tests Engineer.

B. Testing

1. Proof Load Test

Load a test bearing to 150% of the bearing's rated design capacity and simultaneously subject it to a rotational range of 0.02 radians (1.146°) for a period of 1 hour.

Have the bearing visually examined both during the test and upon disassembly after the test. Any resultant visual defects, such as extruded or deformed elastomer or PTFE, damaged seals or rings, or cracked steel is cause for rejection.

Keep continuous and uniform contact between the polyether urethane element and the bearing plates and between the sliding steel top plate and the upper bearing plate for the duration of the test. Any observed lift-off is cause for rejection.

2. Sliding Coefficient of Friction

For all guided and non-guided expansion type bearings, measure the sliding coefficient of friction at the bearing's design capacity in accordance with the test method described below, and on the fifth and fiftieth cycles, at a sliding speed of 1 in/min.

Calculate the sliding coefficient of friction as the horizontal load required to maintain continuous sliding of one bearing, divided by the bearing's vertical design capacity.

The test results are evaluated as follows:

- A maximum measured sliding coefficient of friction of 3%.
- A visual examination both during and after the test. Any resultant visual defects, such as bond failure, physical destruction, cold flow of PTFE to the point of debonding, or damaged components is cause for rejection of the lot.

Using undamaged test bearings in the work is permitted.

3. Test Method

The test method and equipment shall meet the following requirements:

- f. Arrange the test to determine the coefficient of friction on the first movement of the manufactured bearing.
- g. Clean the bearing surface prior to testing.
- h. Conduct the test at maximum working stress for the PTFE surface with the test load applied continuously for 12 hours prior to measuring friction.
- i. Determine the first movement static and dynamic coefficient of friction of the test bearing at a sliding speed of less than 1 in/min, not to exceed:

0.04	unfilled PTFE
0.08	filled PTFE
- j. Subject the bearing specimen to 100 movements of at least 1 inch of relative movement and, if the test facility permits, the full design movement at a speed of less than 1 ft/min. Following this test determine the static and kinetic coefficient of friction again. The specimen is considered a failure if it exceeds the values measured in (d) above or if it shows any signs of bond failure or other defects.

Bearings represented by test specimens passing the above requirements are approved for use in the structure subject to on-site inspection for visible defects.

5.0 INSTALLATION

Store disc bearings delivered to the bridge site under cover on a platform above the ground surface. Protect the bearings from injury at all times and, before placing the bearings, dry and clean all dirt, oil, grease or other foreign substances from the bearing. Do not disassemble the bearings during installation, except at the manufacturer's direction. Place the bearings in accordance with the recommendations of the manufacturer, Contract Drawings, and as directed by the Engineer. If there is any discrepancy between the recommendations of the manufacturer, Special Provisions, and Contract Drawings, the Engineer is the sole judge in reconciling any such discrepancy.

Provide preformed bearing pads under the masonry plates in accordance with Article 1079-1 of the Standard Specifications.

Do not install any bearing before the Engineer approves it.

6.0 BASIS OF PAYMENT

Payment for all optional disc bearings will be at the lump sum contract price bid for "Pot Bearings" which includes full compensation for furnishing all disc bearings, labor, materials, tools, equipment, testing and incidentals required to complete the work in accordance with the Standard Specifications, this Special Provision, the manufacturer's requirements and as directed by the Engineer.

THERMAL SPRAYED COATINGS (METALLIZATION)

(9-30-11)

1.0 DESCRIPTION

Apply a thermal sprayed coating (TSC) and sealer to metal surfaces as specified herein when called for on the plans or by other Special Provisions, or when otherwise approved by the Engineer in accordance with the SSPC-CS 23.00/AWS C2.23/NACE No. 12 Specification. Only Arc Sprayed application methods are used to apply TSC coatings, the Engineer must approve other methods of application.

2.0 QUALIFICATIONS

Only use NCDOT approved TSC Contractors meeting the following requirements:

1. The capability of blast cleaning steel surfaces to SSPC SP-5 and SP-10 Finishes.
2. Employ Spray Operator(s) qualified in accordance with AWS C.16/C2.16M2002 and Quality Control Inspector(s) who have documented training in the applicable test procedures of ASTM D-3276 and SSPC-CS 23.00.

A summary of the contractor's related work experience and the documents verifying each Spray Operator's and Quality Control Inspector's qualifications are submitted to the Engineer before any work is performed.

3.0 MATERIALS

Provide wire in accordance with the metallizing equipment manufacturer's recommendations. Use the wire alloy specified on the plans which meets the requirements in Annex C of the SSPC-CS 23.00 Specification. Have the contractor provide a certified analysis (NCDOT Type 2 Certification) for each lot of wire material.

Apply an approved sealer to all metallized surfaces in accordance with Section 9 of SSPC-CS 23. The sealer must either meet SSPC Paint 27 or is an alternate approved by the Engineer.

4.0 SURFACE PREPARATION AND TSC APPLICATION

Grind flame cut edges to remove the carbonized surface prior to blasting. Bevel all flame cut edges in accordance with Article 442-10(D) regardless of included angle. Blast clean surfaces to be metallized with grit or mineral abrasive in accordance with Steel Structures Painting Council SSPC SP-5/10(as specified) to impart an angular surface profile of 2.5 - 4.0 mils. Surface preparation hold times are in accordance with Section 7.32 of SSPC-CS 23. If flash rusting occurs prior to metallizing, blast clean the metal surface again. Apply the thermal sprayed coating only when the surface temperature of the steel is at least 5°F above the dew point.

At the beginning of each work period or shift, conduct bend tests in accordance with Section 6.5 of SSPC-CS 23.00. Any disbonding or delamination of the coating that exposes the substrate requires corrective action, additional testing, and the Engineer's approval before resuming the metallizing process.

Apply TSC with the alloy to the thickness specified on the plans or as provided in the table below. All spot results (the average of 3 to 5 readings) must meet the minimum requirement. No additional tolerance (as allowed by SSPC PA-2) is permitted. (For Steel Beams: For pieces with less than 200 ft² measure 2 spots/surface per piece and for pieces greater than 200 ft² add 1 additional spots/surface for each 500 ft²).

Application	Thickness	Alloy	Seal Coat
Pot Bearings	8 mil	85/15 Zinc (W-Zn-Al-2)	0.5 mil
Armored Joint Angles	8 mil	85/15 Zinc (W-Zn-Al-2)	0.5 mil
Modular Joints	8 mil	99.99% Zn (W-Zn-1)	0.5 mil
Expansion Joint Seals	8 mil	99.99% Zn (W-Zn-1)	0.5 mil
Optional Disc Bearings	8 mil	85/15 Zinc (W-Zn-Al-2)	0.5 mil

When noted on the plans or as specified in the above chart, apply the sealer to all metallized surfaces in accordance with the manufacturer's recommendations and these provisions. Apply the seal coat only when the air temperature is above 40°F and the surface temperature of the steel is at least 5°F above the dew point. If the sealer is not applied within eight hours after the final application of TSC, the applicator verifies acceptable TSC surfaces and obtains approval from the Engineer before applying the sealer.

5.0 INSPECTION FREQUENCY

The TSC Contractor must conduct the following tests at the specified frequency and the results documented in a format approved by the Engineer.

Test/Standard	Location	Frequency	Specification
Ambient Conditions	Site	Each Process	5°F above the dew point
Abrasive Properties	Site	Each Day	Size, angularity, cleanliness
Surface Cleanliness SSPC Vis 1	All Surfaces	Visual All Surfaces	SSPC-SP-10 Atmospheric Service SSPC-SP - 5 Immersion Service
Surface Profile ASTM D-4417 Method C	Random Surfaces	3 per 500 ft ²	2.5 - 4.0 mils
Bend Test SSPC-CS 23.00	Site	5 per shift	Pass Visual
Thickness SSPC PA-2R SSPC-CS 23.00	Each Surface	Use the method in PA-2 Appendix 3 for Girders and Appendix 4 for frames and miscellaneous steel. See Note 1.	Zn - 8 mils minimum Al - 8 mils minimum Zn Al - 8 mils minimum Areas with more than twice the minimum thickness are inspected for compliance to the adhesion and cut testing requirements of this specification.
Adhesion ASTM 4541	Random Surfaces Splice Areas	1 set of 3 per 500 ft ²	Zn > 500 psi Al > 1000 psi Zn Al > 750 psi
Cut Test - SSPC-CS 23.00	Random Surfaces	3 sets of 3 per 500 ft ²	No peeling or delamination
Job Reference Std. SSPC-CS 23.00	Site	1 per job	Meets all the above requirements

6.0 REPAIRS

All Repairs are to be performed in accordance with the procedures below, depending on whether the repair surface is hidden or exposed. As an exception to the following, field welded splices on joint angles and field welding bearing plates to girders may be repaired in accordance with the procedures for hidden surfaces.

For hidden surfaces (including but not limited to interior girders, interior faces of exterior girders, and below-grade sections of piles):

1. Welding of metallized surfaces may be performed only if specifically permitted by the Engineer. Remove metallizing at the location of field welds by blast cleaning (SSPC SP-6 finish), or hand (SSPC SP-2 finish) or power tool cleaning (SSPC SP-3 finish) just prior to welding. Clean sufficiently to prevent contamination of the weld. All repairs to welded connections are metallized in accordance with SSPC CS 23.00.
2. Minor areas less than or equal to 0.1 ft^2 exposing the substrate are metallized in accordance with SSPC CS 23.00 or painted in accordance with ASTM A780, "Repair of Damaged and Uncoated Areas of Hot Dip Galvanized Coatings."
3. Large areas greater than 0.1 ft^2 exposing the substrate are metallized in accordance with SSPC CS 23.00.
4. Damaged (burnished) areas not exposing the substrate with less than the specified coating thickness are metallized in accordance with SSPC CS 23.00 or painted in accordance with ASTM A780, "Repair of Damaged and Uncoated Areas of Hot Dip Galvanized Coatings."
5. Damaged (burnished) areas not exposing the substrate with more than the specified coating thickness are not repaired.
6. Defective coating is repaired by either method 2 or 3 depending on the area of the defect.

For Exposed Surfaces (including but not limited to exterior faces of exterior girders and above-grade sections of piles):

1. Welding of metallized surfaces may be performed only if specifically permitted by the Engineer. Remove metallization at the location of field welds by blast cleaning (SSPC SP-6 finish), or hand (SSPC SP-2 finish) or power tool cleaning (SSPC SP-3 finish) just prior to welding. Clean sufficiently to prevent contamination of the weld. All repairs to welded connections are metallized in accordance with SSPC CS 23.00.
2. All areas exposing the substrate are metallized in accordance with SSPC CS 23.00
3. Defective coating is repaired by either method 2 or 3 depending on the area of the defect.

7.0 TWELVE MONTH OBSERVATION PERIOD

The contractor maintains responsibility for the coating system for a twelve (12) month observation period beginning upon the satisfactory completion of all the work required in the plans or as directed by the engineer. The contractor must guarantee the coating system under the payment and performance bond (refer to Article 109-10). To successfully complete the observation period, the coating system must meet the following requirements after twelve(12) months service:

- No visible rust, contamination or application defect is observed in any coated area.
- Painted surfaces have a uniform color and gloss.
- Surfaces have an adhesion of no less than 500 psi when tested in accordance with ASTM D-4541.

8.0 BASIS OF PAYMENT

The contract price bid for the bridge component to which the coating is applied will be full compensation for the thermal sprayed coating.

FOAM JOINT SEALS

(9-30-11)

1.0 SEALS

Use preformed seals compatible with concrete and resistant to abrasion, oxidation, oils, gasoline, salt and other materials that are spilled on or applied to the surface. Use a resilient, UV stable, preformed, impermeable, flexible, expansion joint seal. The joint seal shall consist of low-density, closed cell, cross-linked polyethylene non-extrudable, foam. The joint seal shall contain no EVA (Ethylene Vinyl Acetate). Cell generation shall be achieved by being physically blown using nitrogen. No chemical blowing agents shall be used in the cell generation process.

Use seals manufactured with grooves $1/8'' \pm$ wide by $1/8'' \pm$ deep and spaced between $1/4''$ and $1/2''$ apart along the bond surface running the length of the joint. Use seals with a depth that meets the manufacturer's recommendation, but is not less than 70% of the uncompressed width. Provide a seal designed so that, when compressed, the center portion of the top does not extend upward above the original height of the seal by more than $1/4''$.

Provide a seal that has a working range of 30% tension and 60% compression and meets the requirements given below.

TEST	TEST METHOD	REQUIREMENT
Tensile strength	ASTM D3575-08, Suffix T	110 – 130 psi
Compression Set	ASTM D1056 Suffix B, 2 hr recovery	10% - 16%
Water Absorption	ASTM D3575	< 0.03 lb/ft ²
Elongation at Break	ASTM D3575	180% - 210%
Tear Strength	ASTM D624 (D3575-08, Suffix G)	14 – 20 pli
Density	ASTM D3575-08, Suffix W, Method A	1.8 – 2.2 lb/ft ³
Toxicity	ISO-10993.5	Pass (not cytotoxic)

Have the top of the joint seal clearly shop marked. Inspect the joint seals upon receipt to ensure that the marks are clearly visible before installation.

2.0 BONDING ADHESIVE

Use a two component, 100% solid, modified epoxy adhesive supplied by the joint seal manufacturer that meets the requirements given below.

TEST	TEST METHOD	REQUIREMENT
Tensile strength	ASTM D638	3000 psi (min.)
Compressive strength	ASTM D695	7000 psi (min.)
Hardness	Shore D Scale	75-85 psi
Water Absorption	ASTM D570	0.25% by weight max.
Elongation to Break	ASTM D638	5% (max.)
Bond Strength	ASTM C882	2000 psi (min.)

Use an adhesive that is workable to 40°F. When installing in ambient air or surface temperatures below 40°F or for application on moist, difficult to dry concrete surfaces, use an adhesive specified by the manufacturer of the joint seal.

3.0 ELASTOMERIC CONCRETE

The elastomeric concrete shall not be placed until the reinforced concrete deck slab has cured for seven full days and reached a minimum strength of 3000 psi.

Prepare the concrete surface within 48 hours prior to placing the elastomeric concrete. Before placing the elastomeric concrete, all concrete surfaces shall be thoroughly cleaned

and dry. Sandblast the concrete surface in the blockout and clear the surface of all loose debris. Do not place the elastomeric concrete until the surface preparation is completed and approved.

A manufacturer's representative shall be present when placing elastomeric concrete. Do not place elastomeric concrete if the ambient air or surface temperature is below 45°F.

Prepare and apply a primer, as per manufacturer's recommendations, to all vertical concrete faces to be in contact with elastomeric concrete, and to areas specified by the manufacturer.

Prepare, batch, and place the elastomeric concrete in accordance with the manufacturer's instructions. Place the elastomeric concrete in the areas specified on the plans while the primer is still tacky and within 2 hours after applying the primer. Trowel the elastomeric concrete to a smooth finish.

4.0 SAWING THE JOINT

The joint opening shall be initially formed to the width shown on the plans including the blockout for the elastomeric concrete.

The elastomeric concrete shall cure a minimum of 2 days prior to sawing the elastomeric concrete to the final width and depth as specified in the plans.

When sawing the joint to receive the foam seal, always use a rigid guide to control the saw in the desired direction. To control the saw and to produce a straight line as indicated on the plans, anchor and positively connect a template or a track to the bridge deck. Do not saw the joint by visual means such as a chalk line. Fill the holes used for holding the template or track to the deck with an approved, flowable non-shrink, non-metallic grout.

Saw cut to the desired width and depth in one or two passes of the saw by placing and spacing two metal blades on the saw shaft to the desired width for the joint opening.

The desired depth is the depth of the seal plus 1/4" above the top of the seal plus approximately 1" below the bottom of the seal. An irregular bottom of sawed joint is permitted as indicated on the plans. Grind exposed corners on saw cut edges to a 1/4" chamfer.

Saw cut a straight joint, centered over the formed opening and to the desired width specified in the plans. Prevent any chipping or damage to the sawed edges of the joint.

Remove any staining or deposited material resulting from sawing with a wet blade to the satisfaction of the Engineer.

5.0 PREPARATION OF SAWED JOINT FOR SEAL INSTALLATION

After sawing the joint, the Engineer will thoroughly inspect the sawed joint opening for spalls, popouts, cracks, etc. All necessary repairs will be made by the Contractor prior to blast cleaning and installing the seal.

Clean the joints by sandblasting with clean dry sand immediately before placing the bonding agent. Sandblast the joint opening to provide a firm, clean joint surface free of curing compound, loose material and any foreign matter. Sandblast the joint opening without causing pitting or uneven surfaces. The aggregate in the elastomeric concrete may be exposed after sandblasting.

After blasting, either brush the surface with clean brushes made of hair, bristle or fiber, blow the surface with compressed air, or vacuum the surface until all traces of blast products and abrasives are removed from the surface, pockets, and corners.

If nozzle blasting is used to clean the joint opening, use compressed air that does not contain detrimental amounts of water or oil.

Examine the blast cleaned surface and remove any traces of oil, grease or smudge deposited in the cleaning operations.

Bond the seal to the blast cleaned surface on the same day the surface is blast cleaned.

6.0 SEAL INSTALLATION

Install the joint seal according to the manufacturer's procedures and recommendations and as recommended below. Do not install the joint seal if the ambient air or surface temperature is below 45°F. Have a manufacturer's certified trained factory representative present during the installation of the first seal of the project.

Before installing the joint seal, check the uninstalled seal length to insure the seal is the same length as the deck opening. When the joint seal requires splicing, use the heat welding method by placing the joint material ends against a teflon heating iron of 425-475°F for 7 - 10 seconds, then pressing the ends together tightly. Do not test the welding until the material has completely cooled.

Begin installation by protecting the top edges of the concrete deck adjacent to the vertical walls of the joint as a means to minimize clean up. After opening both cans of the bonding agent, stir each can using separate stirring rods for each component to prevent premature curing of the bonding agent. Pour the two components, at the specified mixing ratio, into a clean mixing bucket. Mix the components with a low speed drill (400 rpm max.) until a uniform gray color is achieved without visible marbling. Apply bonding agent to both sides of the elastomeric concrete as well as both sides of the joint seal, making certain to completely fill the grooves with epoxy. With gloved hands, compress the joint seal and with the help of a blunt probe, push the seal into the joint opening until the seal is recessed approximately 1/4" below the surface. When pushing down on the joint seal, apply

pressure only in a downward direction. Do not push the joint seal into the joint opening at an angle that would stretch the material. Seals that are stretched during installation shall be removed and rejected. Once work on placing a seal begins, do not stop until it is completed. Clean the excess epoxy from the top of the joint seal immediately with a trowel. Do not use solvents or any cleaners to remove the excess epoxy from the top of the seal. Remove the protective cover at the joint edges and check for any excess epoxy on the surface. Remove excess epoxy with a trowel, the use of solvents or any cleaners will not be allowed.

The installed system shall be watertight and will be monitored until final inspection and approval. Do not place pavement markings on top of foam joint seals.

7.0 BASIS OF PAYMENT

Payment for all foam joint seals will be at the lump sum contract price bid for "Foam Joint Seals". Prices and payment will be full compensation for furnishing all material, including elastomeric concrete, labor, tools and equipment necessary for installing these units in place and accepted.

EXPANSION JOINT SEALS

(9-30-11)

1.0 GENERAL

The work covered by this Special Provision consists of furnishing and installing the expansion joint seals as shown on the contract drawings. All materials, labor, equipment and incidentals necessary for the proper installation of the expansion joint seals are included.

2.0 MATERIAL

Provide expansion joint seals capable of accommodating a total movement measured parallel to the centerline of the roadway as shown on plans.

Provide an elastomeric component for each expansion joint seal that is a continuous unit for the entire length of the joint. Do not field splice the elastomeric component. Only vulcanized shop splicing of the elastomeric component is permitted. The minimum length of an elastomeric component before shop splicing is 20 feet. However, one piece shorter than 20 feet is permitted. Provide an elastomeric component that is clearly shop marked to indicate the top side and joint location of the elastomeric component. On skewed bridges, or under unsymmetrical conditions, clearly mark the left side of the elastomeric component. Left is defined as being on the left when facing in the direction of increasing station. Inspect the seals upon receipt to ensure that the marks are clearly visible upon installation.

Make sure the convolution of the gland does not project above the top of the hold-down plates when the joint opening is in the most compressed condition. Use either elastic polychloroprene (neoprene) or ethyl propylene diene monomer (EPDM) for the elastomer that meets the following minimum properties:

	ASTM TEST METHOD	REQUIREMENTS
Hardness, Durometer - Shore A	D2240	60 ± 5, Neoprene (upward corrugated shape - fabric reinforced) 75 ± 5, EPDM and Neoprene (upward non-corrugated shape) 80 ± 5, EPDM (upward corrugated shape-fabric reinforced)
Tensile Strength	D412	2000 psi (min.)
Elongation at Break	D412	250% (min.)
Width of Gland in Relaxed Condition	N/A	10" ± 0.25"

Thickness of Upturned portion of gland	N/A	0.25" non-corrugated shape, -0.032" to +0.032"
Thickness of Upturned portion of gland	N/A	0.1875" corrugated shape, -0.032" to +0.032"
Thickness of Flat portion of gland	N/A	0.1563", -0.032" to +0.032"

For fabric reinforced glands, submit one unreinforced sample per lot number, up to 500 feet of Expansion Joint Seal, to the Engineer for testing.

Only field splice hold-down plates at crown points, at abrupt changes in the deck slab cross slope, and on lane lines. Splicing within travel lanes is not permitted and splicing on edge lines is not required. Field splice hold-down plates between the edge line and gutter upturn and where necessary for proper installation and alignment is permitted. Show all splice locations on the working drawings for approval. For the location of lane markings at the expansion joint seal, see the Structure plans. At the splice locations, locate the hold-down bolts 3 inches from the end of the hold-down plate. At splice locations where changes in deck slab cross slope occur, cut the ends of hold-down plates parallel to the bridge centerline for skews less than 80° and greater than 100°.

Do not use welded shop splices in hold-down plates.

3.0 SHOP DRAWINGS

Submit nine sets of working drawings to the Engineer for review, comments and acceptance. Show complete details drawn to scale and include:

- The proposed template details including the makeup of the template
- The proposed method of holding the base angle assembly in place while concrete is cast around it
- The proposed procedure to correct for the effects of beam movement and rotation when setting width of joint opening
- The proposed chronology of installation including the sequence and direction of the concrete casting
- The details of cross connectors between base angles, such as steel bars with slots bolted to angles, to maintain evenness between the adjacent base angles while accommodating movement that occurs when concrete is cast. Indicate when bolts are loosened to allow movement.
- The proposed method for removing the hold-down plate
- A section detail through the joint showing horizontal offset dimensions of the base angles from the centerline joint. This detail is required when the vertical face of the joint opening is not perpendicular to the roadway surface (e.g. when the roadway grade is significant).

Have someone other than the one who prepares the drawing check all detailed drawings and include the signatures of both the drafter and checker on each sheet of the drawings. The Engineer returns unchecked drawings to the Contractor. Provide all completed drawings well in advance of the scheduled installation time for the expansion joint seal.

4.0 INSTALLATION

Provide supports for the base angle assembly at a maximum spacing of 9 feet. Place supports near field splices of base angles to ensure that field splices are straight and even. Provide base angles with ½" diameter weep holes at 12 inch centers to allow bleeding of trapped air and/or water. Do not obstruct the weep holes with falsework. Make the bottom of the trough parallel to grade and the sides parallel to the sides of the expansion joint seal.

For damaged areas, depressions, spalls, cracks, or irregularities of curbs or decks adjacent to the expansion joint, submit a proposed method of repair and repair material specifications for approval.

If the Engineer deems any aspects of the expansion joint seals unacceptable, make necessary corrections.

5.0 INSPECTION

When concrete is cast, use a non-aluminum, 10 foot, true to line straight edge to check and grade the top of the slab on each side of the joint to ensure smooth transition between spans.

Watertight Integrity Test

- Upon completion of an expansion joint seal, perform a water test on the top surface to detect any leakage. Cover the roadway section of the joint from curb to curb, or barrier rail to barrier rail, with water, either ponded or flowing, not less than 1 inch above the roadway surface at all points. Block sidewalk sections and secure an unnozzled water hose delivering approximately 1 gallon of water per minute to the inside face of the bridge railing, trained in a downward position about 6 inches above the sidewalks, such that there is continuous flow of water across the sidewalk and down the curb face of the joint.
- Maintain the ponding or flowing of water on the roadway and continuous flow across sidewalks and curbs for a period of 5 hours. At the conclusion of the test, the underside of the joint is closely examined for leakage. The expansion joint seal is considered watertight if no obvious wetness is visible on the Engineer's finger after touching a number of underdeck areas. Damp concrete that does not impart wetness to the finger is not a sign of leakage.
- If the joint system leaks, locate the place(s) of leakage and take any repair measures necessary to stop the leakage at no additional cost to the Department. Use repair measures recommended by the manufacturer and approved by the Engineer prior to beginning corrective work.
- If measures to eliminate leakage are taken, perform a subsequent water integrity test subject to the same conditions as the original test. Subsequent tests carry the same responsibility as the original test and are performed at no extra cost to the Department.

6.0 BASIS OF PAYMENT

Basis of payment for all expansion joint seals will be at the lump sum contract price for "Expansion Joint Seals" which price and payment will be full compensation for furnishing all material, including any steel accessory plates for sidewalks, medians and rails, labor, tools, and incidentals necessary for installing the expansion joint seal in place and including all materials, labor, tools and incidentals for performing the original watertight integrity test.

FALSEWORK AND FORMWORK

(4-5-12)

1.0 DESCRIPTION

Use this Special Provision as a guide to develop temporary works submittals required by the Standard Specifications or other provisions; no additional submittals are required herein. Such temporary works include, but are not limited to, falsework and formwork.

Falsework is any temporary construction used to support the permanent structure until it becomes self-supporting. Formwork is the temporary structure or mold used to retain plastic or fluid concrete in its designated shape until it hardens. Access scaffolding is a temporary structure that functions as a work platform that supports construction personnel, materials, and tools, but is not intended to support the structure. Scaffolding systems that are used to temporarily support permanent structures (as opposed to functioning as work platforms) are considered to be falsework under the definitions given. Shoring is a component of falsework such as horizontal, vertical, or inclined support members. Where the term "temporary works" is used, it includes all of the temporary facilities used in bridge construction that do not become part of the permanent structure.

Design and construct safe and adequate temporary works that will support all loads imposed and provide the necessary rigidity to achieve the lines and grades shown on the plans in the final structure.

2.0 MATERIALS

Select materials suitable for temporary works; however, select materials that also ensure the safety and quality required by the design assumptions. The Engineer has authority to reject material on the basis of its condition, inappropriate use, safety, or nonconformance with the plans. Clearly identify allowable loads or stresses for all materials or manufactured devices on the plans. Revise the plan and notify the Engineer if any change to materials or material strengths is required.

3.0 DESIGN REQUIREMENTS**A. Working Drawings**

Provide working drawings for items as specified in the contract, or as required by the Engineer, with design calculations and supporting data in sufficient detail to permit a structural and safety review of the proposed design of the temporary work.

On the drawings, show all information necessary to allow the design of any component to be checked independently as determined by the Engineer.

When concrete placement is involved, include data such as the drawings of proposed sequence, rate of placement, direction of placement, and location of all construction joints. Submit the number of copies as called for by the contract.

When required, have the drawings and calculations prepared under the guidance of, and sealed by, a North Carolina Registered Professional Engineer who is knowledgeable in temporary works design.

If requested by the Engineer, submit with the working drawings manufacturer's catalog data listing the weight of all construction equipment that will be supported on the temporary work. Show anticipated total settlements and/or deflections of falsework and forms on the working drawings. Include falsework footing settlements, joint take-up, and deflection of beams or girders.

As an option for the Contractor, overhang falsework hangers may be uniformly spaced, at a maximum of 36 inches, provided the following conditions are met:

Member Type (PCG)	Member Depth, (inches)	Max. Overhang Width, (inches)	Max. Slab Edge Thickness, (inches)	Max. Screenshot Wheel Weight, (lbs.)	Bracket Min. Vertical Leg Extension, (inches)
II	36	39	14	2000	26
III	45	42	14	2000	35
IV	54	45	14	2000	44
MBT	63	51	12	2000	50
MBT	72	55	12	1700	48

Overhang width is measured from the centerline of the girder to the edge of the deck slab.

For Type II, III & IV prestressed concrete girders (PCG), 45-degree cast-in-place half hangers and rods must have a minimum safe working load of 6,000 lbs.

For MBT prestressed concrete girders, 45-degree angle holes for falsework hanger rods shall be cast through the girder top flange and located, measuring along the top of the member, 1'-2 1/2" from the edge of the top flange. Hanger hardware and rods must have a minimum safe working load of 6,000 lbs.

The overhang bracket provided for the diagonal leg shall have a minimum safe working load of 3,750 lbs. The vertical leg of the bracket shall extend to the point that the heel bears on the girder bottom flange, no closer than 4 inches from the bottom of the member. However, for 72-inch members, the heel of the bracket shall bear on the web, near the bottom flange transition.

Provide adequate overhang falsework and determine the appropriate adjustments for deck geometry, equipment, casting procedures and casting conditions.

If the optional overhang falsework spacing is used, indicate this on the falsework submittal and advise the girder producer of the proposed details. Failure to notify the Engineer of hanger type and hanger spacing on prestressed concrete girder casting drawings may delay the approval of those drawings.

Falsework hangers that support concentrated loads and are installed at the edge of thin top flange concrete girders (such as bulb tee girders) shall be spaced so as not to exceed 75% of the manufacturer's stated safe working load. Use of dual leg hangers (such as Meadow Burke HF-42 and HF-43) are not allowed on concrete girders with thin top flanges. Design the falsework and forms supporting deck slabs and overhangs on girder bridges so that there will be no differential settlement between the girders and the deck forms during placement of deck concrete.

When staged construction of the bridge deck is required, detail falsework and forms for screed and fluid concrete loads to be independent of any previous deck pour components when the mid-span girder deflection due to deck weight is greater than $\frac{3}{4}$ ".

Note on the working drawings any anchorages, connectors, inserts, steel sleeves or other such devices used as part of the falsework or formwork that remains in the permanent structure. If the plan notes indicate that the structure contains the necessary corrosion protection required for a Corrosive Site, epoxy coat, galvanize or metalize these devices. Electroplating will not be allowed. Any coating required by the Engineer will be considered incidental to the various pay items requiring temporary works.

Design falsework and formwork requiring submittals in accordance with the 1995 AASHTO *Guide Design Specifications for Bridge Temporary Works* except as noted herein.

1. Wind Loads

Table 2.2 of Article 2.2.5.1 is modified to include wind velocities up to 110 mph. In addition, Table 2.2A is included to provide the maximum wind speeds by county in North Carolina.

Table 2.2 - Wind Pressure Values

Height Zone feet above ground	Pressure, lb/ft ² for Indicated Wind Velocity, mph				
	70	80	90	100	110
0 to 30	15	20	25	30	35
30 to 50	20	25	30	35	40
50 to 100	25	30	35	40	45
over 100	30	35	40	45	50

2. Time of Removal

The following requirements replace those of Article 3.4.8.2.

Do not remove forms until the concrete has attained strengths required in Article 420-16 of the Standard Specifications and these Special Provisions.

Do not remove forms until the concrete has sufficient strength to prevent damage to the surface.

Table 2.2A - Steady State Maximum Wind Speeds by Counties in North Carolina

COUNTY	25 YR (mph)	COUNTY	25 YR (mph)	COUNTY	25 YR (mph)
Alamance	70	Franklin	70	Pamlico	100
Alexander	70	Gaston	70	Pasquotank	100
Alleghany	70	Gates	90	Pender	100
Anson	70	Graham	80	Perquimans	100
Ashe	70	Granville	70	Person	70
Avery	70	Greene	80	Pitt	90
Beaufort	100	Guilford	70	Polk	80
Bertie	90	Halifax	80	Randolph	70
Bladen	90	Harnett	70	Richmond	70
Brunswick	100	Haywood	80	Robeson	80
Buncombe	80	Henderson	80	Rockingham	70
Burke	70	Hertford	90	Rowan	70
Cabarrus	70	Hoke	70	Rutherford	70
Caldwell	70	Hyde	110	Sampson	90
Camden	100	Iredell	70	Scotland	70
Carteret	110	Jackson	80	Stanley	70
Caswell	70	Johnston	80	Stokes	70
Catawba	70	Jones	100	Surry	70
Cherokee	80	Lee	70	Swain	80
Chatham	70	Lenoir	90	Transylvania	80
Chowan	90	Lincoln	70	Tyrell	100
Clay	80	Macon	80	Union	70
Cleveland	70	Madison	80	Vance	70
Columbus	90	Martin	90	Wake	70
Craven	100	McDowell	70	Warren	70
Cumberland	80	Mecklenburg	70	Washington	100
Currituck	100	Mitchell	70	Watauga	70
Dare	110	Montgomery	70	Wayne	80
Davidson	70	Moore	70	Wilkes	70
Davie	70	Nash	80	Wilson	80
Duplin	90	New Hanover	100	Yadkin	70
Durham	70	Northampton	80	Yancey	70
Edgecombe	80	Onslow	100		
Forsyth	70	Orange	70		

B. Review and Approval

The Engineer is responsible for the review and approval of temporary works' drawings.

Submit the working drawings sufficiently in advance of proposed use to allow for their review, revision (if needed), and approval without delay to the work.

The time period for review of the working drawings does not begin until complete drawings and design calculations, when required, are received by the Engineer.

Do not start construction of any temporary work for which working drawings are required until the drawings have been approved. Such approval does not relieve the Contractor of the responsibility for the accuracy and adequacy of the working drawings.

4.0 CONSTRUCTION REQUIREMENTS

All requirements of Section 420 of the Standard Specifications apply.

Construct temporary works in conformance with the approved working drawings. Ensure that the quality of materials and workmanship employed is consistent with that assumed in the design of the temporary works. Do not weld falsework members to any portion of the permanent structure unless approved. Show any welding to the permanent structure on the approved construction drawings.

Provide tell-tales attached to the forms and extending to the ground, or other means, for accurate measurement of falsework settlement. Make sure that the anticipated compressive settlement and/or deflection of falsework does not exceed 1 inch. For cast-in-place concrete structures, make sure that the calculated deflection of falsework flexural members does not exceed 1/240 of their span regardless of whether or not the deflection is compensated by camber strips.

A. Maintenance and Inspection

Inspect and maintain the temporary work in an acceptable condition throughout the period of its use. Certify that the manufactured devices have been maintained in a condition to allow them to safely carry their rated loads. Clearly mark each piece so that its capacity can be readily determined at the job site.

Perform an in-depth inspection of an applicable portion(s) of the temporary works, in the presence of the Engineer, not more than 24 hours prior to the beginning of each concrete placement. Inspect other temporary works at least once a month to ensure that they are functioning properly. Have a North Carolina Registered Professional Engineer inspect the cofferdams, shoring, sheathing, support of excavation structures, and support systems for load tests prior to loading.

B. Foundations

Determine the safe bearing capacity of the foundation material on which the supports for temporary works rest. If required by the Engineer, conduct load tests to verify proposed bearing capacity values that are marginal or in other high-risk situations.

The use of the foundation support values shown on the contract plans of the permanent structure is permitted if the foundations are on the same level and on the same soil as those of the permanent structure.

Allow for adequate site drainage or soil protection to prevent soil saturation and washout of the soil supporting the temporary works supports.

If piles are used, the estimation of capacities and later confirmation during construction using standard procedures based on the driving characteristics of the pile is permitted. If preferred, use load tests to confirm the estimated capacities; or, if required by the Engineer conduct load tests to verify bearing capacity values that are marginal or in other high risk situations.

The Engineer reviews and approves the proposed pile and soil bearing capacities.

5.0 REMOVAL

Unless otherwise permitted, remove and keep all temporary works upon completion of the work. Do not disturb or otherwise damage the finished work.

Remove temporary works in conformance with the contract documents. Remove them in such a manner as to permit the structure to uniformly and gradually take the stresses due to its own weight.

6.0 METHOD OF MEASUREMENT

Unless otherwise specified, temporary works will not be directly measured.

7.0 BASIS OF PAYMENT

Payment at the contract unit prices for the various pay items requiring temporary works will be full compensation for the above falsework and formwork.

SUBMITTAL OF WORKING DRAWINGS

(2-10-12)

1.0 GENERAL

Submit working drawings in accordance with Article 105-2 of the *Standard Specifications* and this provision. For this provision, “submittals” refers to only those listed in this provision. The list of submittals contained herein does not represent a list of required submittals for the project. Submittals are only necessary for those items as required by the contract. Make submittals that are not specifically noted in this provision directly to the Resident Engineer. Either the Structure Design Unit or the Geotechnical Engineering Unit or both units will jointly review submittals.

If a submittal contains variations from plan details or specifications or significantly affects project cost, field construction or operations, discuss the submittal with and submit all copies to the Resident Engineer. State the reason for the proposed variation in the submittal. To minimize review time, make sure all submittals are complete when initially submitted. Provide a contact name and information with each submittal. Direct any questions regarding submittal requirements to the Resident Engineer, Structure Design Unit contacts or the Geotechnical Engineering Unit contacts noted below.

In order to facilitate in-plant inspection by NCDOT and approval of working drawings, provide the name, address and telephone number of the facility where fabrication will actually be done if different than shown on the title block of the submitted working drawings. This includes, but is not limited to, precast concrete items, prestressed concrete items and fabricated steel or aluminum items.

2.0 ADDRESSES AND CONTACTS

For submittals to the Structure Design Unit, use the following addresses:

Via US mail:

Mr. G. R. Perfetti, P. E.
State Bridge Design Engineer
North Carolina Department
of Transportation
Structure Design Unit
1581 Mail Service Center
Raleigh, NC 27699-1581

Attention: Mr. P. D. Lambert, P. E.

Via other delivery service:

Mr. G. R. Perfetti, P. E.
State Bridge Design Engineer
North Carolina Department
of Transportation
Structure Design Unit
1000 Birch Ridge Drive
Raleigh, NC 27610

Attention: Mr. P. D. Lambert, P. E.

Submittals may also be made via email.

Send submittals to:

plambert@ncdot.gov (Paul Lambert)

Send an additional e-copy of the submittal to the following address:

jgaither@ncdot.gov (James Gaither)

jlbolden@ncdot.gov (James Bolden)

For submittals to the Geotechnical Engineering Unit, use the following addresses:

For projects in Divisions 1-7, use the following Eastern Regional Office address:

Via US mail:

Mr. K. J. Kim, Ph. D., P. E.
Eastern Regional Geotechnical
Manager
North Carolina Department
of Transportation
Geotechnical Engineering Unit
Eastern Regional Office
1570 Mail Service Center
Raleigh, NC 27699-1570

Via other delivery service:

Mr. K. J. Kim, Ph. D., P. E.
Eastern Regional Geotechnical
Manager
North Carolina Department
of Transportation
Geotechnical Engineering Unit
Eastern Regional Office
3301 Jones Sausage Road, Suite 100
Garner, NC 27529

For projects in Divisions 8-14, use the following Western Regional Office address:

Via US mail:

Mr. John Pilipchuk, L. G., P. E.
Western Regional Geotechnical
Manager
North Carolina Department
of Transportation
Geotechnical Engineering Unit
Western Regional Office
5253 Z Max Boulevard
Harrisburg, NC 28075

Via other delivery service:

Mr. John Pilipchuk, L. G., P. E.
Western Region Geotechnical
Manager
North Carolina Department
of Transportation
Geotechnical Engineering Unit
Western Regional Office
5253 Z Max Boulevard
Harrisburg, NC 28075

The status of the review of structure-related submittals sent to the Structure Design Unit can be viewed from the Unit’s web site, via the “Contractor Submittal” link.

Direct any questions concerning submittal review status, review comments or drawing markups to the following contacts:

Primary Structures Contact: Paul Lambert (919) 707 – 6407
(919) 250 – 4082 facsimile
plambert@ncdot.gov

Secondary Structures Contacts: James Gaither (919) 707 – 6409
James Bolden (919) 707 – 6408

Eastern Regional Geotechnical Contact (Divisions 1-7):

K. J. Kim (919) 662 – 4710
(919) 662 – 3095 facsimile
kkim@ncdot.gov

Western Regional Geotechnical Contact (Divisions 8-14):

John Pilipchuk

(704) 455 – 8902

(704) 455 – 8912 facsimile

jpilipchuk@ncdot.gov

3.0 SUBMITTAL COPIES

Furnish one complete copy of each submittal, including all attachments, to the Resident Engineer. At the same time, submit the number of hard copies shown below of the same complete submittal directly to the Structure Design Unit and/or the Geotechnical Engineering Unit.

The first table below covers “Structure Submittals”. The Resident Engineer will receive review comments and drawing markups for these submittals from the Structure Design Unit. The second table in this section covers “Geotechnical Submittals”. The Resident Engineer will receive review comments and drawing markups for these submittals from the Geotechnical Engineering Unit.

Unless otherwise required, submit one set of supporting calculations to either the Structure Design Unit or the Geotechnical Engineering Unit unless both units require submittal copies in which case submit a set of supporting calculations to each unit. Provide additional copies of any submittal as directed.

STRUCTURE SUBMITTALS

Submittal	Copies Required by Structure Design Unit	Copies Required by Geotechnical Engineering Unit	Contract Reference Requiring Submittal ¹
Arch Culvert Falsework	5	0	Plan Note, SN Sheet & "Falsework and Formwork"
Box Culvert Falsework ⁷	5	0	Plan Note, SN Sheet & "Falsework and Formwork"
Cofferdams	6	2	Article 410-4
Foam Joint Seals ⁶	9	0	"Foam Joint Seals"
Expansion Joint Seals (hold down plate type with base angle)	9	0	"Expansion Joint Seals"
Expansion Joint Seals (modular)	2, then 9	0	"Modular Expansion Joint Seals"
Expansion Joint Seals (strip seals)	9	0	"Strip Seals"
Falsework & Forms ² (substructure)	8	0	Article 420-3 & "Falsework and Formwork"
Falsework & Forms (superstructure)	8	0	Article 420-3 & "Falsework and Formwork"
Girder Erection over Railroad	5	0	Railroad Provisions
Maintenance and Protection of Traffic Beneath Proposed Structure	8	0	"Maintenance and Protection of Traffic Beneath Proposed Structure at Station ____"
Metal Bridge Railing	8	0	Plan Note
Metal Stay-in-Place Forms	8	0	Article 420-3
Metalwork for Elastomeric Bearings ^{4,5}	7	0	Article 1072-8
Miscellaneous Metalwork ^{4,5}	7	0	Article 1072-8
Optional Disc Bearings ⁴	8	0	"Optional Disc Bearings"

Overhead and Digital Message Signs (DMS) (metalwork and foundations)	13	0	Applicable Provisions
Placement of Equipment on Structures (cranes, etc.)	7	0	Article 420-20
Pot Bearings ⁴	8	0	“Pot Bearings”
Precast Concrete Box Culverts	2, then 1 reproducible	0	“Optional Precast Reinforced Concrete Box Culvert at Station ____”
Prestressed Concrete Cored Slab (detensioning sequences) ³	6	0	Article 1078-11
Prestressed Concrete Deck Panels	6 and 1 reproducible	0	Article 420-3
Prestressed Concrete Girder (strand elongation and detensioning sequences)	6	0	Articles 1078-8 and 1078-11
Removal of Existing Structure over Railroad	5	0	Railroad Provisions
Revised Bridge Deck Plans (adaptation to prestressed deck panels)	2, then 1 reproducible	0	Article 420-3
Revised Bridge Deck Plans (adaptation to modular expansion joint seals)	2, then 1 reproducible	0	“Modular Expansion Joint Seals”
Sound Barrier Wall (precast items)	10	0	Article 1077-2 & “Sound Barrier Wall”
Sound Barrier Wall Steel Fabrication Plans ⁵	7	0	Article 1072-8 & “Sound Barrier Wall”
Structural Steel ⁴	2, then 7	0	Article 1072-8
Temporary Detour Structures	10	2	Article 400-3 & “Construction, Maintenance and Removal of Temporary Structure at Station ____”
TFE Expansion Bearings ⁴	8	0	Article 1072-8

FOOTNOTES

1. References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Articles refer to the *Standard Specifications*.
2. Submittals for these items are necessary only when required by a note on plans.
3. Submittals for these items may not be required. A list of pre-approved sequences is available from the producer or the Materials & Tests Unit.
4. The fabricator may submit these items directly to the Structure Design Unit.
5. The two sets of preliminary submittals required by Article 1072-8 of the *Standard Specifications* are not required for these items.
6. Submittals for Fabrication Drawings are not required. Submittals for Catalogue Cuts of Proposed Material are required. See Section 5.A of the referenced provision.
7. Submittals are necessary only when the top slab thickness is 18" or greater.

GEOTECHNICAL SUBMITTALS

Submittal	Copies Required by Geotechnical Engineering Unit	Copies Required by Structure Design Unit	Contract Reference Requiring Submittal ¹
Drilled Pier Construction Plans ²	1	0	Subarticle 411-3(A)
Crosshole Sonic Logging (CSL) Reports ²	1	0	Subarticle 411-5(A)(2)
Pile Driving Equipment Data Forms ^{2,3}	1	0	Subarticle 450-3(D)(2)
Pile Driving Analyzer (PDA) Reports ²	1	0	Subarticle 450-3(F)(3)
Retaining Walls ⁴	8 drawings, 2 calculations	2 drawings	Applicable Provisions
Temporary Shoring ⁴	5 drawings, 2 calculations	2 drawings	“Temporary Shoring” & “Temporary Soil Nail Walls”

FOOTNOTES

- References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Subarticles refer to the *Standard Specifications*.
- Submit one hard copy of submittal to the Resident or Bridge Maintenance Engineer. Submit a second copy of submittal electronically (PDF via email) or by facsimile, US mail or other delivery service to the appropriate Geotechnical Engineering Unit regional office. Electronic submission is preferred.
- The Pile Driving Equipment Data Form is available from:
www.ncdot.org/doh/preconstruct/highway/geotech/formdet/
See second page of form for submittal instructions.
- Electronic copy of submittal is required. See referenced provision.

CRANE SAFETY

(8-15-05)

Comply with the manufacturer specifications and limitations applicable to the operation of any and all cranes and derricks. Prime contractors, sub-contractors, and fully operated rental companies shall comply with the current Occupational Safety and Health Administration regulations (OSHA).

Submit all items listed below to the Engineer prior to beginning crane operations involving critical lifts. A critical lift is defined as any lift that exceeds 75 percent of the manufacturer's crane chart capacity for the radius at which the load will be lifted or requires the use of more than one crane. Changes in personnel or equipment must be reported to the Engineer and all applicable items listed below must be updated and submitted prior to continuing with crane operations.

CRANE SAFETY SUBMITTAL LIST

- A. **Competent Person:** Provide the name and qualifications of the "Competent Person" responsible for crane safety and lifting operations. The named competent person will have the responsibility and authority to stop any work activity due to safety concerns.
- B. **Riggers:** Provide the qualifications and experience of the persons responsible for rigging operations. Qualifications and experience should include, but not be limited to, weight calculations, center of gravity determinations, selection and inspection of sling and rigging equipment, and safe rigging practices.
- C. **Crane Inspections:** Inspection records for all cranes shall be current and readily accessible for review upon request.
- D. **Certifications:** By July 1, 2006, crane operators performing critical lifts shall be certified by NC CCO (National Commission for the Certification of Crane Operators), or satisfactorily complete the Carolinas AGC's Professional Crane Operator's Proficiency Program. Other approved nationally accredited programs will be considered upon request. All crane operators shall also have a current CDL medical card. Submit a list of anticipated critical lifts and corresponding crane operator(s). Include current certification for the type of crane operated (small hydraulic, large hydraulic, small lattice, large lattice) and medical evaluations for each operator.

GROUT FOR STRUCTURES

(9-30-11)

1.0 DESCRIPTION

This special provision addresses grout for use in pile blockouts, grout pockets, shear keys, dowel holes and recesses for structures. This provision does not apply to grout placed in post-tensioning ducts for bridge beams, girders, or decks. Mix and place grout in accordance with the manufacturer's recommendations, the applicable sections of the Standard Specifications and this provision.

2.0 MATERIAL REQUIREMENTS

Use a Department approved pre-packaged, non-shrink, non-metallic grout. Contact the Materials and Tests Unit for a list of approved pre-packaged grouts and consult the manufacturer to determine if the pre-packaged grout selected is suitable for the required application.

When using an approved pre-packaged grout, a grout mix design submittal is not required.

The grout shall be free of soluble chlorides and contain less than one percent soluble sulfate. Supply water in compliance with Article 1024-4 of the Standard Specifications.

Aggregate may be added to the mix only where recommended or permitted by the manufacturer and Engineer. The quantity and gradation of the aggregate shall be in accordance with the manufacturer's recommendations.

Admixtures, if approved by the Department, shall be used in accordance with the manufacturer's recommendations. The manufacture date shall be clearly stamped on each container. Admixtures with an expired shelf life shall not be used.

The Engineer reserves the right to reject material based on unsatisfactory performance.

Initial setting time shall not be less than 10 minutes when tested in accordance with ASTM C266.

Test the expansion and shrinkage of the grout in accordance with ASTM C1090. The grout shall expand no more than 0.2% and shall exhibit no shrinkage. Furnish a Type 4 material certification showing results of tests conducted to determine the properties listed in the Standard Specifications and to assure the material is non-shrink.

Unless required elsewhere in the contract the compressive strength at 3 days shall be at least 5000 psi. Compressive strength in the laboratory shall be determined in accordance with ASTM C109 except the test mix shall contain only water and the dry manufactured material. Compressive strength in the field will be determined by molding and testing 4" x 8" cylinders in accordance with AASHTO T22. Construction loading and traffic loading shall not be allowed until the 3 day compressive strength is achieved.

When tested in accordance with ASTM C666, Procedure A, the durability factor of the grout shall not be less than 80.

3.0 SAMPLING AND PLACEMENT

Place and maintain components in final position until grout placement is complete and accepted. Concrete surfaces to receive grout shall be free of defective concrete, laitance, oil, grease and other foreign matter. Saturate concrete surfaces with clean water and remove excess water prior to placing grout.

Do not place grout if the grout temperature is less than 50°F or more than 90°F or if the air temperature measured at the location of the grouting operation in the shade away from artificial heat is below 45°F.

Provide grout at a rate that permits proper handling, placing and finishing in accordance with the manufacturer's recommendations unless directed otherwise by the Engineer. Use grout free of any lumps and undispersed cement. Agitate grout continuously before placement.

Control grout delivery so the interval between placing batches in the same component does not exceed 20 minutes.

The Engineer will determine the locations to sample grout and the number and type of samples collected for field and laboratory testing. The compressive strength of the grout will be considered the average compressive strength test results of 3 cube or 2 cylinder specimens at 28 days.

4.0 BASIS OF PAYMENT

No separate payment will be made for "Grout for Structures". The cost of the material, equipment, labor, placement, and any incidentals necessary to complete the work shall be considered incidental to the structure item requiring grout.

MECHANICALLY STABILIZED EARTH RETAINING WALLS

(7-17-12)

1.0 GENERAL

Construct mechanically stabilized earth (MSE) retaining walls consisting of steel or geogrid reinforcement in the reinforced zone connected to vertical facing elements. The facing elements may be precast concrete panels or segmental retaining wall (SRW) units unless required otherwise in the plans or the *NCDOT Policy for Mechanically Stabilized Earth Retaining Walls* prohibits the use of SRW units. At the Contractor's option, use coarse or fine aggregate in the reinforced zone of MSE retaining walls except do not use fine aggregate for walls subject to scour, walls that support or are adjacent to railroads or walls with design heights greater than 35 ft or internal acute corners less than 45°. Provide reinforced concrete coping as required. Design and construct MSE retaining walls based on actual elevations and wall dimensions in accordance with the contract and accepted submittals. Use a prequalified MSE Wall Installer to construct MSE retaining walls.

Define "MSE wall" as a mechanically stabilized earth retaining wall and "MSE Wall Vendor" as the vendor supplying the chosen MSE wall system. Define a "segmental retaining wall" as an MSE wall with SRW units and an "abutment wall" as an MSE wall with bridge foundations in the reinforced zone. Define "reinforcement" as steel or geogrid reinforcement and "aggregate" as coarse or fine aggregate. Define "panel" as a precast concrete panel and "coping" as precast or cast-in-place concrete coping.

Use an approved MSE wall system in accordance with the plans, NCDOT MSE wall policy and any NCDOT restrictions for the chosen system. Value engineering proposals for other MSE wall systems will not be considered. Do not use segmental retaining walls or MSE wall systems with an “approved for provisional use” status code for critical walls or MSE walls connected to critical walls. Critical walls are defined in the NCDOT MSE wall policy. The list of approved MSE wall systems and NCDOT MSE wall policy are available from:

www.ncdot.org/doh/preconstruct/highway/geotech/msewalls

2.0 MATERIALS

Refer to the *Standard Specifications*.

Item	Section
Aggregate	1014
Anchor Pins	1056-2
Curing Agents	1026
Geotextiles, Type 2	1056
Joint Materials	1028
Portland Cement Concrete, Class A	1000
Precast Retaining Wall Coping	1077
Reinforcing Steel	1070
Retaining Wall Panels	1077
Segmental Retaining Wall Units	1040-4
Shoulder Drain Materials	816-2
Wire Staples	1060-8(D)

Provide Type 2 geotextile for filtration and separation geotextiles. Use Class A concrete for cast-in-place coping, leveling concrete and pads.

Provide panels and SRW units produced by a manufacturer approved or licensed by the MSE Wall Vendor. Unless required otherwise in the contract, produce panels with a smooth flat final finish that meets Article 1077-11 of the *Standard Specifications*. Accurately locate and secure reinforcement connectors in panels and maintain required concrete cover. Produce panels within 1/4" of the panel dimensions shown in the accepted submittals.

Damaged panels or SRW units with excessive discoloration, chips or cracks as determined by the Engineer will be rejected. Do not damage reinforcement connection devices or mechanisms in handling or storing panels and SRW units.

Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Handle and store geogrids in

accordance with Article 1056-2 of the *Standard Specifications*. Load, transport, unload and store MSE wall materials so materials are kept clean and free of damage.

A. Aggregate

Use standard size No. 57, 57M, 67 or 78M that meets Table 1005-1 of the *Standard Specifications* for coarse aggregate except do not use No. 57 or 57M stone in the reinforced zone of MSE walls with geogrid reinforcement. Use the following for fine aggregate:

1. Standard size No. 1S, 2S, 2MS or 4S that meets Table 1005-2 of the *Standard Specifications* or
2. Gradation that meets Class III, Type 3 select material in accordance with Article 1016-3 of the *Standard Specifications*.

Fine aggregate is exempt from mortar strength and siliceous particle content referenced in Subarticles 1014-1(E) and 1014-1(H) of the *Standard Specifications*. Provide fine aggregate that meets the following requirements:

FINE AGGREGATE REQUIREMENTS

Reinforcement or Connector Material	pH	Resistivity	Chlorides	Sulfates	Organics
Steel	5-10	≥ 3,000 Ω · cm	≤ 100 ppm	≤ 200 ppm	≤ 1%
Polyester Type (PET) Geogrid	5-8	N/A*	N/A*	N/A*	≤ 1%
Polyolefin Geogrid	4.5-9	N/A*	N/A*	N/A*	≤ 1%

* Resistivity, chlorides and sulfates are not applicable to geogrid.

Use fine aggregate from a source that meets the *Mechanically Stabilized Earth Wall Fine Aggregate Sampling and Testing Manual*. Perform organic content tests in accordance with AASHTO T 267 instead of Subarticle 1014-1(D) of the *Standard Specifications*. Perform electrochemical tests in accordance with the following test procedures:

Property	Test Method
pH	AASHTO T 289
Resistivity	AASHTO T 288
Chlorides	AASHTO T 291
Sulfates	AASHTO T 290

B. Reinforcement

Provide steel or geogrid reinforcement supplied by the MSE Wall Vendor or a manufacturer approved or licensed by the vendor. Use approved reinforcement for the chosen MSE wall system. The list of approved reinforcement for each MSE wall system is available from the website shown elsewhere in this provision.

Steel Reinforcement

Provide Type 1 material certifications in accordance with Article 106-3 of the *Standard Specifications* for steel reinforcement. Use welded wire grid reinforcement (“mesh”, “mats” and “ladders”) that meet Article 1070-3 of the *Standard Specifications* and metallic strip reinforcement (“straps”) that meet ASTM A572 or A1011. Galvanize steel reinforcement in accordance with Section 1076 of the *Standard Specifications*.

Geogrid Reinforcement

Define “machine direction” (MD) for geogrids in accordance with ASTM D4439. Provide Type 1 material certifications for geogrid strengths in the MD in accordance with Article 1056-3 of the *Standard Specifications*. Test geogrids in accordance with ASTM D6637.

C. Bearing Pads

Use bearing pads that meet Section 3.6.1.a of the *FHWA Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes – Volume I* (Publication No. FHWA-NHI-10-024).

D. Miscellaneous Components

Miscellaneous components may include connectors (e.g., anchors, bars, clamps, pins, plates, ties, etc.), fasteners (e.g., bolts, nuts, washers, etc.) and any other MSE wall components not included above. Galvanize steel components in accordance with Section 1076 of the *Standard Specifications*. Provide approved miscellaneous components for the chosen MSE wall system. The list of approved miscellaneous components for each MSE wall system is available from the website shown elsewhere in this provision.

3.0 PRECONSTRUCTION REQUIREMENTS

A. MSE Wall Surveys

The Retaining Wall Plans show a plan view, typical sections, details, notes and an elevation or profile view (wall envelope) for each MSE wall. Before beginning MSE wall design, survey existing ground elevations shown in the plans and other elevations in the vicinity of MSE wall locations as needed. Based on these elevations, finished grades and actual MSE wall dimensions and details, submit revised wall envelopes for acceptance. Use accepted wall envelopes for design.

B. MSE Wall Designs

Submit 11 copies of working drawings and 3 copies of design calculations and a PDF copy of each for MSE wall designs at least 30 days before the preconstruction meeting.

Do not begin MSE wall construction until a design submittal is accepted.

Use a prequalified MSE Wall Design Consultant to design MSE walls. Provide designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the MSE Wall Design Consultant.

Design MSE walls in accordance with the plans, *AASHTO LRFD Bridge Design Specifications* and any NCDOT restrictions for the chosen MSE wall system unless otherwise required. Design MSE walls for seismic if walls are located in seismic zone 2 based on Figure 2-1 of the *Structure Design Manual*. Use a uniform reinforcement length throughout the wall height of at least 0.7H with H as defined for the embedment requirements in this provision or 6 ft, whichever is greater, unless shown otherwise in the plans. Extend the reinforced zone at least 6" beyond end of reinforcement. Do not locate drains, the reinforced zone or leveling pads outside right-of-way or easement limits.

Use the simplified method for determining maximum reinforcement loads and approved design parameters for the chosen MSE wall system or default values in accordance with the AASHTO LRFD specifications. Design steel components including reinforcement and connectors for the design life noted in the plans and aggregate type in the reinforced zone. Use corrosion loss rates for galvanizing in accordance with the AASHTO LRFD specifications for nonaggressive backfill and carbon steel corrosion rates in accordance with the following:

CARBON STEEL CORROSION RATES	
Aggregate Type (in the reinforced zone)	Corrosion Loss Rate (after zinc depletion)
Coarse	0.47 mil/year
Fine (except abutment walls)	0.58 mil/year
Fine (abutment walls)	0.70 mil/year

For geogrid reinforcement and connectors, use approved geogrid properties for the design life noted in the plans and aggregate type in the reinforced zone.

When noted in the plans, design MSE walls for a live load (traffic) surcharge of 250 lb/sf in accordance with Figure C11.5.5-3(b) of the AASHTO LRFD specifications. For steel beam guardrail with 8 ft posts or concrete barrier rail above MSE walls, analyze top 2 reinforcement layers for traffic impact loads in accordance

with Section 7.2 of the FHWA MSE wall manual shown elsewhere in this provision except use the following for geogrid reinforcement rupture:

$$\phi T_{al} R_c \geq T_{max} + (T_I / RF_{CR})$$

Where,

- ϕ = resistance factor for tensile resistance in accordance with Section 7.2.1 of the FHWA MSE wall manual,
- T_{al} = long-term geogrid design strength approved for chosen MSE wall system,
- R_c = reinforcement coverage ratio = 1 for continuous geogrid reinforcement,
- T_{max} = factored static load in accordance with Section 7.2 of the FHWA MSE wall manual,
- T_I = factored impact load in accordance with Section 7.2 of the FHWA MSE wall manual and
- RF_{CR} = creep reduction factor approved for chosen MSE wall system.

If existing or future obstructions such as foundations, guardrail, fence or handrail posts, moment slabs, pavements, pipes, inlets or utilities will interfere with reinforcement, maintain a clearance of at least 3" between obstructions and reinforcement unless otherwise approved. Locate reinforcement layers so all of reinforcement length is within 3" of corresponding connection elevations.

Use 6" thick cast-in-place unreinforced concrete leveling pads beneath panels and SRW units that are continuous at steps and extend at least 6" in front of and behind bottom row of panels or SRW units. Unless required otherwise in the plans, embed top of leveling pads in accordance with the following requirements:

EMBEDMENT REQUIREMENTS		
Front Slope¹ (H:V)	Minimum Embedment Depth² (whichever is greater)	
6:1 or flatter (except abutment walls)	H/20	1 ft for H ≤ 10 ft 2 ft for H > 10 ft
6:1 or flatter (abutment walls)	H/10	2 ft
> 6:1 to < 3:1	H/10	2 ft
3:1 to 2:1	H/7	2 ft

1. Front slope is as shown in the plans.
2. Define "H" as the maximum design height plus embedment per wall with the design height and embedment as shown in the plans.

When noted in the plans, locate a continuous aggregate shoulder drain along base of reinforced zone behind aggregate. Provide wall drainage systems consisting of drains and outlet components in accordance with Standard Drawing No. 816.02 of the *Roadway Standard Drawings*.

For MSE walls with panels, place at least 2 bearing pads in each horizontal panel joint so the final horizontal joint opening is between 5/8" and 7/8". Additional bearing pads may be required for panels wider than 5 ft as determined by the Engineer. Cover joints at back of panels with filtration geotextiles at least 12" wide.

For segmental retaining walls, fill SRW unit core spaces with coarse aggregate and between and behind SRW units with coarse aggregate for a horizontal distance of at least 18".

Separation geotextiles are required between aggregate and overlying fill or pavement sections except when concrete pavement, full depth asphalt or cement treated base is placed directly on aggregate. Separation geotextiles may also be required between coarse aggregate and backfill or natural ground as determined by the Engineer.

Unless required otherwise in the plans, use reinforced concrete coping at top of walls. Extend coping at least 6" above where the grade intersects back of coping unless required otherwise in the plans. Use coping dimensions shown in the plans and cast-in-place concrete coping for segmental retaining walls and when noted in the plans. At the Contractor's option, connect cast-in-place concrete coping to panels and SRW units with dowels or extend coping down back of MSE walls. Also, connect cast-in-place leveling concrete for precast concrete coping to panels with dowels. When concrete barrier rail is required above MSE walls, use concrete barrier rail with moment slab as shown in the plans.

Submit working drawings and design calculations for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing plan views, wall profiles with required resistances, typical sections with reinforcement and connection details, aggregate locations and types, geotextile locations and details of leveling pads, panels or SRW units, coping, bin walls, slip joints, etc. If necessary, include details on working drawings for concrete barrier rail with moment slab, reinforcement splices if allowed for the chosen MSE wall system, reinforcement connected to end bent caps and obstructions extending through walls or interfering with reinforcement, leveling pads, barriers or moment slabs. Submit design calculations for each wall section with different surcharge loads, geometry or material parameters. At least one analysis is required for each wall section with different reinforcement lengths. When designing MSE walls with computer software other than MSEW, use MSEW version 3.0 with update 14.2 or later, manufactured by ADAMA Engineering, Inc. to verify the design. At least one MSEW analysis is required per 100 ft of wall length with at least one MSEW analysis for the wall section with the longest reinforcement. Submit electronic MSEW input files and PDF output files with design calculations.

C. Preconstruction Meeting

Before starting MSE wall construction, hold a preconstruction meeting to discuss the construction and inspection of the MSE walls. Schedule this meeting after all MSE wall submittals have been accepted. The Resident or Bridge Maintenance Engineer,

Bridge Construction Engineer, Geotechnical Operations Engineer, Contractor and MSE Wall Installer Superintendent will attend this preconstruction meeting.

4.0 CORROSION MONITORING

Corrosion monitoring is required for MSE walls with steel reinforcement. The Engineer will determine the number of monitoring locations and where to install the instrumentation. Contact the Materials and Tests (M&T) Unit before beginning wall construction. M&T will provide the corrosion monitoring instrumentation kits and if necessary, assistance with installation.

5.0 SITE ASSISTANCE

Unless otherwise approved, provide an MSE Wall Vendor representative to assist and guide the MSE Wall Installer on-site for at least 8 hours when the first panels or SRW units and reinforcement layer are placed. If problems are encountered during construction, the Engineer may require the vendor representative to return to the site for a time period determined by the Engineer.

6.0 CONSTRUCTION METHODS

Control drainage during construction in the vicinity of MSE walls. Direct run off away from MSE walls, aggregate and backfill. Contain and maintain aggregate and backfill and protect material from erosion.

Excavate as necessary for MSE walls in accordance with the accepted submittals. If applicable and at the Contractor's option, use temporary shoring for wall construction instead of temporary slopes to construct MSE walls. Define "temporary shoring for wall construction" as temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience.

Unless required otherwise in the plans, install foundations located in the reinforced zone before placing aggregate or reinforcement. Notify the Engineer when foundation excavation is complete. Do not place leveling pad concrete, aggregate or reinforcement until excavation dimensions and foundation material are approved.

Construct cast-in-place concrete leveling pads at elevations and with dimensions shown in the accepted submittals and in accordance with Section 420 of the *Standard Specifications*. Cure leveling pads at least 24 hours before placing panels or SRW units.

Erect and support panels and stack SRW units with no negative batter (wall face leaning forward) so the final wall position is as shown in the accepted submittals. Place SRW units with a maximum vertical joint width of 3/8".

Set panels with a vertical joint width of 3/4". Place bearing pads in horizontal panel joints and cover all panel joints with filtration geotextiles as shown in the accepted submittals. Attach filtration geotextiles to back of panels with adhesives, tapes or other approved methods.

Stagger panels and SRW units to create a running bond by centering panels or SRW units over joints in the row below as shown in the accepted submittals. Construct MSE walls with the following tolerances:

- A. SRW units are level from front to back and between units when checked with a 3 ft long level,
- B. Final wall face is within 3/4" of horizontal and vertical alignment shown in the accepted submittals when measured along a 10 ft straightedge and
- C. Final wall plumbness (batter) is within 0.5° of vertical unless otherwise approved.

Place reinforcement at locations and elevations shown in the accepted submittals and within 3" of corresponding connection elevations. Install reinforcement with the direction shown in the accepted submittals. Place reinforcement in slight tension free of kinks, folds, wrinkles or creases. Reinforcement may be spliced once per reinforcement length if shown in the accepted submittals. Use reinforcement pieces at least 6 ft long. Contact the Engineer when unanticipated existing or future obstructions such as foundations, guardrail, fence or handrail posts, pavements, pipes, inlets or utilities will interfere with reinforcement. To avoid obstructions, deflect, skew or modify reinforcement as shown in the accepted submittals.

Place aggregate in the reinforced zone in 8" to 10" thick lifts. Compact fine aggregate in accordance with Subarticle 235-3(C) of the *Standard Specifications*. Use only hand operated compaction equipment to compact aggregate within 3 ft of panels or SRW units. At a distance greater than 3 ft, compact aggregate with at least 4 passes of an 8 ton to 10 ton vibratory roller in a direction parallel to the wall face. Smooth wheeled or rubber tired rollers are also acceptable for compacting aggregate. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet. Do not displace or damage reinforcement when placing and compacting aggregate. End dumping directly on geogrids is not permitted. Do not operate heavy equipment on reinforcement until it is covered with at least 8" of aggregate. Replace any damaged reinforcement to the satisfaction of the Engineer.

Backfill for MSE walls outside the reinforced zone in accordance with Article 410-8 of the *Standard Specifications*. If a drain is required, install wall drainage systems as shown in the accepted submittals and in accordance with Section 816 of the *Standard Specifications*.

Place and construct coping and leveling concrete as shown in the accepted submittals. Construct leveling concrete in accordance with Section 420 of the *Standard Specifications*. Construct cast-in-place concrete coping in accordance with Subarticle 452-3(C) of the *Standard Specifications*. When single faced precast concrete barrier is required in front of and against MSE walls, stop coping just above barrier so coping does not interfere with placing barrier up against wall faces.

When separation geotextiles are required, overlap adjacent geotextiles at least 18" and hold separation geotextiles in place with wire staples or anchor pins as needed. Seal joints above and behind MSE walls between coping and ditches or concrete slope protection with silicone sealant.

7.0 MEASUREMENT AND PAYMENT

MSE Retaining Wall No. ___ will be measured and paid in square feet. MSE walls will be measured as the square feet of exposed wall face area with the height equal to the difference between top and bottom of wall elevations. Define “top of wall” as top of coping or top of panels or SRW units for MSE walls without coping. Define “bottom of wall” as shown in the plans and no measurement will be made for portions of MSE walls embedded below bottom of wall elevations.

The contract unit price for *MSE Retaining Wall No. ___* will be full compensation for providing designs, submittals, labor, tools, equipment and MSE wall materials, excavating, backfilling, hauling and removing excavated materials and supplying site assistance, leveling pads, panels, SRW units, reinforcement, aggregate, wall drainage systems, geotextiles, bearing pads, coping, miscellaneous components and any incidentals necessary to construct MSE walls. The contract unit price for *MSE Retaining Wall No. ___* will also be full compensation for reinforcement connected to and aggregate behind end bent caps in the reinforced zone, if required.

No separate payment will be made for temporary shoring for wall construction. Temporary shoring for wall construction will be incidental to the contract unit price for *MSE Retaining Wall No. ___*.

The contract unit price for *MSE Retaining Wall No. ___* does not include the cost for ditches, fences, handrails, barrier or guardrail associated with MSE walls as these items will be paid for elsewhere in the contract.

Where it is necessary to provide backfill material behind the reinforced zone from sources other than excavated areas or borrow sources used in connection with other work in the contract, payment for furnishing and hauling such backfill material will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*. Placing and compacting such backfill material is not considered extra work but is incidental to the work being performed.

Payment will be made under:

Pay Item	Pay Unit
MSE Retaining Wall No. ___	Square Foot

PILE DRIVING CRITERIA

(9-18-12)

Revise the *2012 Standard Specifications* as follows:

Page 4-72, Subarticle 450-3(D)(3) Required Driving Resistance, lines 26-30, delete first paragraph and replace with the following:

The Engineer will determine if the proposed pile driving methods and equipment are acceptable and provide the blows/ft and equivalent set for the required driving resistance noted in the plans,

i.e., "pile driving criteria" except for structures with pile driving analyzer (PDA) testing. For structures with PDA testing, provide pile driving criteria for any bents and end bents with piles in accordance with Subarticle 450-3(F)(4).

Page 4-73, Subarticle 450-3(F) Pile Driving Analyzer, lines 45-48, delete third paragraph and replace with the following:

The Engineer will complete the review of the proposed pile driving methods and equipment within 7 days of receiving PDA reports and pile driving criteria. Do not place concrete for caps or footings on piles until PDA reports and pile driving criteria have been accepted.

Page 4-75, Subarticle 450-3(F) Pile Driving Analyzer, add the following:

(4) Pile Driving Criteria

Analyze pile driving with the GRL Wave Equation Analysis Program (GRLWEAP) manufactured by Pile Dynamics, Inc. Use the same PDA Consultant that provides PDA reports to perform GRLWEAP analyses and develop pile driving criteria. Provide driving criteria sealed by an engineer approved as a Project Engineer (key person) for the same PDA Consultant.

Analyze pile driving so driving stresses, energy transfer, ram stroke and blows/ft from PDA testing and resistances from CAPWAP analyses correlate to GRLWEAP models. Provide pile driving criteria for each combination of required driving resistance and pile length installed for all pile types and sizes. Submit 2 copies of pile driving criteria with PDA reports. Include the following for driving criteria:

- (a) Project information in accordance with Subarticle 450-3(F)(3)(a)
- (b) Table showing blows/ft and equivalent set vs. either stroke for multiple strokes in increments of 6" or bounce chamber pressure for multiple pressures in increments of 1 psi
- (c) Maximum stroke or blows/ft or pile cushion requirements to prevent overstressing piles as needed
- (d) GRLWEAP software version information
- (e) PDF copy of all pile driving criteria and executable GRLWEAP input and output files

Page 4-76, Article 450-4 MEASUREMENT AND PAYMENT, add the following:

The contract unit price for *PDA Testing* will also be full compensation for performing GRLWEAP analysis and developing and providing pile driving criteria.

BRIDGE MOUNTED CHAIN LINK FENCE**(SPECIAL)**

Construct the chain link fence in accordance with the applicable sections of the Standard Specifications, the details shown on the plans and this special provision.

The quantity of chain link fence will be the actual number of linear feet of fence, measured in place from end post to end post, which has been completed and accepted. All posts used for the chain link fence are included in the price of the fence and will not be paid for separately. There will be no measurement made for installing adhesive anchors in concrete barrier rail as such work is considered incidental.

Work includes but is not limited to furnishing and installing fence fabric, tie wires, stretcher bars, stretcher bar bands, tie rods, turnbuckles, brace rails, posts, post caps, brackets, adhesive anchors, fittings and any other materials necessary to complete the work as described in the plans and this special provision.

Payment will be made under:

104" Chain Link Fence _____ Linear Feet

ELASTOMERIC CONCRETE**(9-30-11)****1.0 DESCRIPTION**

Elastomeric concrete is a mixture of a two-part polymer consisting of polyurethane and/or epoxy and kiln-dried aggregate. Provide an elastomeric concrete and binder system that is preapproved. Use the concrete in the blocked out areas on both sides of the bridge deck joints as indicated on the plans.

2.0 MATERIALS

Provide materials that comply with the following minimum requirements at 14 days (or at the end of the specified curing time).

ELASTOMERIC CONCRETE PROPERTIES	TEST METHOD	MINIMUM REQUIREMENT
Compressive Strength, psi	<i>ASTM D695</i>	2000
5% Deflection Resilience	ASTM D695	95
Splitting Tensile Strength, psi	ASTM D3967	625
Bond Strength to Concrete, psi	ASTM D882 (D882M)	450
Durometer Hardness	ASTM D2240	50

BINDER PROPERTIES (without aggregate)	TEST METHOD	MINIMUM REQUIREMENT
Tensile Strength, psi	ASTM D638	1000
Ultimate Elongation	ASTM D638	150%
Tear Resistance, lb/in	ASTM D624	200

In addition to the requirements above, the elastomeric concrete must be resistant to water, chemical, UV and ozone exposure and withstand temperature extremes. Elastomeric concrete systems requiring preheated aggregates are not allowed.

3.0 PREQUALIFICATION

Manufacturers of elastomeric concrete materials shall submit samples (including aggregate, primer and binder materials) and a Type 4 certification in accordance with Article 106-3 of the Standard Specifications for prequalification to:

North Carolina Department of Transportation
Materials and Tests Unit
1801 Blue Ridge Road
Raleigh, NC 27607

Prequalification will be determined for the system. Individual components will not be evaluated, nor will individual components of previously evaluated systems be deemed prequalified for use.

The submitted binder (a minimum volume of 1 gallon) and corresponding aggregate samples will be evaluated for compliance with the Materials requirements specified above. Systems satisfying all of the Materials requirements will be prequalified for a one year period. Before the end of this period new product samples shall be resubmitted for prequalification evaluation.

If, at any time, any formulation or component modifications are made to a prequalified system that system will no longer be approved for use.

4.0 MATERIAL CERTIFICATION AND INSTALLATION

Provide a Type 5 certification in accordance with Article 106-3 of the Standard Specifications, verifying that the materials satisfy the above requirements and proof of NCDOT prequalification.

Prior to placing the elastomeric concrete, thoroughly clean and dry all concrete surfaces. Sandblast the concrete surface in the blockout and clear the surface of all loose debris.

Provide a manufacturer's representative at the bridge site during the installation of the elastomeric concrete to ensure that all steps being performed comply with all manufacturer

installation requirements including, but not limited to weather conditions (ambient temperature, relative humidity, precipitation, wind, etc), concrete deck surface preparation, binder and aggregate mixing, primer application, elastomeric concrete placement, curing conditions and minimum curing time before joint exposure to traffic.

5.0 FIELD SAMPLING

Provide additional production material to allow freshly mixed elastomeric concrete to be sampled for acceptance. A minimum of six 2 inch cube molds and three 3x6 inch cylinders will be taken by the Department for each day’s production. Compression, splitting tensile, and durometer hardness testing will be performed by the Department to determine acceptance. Materials failing to meet the requirements listed above are subject to removal and replacement at no cost to the Department.

6.0 BASIS OF PAYMENT

No separate payment will be made for elastomeric concrete. The lump sum contract price bid for “Foam Joint Seals” will be full compensation for furnishing and placing the Elastomeric Concrete.

CONCRETE BARRIER RAIL WITH MOMENT SLAB

(1-17-12)

1.0 GENERAL

Construct concrete barrier rail connected to moment slabs to resist traffic impact above retaining walls. Construct concrete barrier rail with moment slab in accordance with the contract and accepted submittals.

2.0 MATERIALS

Refer to Division 10 of the *Standard Specifications*.

Item	Section
Barrier Delineators	1088-2
Portland Cement Concrete	1000
Reinforcing Steel	1070

Use Class AA concrete for concrete barrier rail and Class A concrete for moment slabs. Provide epoxy coated reinforcing steel that meets Article 1070-7 of the *Standard Specifications* for concrete barrier rail.

3.0 CONSTRUCTION METHODS

Construct concrete barrier rail with moment slab in accordance with the plans and accepted submittals. Construct cast-in-place reinforced concrete moment slabs in accordance with Section 420 of the *Standard Specifications* and concrete barrier rail in accordance with

Subarticle 460-3(C) of the *Standard Specifications*. Do not remove forms until concrete attains a compressive strength of at least 2,400 psi.

4.0 MEASUREMENT AND PAYMENT

Concrete Barrier Rail with Moment Slab will be measured and paid in linear feet. Concrete barrier rail with moment slab will be measured as the length of concrete barrier rail above retaining walls. The contract unit price for *Concrete Barrier Rail with Moment Slab* will be full compensation for submittals, labor, tools, equipment and concrete barrier rail with moment slab materials, excavating, backfilling, hauling and removing excavated materials and supplying any incidentals necessary to construct concrete barrier rail with moment slab.

Payment will be made under:

Pay Item	Pay Unit
Concrete Barrier Rail with Moment Slab	Linear Foot

SOLDIER PILE RETAINING WALLS

(5-15-12)

1.0 GENERAL

Construct soldier pile retaining walls consisting of driven or drilled-in steel H-piles with either precast concrete panels in between piles or a cast-in-place reinforced concrete face attached to front of piles unless required otherwise in the plans. Timber lagging is typically used for temporary support of excavations during construction. Provide cast-in-place reinforced concrete coping as required. Design and construct soldier pile retaining walls based on actual elevations and wall dimensions in accordance with the contract and accepted submittals. Use a prequalified Cantilever Wall Contractor to construct soldier pile retaining walls. Define “soldier pile wall” as a soldier pile retaining wall. Define “panel” as a precast concrete panel and “concrete facing” as a cast-in-place reinforced concrete face. Define “pile” as a steel H-pile and “coping” as cast-in-place concrete coping.

2.0 MATERIALS

Refer to the *Standard Specifications*.

Item	Section
Anchor Pins	1056-2
Curing Agents	1026
Flowable Fill, Excavatable	1000-6
Geosynthetics	1056
Joint Materials	1028
Masonry	1040
Neat Cement Grout, Nonshrink	1003
Portland Cement Concrete	1000
Reinforcing Steel	1070

Retaining Wall Panels	1077
Select Material, Class VI	1016
Shoulder Drain Materials	816-2
Steel H-Piles	1084-1
Untreated Timber	1082-2
Welded Stud Shear Connectors	1072-6
Wire Staples	1060-8(D)

Provide Type 2 geotextile for separation geotextiles and Class VI select material (standard size No. 57 stone) for leveling pads and backfilling. Use Class A concrete for concrete facing and coping and Class A concrete that meets Article 450-2 of the *Standard Specifications* for drilled-in piles. Use untreated timber with a thickness of at least 3" and a bending stress of at least 1,000 psi for timber lagging.

Unless required otherwise in the contract, produce panels with a smooth flat final finish that meets Article 1077-11 of the *Standard Specifications*. When noted in the plans, produce panels with an exposed aggregate finish that meets Article 1077-12 of the *Standard Specifications*. Produce panels within 1/4" of the panel dimensions shown in the accepted submittals. Damaged panels with excessive discoloration, chips or cracks as determined by the Engineer will be rejected.

For soldier pile walls with panels, galvanize piles in accordance with Section 1076 of the *Standard Specifications*. When noted in the plans, paint galvanized piles in accordance with Article 442-12 of the *Standard Specifications*. Apply the following system to paint galvanized piles gray with waterborne paints that meet Article 1080-11 of the *Standard Specifications*. For painting galvanized piles other colors, contact the Materials and Tests (M&T) Unit for an appropriate paint system.

GRAY PAINT SYSTEM FOR GALVANIZED PILES

Coat	Color	Dry/Wet Film Thickness (Mils)	
		Min.	Max.
Intermediate	Brown	3.0 DFT	5.0 DFT
Stripe	White	4.0 WFT	7.0 WFT
Topcoat	Gray	2.0 DFT	4.0 DFT
Total		5.0 DFT	9.0 DFT

Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Load, transport, unload and store soldier pile wall materials so materials are kept clean and free of damage.

3.0 PRECONSTRUCTION REQUIREMENTS

A. Soldier Pile Wall Surveys

The Retaining Wall Plans show a plan view, typical sections, details, notes and an elevation or profile view (wall envelope) for each soldier pile wall. Before beginning soldier pile wall design, survey existing ground elevations shown in the plans and other elevations in the vicinity of soldier pile wall locations as needed. Based on these elevations, finished grades and actual soldier pile wall dimensions and details, submit revised wall envelopes for acceptance. Use accepted wall envelopes for design.

B. Soldier Pile Wall Designs

Submit 11 copies of working drawings and 3 copies of design calculations and a PDF copy of each for soldier pile wall designs at least 30 days before the preconstruction meeting. Do not begin soldier pile wall construction until a design submittal is accepted.

Use a prequalified Cantilever Wall Design Consultant to design soldier pile walls. Provide designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the Cantilever Wall Design Consultant.

Design soldier pile walls in accordance with the plans and Article 11.8 of the *AASHTO LRFD Bridge Design Specifications* unless otherwise required. Design soldier pile walls for seismic if walls are located in seismic zone 2 based on Figure 2-1 of the *Structure Design Manual*. Design soldier pile walls for a maximum deflection of 2" or 1.5% of H, whichever is less, with H as shown in the plans.

When noted in the plans, design soldier pile walls for a live load (traffic) surcharge of 250 lb/sf in accordance with Article 11.5.5 of the AASHTO LRFD specifications. For steel beam guardrail with 8 ft posts above soldier pile walls, analyze walls for a horizontal load (P_{HI}) of 300 lb/ft of wall in accordance with Figure 3.11.6.3-2(a) of the AASHTO LRFD specifications. For concrete barrier rail above soldier pile walls, analyze walls for a P_{HI} of 500 lb/ft of wall in accordance with Figure 3.11.6.3-2(a).

Use a maximum H-pile spacing of 10 ft. At the Contractor's option, use driven or drilled-in piles for soldier pile walls with concrete facing unless otherwise required. For soldier pile walls with panels, use drilled-in piles unless noted otherwise in the plans. Use concrete or grout for embedded portions of drilled-in piles. Install drilled-in piles by excavating holes with diameters that will result in at least 3" of clearance all around piles.

Provide temporary support of excavations for excavations more than 4 ft deep and timber lagging in accordance with the *AASHTO Guide Design Specifications for Bridge Temporary Works*. At the Contractor's option and when noted in the plans, provide temporary slopes instead of temporary support of excavations. Do not extend temporary slopes outside right-of-way or easement limits. Except for fill sections or

when using temporary slopes, backfill voids behind panels, lagging and piles with No. 57 stone. Place separation geotextile between No. 57 stone and overlying fill or pavement sections except when concrete pavement, full depth asphalt or cement treated base is placed directly on stone.

At the Contractor's option, use panels or concrete facing unless required otherwise in the plans. Design panels and concrete facing in accordance with the plans and Section 5 of the *AASHTO LRFD Bridge Design Specifications*. Provide reinforcing steel of sufficient density to satisfy Article 5.7.3.4 of the AASHTO LRFD specifications. Attach concrete facing to front of H-piles with welded stud shear connectors. Use panels or concrete facing at least 6" thick and extend facing at least 6" above where the grade intersects back of concrete facing unless required otherwise in the plans.

Use No. 57 stone for aggregate leveling pads. Use 6" thick leveling pads beneath panels and concrete facing. Unless required otherwise in the plans, embed top of leveling pads at least 12" below bottom of walls shown in the plans.

Provide wall drainage systems consisting of geocomposite drain strips, drains and outlet components. Place drain strips with a horizontal spacing of no more than 10 ft and center strips between adjacent piles. Attach drain strips to front of timber lagging or back of panels or concrete facing and connect strips to leveling pads. Locate a continuous aggregate shoulder drain along the base of panels or concrete facing in front of piles and leveling pads. Provide drains and outlet components in accordance with Standard Drawing No. 816.02 of the *Roadway Standard Drawings*.

Unless required otherwise in the plans, use cast-in-place reinforced concrete coping at top of soldier pile walls with panels. Extend coping at least 6" above where the grade intersects back of coping unless required otherwise in the plans. Use coping dimensions shown in the plans. At the Contractor's option, connect coping to panels with dowels or extend coping down back of panels. When concrete barrier rail is required above soldier pile walls, use concrete barrier rail with moment slab as shown in the plans.

Submit working drawings and design calculations for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing plan views, wall profiles with pile locations, typical sections and details of piles, drainage, temporary support, leveling pads, panels and concrete facing. If necessary, include details on working drawings for coping, concrete barrier rail with moment slab and obstructions extending through walls or interfering with piles, barriers or moment slabs. Submit design calculations including deflection calculations for each wall section with different surcharge loads, geometry or material parameters. Include analysis of temporary conditions in design calculations. When designing soldier pile walls with computer software, a hand calculation is required for the tallest wall section.

C. Soldier Pile Wall Construction Plan

Submit 4 copies and a PDF copy of a soldier pile wall construction plan at least 30 days before the preconstruction meeting. Do not begin soldier pile wall construction until the construction plan submittal is accepted. Provide project specific information in the soldier pile wall construction plan including a detailed construction sequence. For driven piles, submit proposed pile driving methods and equipment in accordance with Subarticle 450-3(D)(2) of the *Standard Specifications*. For drilled-in piles, submit installation details including drilling equipment and methods for stabilizing and filling holes. Provide details in the construction plan of excavations including temporary support and any other information shown in the plans or requested by the Engineer.

If alternate construction procedures are proposed or necessary, a revised soldier pile wall construction plan submittal may be required. If the work deviates from the accepted submittal without prior approval, the Engineer may suspend soldier pile wall construction until a revised plan is accepted.

D. Preconstruction Meeting

Before starting soldier pile wall construction, hold a preconstruction meeting to discuss the construction and inspection of the soldier pile walls. Schedule this meeting after all soldier pile wall submittals have been accepted. The Resident or Bridge Maintenance Engineer, Bridge Construction Engineer, Geotechnical Operations Engineer, Contractor and Cantilever Wall Contractor Superintendent will attend this preconstruction meeting.

4.0 CONSTRUCTION METHODS

Control drainage during construction in the vicinity of soldier pile walls. Direct run off away from soldier pile walls and areas above and behind walls. Contain and maintain No. 57 stone and backfill and protect material from erosion.

Notify the Engineer before blasting in the vicinity of soldier pile walls. Perform blasting in accordance with the contract. Unless required otherwise in the plans, install foundations located behind soldier pile walls before beginning wall construction if the horizontal distance to the closest foundation is less than the height of the tallest wall section.

Install soldier pile walls in accordance with the accepted submittals and as directed. Do not excavate behind soldier pile walls unless a temporary slope is shown in the accepted submittals. If overexcavation occurs and is not approved, repair walls with an approved method and a revised soldier pile wall design or construction plan may be required.

A. Piles

If a temporary slope is shown in the accepted submittals, excavate the slope before installing piles. Otherwise, install piles before excavating for soldier pile walls. Weld

stud shear connectors to piles in accordance with Article 1072-6 of the *Standard Specifications*.

Install piles within 1" of horizontal and vertical alignment shown in the accepted submittals and with no negative batter (piles leaning forward). Minimize alignment variations between piles for soldier pile walls with concrete facing since variations can result in thicker concrete facing in some locations in order to provide the minimum required facing thickness elsewhere. Locate piles so the minimum required concrete facing thickness, if applicable, and roadway clearances are maintained for variable pile alignments.

Install piles with the minimum required embedment in accordance with Subarticles 450-3(D) and 450-3(E) of the *Standard Specifications*. Piles may be installed with a vibratory hammer as approved by the Engineer. Do not splice piles. If necessary, cut off piles at elevations shown in the accepted submittals along a plane normal to the pile axis.

Use pile excavation to install drilled-in piles. If overexcavation occurs, fill to required elevations with No. 57 stone before setting piles. After filling holes with concrete or grout to the elevations shown in the accepted submittals, remove any fluids and fill remaining portions of holes with flowable fill. Cure concrete or grout at least 7 days before excavating.

Notify the Engineer if refusal is reached before pile excavation or driven piles attain the minimum required embedment. When this occurs, a revised soldier pile wall design or construction plan submittal may be required.

B. Excavation

If a temporary slope is shown in the accepted submittals, excavate the slope as shown. Otherwise, excavate in front of piles from the top down in accordance with the accepted submittals. Excavate in staged horizontal lifts with a maximum height of 5 ft. Use timber lagging or an alternate approved method for temporary support of excavations in accordance with the accepted submittals.

Install temporary support within 24 hours of excavating each lift unless otherwise approved. The installation may be delayed if it can be demonstrated that delays will not adversely affect excavation stability. If excavation faces will be exposed for more than 24 hours, use polyethylene sheets anchored at top and bottom of lifts to protect excavation faces from changes in moisture content.

If an excavation becomes unstable at any time, suspend soldier pile wall construction and temporarily stabilize the excavation by immediately placing an earth berm up against the unstable excavation face. When this occurs, repair walls with an approved method and a revised soldier pile wall design or construction plan may be required.

Remove flowable fill and material in between piles as necessary to install timber lagging. Position lagging with at least 3" of contact in the horizontal direction between

the lagging and pile flanges. Do not excavate the next lift until temporary support for the current lift is accepted.

C. Wall Drainage Systems

Install wall drainage systems as shown in the accepted submittals and in accordance with Section 816 of the *Standard Specifications*. Place geocomposite drain strips with the geotextile side facing away from wall faces. Secure drain strips so strips are in continuous contact with surfaces to which they are attached and allow for full flow the entire height of soldier pile walls. Discontinuous drain strips are not allowed. If splices are needed, overlap drain strips at least 12" so flow is not impeded. Connect drain strips to leveling pads by embedding strip ends at least 4" into No. 57 stone.

D. Leveling Pads, Panels, Coping and Concrete Facing

Construct aggregate leveling pads at elevations and with dimensions shown in the accepted submittals. Compact leveling pads with a vibratory compactor to the satisfaction of the Engineer.

Set panels against pile flanges as shown in the accepted submittals. Position panels with at least 2" of contact in the horizontal direction between the panels and pile flanges. If contact cannot be maintained, remove panels, fill gaps with joint filler and reset panels. Securely support panels until enough No. 57 stone or backfill is placed to hold panels in place.

Construct coping as shown in the accepted submittals and Subarticle 452-3(C) of the *Standard Specifications*. When single faced precast concrete barrier is required in front of and against soldier pile walls, stop coping just above barrier so coping does not interfere with placing barrier up against wall faces.

Construct concrete facing in accordance with the accepted submittals and Section 420 of the *Standard Specifications*. Do not remove forms until concrete attains a compressive strength of at least 2,400 psi. Unless required otherwise in the plans, provide a Class 2 surface finish for concrete facing that meets Subarticle 420-17(F) of the *Standard Specifications*. Construct concrete facing joints at a maximum spacing of 30 ft unless required otherwise in the plans. Make 1/2" thick expansion joints that meet Article 420-10 of the *Standard Specifications* for every third joint and 1/2" deep grooved contraction joints that meet Subarticle 825-11(B) for the remaining joints. Stop reinforcing steel for concrete facing 2" on either side of expansion joints.

If a brick veneer is required, construct brick masonry in accordance with Section 830 of the *Standard Specifications*. Anchor brick veneers to soldier pile walls with approved brick to concrete type anchors in accordance with the manufacturer's instructions. Space anchors no more than 16" apart in the vertical direction and no more than 32" apart in the horizontal direction with each row of anchors staggered 16" from the row above and below.

Seal joints above and behind soldier pile walls between coping or concrete facing and ditches or concrete slope protection with silicone sealant.

E. Backfill

For fill sections or if a temporary slope is shown in the accepted submittals, backfill behind piles, panels and concrete facing in accordance with Article 410-8 of the *Standard Specifications*. Otherwise, backfill voids behind panels, lagging and piles with No. 57 stone as shown in the accepted submittals. Ensure all voids between panels and lagging and between piles, lagging and excavation faces are filled with No. 57 stone. Compact stone to the satisfaction of the Engineer. When separation geotextiles are required, overlap adjacent geotextiles at least 18" and hold separation geotextiles in place with wire staples or anchor pins as needed.

F. Pile Coatings

For soldier pile walls with panels, clean exposed galvanized or painted surfaces of piles with a 2,500 psi pressure washer after wall construction is complete. Repair galvanized surfaces that are exposed and damaged in accordance with Article 1076-7 of the *Standard Specifications*. Repair painted surfaces that are exposed and damaged by applying 4.0 to 7.0 mils wet film thickness of a topcoat to damaged areas with brushes or rollers. Use the same paint for damaged areas that was used for the topcoat when painting piles initially. Feather or taper topcoats in damaged areas to be level with surrounding areas.

5.0 MEASUREMENT AND PAYMENT

Soldier Pile Retaining Walls will be measured and paid in square feet. Soldier pile walls will be measured as the square feet of exposed wall face area with the height equal to the difference between top and bottom of wall elevations. Define "top of wall" as top of coping or top of panels or concrete facing for soldier pile walls without coping. Define "bottom of wall" as shown in the plans and no measurement will be made for portions of soldier pile walls embedded below bottom of wall elevations.

The contract unit price for *Soldier Pile Retaining Walls* will be full compensation for providing designs, submittals, labor, tools, equipment and soldier pile wall materials, installing piles, excavating, backfilling, hauling and removing excavated materials and supplying temporary support of excavations, wall drainage systems, leveling pads, panels, concrete facing, No. 57 stone, geotextiles and any incidentals necessary to construct soldier pile walls. The contract unit price for *Soldier Pile Retaining Walls* will also be full compensation for coping, pile coatings and brick veneers, if required. No additional payment will be made and no extension of completion date or time will be allowed for repairing overexcavations or unstable excavations or thicker concrete facing.

The contract unit price for *Soldier Pile Retaining Walls* does not include the cost for ditches, fences, handrails, barrier or guardrail associated with soldier pile walls as these items will be paid for elsewhere in the contract.

Where it is necessary to provide backfill material behind soldier pile walls from sources other than excavated areas or borrow sources used in connection with other work in the contract, payment for furnishing and hauling such backfill material will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*. Placing and compacting such backfill material is not considered extra work but is incidental to the work being performed.

Payment will be made under:

Pay Item

Soldier Pile Retaining Walls

Pay Unit

Square Foot

PROJECT SPECIAL PROVISION

(10-18-95)

Z-1 (Rev.)

PERMITS

The Contractor's attention is directed to the following permits, which have been issued to the Department of Transportation by the authority granting the permit.

<u>PERMIT</u>	<u>AUTHORITY GRANTING THE PERMIT</u>
Dredge and Fill and/or Work in Navigable Waters (404)	U. S. Army Corps of Engineers
Water Quality (401)	Division of Environmental Management, DENR State of North Carolina

The Contractor shall comply with all applicable permit conditions during construction of this project. Those conditions marked by * are the responsibility of the department and the Contractor has no responsibility in accomplishing those conditions.

Agents of the permitting authority will periodically inspect the project for adherence to the permits.

The Contractor's attention is also directed to Articles 107-10 and 107-13 of the *2012 Standard Specifications* and the following:

Should the Contractor propose to utilize construction methods (such as temporary structures or fill in waters and/or wetlands for haul roads, work platforms, cofferdams, etc.) not specifically identified in the permit (individual, general, or nationwide) authorizing the project it shall be the Contractor's responsibility to coordinate with the Engineer to determine what, if any, additional permit action is required. The Contractor shall also be responsible for initiating the request for the authorization of such construction method by the permitting agency. The request shall be submitted through the Engineer. The Contractor shall not utilize the construction method until it is approved by the permitting agency. The request normally takes approximately 60 days to process; however, no extensions of time or additional compensation will be granted for delays resulting from the Contractor's request for approval of construction methods not specifically identified in the permit.

Where construction moratoriums are contained in a permit condition which restricts the Contractor's activities to certain times of the year, those moratoriums will apply only to the portions of the work taking place in the waters or wetlands provided that activities outside those areas is done in such a manner as to not affect the waters or wetlands.

Please note that the requirements contained in this permit are applicable only to the U-4444AB portion of this project.

There are no impacts on U-4444B.



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

August 6, 2009

Regulatory Division

Action ID Number 2009-00654, NC 24-87-210 (Murchison Road) Widening, Transportation Improvements Project U-4444, State Project Number 3.6492.1.2, Cumberland County, North Carolina.

Dr. Gregory J. Thorpe, PhD, Manager
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
Division of Highways
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Dr. Thorpe:

In accordance with your written request of March 31, 2009 and the ensuing administrative record, enclosed are two copies of a Department of the Army permit to directly discharge dredged and/or fill material into jurisdictional wetlands to facilitate the widening of NC 24-87-210 (Murchison Road), Transportation Improvements Project U-4444, State Project Number 3.6492.1.2, in Cumberland County, North Carolina. The proposed 5.5 mile NC 210 highway improvement project (Figure 1) begins at the proposed intersection location of the Fayetteville Outer Loop and extends along the existing facility to the NC 24/87 (Bragg Boulevard) intersection in Spring Lake, Cumberland County, North Carolina. The proposed project is located in adjacent wetlands and tributaries that are hydrologically connected to the Cape Fear River. The project is more specifically located starting at Latitude 35.1305 N, Longitude 78.9467 W and ending at Latitude 35.1627, Longitude 78.9720.

You should acknowledge that you accept the terms and conditions of the enclosed permit by signing and dating each copy in the spaces provided ("Permittee" on page 3). Your signature, as permittee, indicates that, as consideration for the issuance of this permit, you voluntarily accept and agree to comply with all of the terms and conditions of this permit. All pages of both copies of the signed permit with drawings should then be returned to this office for final authorization. A self-addressed envelope is enclosed for your convenience.

This correspondence contains a preoffered permit for the above described site. If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR part 331.

Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the District Commander, Wilmington District Corps of Engineers at the following address:

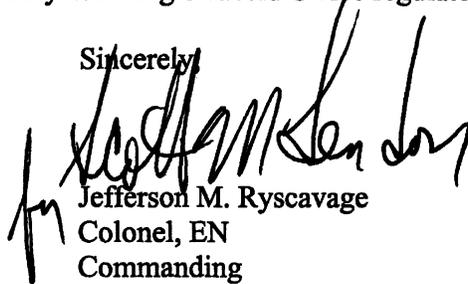
Colonel Jefferson M. Ryscavage, District Commander
U.S. Army Corps of Engineers, Wilmington District
69 Darlington Avenue
Wilmington, North Carolina 28403-1343

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete; that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by October 5, 2009.

It is not necessary to submit an RFA form to the Division Office if you do not object to the decision contained in this correspondence.

After the permit is authorized in this office, the original copy will be returned to you; the duplicate copy will be permanently retained in this office. Should you have questions, contact Ms. Kimberly Garvey of my Wilmington Field Office regulatory staff at telephone (910) 251-4482.

Sincerely,



Jefferson M. Ryscavage
Colonel, EN
Commanding

Enclosures

DEPARTMENT OF THE ARMY PERMIT

Permittee North Carolina Department of Transportation

Permit No. SAW-2009-000654

Issuing Office USAED, WILMINGTON

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description : Directly discharge dredged and/or fill material into tributaries and associated wetlands to facilitate the widening of NC 24-87-210 (Murchison Road) Widening, Transportation Improvements Project U-4444, State Project Number 3.6492.1.2, in Cumberland County, North Carolina.

Project Location: In the Cape Fear River, Hydrologic Cataloging Unit 03030004. The project is more specifically located starting at Latitude 35.1305 N, Longitude 78.9467 W and ending at Latitude 35.1627, Longitude 78.9720.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2014**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

ENG FORM 1721, Nov 86

EDITION OF SEP 82 IS OBSOLETE.

(33 CFR 325 (Appendix A))

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit,

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - () Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization.
 - a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.
3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
 - a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
 - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.

- e. Damage claims associated with any future modification, suspension, or revocation of this permit.
- 4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
- 5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
 - a. You fail to comply with the terms and conditions of this permit.
 - b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
 - c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit, Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

E. L. Lusk for Gregory J. Thorne PhD 8-7-09
 (PERMITEE) NORTH CAROLINA DEPARTMENT OF TRANSPORTATION. (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

G. Kenneth Kelly 8/21/09
 (DISTRICT ENGINEER) JEFFERSON M. BYSCAVAGE, COLONEL (DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

 (TRANSFeree) (DATE)

**SPECIAL CONDITIONS (Action ID. 2009-00654, NC 24-87-210 (Murchison Road)
Widening, Transportation Improvements Project U-4444, State Project Number 3.6492.1.2.)**

1. Failure to institute and carry out the details of the following special conditions below will result in a directive to cease all ongoing and permitted work within waters of the United States, including wetlands, associated with the permitted project, or such other remedies and/or fines as the U.S. Army Corps of Engineers District Commander or his authorized representatives may seek.
2. All work authorized by this permit must be preformed in strict compliance with the attached plans, which are a part of this permit.
- * 3. The permittee shall schedule a preconstruction meeting between its representatives, the contractor's representatives, and the Corps of Engineers, Ms. Kimberly Garvey, Wilmington Regulatory Field Office, prior to any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all of the terms and conditions contained within this Department of the Army Permit. The permittee shall notify the Corps of Engineers Project Manager a minimum of thirty (30) days in advance of the scheduled meetings in order to provide that individual with ample opportunity to schedule and participate in the required meetings. One copy of the final half-size construction drawings shall be furnished to the Corps of Engineers, Ms. Kimberly Garvey, Wilmington Regulatory Field Office prior to the pre-construction meeting.
- * 4. The permittee shall ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Written verification shall be provided that the final construction drawings comply with the attached permit drawings prior to any active construction in waters of the United States, including wetlands. Any deviation in the construction design plans will be brought to the attention of the Corps of Engineers, Ms. Kimberly Garvey, Wilmington Regulatory Field Office prior to any active construction in waters or wetlands.
5. The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit and any authorized modifications. Copies of this permit and any modifications authorized by the USACE shall be available for review at the construction site at all times. All violations, including non-compliance of these conditions, of the authorized permit shall be reported to the District Engineer within 24 hours of the violation.
- * 6. Compensatory mitigation for the unavoidable impacts to 7.33 acres of riparian wetlands, 0.06 acre of non-riparian wetlands and 991 linear feet of warm water streams associated with the proposed project shall be provided by the North Carolina Ecosystem Enhancement Program (NCEEP) within the Cape Fear River Basin (Cataloging Unit 03030004). The EEP will provide 14.66 acres of riparian wetland credits, 0.12 acre of non-riparian wetland credits and 1,982 warm water stream credits, pursuant to Section X of Amendment Number 2 to the Memorandum of Agreement (MOA) signed 8 March 2007.

7. Except as authorized by this permit or any USACE approved modification to this permit, no excavation, fill, or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands, or shall any activities take place that cause the degradation of waters or wetlands. There shall be no excavation from, waste disposal into, or degradation of, jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit, including appropriate compensatory mitigation. This prohibition applies to all borrow and fill activities connected with this project. In addition, except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within, into, or out of waters or wetlands or to reduce the reach of waters or wetlands.

8. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area.

9. To ensure that all borrow and waste activities occur on high ground and do not result in loss or the degradation of adjacent wetlands and streams, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall ensure that all such areas comply with the preceding condition (#7) of this permit, and shall require and maintain documentation of the location and characteristics of all borrow and disposal sites associated with this project. This information will include data regarding soils, vegetation and hydrology sufficient to clearly demonstrate compliance with the preceding condition (#7). All information will be available to the Corps of Engineers upon request. NCDOT shall require its contractors to complete and execute reclamation plans for each waste and borrow site and provide written documentation that the reclamation plans have been implemented and all work is completed. This documentation will be provided to the Corps of Engineers within 30 days of the completion of the reclamation work.

10. The permittee shall comply with the conditions specified in the water quality certification, No. 3805, issued by the North Carolina Division of Water Quality on 20 July 2009.

11. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in disequilibrium of wetlands or streambeds or banks, adjacent to, upstream or downstream of the structures. Culverts shall be placed so that the openings match the natural stream channel wherever possible. Riprap armoring of streams at culvert outlets shall be minimized, including riprap placed above the ordinary high water elevation, in favor of bioengineering techniques such as bank sloping, erosion control matting and revegetation with deep-rooted, woody plants.

12. The permittee shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" to assure compliance with the appropriate turbidity water quality standard. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to assure compliance with the appropriate turbidity water quality standards. This shall include, but is not limited to, the immediate installation of silt fencing

or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4). Adequate sedimentation and erosion control measures must be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. These measures must be inspected and maintained regularly, especially following rainfall events. All fill material must be adequately stabilized at the earliest practicable date to prevent sediment from entering into adjacent waters or wetlands.

13. The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.

14. The permittee shall take measures to prevent live or fresh concrete from coming into contact with any surface waters until the concrete has hardened.

15. The permittee shall install barrier fencing or other acceptable forms of barrier around all wetlands that are not to be disturbed to make them readily visible and prevent construction equipment from inadvertently entering and disturbing the wetland areas that are to remain undisturbed.

16. All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. No equipment staging or storage of construction material will occur in wetlands. Hydro-seeding equipment will not be discharged or washed out into any surface waters or wetlands. In the event of a spill of petroleum products or any other hazardous waste, the permittee shall immediately report it to the N.C. Division of Water Quality at (919) 733-5083 or (800) 662-7956 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act will be followed.

17. If the permittee discovers any previously unknown historic or archeological sites while accomplishing the authorized work, he shall immediately stop work and notify the Wilmington District Engineer who will initiate the required State/Federal coordination.

18. The permittee shall maintain the authorized work in good condition and in conformance with the terms and conditions of this permit. The permittee is not relieved of this requirement if he abandons the permitted activity without transferring it to a third party.

19. Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used.

20. This Department of the Army permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

21. In issuing this permit, the Federal Government does not assume any liability for:

- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
- b. Damages to the permitted project or uses thereof as a result of current or future Federal activities initiated on behalf of the general public.
- c. Damages to other permitted or un-permitted activities or structures caused by the authorized activity.
- d. Design and construction deficiencies associated with the permitted work.
- e. Damage claims associated with any future modification, suspension, or revocation of this permit.



North Carolina Department of Environment and Natural Resources

Division of Water Quality
Coleen H. Sullins
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

July 20, 2009

RECEIVED
Division of Highways

JUL 23 2009

Preconstruction
Project Development and
Environmental Analysis Branch

Dr. Greg Thorpe, PhD., Manager
Planning and Environmental Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina, 27699-1548

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with
ADDITIONAL CONDITIONS for Proposed improvements to NC 210 (Murchison Road) in Cumberland
County, Federal Aid Project No. STP 210(11), State Project No. 36492.1.2, TIP No. U-4444,
NCDWQ Project No. 20090372.

Dear Dr. Thorpe:

Attached hereto is a copy of Certification No. 3805 issued to The North Carolina Department of Transportation
(NCDOT) dated July 20, 2009.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

Coleen H. Sullins
for Coleen H. Sullins
Director

Underwood
RECEIVED
JUL 24 2009
DIVISION OF HIGHWAYS
PDEA-OFFICE OF NATURAL ENVIRONMENT

Attachments

- cc: Richard Spencer, US Army Corps of Engineers, Wilmington Field Office
- Jim Rerko, Division 6 Environmental Officer
- Chris Underwood, NCDOT NEU
- Travis Wilson, NC Wildlife Resources Commission
Ecosystem Enhancement Program
- Ken Averitte, NCDWQ Fayetteville Regional Office
File Copy

401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCDOT to impact 7.39 acres of jurisdictional wetlands, and 1,100 linear feet of jurisdictional streams in Cumberland County. The project shall be constructed pursuant to the application dated received April 7, 2009. The authorized impacts are as described below:

Stream Impacts in the Cape Fear River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
2	0	310	310	310
3	0	681	681	681
4	109	0	109	0
Total	109	991	1100	991

Total Stream Impact for Project: 1,100 linear feet

Wetland Impacts in the Cape Fear River Basin

Site	Permanent Fill (ac)	Excavation (ac)	Mechanized Clearing (ac)	Drained (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
1	0	0	0.01	0	0.01	0.01
2	1.00	0	0.08	0	1.08	1.08
3	4.53	0.22	0.29	0.95	5.99	5.99
4	0.26	0	0	0	0.26	0.26
5	0.05	0	0	0	0.05	0.05
Total	5.84	0.22	0.38	0.95	7.39	7.39

Total Wetland Impact for Project: 7.39 acres.

The application provides adequate assurance that the discharge of fill material into the waters of the Cape Fear River Basin in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application dated received April 7, 2009. Should your project change, you are required to notify the NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). Additional buffer impacts may require compensatory mitigation as described in For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Conditions of Certification:

- * 1. Compensatory mitigation for 991 linear feet of impact to perennial streams is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated March 23, 2009 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004.

- * 2. Compensatory mitigation for impacts to 7.33 acres of riparian wetlands and 0.06 acres of non-riparian wetlands is required. We understand that you have chosen to perform compensatory mitigation for impacts to wetlands through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated March 23, 2009 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004
3. All portions of the proposed project draining to 303(d) listed watersheds that are impaired due to biological criteria exceedances shall not discharge stormwater directly to surface waters. Stormwater shall be treated using appropriate best management practices (e.g., vegetated conveyances, constructed wetlands, detention ponds, etc.) prior to discharging to surface waters.
4. Unless otherwise approved in this certification, placement of culverts and other structures in waters, streams, and wetlands shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.
5. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.
6. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.
7. For any streams being impacted due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native species.
8. A copy of the final construction drawings shall be furnished to NCDWQ Central Office prior to the pre-construction meeting. The permittee shall provide written verification that the final construction drawings comply with the permit drawings contained in the application dated received April 7, 2009. Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Quality.
9. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.
10. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S.
11. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions.
12. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage.
13. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.
14. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream.
15. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.

16. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification.

17. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.

18. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If NCDWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, NCDWQ may reevaluate and modify this certification.

19. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification.

20. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.

21. The outside wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.

22. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.

23. The Permittee shall report any violations of this certification to the Division of Water Quality within 24 hours of discovery.

* 24. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify NCDWQ when all work included in the 401 Certification has been completed.

25. Native riparian vegetation (i.e., trees and shrubs native to your geographic region) must be reestablished within the construction limits of the project by the end of the growing season following completion of construction.

26. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.

27. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:

- a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
- b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
- c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
- d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

28. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

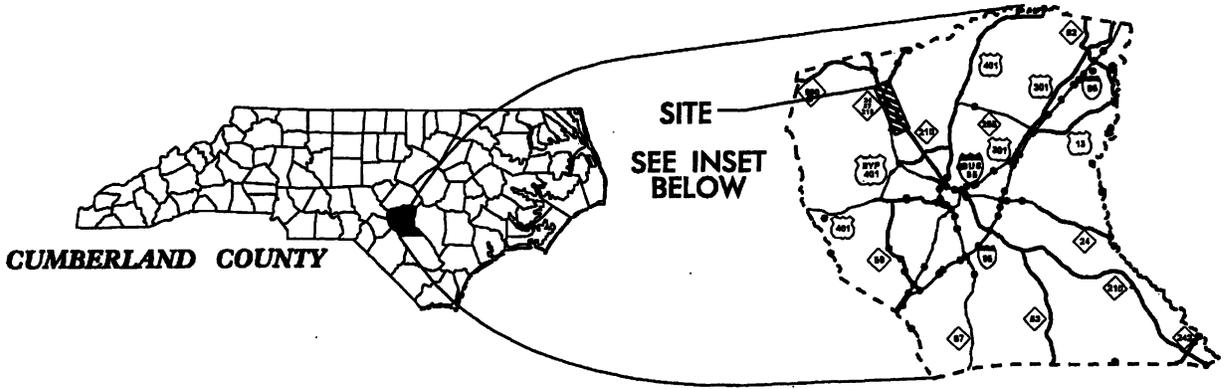
If this Certification is unacceptable to you have the right to an adjudicatory hearing upon written request within sixty (60) days following receipt of this Certification. This request must be in the form of a written petition conforming to Chapter 150B of the North Carolina General Statutes and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, N.C. 27699-6714. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 20th day of July 2009

DIVISION OF WATER QUALITY


for Coleen H. Sullins
Director

WQC No. 3805



VICINITY MAP

**WETLAND / STREAM
IMPACTS
VICINITY MAP**

**N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
CUMBERLAND COUNTY
PROJECT: 36492.1.2 (U-4444A)
NC 210 (MURCHISON ROAD)
FROM FAYETTEVILLE OUTER
LOOP TO BUTNER ROAD**

SHEET OF 01 / 20 / 09

**Permit Drawing
Sheet 1 of 51**

PROPERTY OWNERS
NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	FORT BRAGG MILITARY RESERVATION	
2	STATE OF NC VETERAN AFFAIRS	

**N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
CUMBERLAND COUNTY
PROJECT: 36492.12 (U-4444A)
NC 210 (MURCHISON ROAD) FROM
FAYETTEVILLE OUTER LOOP
TO BUTNER ROAD
SHEET OF 01/20/09**

WETLAND PERMIT IMPACT SUMMARY														
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS						
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)		
3	-L- 130+00 to 138+00 RT.	54" RCP	4.53	0.00	0.22	0.29	0.00	0.00	0.08	0.00	0.00	681	0	0
4	-Y3RPA- 28+00 to 23+10	3 @ 36" RCP	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	109	0	0
5	-Y3RPA- 14+84 to 12+89	N/A	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
TOTALS:			4.84	0.00	0.22	0.29	0.00	0.00	0.08	0.00	0.00	790	0	0

U-4444AB

SITE 3: ADDITIONAL IMPACTS INSIDE-Y3LPD- 0.808 ACRES
 SITE 3: ADDITIONAL IMPACTS OUTSIDE -Y3RPD- 0.138 ACRES

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 CUMBERLAND COUNTY
 WBS - 36492.1.2 (U-4444AB)
 2/26/2009

ATN Revised 3/3/05

Permit Drawing
 Sheet 4 of 51

STATE	NC
PROJECT NO.	U-4444A
DATE	3/29/2009
DESIGNER	STP-380(U)
CHECKER	PE

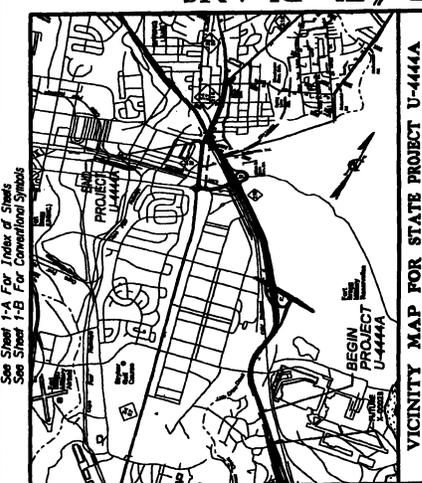
Permit Drawing
Sheet 5 of 51

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CUMBERLAND COUNTY

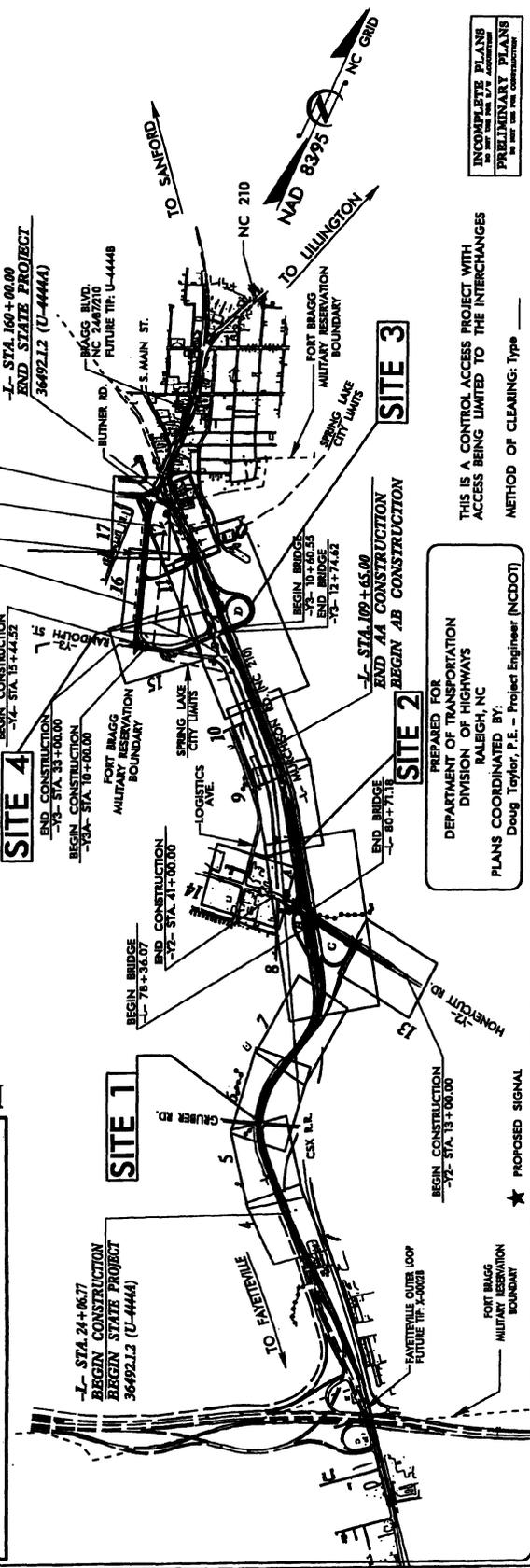
LOCATION: NC 210 (MURCHISON ROAD) FROM FAYETTEVILLE OUTER LOOP TO BUTNER RD.

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, AND STRUCTURES

WETLAND/STREAM IMPACTS



R/W PLANS



INCOMPLETE PLANS
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



THIS IS A CONTROL ACCESS PROJECT WITH ACCESS BEING LIMITED TO THE INTERCHANGES
METHOD OF CLEARING: Type _____

PREPARED FOR
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, NC
PLANS COORDINATED BY:
Doug Taylor, P.E. - Project Engineer (NCDOT)

HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER

RIGHT OF WAY DATE: March 28, 2009
LETTING DATE: September 15, 2009

PROJECT LENGTH
LENGTH ROADWAY TIP PROJECT U-4444A = 2.50 Miles
LENGTH STRUCTURES TIP PROJECT U-4444A = 0.44 Miles
TOTAL LENGTH STATES TIP PROJECT U-4444A = 2.94 Miles

DESIGN DATA
ADT 2005 = 45,400
ADT 2035 = 77,000
D/V = 11%
D & S = 6%
T = 6%
V = 60 MPH
* TST 2% DUAL 4%
FUNC. CLASS - URBAN (PERVA)



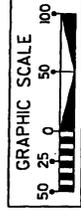
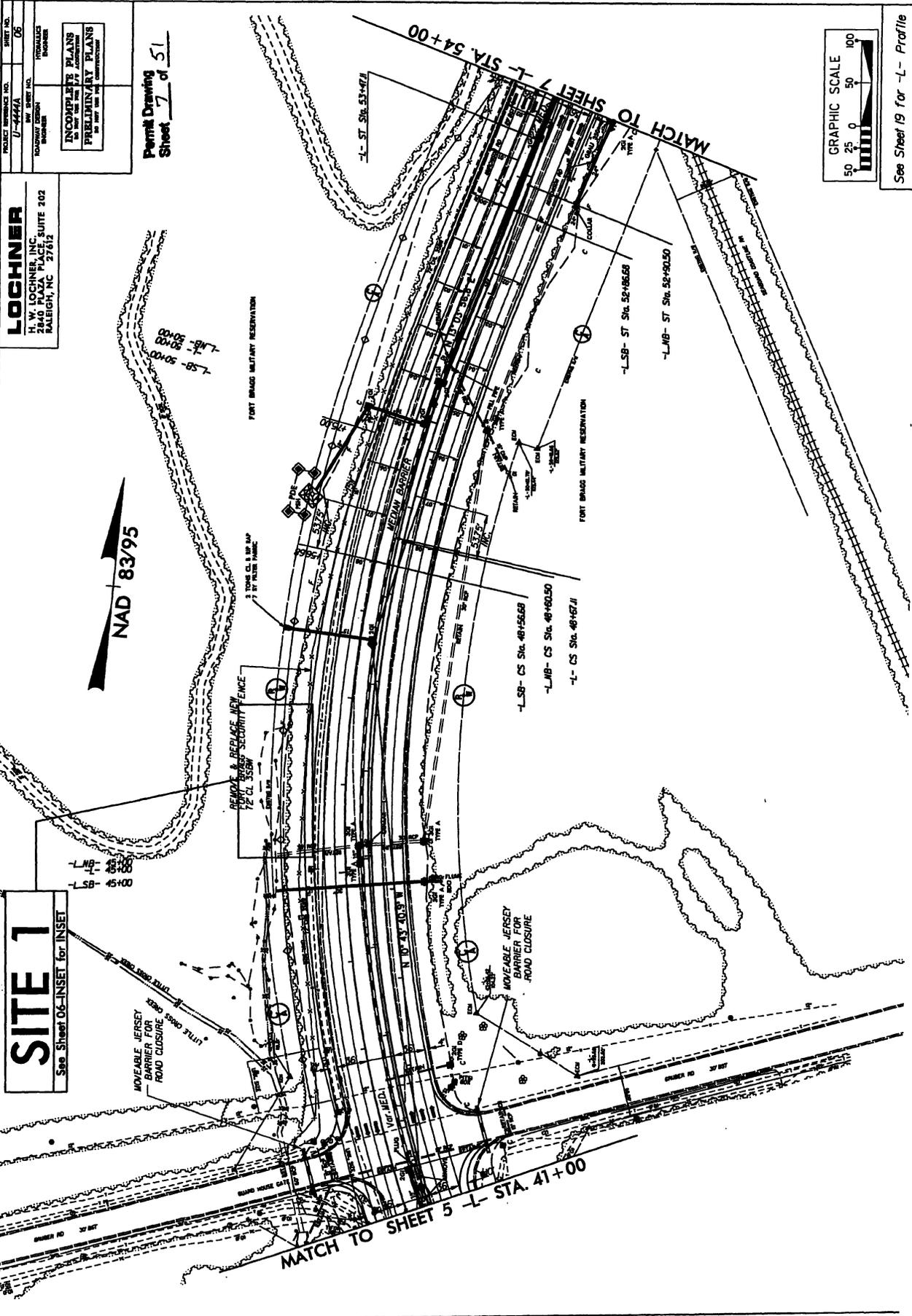
CONTRACT: T1P PROJECT: U-4444A

7/26/23 AM 2/20/2009 13539.09 U-4444HYDRAULICS\Permits\Environment\Drawings\U-4444.txd, fsh.dgn

PROJECT REFERENCE NO. U-4447A
 SHEET NO. 06
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 INCOMPLETE PLANS
 PRELIMINARY PLANS
 FOR THE USE OF THE CONTRACTOR

LOCHNER
 H. W. LOCHNER, INC.
 2449 PLAZA PLACE, SUITE 202
 RALEIGH, NC 27611

Permit Drawing
 Sheet 7 of 51



See Sheet 19 for -L- Profile

SITE 1
 See Sheet 06-INSET for INSET

MOVEABLE JERSEY BARRIER FOR ROAD CLOSURE

REMOVE & REPLACE NEW FORT BRAGG SECURITY FENCE

MOVEABLE JERSEY BARRIER FOR ROAD CLOSURE

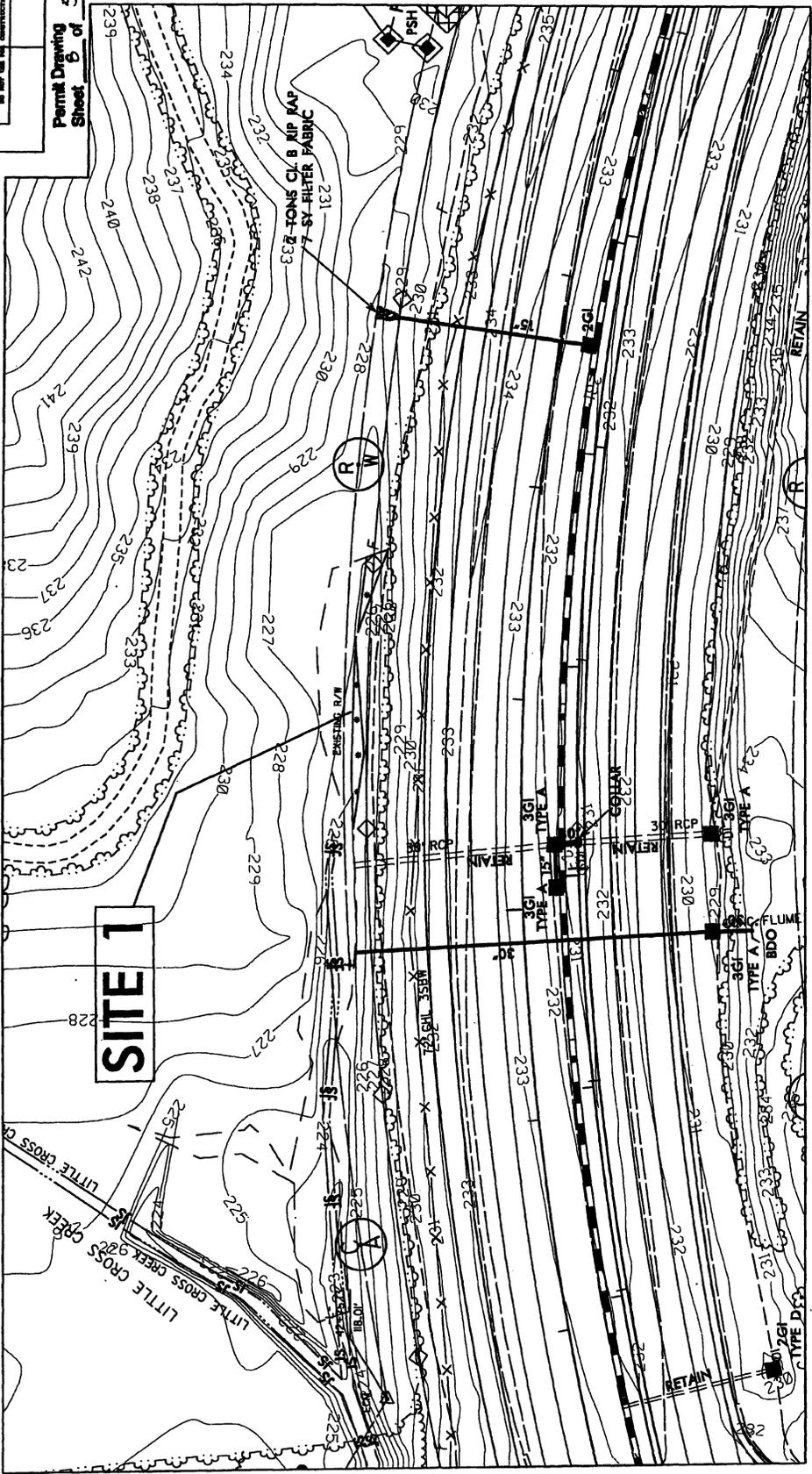
MATCH TO SHEET 5 - L- STA. 41+00

MATCH TO SHEET 7 - L- STA. 54+00

PROJECT REFERENCE NO. U-4444A	SHEET NO. 08-71527
ROADWAY DESIGN NO. 100	FORMALITIES NO. 100
INCOMPLETE PLANS IN THE PARTIAL AND BY AGREEMENT PRELIMINARY PLANS IN THE PARTIAL AND BY AGREEMENT	



Permit Drawing
Sheet B of 51

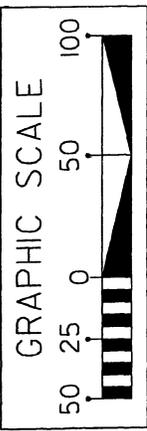


SITE 1

PROJECT: 36492.1.2 (U-4444AA)

SITE 1
(STREAM IER)
(WETLAND IER)

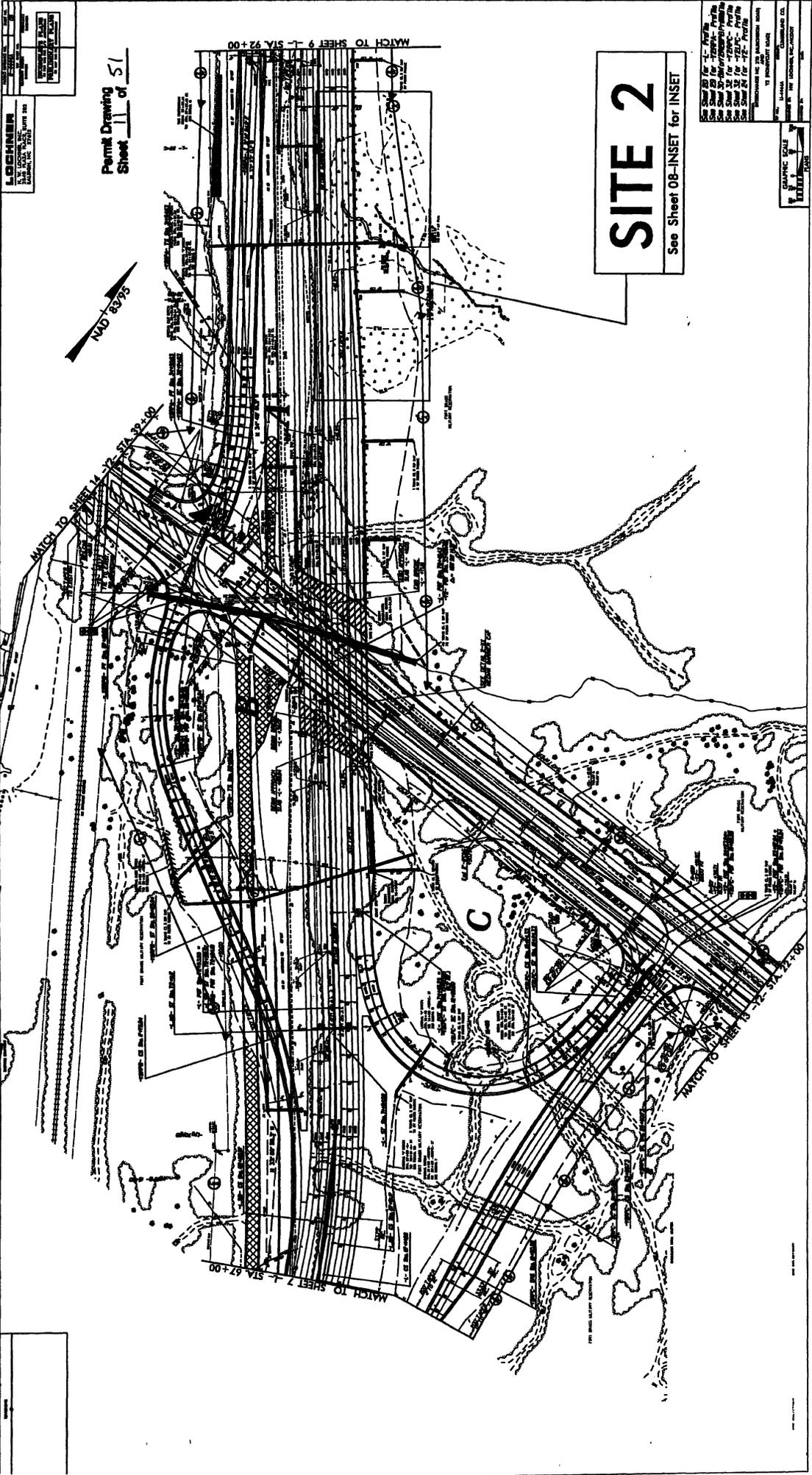
••••• DENOTES MECHANIZED CLEARING



LOCHNER
 2100 W. 10th St., Suite 100
 Lincoln, NE 68502
 (402) 441-1111

PERMIT DRAWING
 PREPARED BY: [Name]
 CHECKED BY: [Name]

Permit Drawing
Sheet 11 of 51



SITE 2
See Sheet 08-INSET for INSET

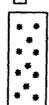
Sheet 08 for - 100% Profile	Sheet 09 for - 100% Profile	Sheet 10 for - 100% Profile	Sheet 11 for - 100% Profile	Sheet 12 for - 100% Profile	Sheet 13 for - 100% Profile	Sheet 14 for - 100% Profile	Sheet 15 for - 100% Profile	Sheet 16 for - 100% Profile	Sheet 17 for - 100% Profile	Sheet 18 for - 100% Profile	Sheet 19 for - 100% Profile	Sheet 20 for - 100% Profile	Sheet 21 for - 100% Profile	Sheet 22 for - 100% Profile	Sheet 23 for - 100% Profile	Sheet 24 for - 100% Profile	Sheet 25 for - 100% Profile	Sheet 26 for - 100% Profile	Sheet 27 for - 100% Profile	Sheet 28 for - 100% Profile	Sheet 29 for - 100% Profile	Sheet 30 for - 100% Profile	Sheet 31 for - 100% Profile	Sheet 32 for - 100% Profile	Sheet 33 for - 100% Profile	Sheet 34 for - 100% Profile	Sheet 35 for - 100% Profile	Sheet 36 for - 100% Profile	Sheet 37 for - 100% Profile	Sheet 38 for - 100% Profile	Sheet 39 for - 100% Profile	Sheet 40 for - 100% Profile	Sheet 41 for - 100% Profile	Sheet 42 for - 100% Profile	Sheet 43 for - 100% Profile	Sheet 44 for - 100% Profile	Sheet 45 for - 100% Profile	Sheet 46 for - 100% Profile	Sheet 47 for - 100% Profile	Sheet 48 for - 100% Profile	Sheet 49 for - 100% Profile	Sheet 50 for - 100% Profile	Sheet 51 for - 100% Profile
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GRAPHIC SCALE
 1" = 100'

POLICE JURISDICTION NO.	U-4444A
PROJECT NO.	08-71527
ROADWAY DESIGN ENGINEER	HYDRAULIC ENGINEER
INCOMPLETE PLANS IN PART FOR THE 17 TH JUDICIAL DISTRICT PRELIMINARY PLANS TO BE USED FOR THE 17 TH JUDICIAL DISTRICT	

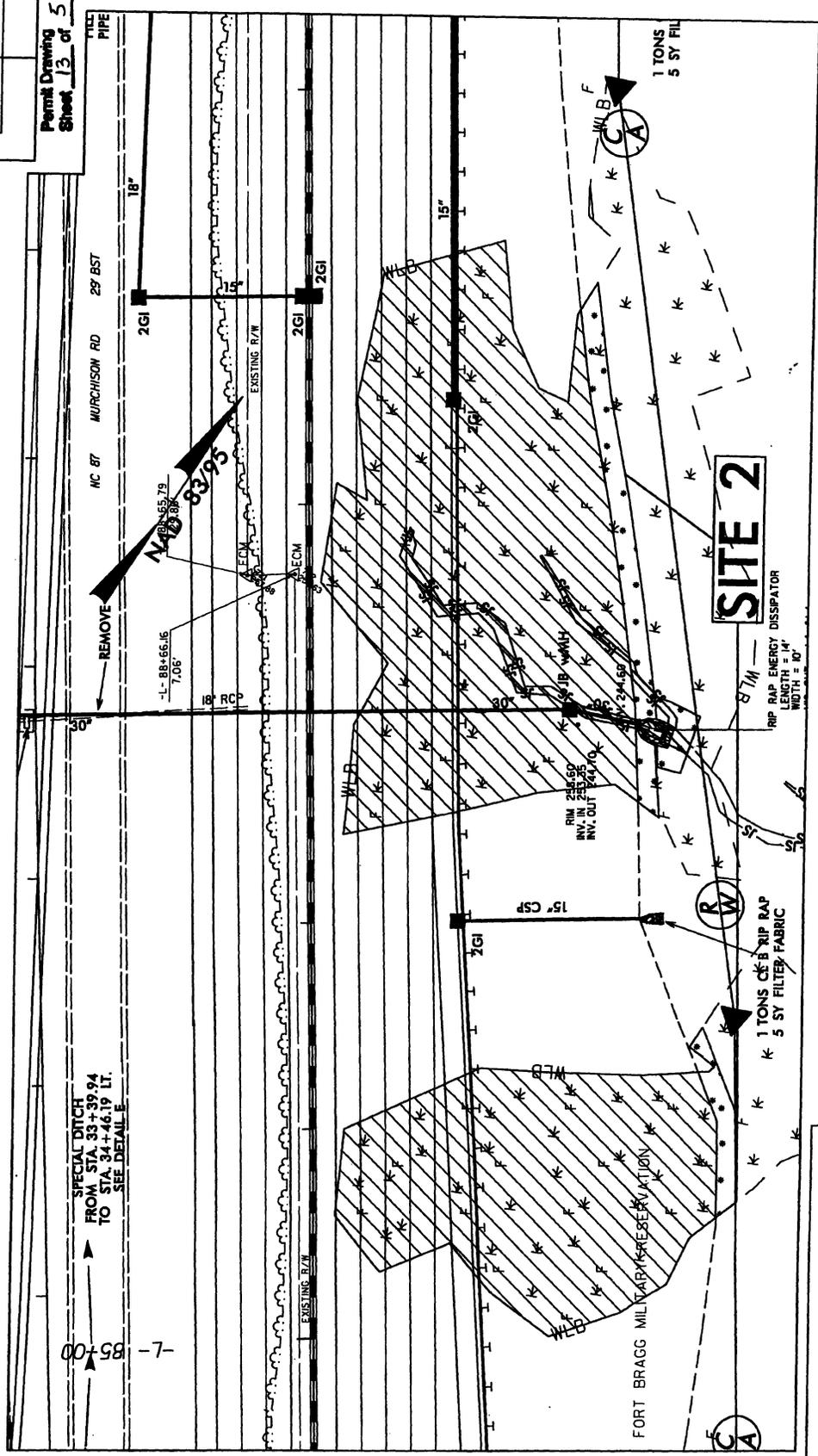
Permit Drawing
Sheet 13 of 51

 DENOTES FILL IN WETLAND

 DENOTES MECHANIZED CLEARING

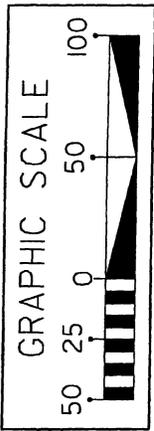
 DENOTES IMPACTS IN SURFACE WATER

SPECIAL DITCH
FROM STA. 33+39.94
TO STA. 34+46.19 LT.
SEE DETAIL E



SITE 2

PROJECT: 36492.1.2 (U-4444AA)
SITE 2
(STREAM 3ER, IIER)
(WETLANDS BER, CER)



LOGANER
 CIVIL ENGINEERING
 1000 W. 10th St., Suite 100
 Anchorage, Alaska 99501
 Phone: (907) 562-1111
 Fax: (907) 562-1112

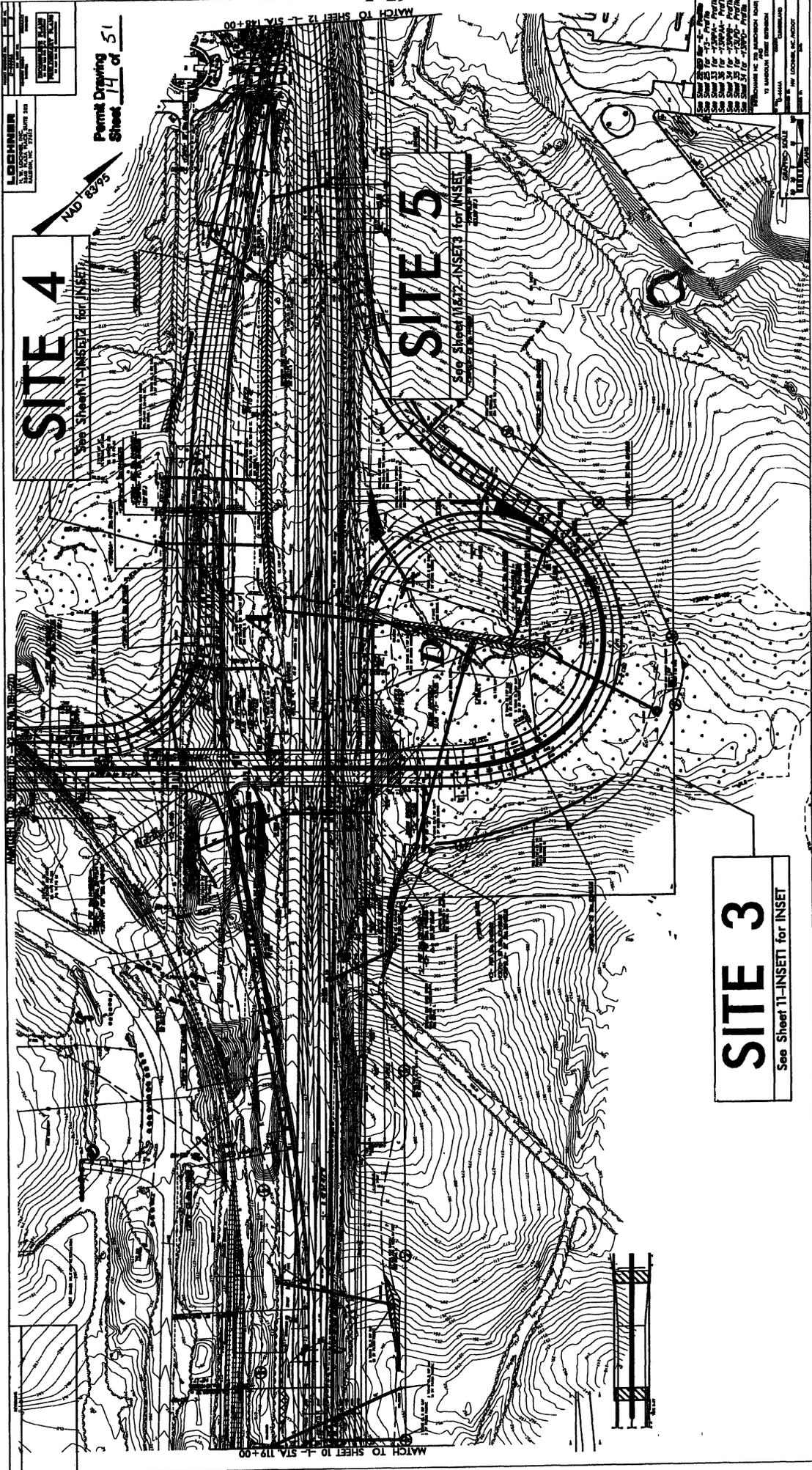
Permit Drawing
 Sheet 14 of 51

SITE 4

SITE 5

SITE 3

See Sheet 11-INSET for INSET



MATCH TO SHEET 10-1-SIA, 119+00

See Sheet 1657-INSET for INSET

NOTES

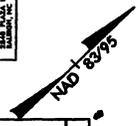
1. This drawing is for the proposed project only. It is not to be used for any other purpose without the written consent of the Engineer.
2. The Engineer is not responsible for the accuracy of the data provided by the client or for the results of any construction based on this drawing.
3. The Engineer is not responsible for the accuracy of the data provided by the client or for the results of any construction based on this drawing.
4. The Engineer is not responsible for the accuracy of the data provided by the client or for the results of any construction based on this drawing.
5. The Engineer is not responsible for the accuracy of the data provided by the client or for the results of any construction based on this drawing.
6. The Engineer is not responsible for the accuracy of the data provided by the client or for the results of any construction based on this drawing.
7. The Engineer is not responsible for the accuracy of the data provided by the client or for the results of any construction based on this drawing.
8. The Engineer is not responsible for the accuracy of the data provided by the client or for the results of any construction based on this drawing.
9. The Engineer is not responsible for the accuracy of the data provided by the client or for the results of any construction based on this drawing.
10. The Engineer is not responsible for the accuracy of the data provided by the client or for the results of any construction based on this drawing.

LOGANER CIVIL ENGINEERING
 1000 W. 10th St., Suite 100
 Anchorage, Alaska 99501
 Phone: (907) 562-1111
 Fax: (907) 562-1112

LEONHNER
 CIVIL ENGINEER
 1000 N. 10th St., Suite 100
 Lincoln, NE 68502
 (402) 441-1111

SITE 4
 See Sheet 11-INSET2 for INSET

Permit Drawing
 Sheet 5 of 51

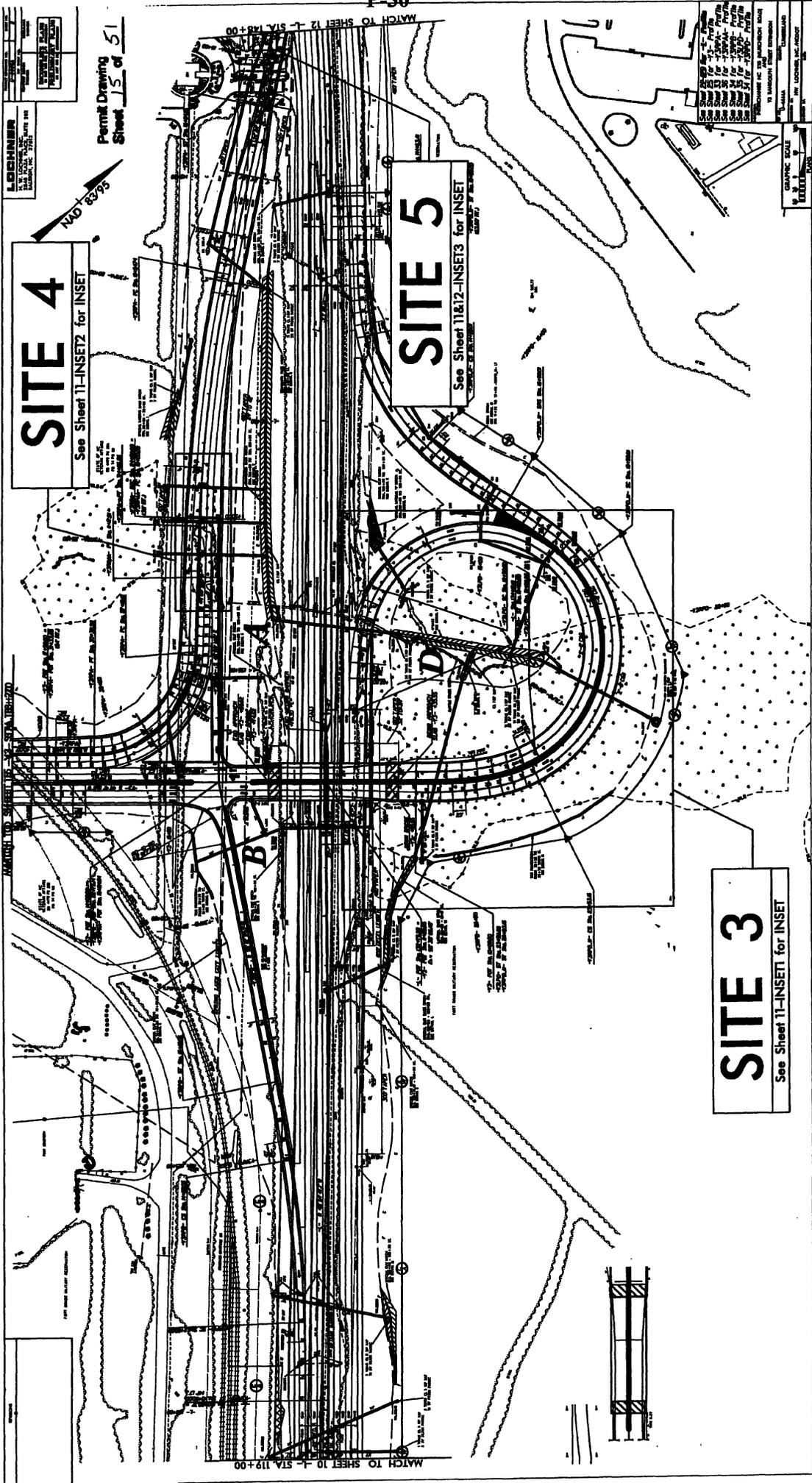


MATCH TO SHEET 10 - STA 119+00

MATCH TO SHEET 12 - STA 121+00

MATCH TO SHEET 10 - STA 119+00

MATCH TO SHEET 12 - STA 121+00



SITE 5
 See Sheet 11&12-INSET3 for INSET

SITE 3
 See Sheet 11-INSET1 for INSET

CONTRACTOR'S SCALE
 1" = 100'

FOR LAYOUT ONLY
 NOT TO BE USED FOR CONSTRUCTION

FOR LAYOUT ONLY
 NOT TO BE USED FOR CONSTRUCTION

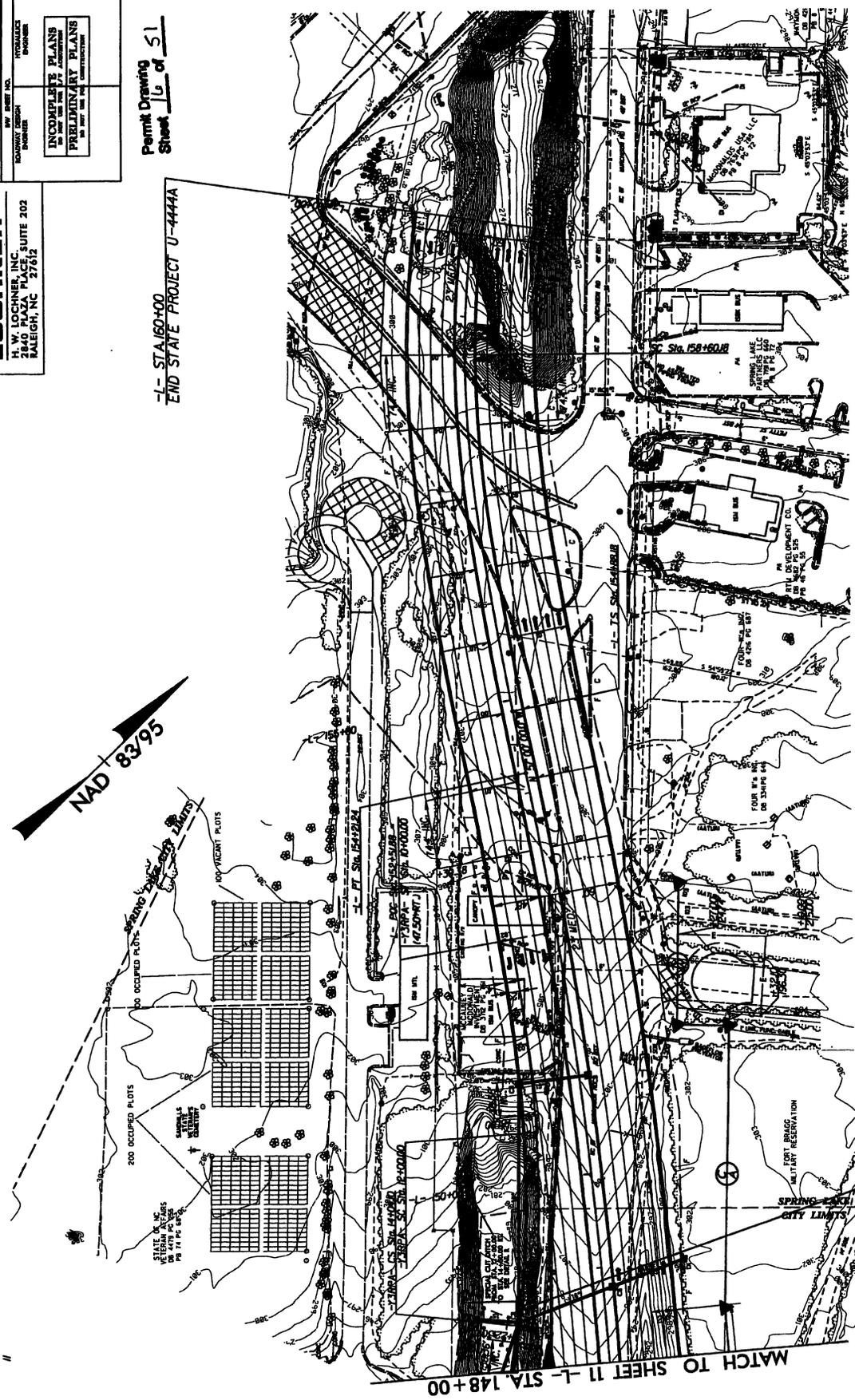
PROJECT REFERENCE NO.	U-4444A
SHEET NO.	12
BY	ENGINEER
CHECKED BY	ENGINEER
DESIGNED BY	ENGINEER
DATE	

LOCHNER
 14 W. LOCHNER, INC.
 2840 PLAZA PLACE, SUITE 202
 RALEIGH, NC 27612

INCOMPLETE PLANS
 PRELIMINARY PLANS
 NOT TO BE USED FOR CONSTRUCTION

Permit Drawing
 Sheet 12 of 51

-L- STA. 160+00
 END STATE PROJECT U-4444A



SITE 5
 See Sheet 11&12-INSET3 for INSET

See Sheet 23 for -L- Profile
 See Sheet 33 for -Y3RPA- Profile

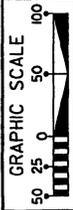
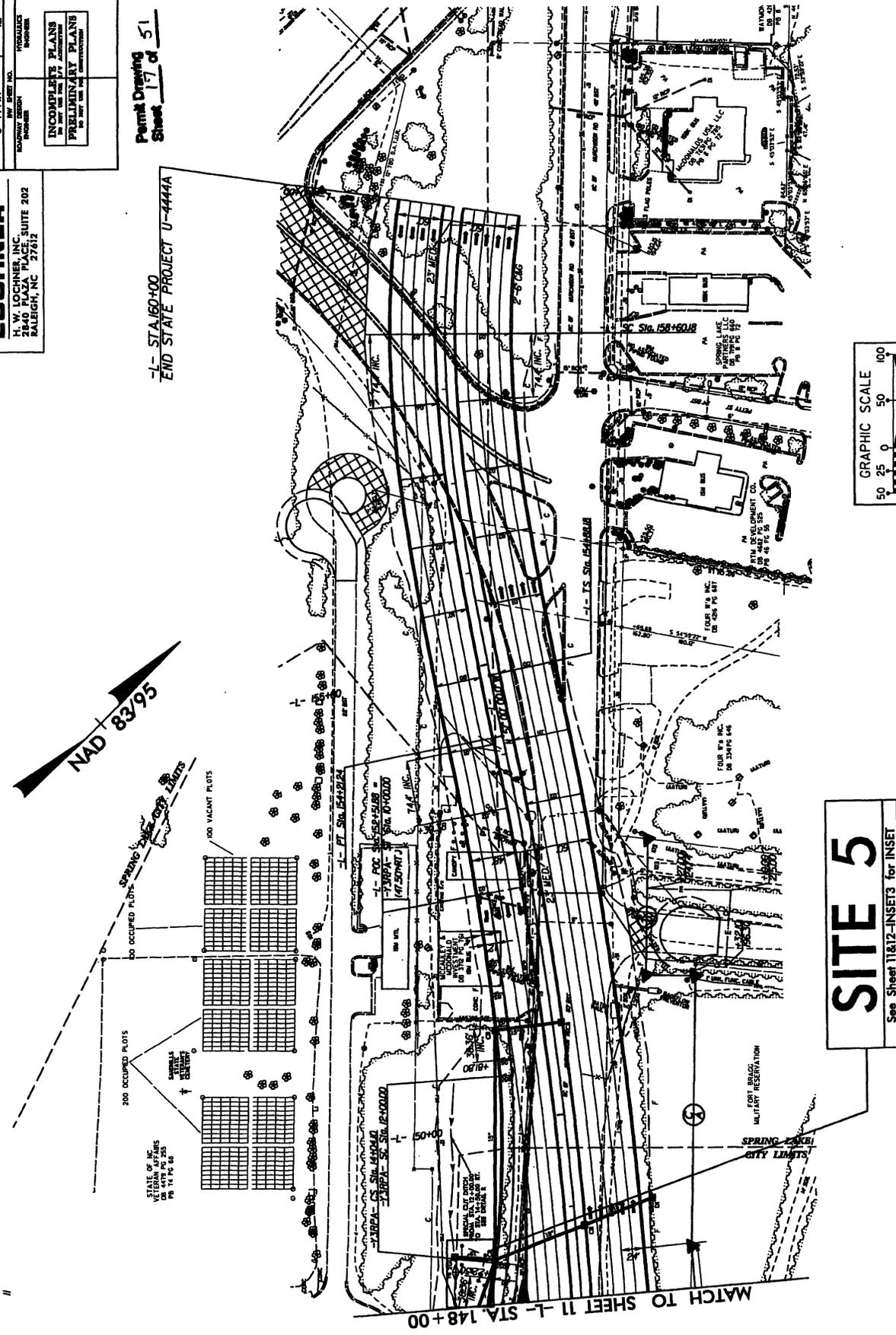
MATCH TO SHEET 11 -L- STA. 148+00

LOCHNER
11 W. LOCHNER INC
3140 HAZEL PLACE SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. U-4444	SHEET NO. 12
ISSUANCE PROVISIONS	DATE 12/15/00
INCOMPLETE PLANS PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 17 of 51

-L- STA.160+00
END STATE PROJECT U-4444A



SITE 5
See Sheet 11&12-INSET3 for INSET

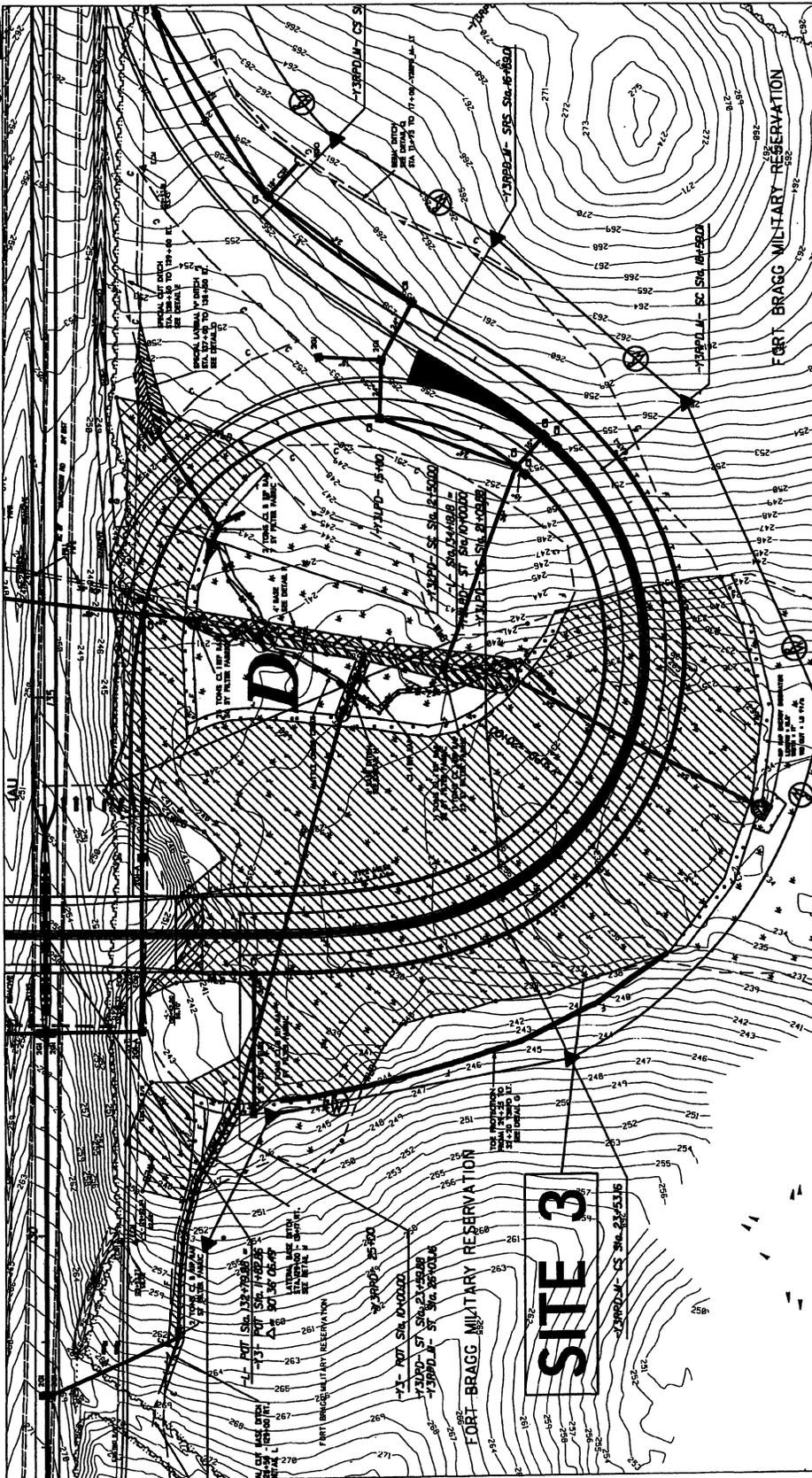
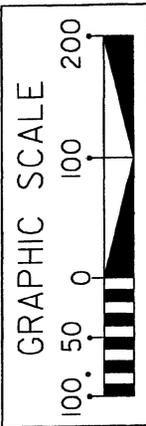
See Sheet 23 for -L- Profile
See Sheet 11 for -Y-APP-3- Profile

PROJECT: U-444A	DESIGN NO. 11-115277
DATE: 11/11/88	DESIGNER: HYDRAULICS ENGINEER
SCALE: AS SHOWN	CHECKED: HYDRAULICS ENGINEER
INCOMPLETE PLANS ON THIS SHEET ARE NOT TO BE CONSIDERED FOR CONSTRUCTION	
PRELIMINARY PLANS DO NOT BE USED FOR CONSTRUCTION	



Permit Drawing
Sheet 16 of 51

-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES EXCAVATION IN WETLAND

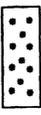


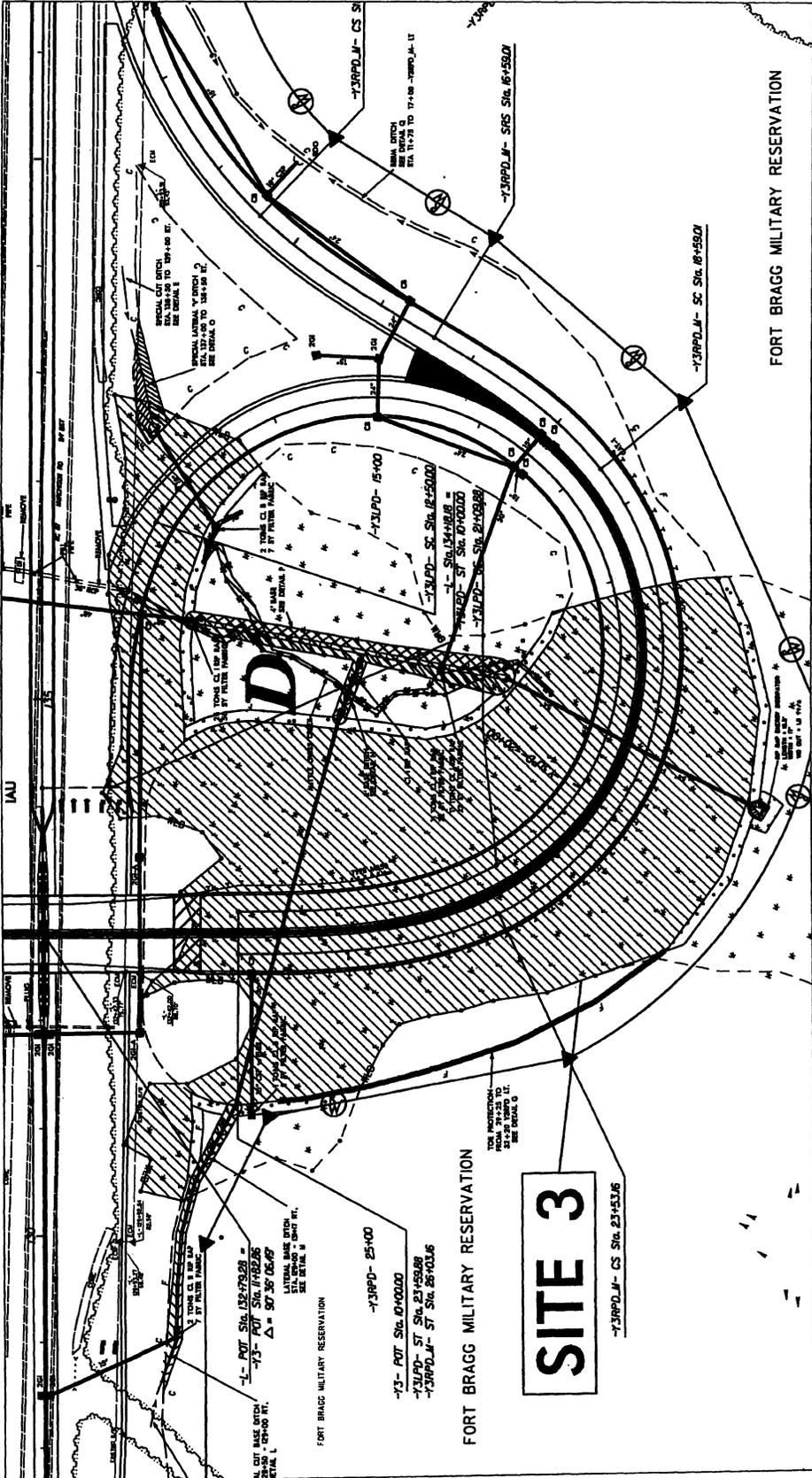
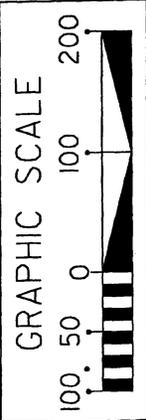
PROJECT: 36492.1.2 (U-4444AB)
SITE 3
(STREAM 6R, 8R, 9R, 10ER)
(WETLAND EER)

PROJECT REFERENCE NO.	U-4444	SHEET NO.	7-10577
ROADWAY DESIGN	INTERSTATE	BY SHEET NO.	
INCOMPLET E PLANS IN THIS SET ARE NOT TO BE CONSIDERED FOR PRELIMINARY PLANS UNLESS SO NOTED ON THE DRAWING			

Permit Drawing
 Street 19 of 51



-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES EXCAVATION IN WETLAND



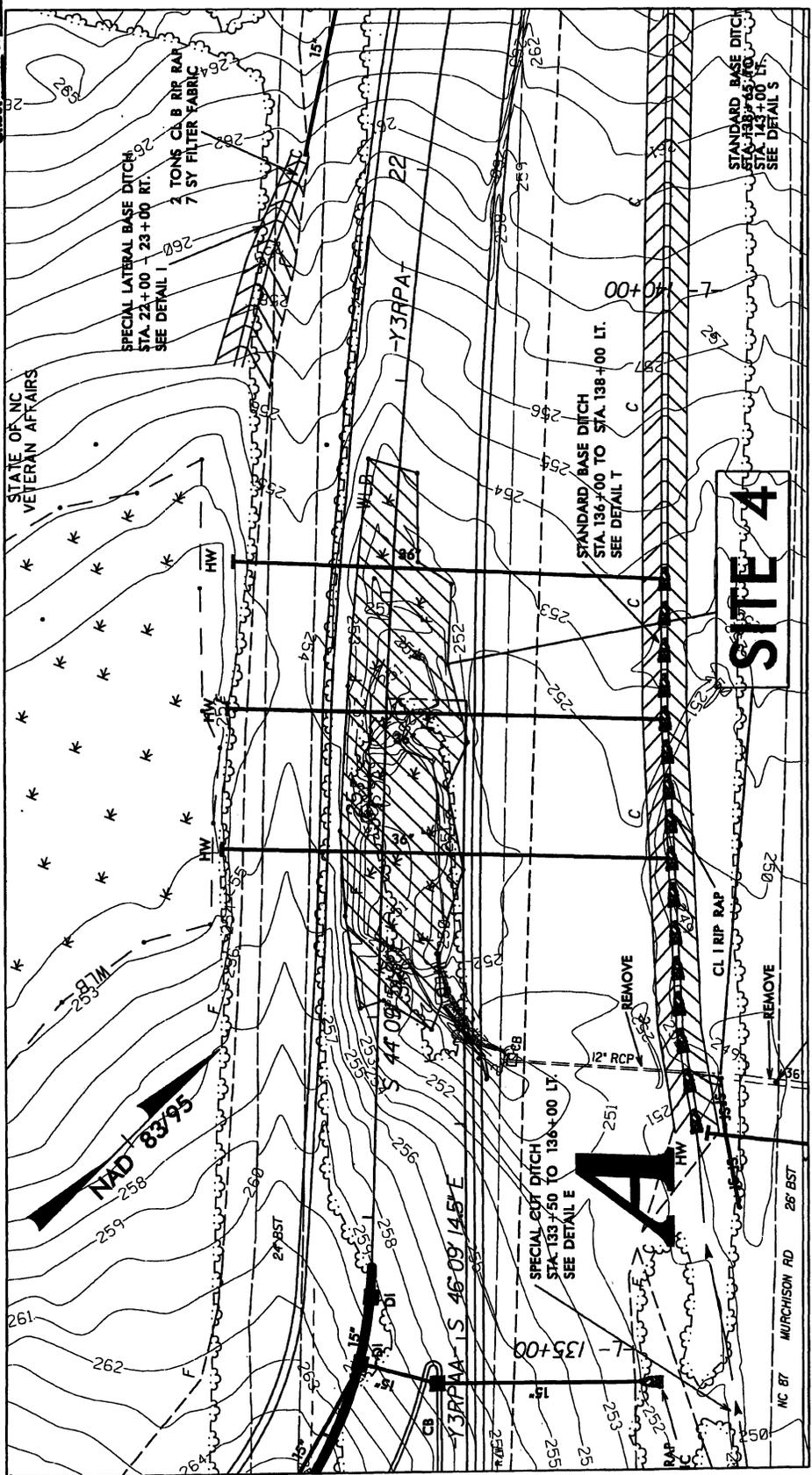
PROJECT: 36492.1.2 (U-4444AB)
 SITE 3
 FORT BRAGG MILITARY RESERVATION
 (STREAM 6ER, 8ER, 9ER, 10ER)
 (WETLAND EER)

PROJECT REFERENCE NO. U-4444A
 SHEET NO. 11-INSET 2
 DRAWING NO. 11-INSET 2
 DATE: 11/14/12
 DRAWN BY: [REDACTED]
 CHECKED BY: [REDACTED]
 INCOMPLETE PLANS
 PRELIMINARY PLANS
 IN THE INTEREST OF THE PUBLIC

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

Permit Drawing
 Sheet 20 of 51



PROJECT: 36492.1.2 (U-4444AB)
 (STREAM 6TB, 7TB)
 (WETLAND FTB)
 SITE 4

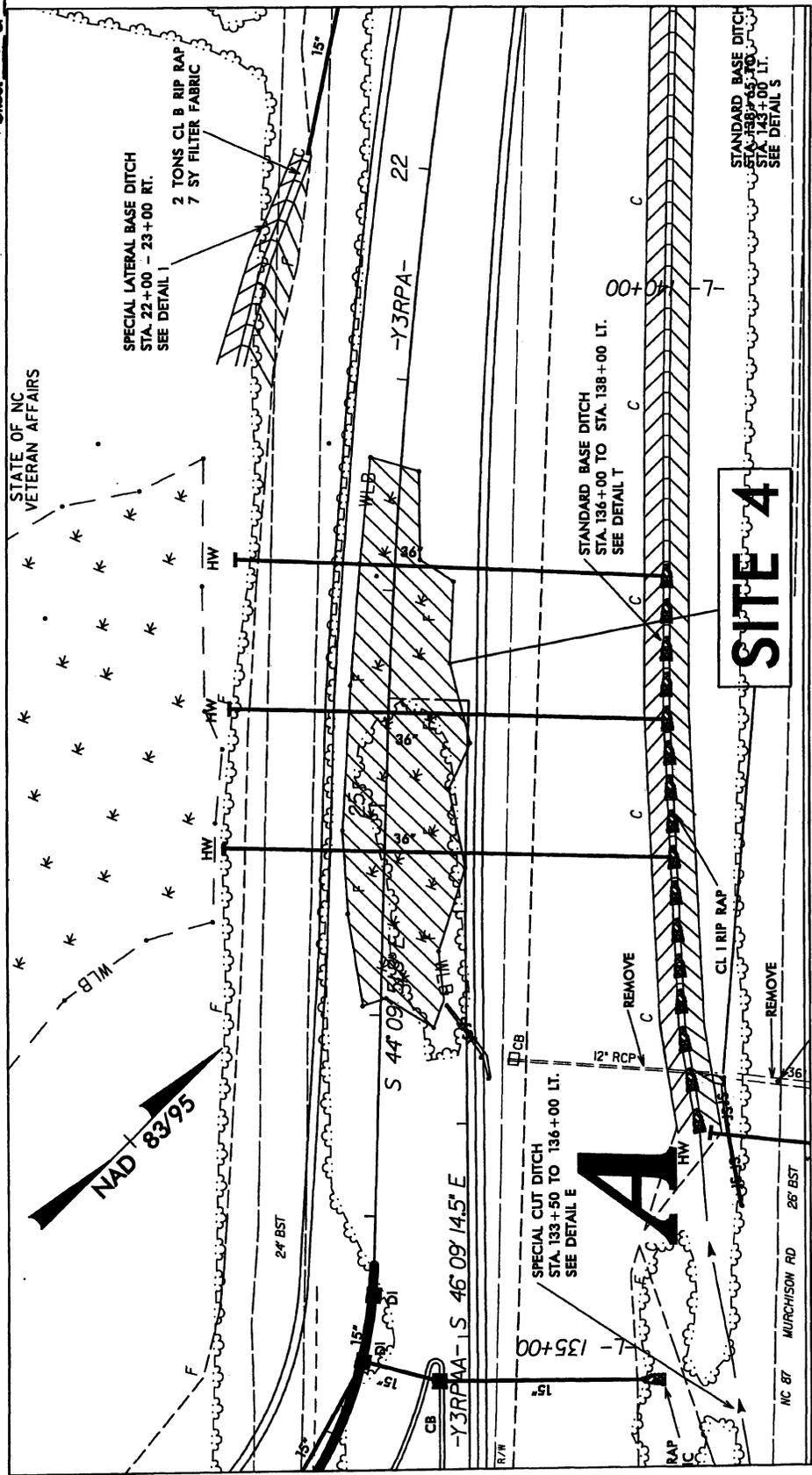
PROJECT REFERENCE NO. U-4444A
 SHEET NO. 1-115/12
 ROADWAY DESIGN ENGINEER
 HYDRAULICS ENGINEER

INCOMPLETE PLANS
 PRELIMINARY PLANS
 NOT FOR CONSTRUCTION

Permit Drawing
Sheet 21 of 51

DENOTES FILL IN WETLAND

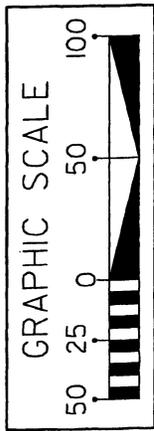
DENOTES IMPACTS IN SURFACE WATER



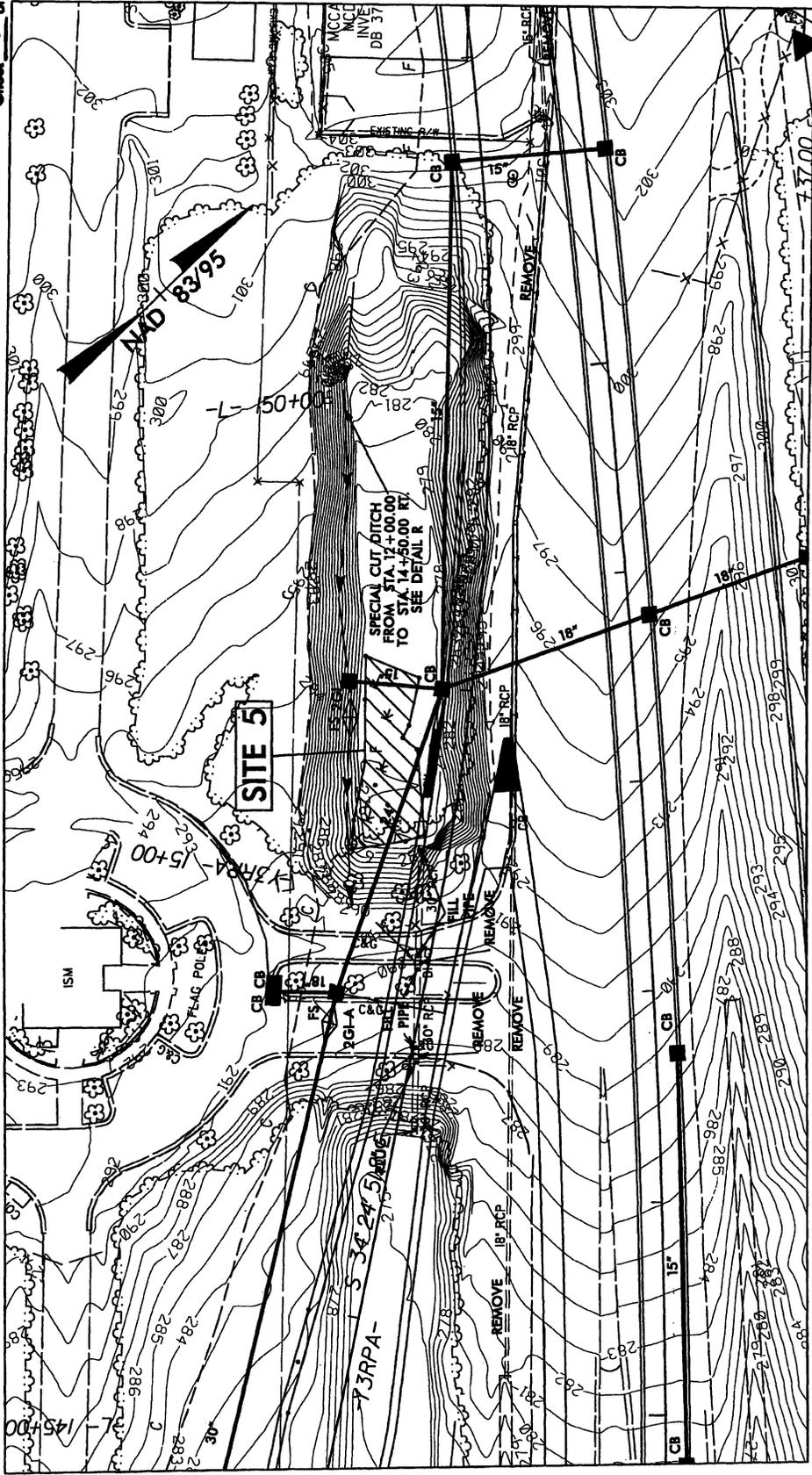
PROJECT: 36492.1.2 (U-4444AB)
 (STREAM 6TB, 7TB)
 (WETLAND FTB)
 SITE 4

PROJECT REFERENCE NO. U-4444	SHEET NO. 18/2-115E/3
DESIGNED BY HYDRAULICS ENGINEER	CHECKED BY HYDRAULICS ENGINEER
INCOMPLETE PLANS FOR PERMITTING PRELIMINARY PLANS FOR CONSTRUCTION	

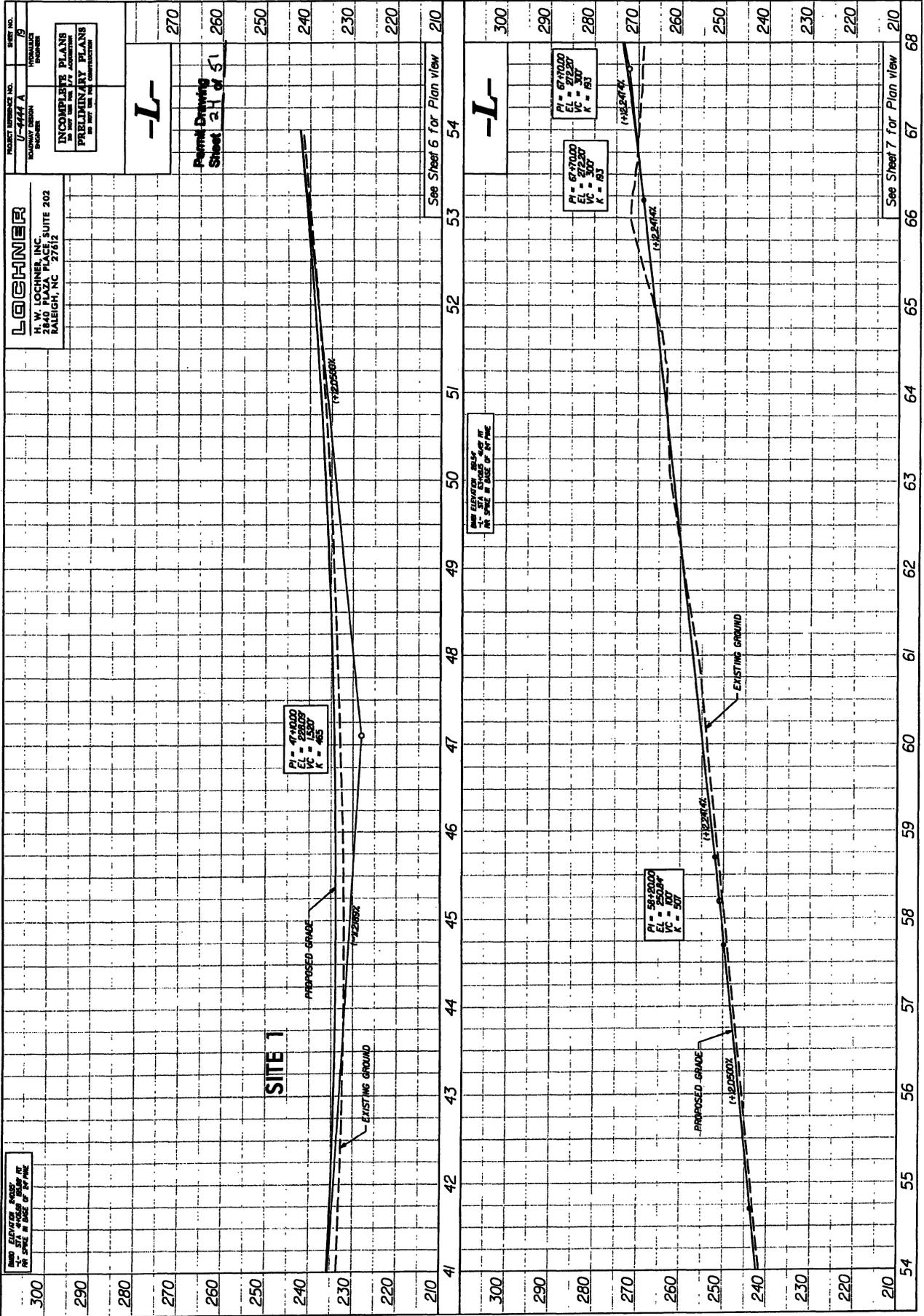
Permit Drawing
Sheet 2.2 of 5.1

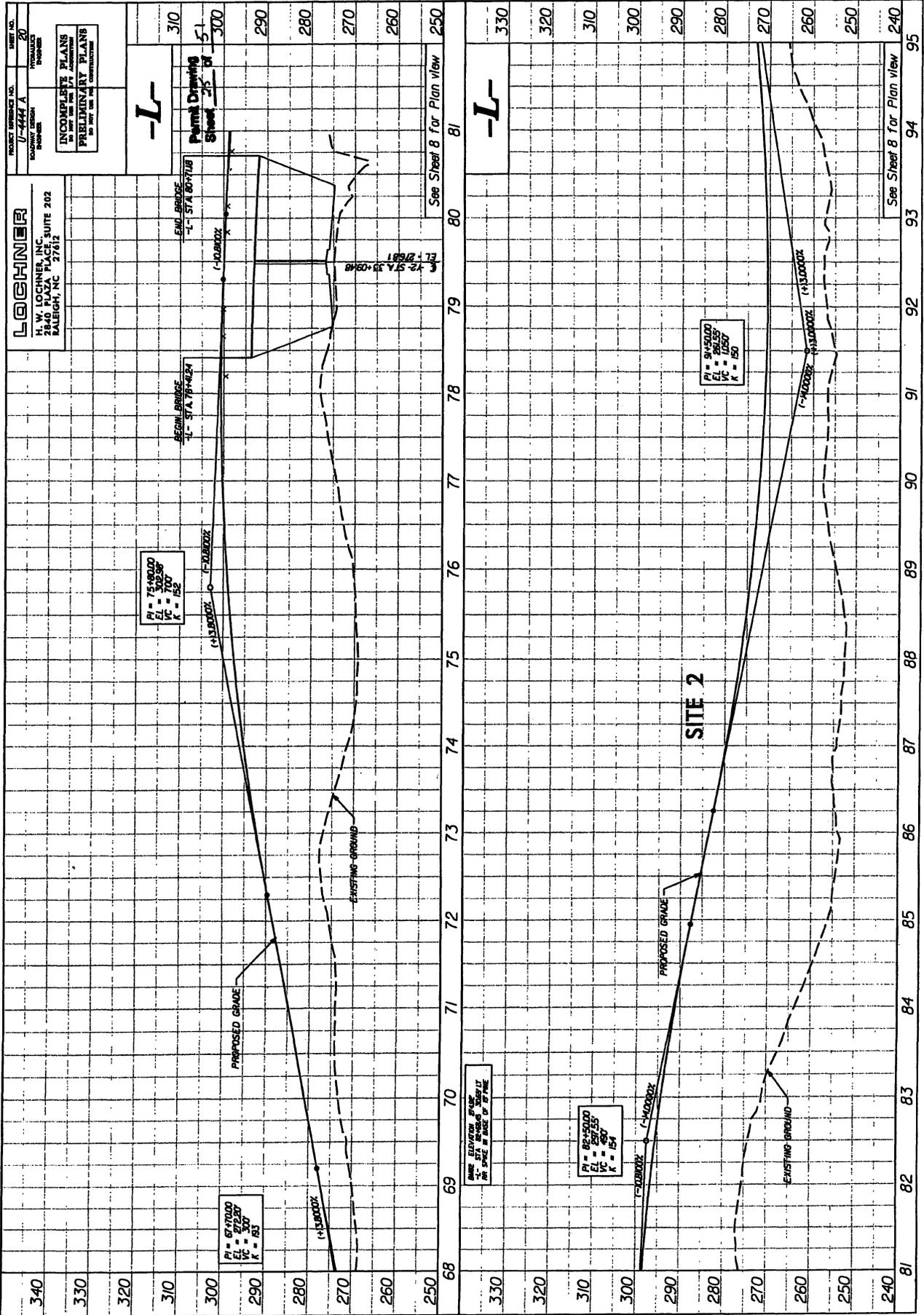


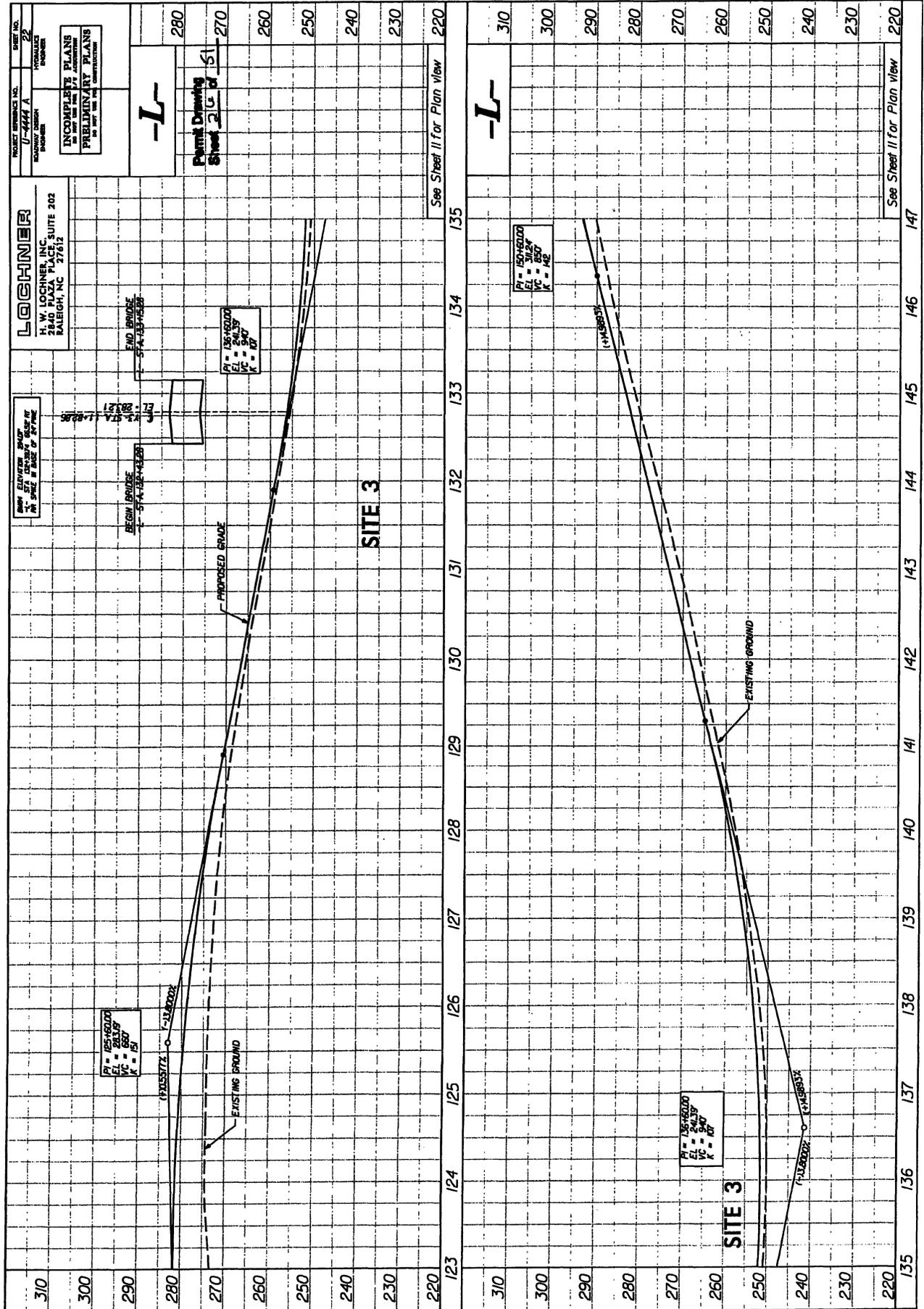
DENOTES FILL IN
WETLAND

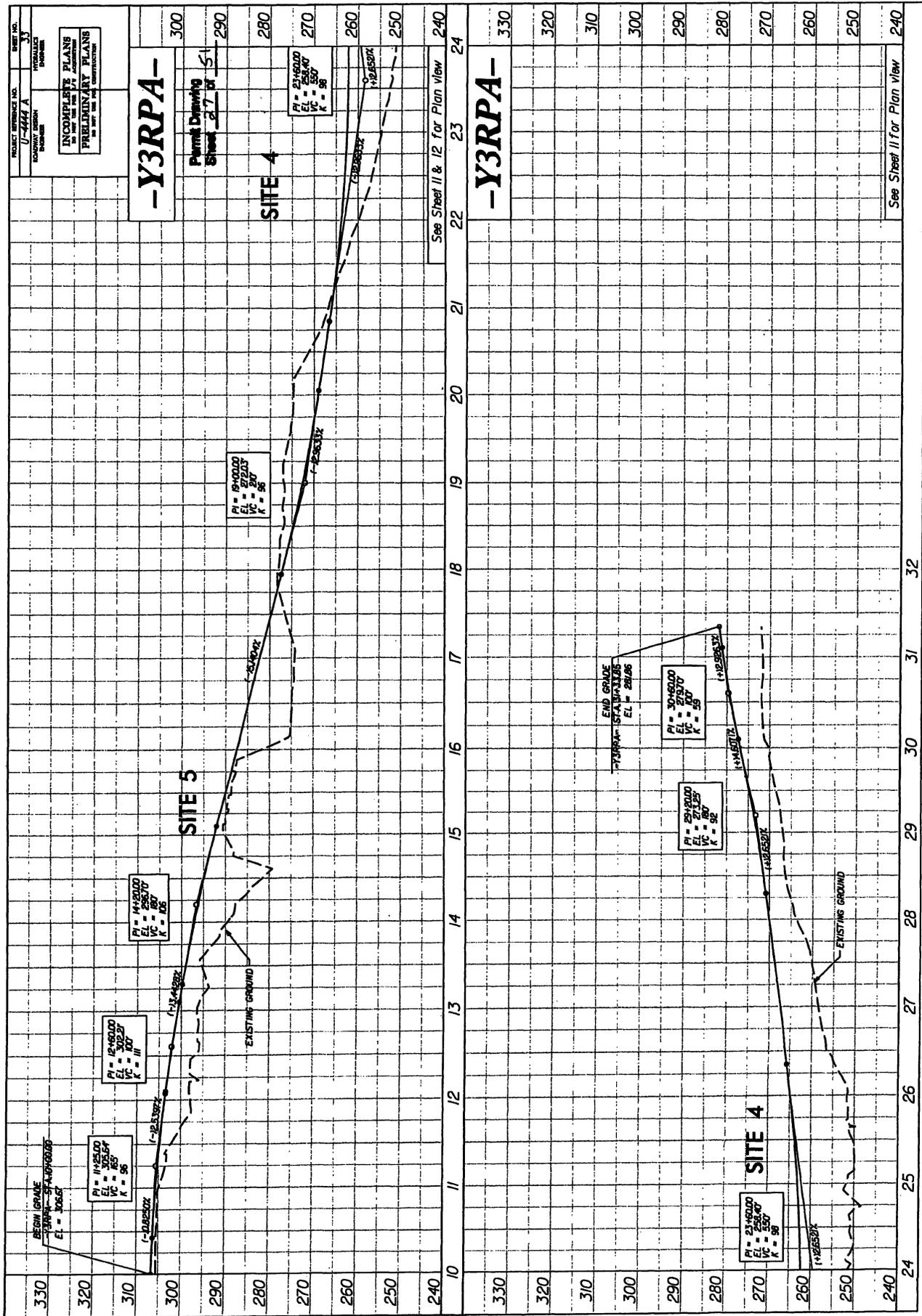


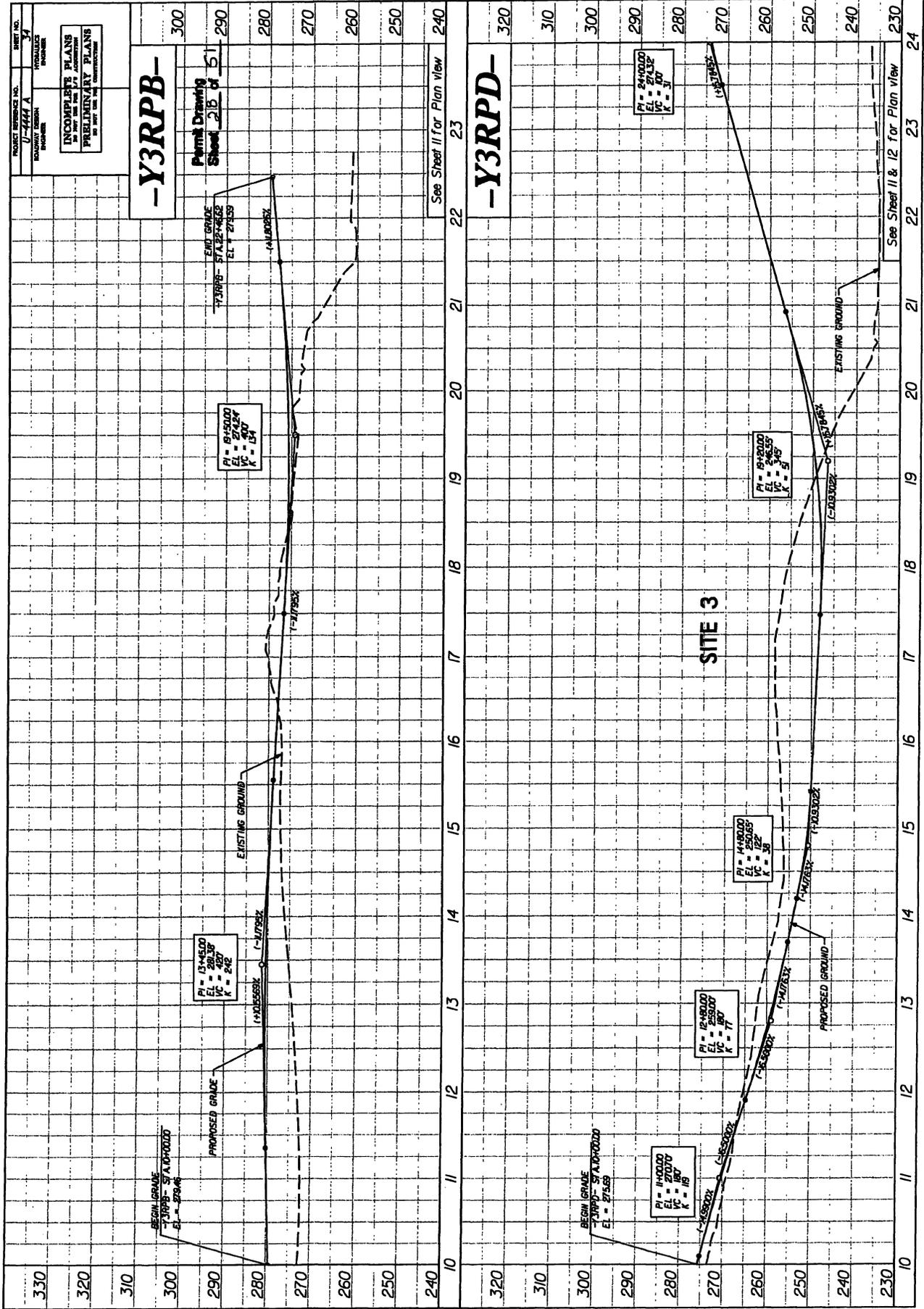
PROJECT: 36492.1.2 (U-4444AB)
 (WETLAND HER)
 SITE 5

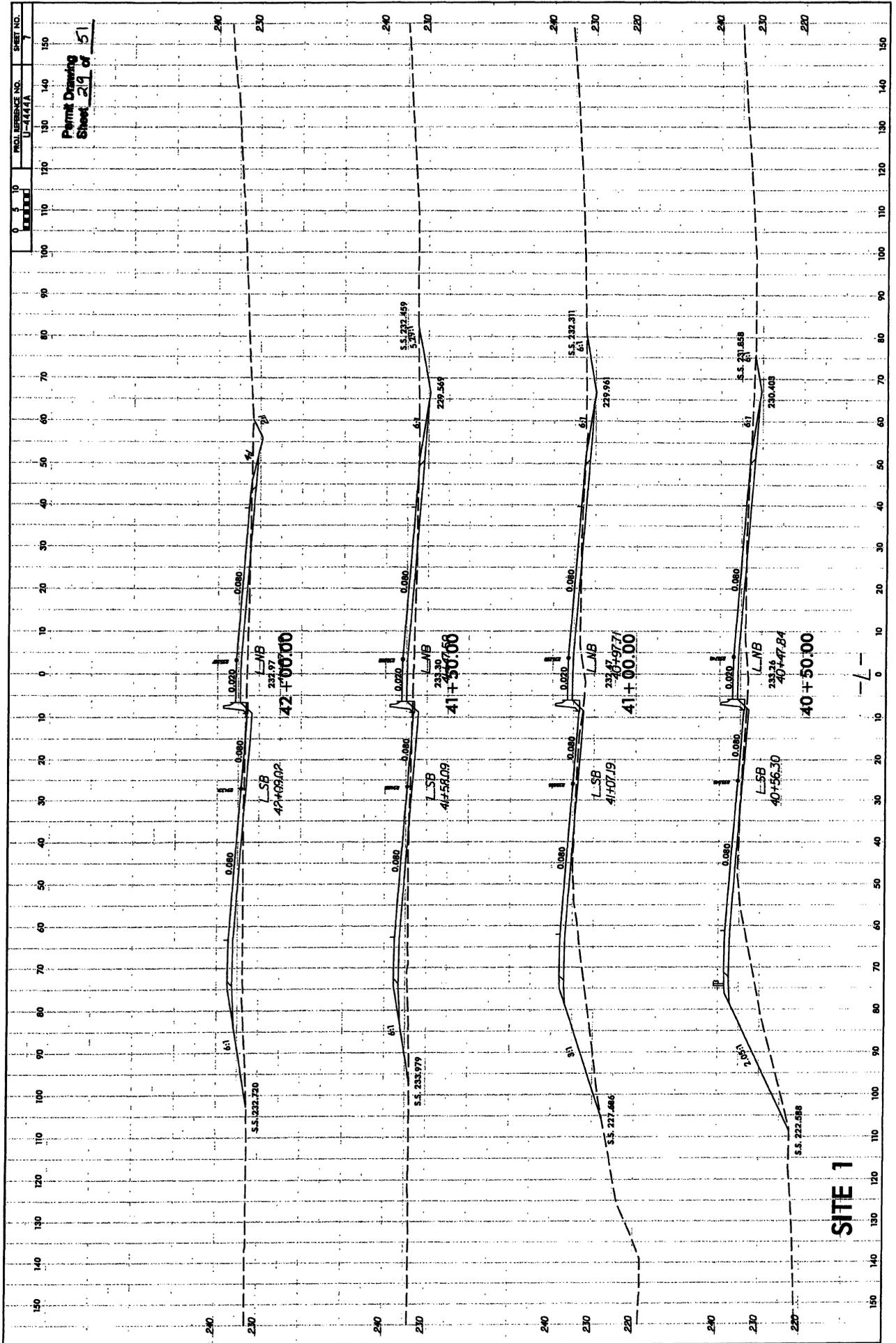










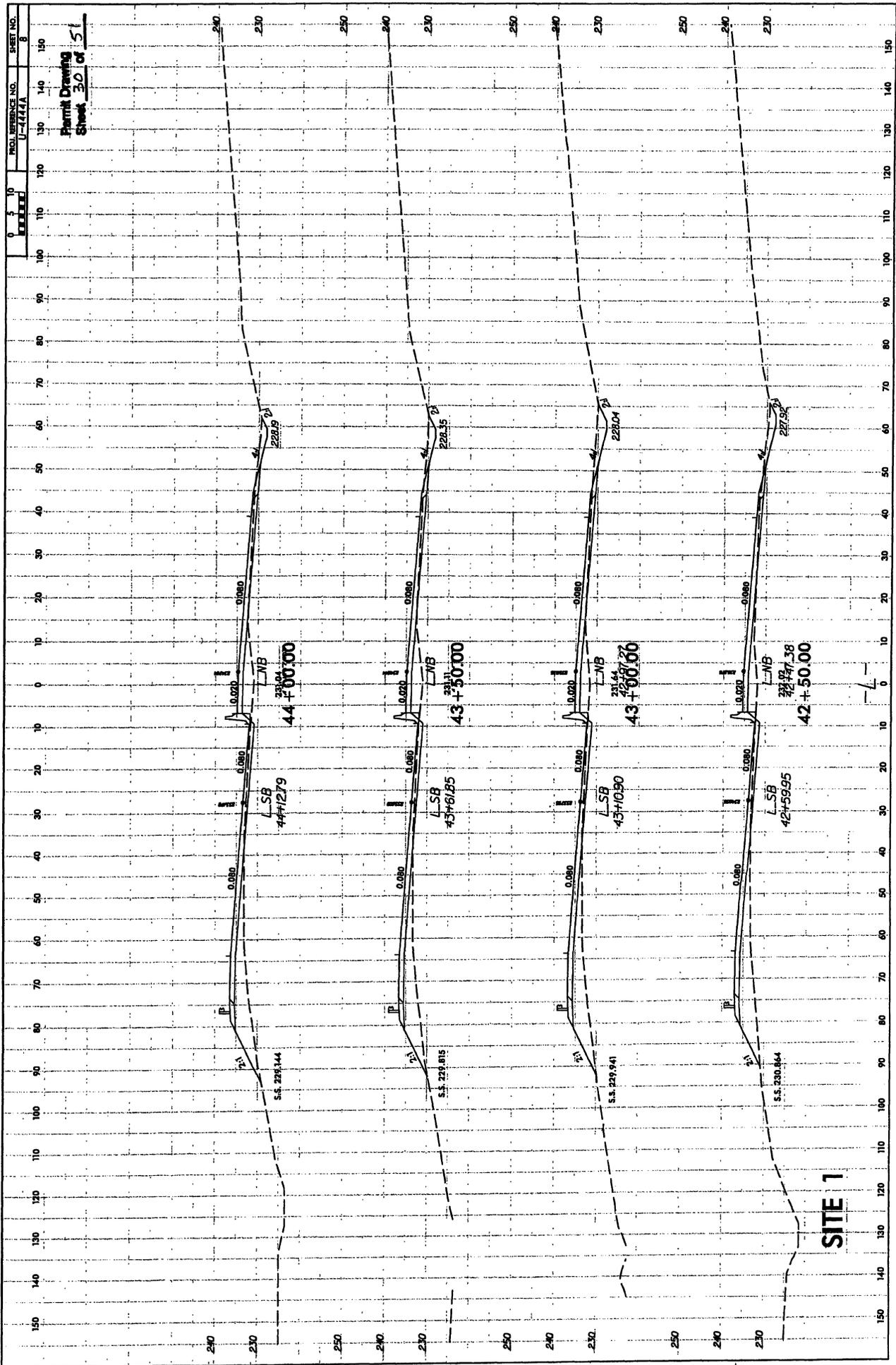


PROJ REFERENCE NO. U-1444A

SHEET NO. 29 OF 51

Permit Drawing
Sheet 29 of 51

SITE 1

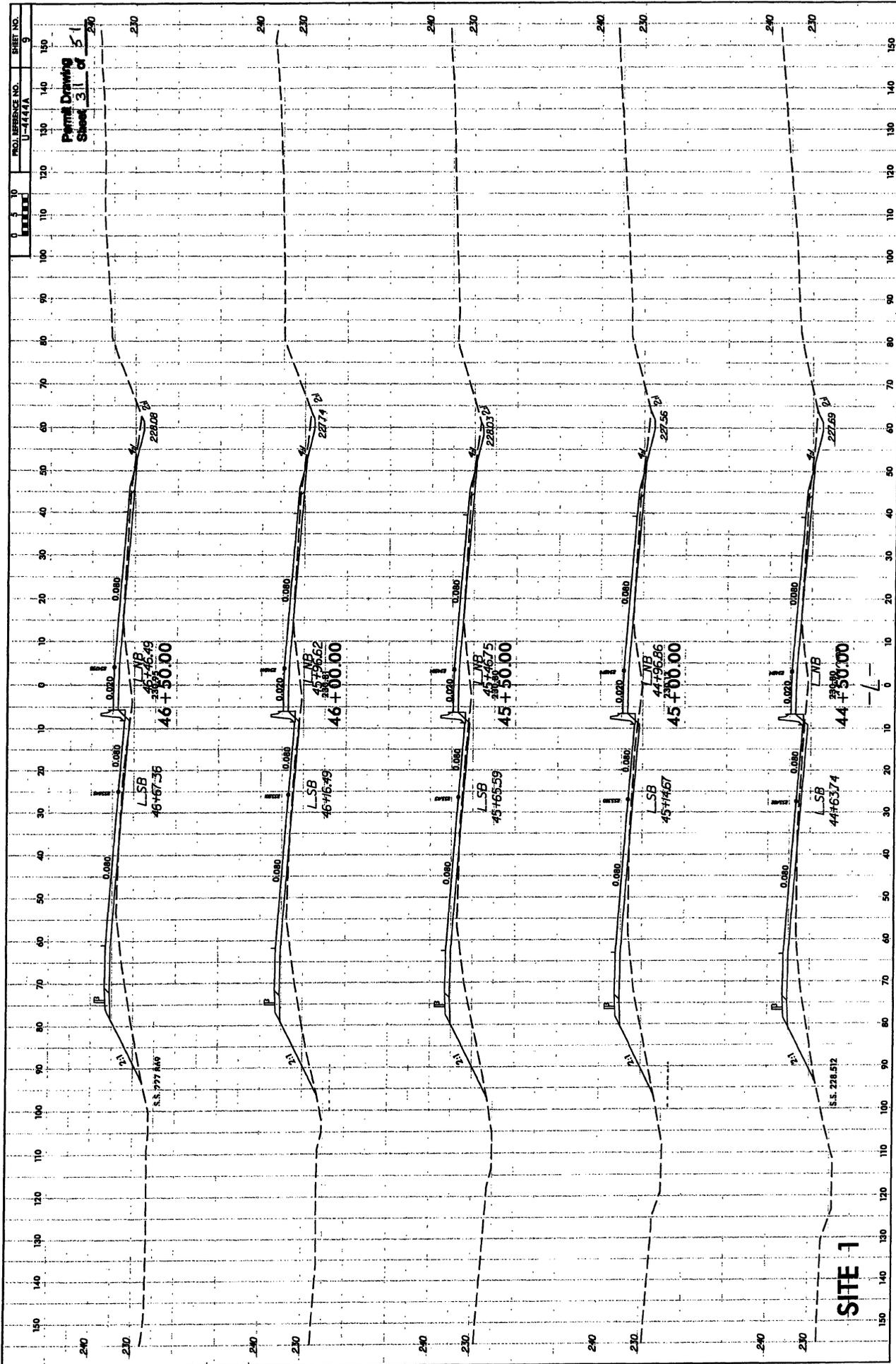


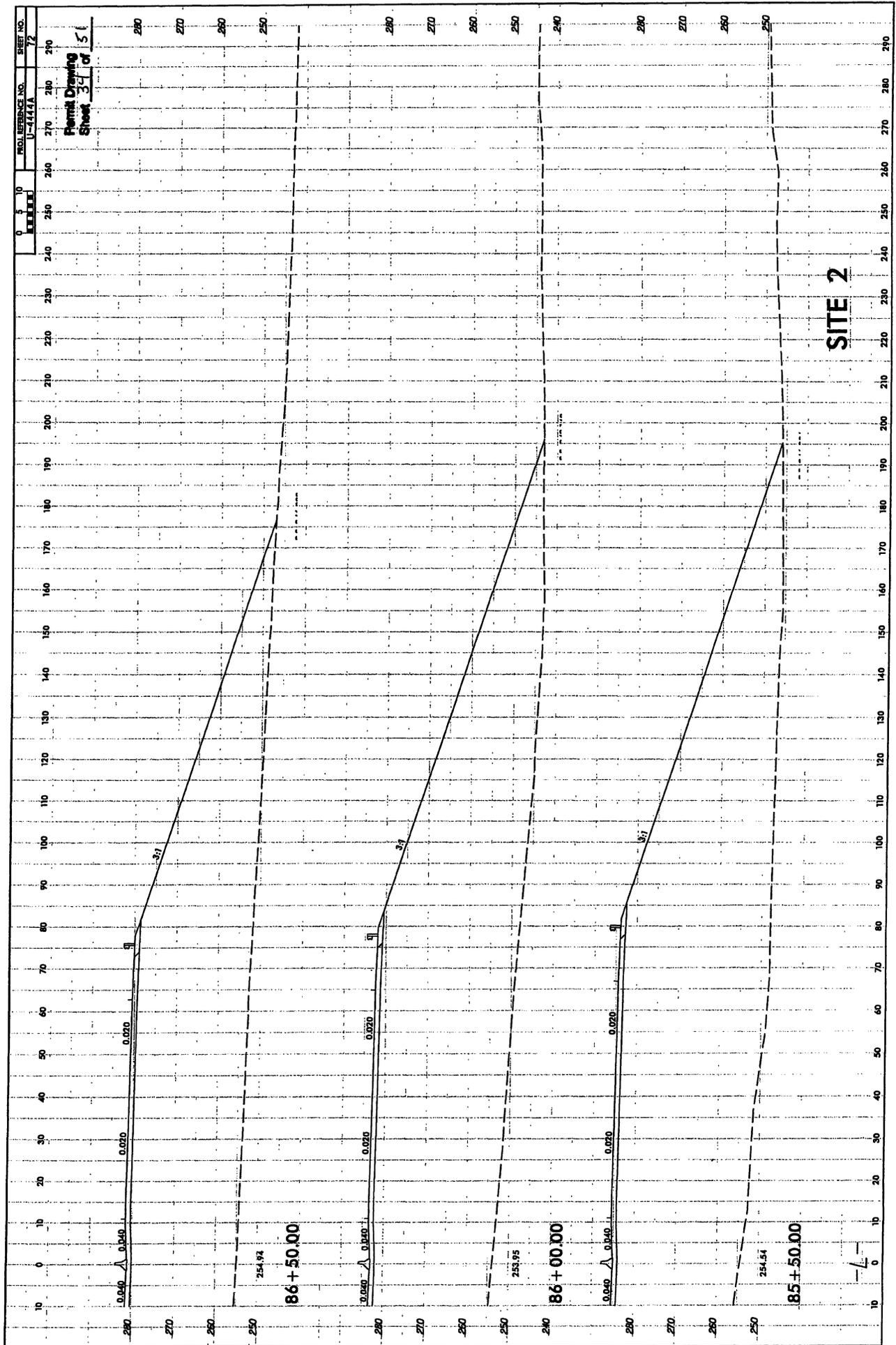
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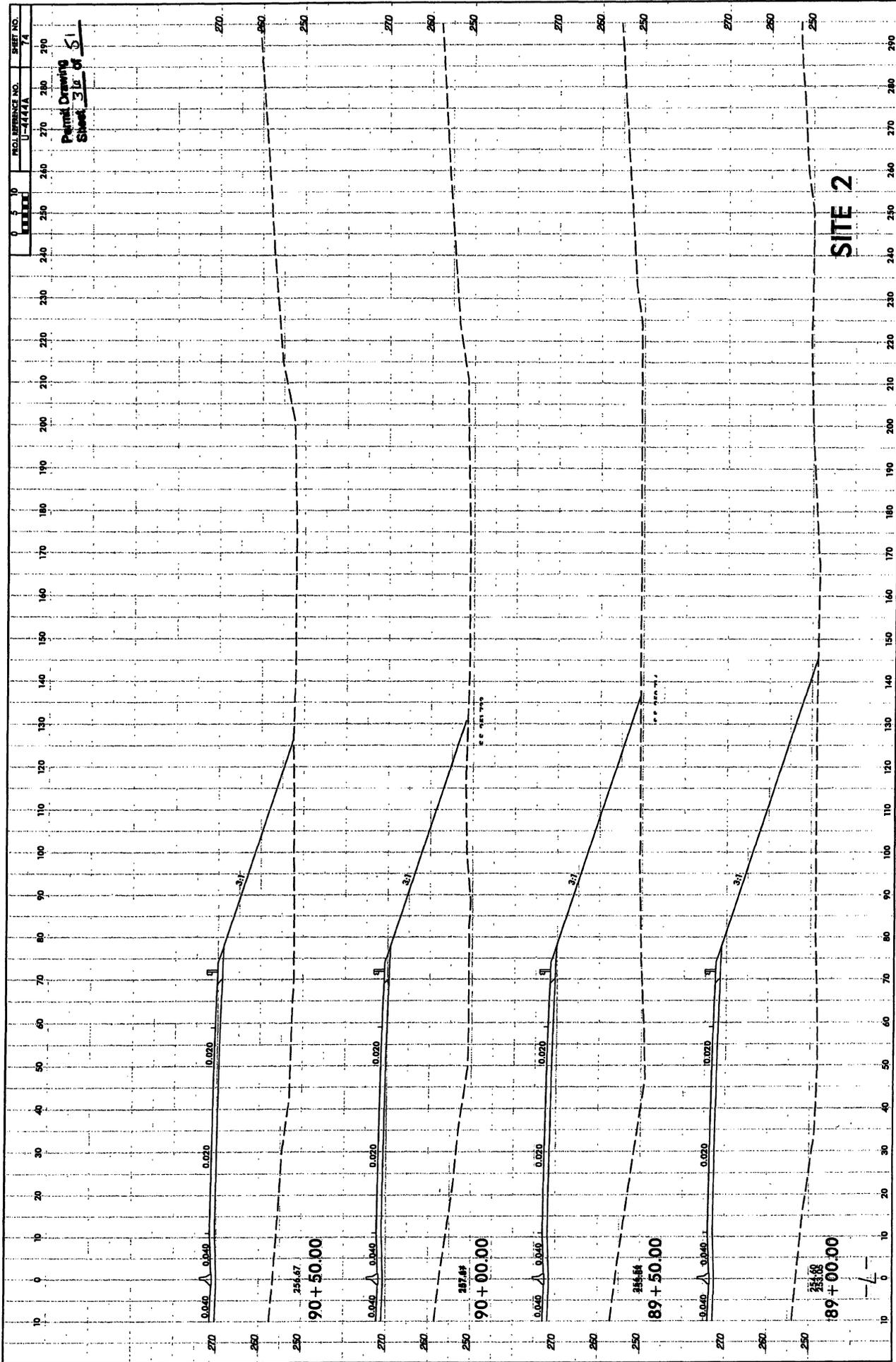
SHEET NO. 8

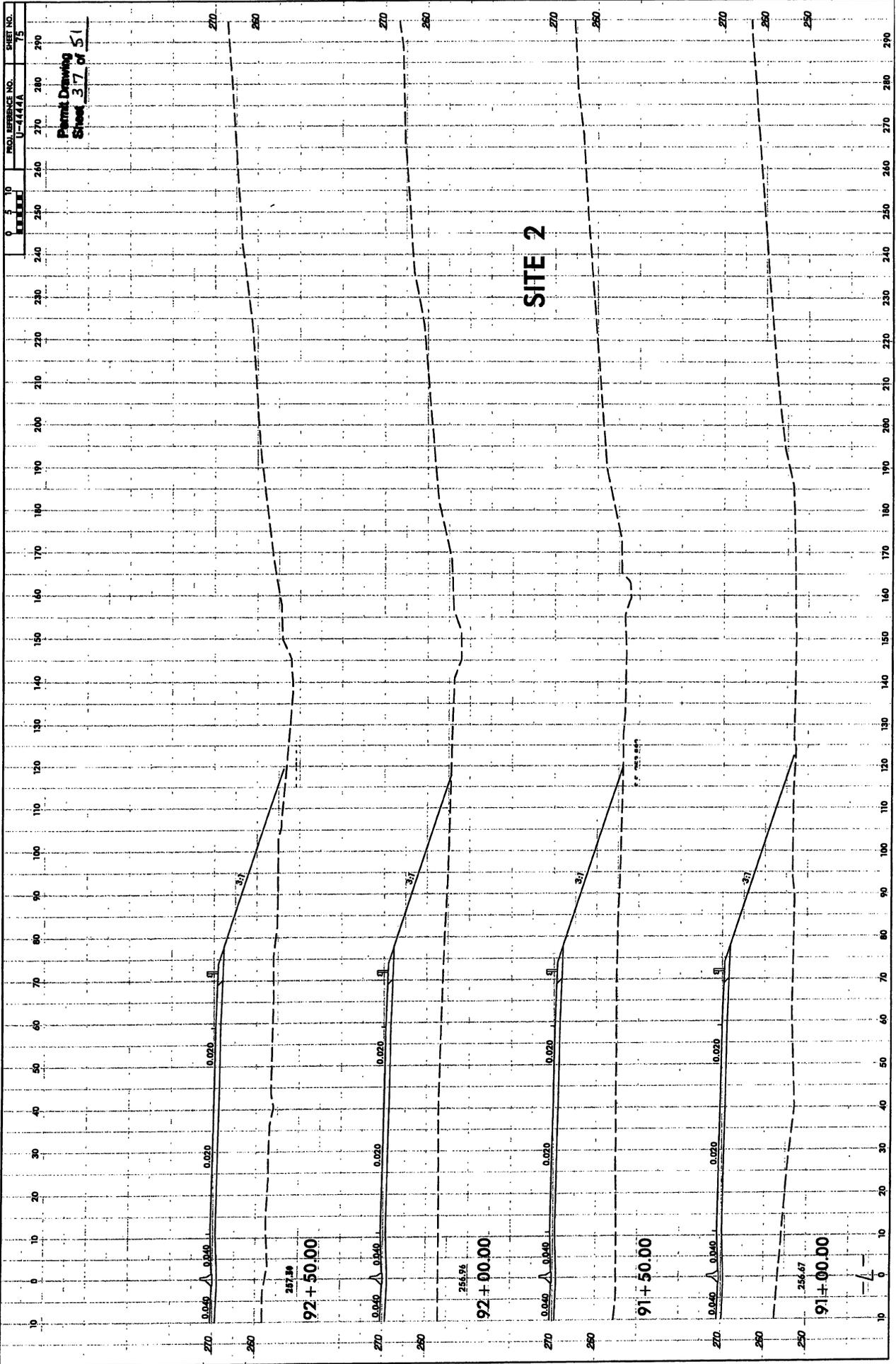
Permit Drawing
Sheet 30 of 51

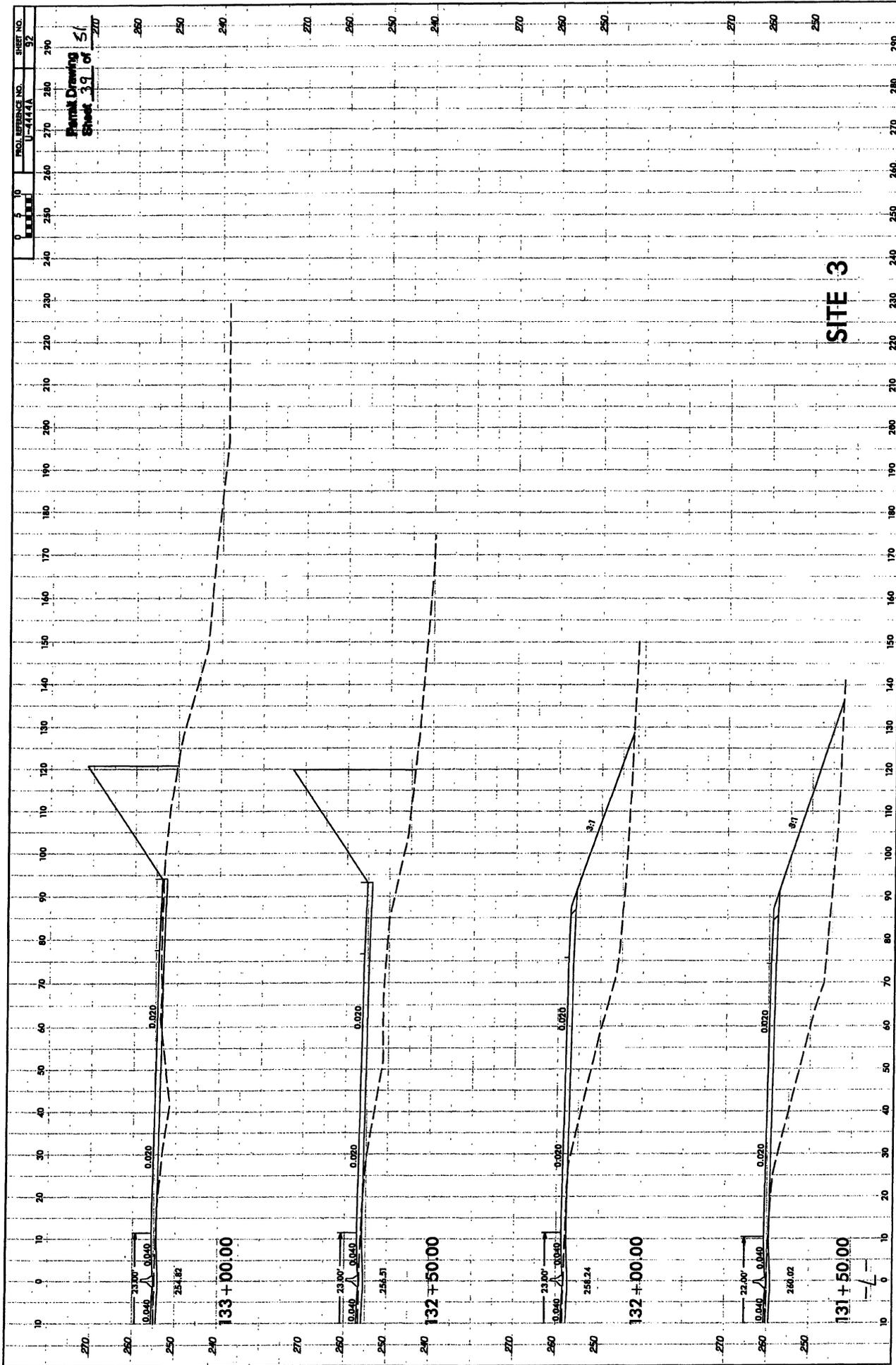
SITE 1

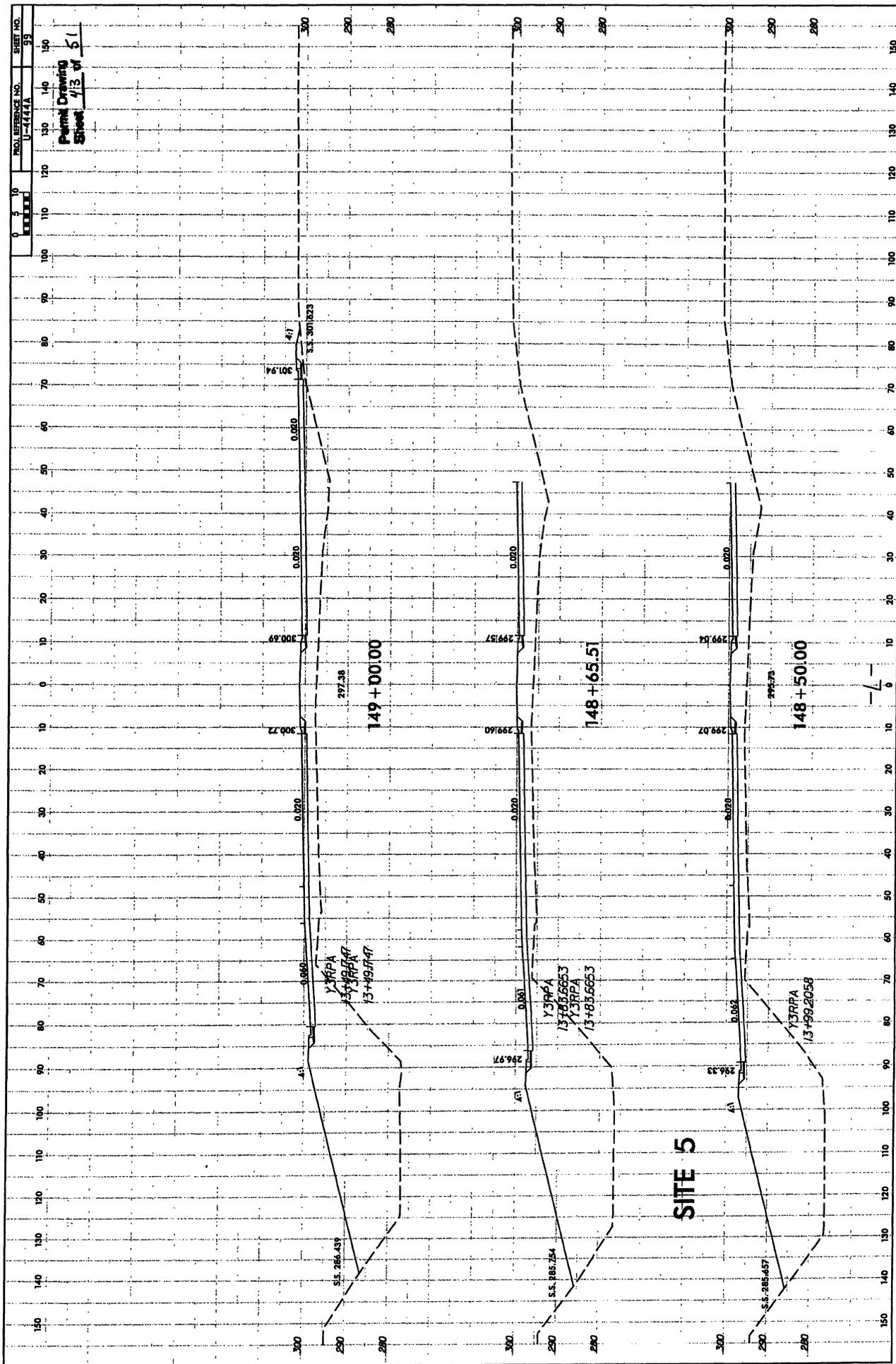


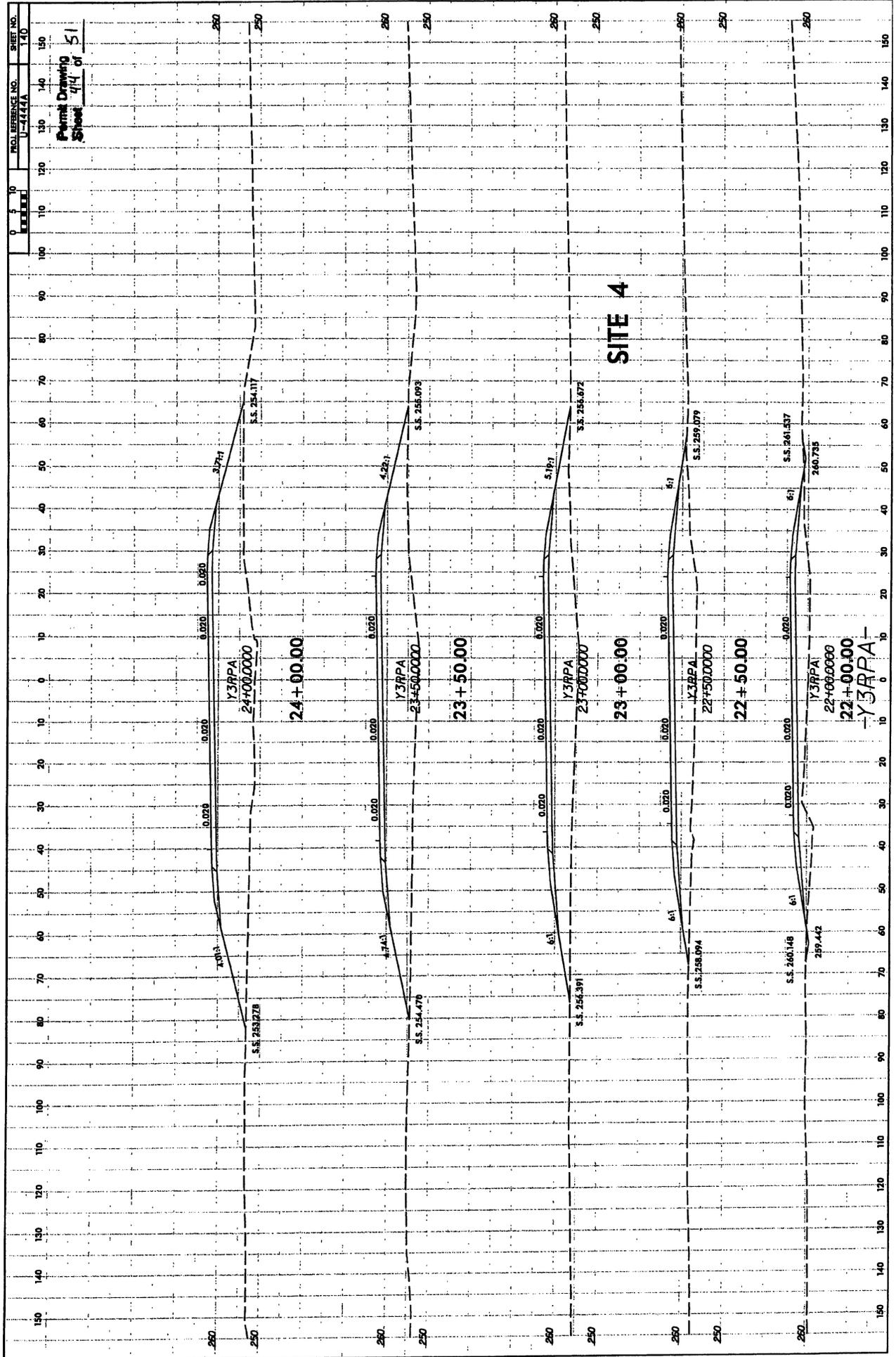


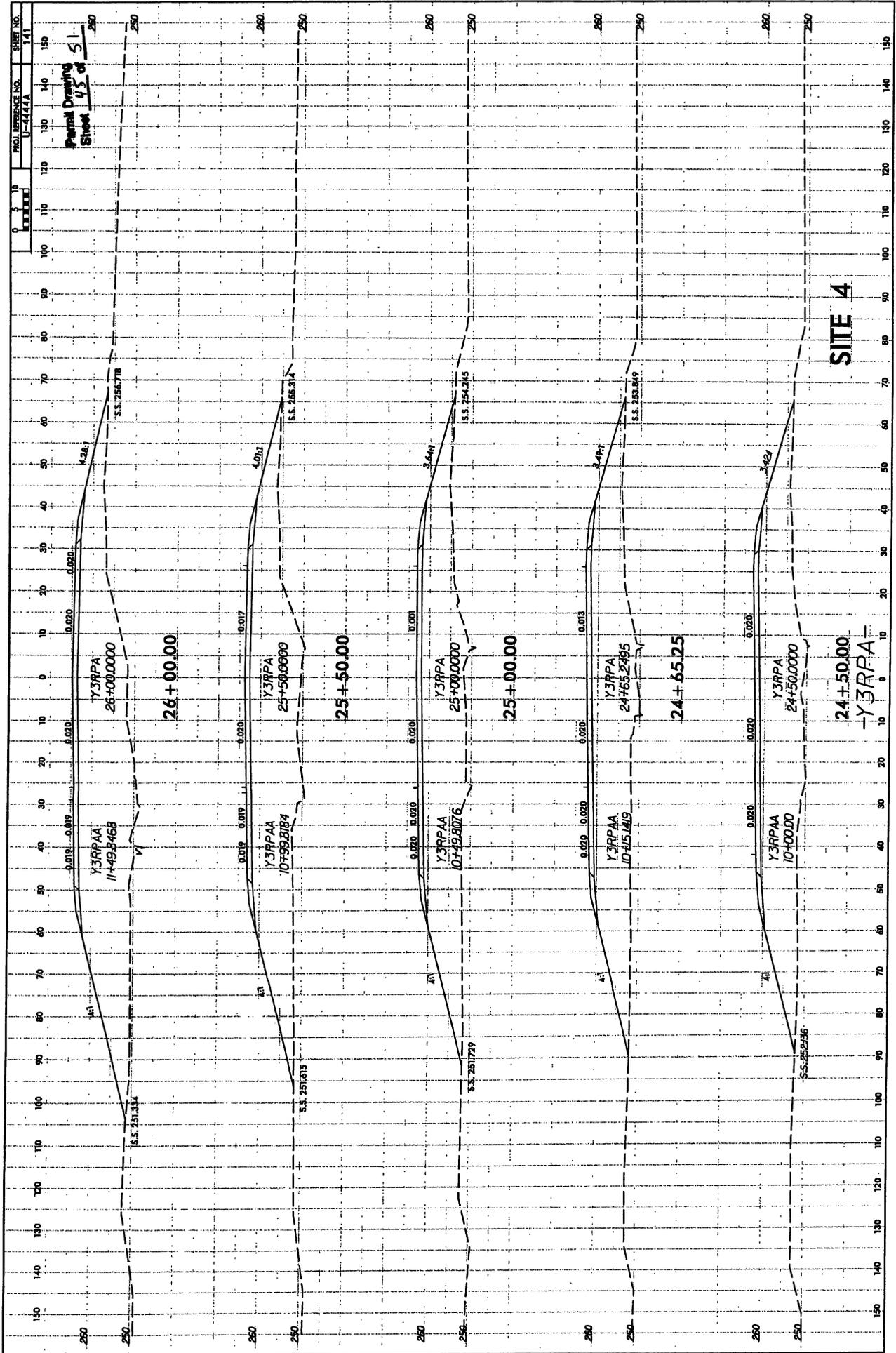










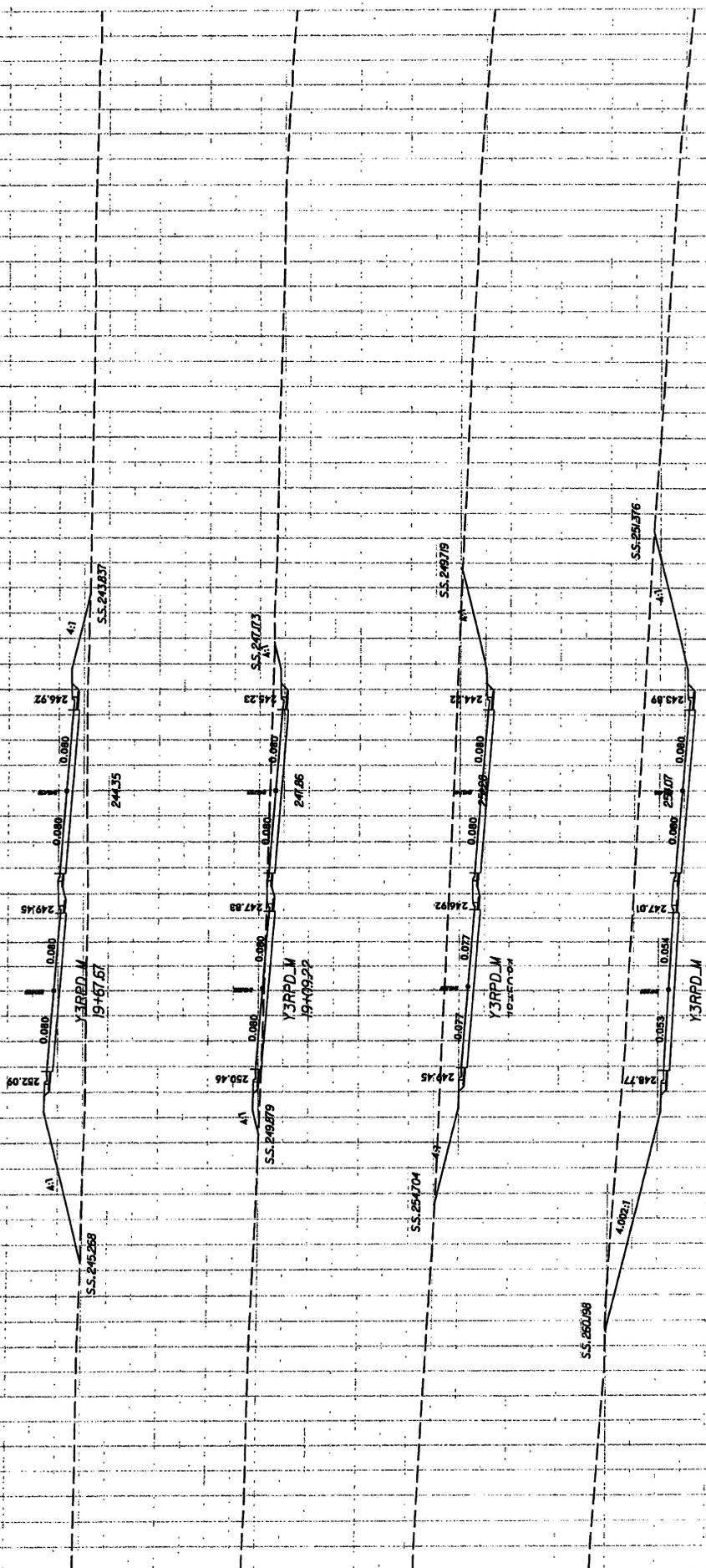


0 5 10
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97.5
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PROJ. REFERENCE NO.
U-1141A

SHEET NO.
160

Permit Drawing
Sheet 50 of 51



SITE 3

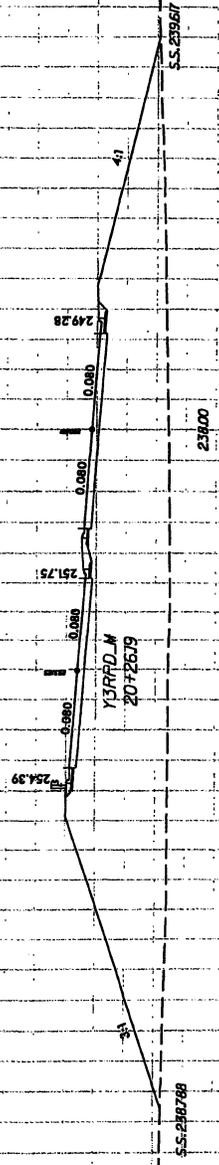
-Y3LPD-

0 5 10
SCALE

PROJECT REFERENCE NO.
U-2411A

SHEET NO.
18

Partial Drawing
Sheet 51 of 51



SITE 3

-Y3LPD-

STANDARD SPECIAL PROVISION
AVAILABILITY OF FUNDS – TERMINATION OF CONTRACTS

(5-20-08)

Z-2

General Statute 143C-6-11. (h) Highway Appropriation is hereby incorporated verbatim in this contract as follows:

(h) Amounts Encumbered. – Transportation project appropriations may be encumbered in the amount of allotments made to the Department of Transportation by the Director for the estimated payments for transportation project contract work to be performed in the appropriation fiscal year. The allotments shall be multiyear allotments and shall be based on estimated revenues and shall be subject to the maximum contract authority contained in *General Statute 143C-6-11(c)*. Payment for transportation project work performed pursuant to contract in any fiscal year other than the current fiscal year is subject to appropriations by the General Assembly. Transportation project contracts shall contain a schedule of estimated completion progress, and any acceleration of this progress shall be subject to the approval of the Department of Transportation provided funds are available. The State reserves the right to terminate or suspend any transportation project contract, and any transportation project contract shall be so terminated or suspended if funds will not be available for payment of the work to be performed during that fiscal year pursuant to the contract. In the event of termination of any contract, the contractor shall be given a written notice of termination at least 60 days before completion of scheduled work for which funds are available. In the event of termination, the contractor shall be paid for the work already performed in accordance with the contract specifications.

Payment will be made on any contract terminated pursuant to the special provision in accordance with Subarticle 108-13(E) of the *2012 Standard Specifications*.

STANDARD SPECIAL PROVISION
NCDOT GENERAL SEED SPECIFICATION FOR SEED QUALITY

(5-17-11)

Z-3

Seed shall be sampled and tested by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory. When said samples are collected, the vendor shall supply an independent laboratory report for each lot to be tested. Results from seed so sampled shall be final. Seed not meeting the specifications shall be rejected by the Department of Transportation and shall not be delivered to North Carolina Department of Transportation warehouses. If seed has been delivered it shall be available for pickup and replacement at the supplier's expense.

Any re-labeling required by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory, that would cause the label to reflect as otherwise specified herein shall be rejected by the North Carolina Department of Transportation.

Seed shall be free from seeds of the noxious weeds Johnsongrass, Balloonvine, Jimsonweed, Witchweed, Itchgrass, Serrated Tussock, Showy Croton, Smooth Croton, Sicklegod, Sandbur, Wild Onion, and Wild Garlic. Seed shall not be labeled with the above weed species on the seed analysis label. Tolerances as applied by the Association of Official Seed Analysts will NOT be allowed for the above noxious weeds except for Wild Onion and Wild Garlic.

Tolerances established by the Association of Official Seed Analysts will generally be recognized. However, for the purpose of figuring pure live seed, the found pure seed and found germination percentages as reported by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory will be used. Allowances, as established by the NCDOT, will be recognized for minimum pure live seed as listed on the following pages.

The specifications for restricted noxious weed seed refers to the number per pound as follows:

<u>Restricted Noxious Weed</u>	<u>Limitations per Lb. Of Seed</u>	<u>Restricted Noxious Weed</u>	<u>Limitations per Lb. of Seed</u>
Blessed Thistle	4 seeds	Cornflower (Ragged Robin)	27 seeds
Cocklebur	4 seeds	Texas Panicum	27 seeds
Spurred Anoda	4 seeds	Bracted Plantain	54 seeds
Velvetleaf	4 seeds	Buckhorn Plantain	54 seeds
Morning-glory	8 seeds	Broadleaf Dock	54 seeds
Corn Cockle	10 seeds	Curly Dock	54 seeds
Wild Radish	12 seeds	Dodder	54 seeds
Purple Nutsedge	27 seeds	Giant Foxtail	54 seeds
Yellow Nutsedge	27 seeds	Horsenettle	54 seeds
Canada Thistle	27 seeds	Quackgrass	54 seeds
Field Bindweed	27 seeds	Wild Mustard	54 seeds
Hedge Bindweed	27 seeds		

Seed of Pensacola Bahiagrass shall not contain more than 7% inert matter, Kentucky Bluegrass, Centipede and Fine or Hard Fescue shall not contain more than 5% inert matter whereas a maximum of 2% inert matter will be allowed on all other kinds of seed. In addition, all seed shall not contain more than 2% other crop seed nor more than 1% total weed seed. The germination rate as tested by the North Carolina Department of Agriculture shall not fall below 70%, which includes both dormant and hard seed. Seed shall be labeled with not more than 7%, 5% or 2% inert matter (according to above specifications), 2% other crop seed and 1% total weed seed.

Exceptions may be made for minimum pure live seed allowances when cases of seed variety shortages are verified. Pure live seed percentages will be applied in a verified shortage situation. Those purchase orders of deficient seed lots will be credited with the percentage that the seed is deficient.

FURTHER SPECIFICATIONS FOR EACH SEED GROUP ARE GIVEN BELOW:

Minimum 85% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 83% pure live seed will not be approved.

 Sericea Lespedeza
 Oats (seeds)

Minimum 80% pure live seed; maximum 1% total weed seed; maximum 2% total other crop; maximum 144 restricted noxious weed seed per pound. Seed less than 78% pure live seed will not be approved.

Tall Fescue (all approved varieties)	Bermudagrass
Kobe Lespedeza	Browntop Millet
Korean Lespedeza	German Millet – Strain R
Weeping Lovegrass	Clover – Red/White/Crimson
Carpetgrass	

Minimum 78% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 76% pure live seed will not be approved.

 Common or Sweet Sundangrass

Minimum 76% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 74% pure live seed will not be approved.

 Rye (grain; all varieties)
 Kentucky Bluegrass (all approved varieties)
 Hard Fescue (all approved varieties)
 Shrub (bicolor) Lespedeza

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 noxious weed seed per pound. Seed less than 70% pure live seed will not be approved.

Centipedegrass

Crownvetch

Pensacola Bahiagrass

Creeping Red Fescue

Japanese Millet

Reed Canary Grass

Zoysia

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 5% inert matter; maximum 144 restricted noxious weed seed per pound.

Barnyard Grass

Big Bluestem

Little Bluestem

Bristly Locust

Birdsfoot Trefoil

Indiangrass

Orchardgrass

Switchgrass

Yellow Blossom Sweet Clover

STANDARD SPECIAL PROVISION**ERRATA**

(1-17-12) (Rev. 9-18-12)

Z-4

Revise the 2012 *Standard Specifications* as follows:

Division 2

Page 2-7, line 31, Article 215-2 Construction Methods, replace “Article 107-26” with “Article 107-25”.

Page 2-17, Article 226-3, Measurement and Payment, line 2, delete “pipe culverts.”

Page 2-20, Subarticle 230-4(B), Contractor Furnished Sources, change references as follows: **Line 1**, replace “(4) Buffer Zone” with “(c) Buffer Zone”; **Line 12**, replace “(5) Evaluation for Potential Wetlands and Endangered Species” with “(d) Evaluation for Potential Wetlands and Endangered Species”; and **Line 33**, replace “(6) Approval” with “(4) Approval”.

Division 4

Page 4-77, line 27, Subarticle 452-3(C) Concrete Coping, replace “sheet pile” with “reinforcement”.

Division 6

Page 6-7, line 31, Article 609-3 Field Verification of Mixture and Job Mix Formula Adjustments, replace “30” with “45”.

Page 6-10, line 42, Subarticle 609-6(C)(2), replace “Subarticle 609-6(E)” with “Subarticle 609-6(D)”.

Page 6-11, Table 609-1 Control Limits, replace “Max. Spec. Limit” for the Target Source of $P_{0.075}/P_{be}$ Ratio with “1.0”.

Page 6-40, Article 650-2 Materials, replace “Subarticle 1012-1(F)” with “Subarticle 1012-1(E)”

Division 10

Page 10-74, Table 1056-1 Geotextile Requirements, replace “50%” for the UV Stability (Retained Strength) of Type 5 geotextiles with “70%”.

Division 12

Page 12-7, Table 1205-3, add “FOR THERMOPLASTIC” to the end of the title.

Page 12-8, Subarticle 1205-5(B), line 13, replace “Table 1205-2” with “Table 1205-4”.

Page 12-8, Table 1205-4 and 1205-5, replace “THERMOPLASTIC” in the title of these tables with “POLYUREA”.

Page 12-9, Subarticle 1205-6(B), line 21, replace “Table 1205-4” with “Table 1205-6”.

Page 12-11, Subarticle 1205-8(C), line 25, replace “Table 1205-5” with “Table 1205-7”.

Division 15

Page 15-6, Subarticle 1510-3(B), after line 21, replace the allowable leakage formula with the following: $W = LD\sqrt{P} \div 148,000$

Page 15-6, Subarticle 1510-3(B), line 32, delete “may be performed concurrently or” and replace with “shall be performed”.

Page 15-17, Subarticle 1540-3(E), line 27, delete “Type 1”.

Division 17

Page 17-26, line 42, Subarticle 1731-3(D) Termination and Splicing within Interconnect Center, delete this subarticle.

Revise the *2012 Roadway Standard Drawings* as follows:

1633.01 Sheet 1 of 1, English Standard Drawing for Matting Installation, replace “1633.01” with “1631.01”.

STANDARD SPECIAL PROVISION**PLANT AND PEST QUARANTINES****(Imported Fire Ant, Gypsy Moth, Witchweed, And Other Noxious Weeds)**

(3-18-03)

Z-04a

Within Quarantined Area

This project may be within a county regulated for plant and/or pests. If the project or any part of the Contractor's operations is located within a quarantined area, thoroughly clean all equipment prior to moving out of the quarantined area. Comply with federal/state regulations by obtaining a certificate or limited permit for any regulated article moving from the quarantined area.

Originating in a Quarantined County

Obtain a certificate or limited permit issued by the N.C. Department of Agriculture/United States Department of Agriculture. Have the certificate or limited permit accompany the article when it arrives at the project site.

Contact

Contact the N.C. Department of Agriculture/United States Department of Agriculture at 1-800-206-9333, 919-733-6932, or <http://www.ncagr.com/plantind/> to determine those specific project sites located in the quarantined area or for any regulated article used on this project originating in a quarantined county.

Regulated Articles Include

1. Soil, sand, gravel, compost, peat, humus, muck, and decomposed manure, separately or with other articles. This includes movement of articles listed above that may be associated with cut/waste, ditch pulling, and shoulder cutting.
2. Plants with roots including grass sod.
3. Plant crowns and roots.
4. Bulbs, corms, rhizomes, and tubers of ornamental plants.
5. Hay, straw, fodder, and plant litter of any kind.
6. Clearing and grubbing debris.
7. Used agricultural cultivating and harvesting equipment.
8. Used earth-moving equipment.
9. Any other products, articles, or means of conveyance, of any character, if determined by an inspector to present a hazard of spreading imported fire ant, gypsy moth, witchweed or other noxious weeds.

STANDARD SPECIAL PROVISION**AWARD OF CONTRACT**

(6-28-77)

Z-6

“The North Carolina Department of Transportation, in accordance with the provisions of *Title VI of the Civil Rights Act of 1964* (78 Stat. 252) and the Regulations of the Department of Transportation (*49 C.F.R., Part 21*), issued pursuant to such act, hereby notifies all bidders that it will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded to the lowest responsible bidder without discrimination on the ground of race, color, or national origin”.

STANDARD SPECIAL PROVISION**MINORITY AND FEMALE EMPLOYMENT REQUIREMENTS**

Z-7

NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (*EXECUTIVE NUMBER 11246*)

1. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, see as shown on the attached sheet entitled "Employment Goals for Minority and Female participation".

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in *41 CFR Part 60-4* shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in *41 CFR 60-4.3(a)*, and its effort to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project or the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the executive Order and the regulations in *41 CFR Part 60-4*. Compliance with the goals will be measured against the total work hours performed.

2. As used in this Notice and in the contract resulting from this solicitation, the "covered area" is the county or counties shown on the cover sheet of the proposal form and contract.

**EMPLOYMENT GOALS FOR MINORITY
AND FEMALE PARTICIPATION**

Economic Areas

Area 023 29.7%

Bertie County
Camden County
Chowan County
Gates County
Hertford County
Pasquotank County
Perquimans County

Area 024 31.7%

Beaufort County
Carteret County
Craven County
Dare County
Edgecombe County
Green County
Halifax County
Hyde County
Jones County
Lenoir County
Martin County
Nash County
Northampton County
Pamlico County
Pitt County
Tyrrell County
Washington County
Wayne County
Wilson County

Area 025 23.5%

Columbus County
Duplin County
Onslow County
Pender County

Area 026 33.5%

Bladen County
Hoke County
Richmond County
Robeson County
Sampson County
Scotland County

Area 027 24.7%

Chatham County
Franklin County
Granville County
Harnett County
Johnston County
Lee County
Person County
Vance County
Warren County

Area 028 15.5%

Alleghany County
Ashe County
Caswell County
Davie County
Montgomery County
Moore County
Rockingham County
Surry County
Watauga County
Wilkes County

Area 029 15.7%

Alexander County
Anson County
Burke County
Cabarrus County
Caldwell County
Catawba County
Cleveland County
Iredell County
Lincoln County
Polk County
Rowan County
Rutherford County
Stanly County

Area 0480 8.5%

Buncombe County
Madison County

Area 030 6.3%

Avery County
Cherokee County
Clay County
Graham County
Haywood County
Henderson County
Jackson County
McDowell County
Macon County
Mitchell County
Swain County
Transylvania County
Yancey County

SMSA Areas

Area 5720 26.6%

Currituck County

Area 9200 20.7%

Brunswick County

New Hanover County

Area 2560 24.2%

Cumberland County

Area 6640 22.8%

Durham County

Orange County

Wake County

Area 1300 16.2%

Alamance County

Area 3120 16.4%

Davidson County

Forsyth County

Guilford County

Randolph County

Stokes County

Yadkin County

Area 1520 18.3%

Gaston County

Mecklenburg County

Union County

Goals for Female

Participation in Each Trade

(Statewide) 6.9%

STANDARD SPECIAL PROVISION**REQUIRED CONTRACT PROVISIONS FEDERAL - AID CONSTRUCTION CONTRACTS**

FHWA - 1273 Electronic Version - May 1, 2012

Z-8

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

- A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).
The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.
Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.
Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).
2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.
4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are

incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

- a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.
 - b. The contractor will accept as its operating policy the following statement:
"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."
2. **EEO Officer:** The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.
3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
- a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
 - b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
 - c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.
 - d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
 - e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.
- a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.
 - b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.
 - c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.
5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:
- a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
 - b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
 - c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
 - d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.
6. **Training and Promotion:**
- a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.
 - b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).
 - c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
 - d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:
 - a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.
 - b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
 - c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.
 - d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.
8. **Reasonable Accommodation for Applicants / Employees with Disabilities:** The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.
9. **Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.
 - a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.
 - b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.
10. **Assurance Required by 49 CFR 26.13(b):**
 - a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.
 - b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.
11. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.
 - a. The records kept by the contractor shall document the following:
 - (1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;
 - (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and
 - (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;
 - b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

- a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the

Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

- b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:
 - (i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - (ii) The classification is utilized in the area by the construction industry; and
 - (iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
 - (2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
 - (3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
 - (4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
 - c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
 - d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.
2. **Withholding.** The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.
 3. **Payrolls and basic records**
 - a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.
 - b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the

payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency.

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL). Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL). Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.
- d. Apprentices and Trainees (programs of the U.S. DOT). Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.
5. **Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.
6. **Subcontracts.** The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.
7. **Contract termination: debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.
8. **Compliance with Davis-Bacon and Related Act requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.
9. **Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.
10. **Certification of eligibility.**
 - a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
 - b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
 - c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. **Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
2. **Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.
3. **Withholding for unpaid wages and liquidated damages.** The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.
4. **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).
 - a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees

from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
 - (2) the prime contractor remains responsible for the quality of the work of the leased employees;
 - (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
 - (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.
- b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.
2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
 3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.
 4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.
 5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).
3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

- a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.
- d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).
- f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
- g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.
- h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.
- i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

- a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:
 - (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;
 - (2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and
 - (4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

- a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
- d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers to any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.
- g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.
- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion—Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
 - a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
 - b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

STANDARD SPECIAL PROVISION**ON-THE-JOB TRAINING**

(10-16-07) (Rev. 7-21-09)

Z-10

Description

The North Carolina Department of Transportation will administer a custom version of the Federal On-the-Job Training (OJT) Program, commonly referred to as the Alternate OJT Program. All contractors (existing and newcomers) will be automatically placed in the Alternate Program. Standard OJT requirements typically associated with individual projects will no longer be applied at the project level. Instead, these requirements will be applicable on an annual basis for each contractor administered by the OJT Program Manager.

On the Job Training shall meet the requirements of 23 CFR 230.107 (b), 23 USC – Section 140, this provision and the On-the-Job Training Program Manual.

The Alternate OJT Program will allow a contractor to train employees on Federal, State and privately funded projects located in North Carolina. However, priority shall be given to training employees on NCDOT Federal-Aid funded projects.

Minorities and Women

Developing, training and upgrading of minorities and women toward journeyman level status is a primary objective of this special training provision. Accordingly, the Contractor shall make every effort to enroll minority and women as trainees to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

Assigning Training Goals

The Department, through the OJT Program Manager, will assign training goals for a calendar year based on the contractors' past three years' activity and the contractors' anticipated upcoming year's activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific number of annual training goals agreed to by both parties. The number of training assignments may range from 1 to 15 per contractor per calendar year. The Contractor shall sign an agreement to fulfill their annual goal for the year. A sample agreement is available at www.ncdot.org/business/ocs/ojt/.

Training Classifications

The Contractor shall provide on-the-job training aimed at developing full journeyman level workers in the construction craft/operator positions. Preference shall be given to providing training in the following skilled work classifications:

Equipment Operators	Office Engineers
Truck Drivers	Estimators
Carpenters	Iron / Reinforcing Steel Workers
Concrete Finishers	Mechanics
Pipe Layers	Welders

The Department has established common training classifications and their respective training requirements that may be used by the contractors. However, the classifications established are not all-inclusive. Where the training is oriented toward construction applications, training will be allowed in lower-level management positions such as office engineers and estimators. Contractors shall submit new classifications for specific job functions that their employees are performing. The Department will review and recommend for acceptance to FHWA the new classifications proposed by contractors, if applicable. New classifications shall meet the following requirements:

Proposed training classifications are reasonable and realistic based on the job skill classification needs, and

The number of training hours specified in the training classification is consistent with common practices and provides enough time for the trainee to obtain journeyman level status.

The Contractor may allow trainees to be trained by a subcontractor provided that the Contractor retains primary responsibility for meeting the training and this provision is made applicable to the subcontract. However, only the Contractor will receive credit towards the annual goal for the trainee.

Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journeyman level status or in which they have been employed as a journeyman.

Records and Reports

The Contractor shall maintain enrollment, monthly and completion reports documenting company compliance under these contract documents. These documents and any other information as requested shall be submitted to the OJT Program Manager.

Upon completion and graduation of the program, the Contractor shall provide each trainee with a certification Certificate showing the type and length of training satisfactorily completed.

Trainee Interviews

All trainees enrolled in the program will receive an initial and Trainee/Post graduate interview conducted by the OJT program staff.

Trainee Wages

Contractors shall compensate trainees on a graduating pay scale based upon a percentage of the prevailing minimum journeyman wages (Davis-Bacon Act). Minimum pay shall be as follows:

60 percent	of the journeyman wage for the first half of the training period
75 percent	of the journeyman wage for the third quarter of the training period
90 percent	of the journeyman wage for the last quarter of the training period

In no instance shall a trainee be paid less than the local minimum wage. The Contractor shall adhere to the minimum hourly wage rate that will satisfy both the NC Department of Labor (NCDOL) and the Department.

Achieving or Failing to Meet Training Goals

The Contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and who receives training for at least 50 percent of the specific program requirement. Trainees will be allowed to be transferred between projects if required by the Contractor's scheduled workload to meet training goals.

If a contractor fails to attain their training assignments for the calendar year, they may be taken off the NCDOT's Bidders List.

Measurement and Payment

No compensation will be made for providing required training in accordance with these contract documents.

STANDARD SPECIAL PROVISION
MINIMUM WAGES
GENERAL DECISION NC120087 01/06/2012 NC87

Z-87

Date: January 6, 2012

General Decision Number: NC120087 01/06/2012 NC87

Superseded General Decision Numbers: NC20100124

State: North Carolina

Construction Type: HIGHWAY

COUNTIES:

Cumberland
Currituck
Hoke
Onslow

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects, railroad construction, bascule, suspension and spandrel arch bridges designed for commercial navigation, bridges involving marine construction, and other major bridges).

Modification Number

0

Publication Date

01/06/2012

SUNC2011-068 09/15/2011

	Rates	Fringes
CARPENTER (Form Work Only)		
Cumberland and Hoke Counties	14.63	
Currituck and Onslow Counties	13.69	
CEMENT MASON/CONCRETE FINISHER	13.01	
IRONWORKER (Reinforcing)	14.88	
LABORER		
Asphalt, Asphalt Distributor, Raker, and Spreader		
Cumberland and Hoke Counties	11.71	
Currituck and Onslow Counties	12.20	
Common or General		
Cumberland County	10.80	
Currituck and Onslow Counties	10.70	
Hoke County	10.34	
Concrete Saw	13.52	
Landscape	9.34	
Luteman	12.73	
Mason Tender (Cement/Concrete)	11.43	
Pipelayer	12.05	
Traffic Control (Cone Setter)	11.15	
Traffic Control (Flagger)	9.89	
POWER EQUIPMENT OPERATORS		
Backhoe/Excavator/Trackhoe	13.86	
Broom/Sweeper	13.97	
Bulldozer	14.93	
Crane	19.87	
Curb Machine	14.43	
Distributor	15.27	
Drill	18.28	
Grader/Blade	16.47	
Loader	14.16	
Mechanic	17.37	
Milling Machine	14.38	
Oiler	13.58	
Paver		
Cumberland and Hoke Counties	16.83	
Currituck and Onslow Counties	15.64	
Roller	13.94	
Scraper	14.35	
Screed	14.86	
Tractor	14.47	
TRUCK DRIVER		
Distributor	16.75	
Dump	11.32	
Flatbed Truck	15.02	
Lowboy Truck	15.34	
Off the Road Truck	13.78	
Single Axle Truck	12.13	
Tack Truck	16.51	
Water Truck	13.39	

Welders – Receive rate prescribed for craft performing operation to which welding is incidental.

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

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters, PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rate.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

- 1.) Has there been an initial decision in the matter? This can be:
 - * an existing published wage determination
 - * a survey underlying a wage determination
 - * a Wage and Hour Division letter setting forth a position on a wage determination matter
 - * a conformance (additional classification and rate) ruling

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

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

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

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

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

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

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

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

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

END OF GENERAL DECISION

Vendor 2 of 7: BARNHILL CONTRACTING COMPANY (3516) Call Order 012 (Proposal: C202826)

Bid Information

County: CUMBERLAND
Address: 2311 N. Main Street
 P.O. Box 1529
 Tarboro , NC , 27886
Signature Check: Drew_M._Johnson_3516
Time Bid Received: October 16, 2012 01:58 PM
Amendment Count: 1

Bid Checksum: 51B5FD42
Bid Total: \$32,304,260.59
Items Total: \$32,304,260.59
Time Total: \$0.00



Bidding Errors:
None.

DBE GOAL SET	13.0
DBE GOAL MET	13.0

Vendor 2 of 7: BARNHILL CONTRACTING COMPANY (3516)
Call Order 012 (Proposal: C202826)

Bid Bond Information

Projects:	Bond Maximum:
Counties:	State of Incorporation:
Bond ID: SNC12606096	Agency Execution Date: 10/4/2012 3
Paid by Check: No	Surety Name: surety2000
Bond Percent: 5%	Bond Agency Name: Travelers Casualty and Surety Company of America

Vendor 3516's Bid Information for Call 012, Letting L121016, 10/16/12

Barnhill Contracting Company (3516)
 Call Order 012 (Proposal ID C202826)

LIST OF DBE PARTICIPANTS

VENDOR NUMBER	DBE NAME ADDRESS	WORK CODE TYPE OF WORK	CERT TYPE AMOUNT	
10650	WB DJP TRUCKING INC P. O. BOX 65574 , FAYETTEVILLE, NC 28306		Sub	824,997.25 committed
4898	WB BULLINGTON CONSTRUCTION INC 417 FOXGLOVE LANE , INDIAN TRAIL, NC 28079		Sub	193,329.00 committed
4761	WB TRAFFIC CONTROL SAFETY SERVICES POST OFFICE BOX 24511 , WINSTON-SALEM, NC 27114		Sub	87,583.50 committed
3346	WB LINEBERRY, INC. POST OFFICE BOX 307 , CLIMAX, NC 27233		Sub	417,874.00 committed
3080	WB CURTIN TRUCKING & DRAINAGE, INC POST OFFICE BOX 38220 , CHARLOTTE, NC 282781003		Sub	198,096.00 committed
12278	WB CLIFTON CONSTRUCTION CO., INC. 1435 GIDDENSVILLE ROAD , FAISON, NC 28341		Sub	17,505.00 committed
4247	WB SEAL BROTHERS CONTRACTING LLC 131 W. CLEVE STREET , MOUNT AIRY, NC 27030		Sub	152,993.00 committed
2549	MB CLARK TRUCKING OF HOPE MILLS, I 4646 SOUTH MAIN STREET , HOPE MILLS, NC 28348		Sub	760,440.00 not committed
12802	WB NICKELSTON INDUSTRIES, INC. POST OFFICE BOX 133 , LAWSONVILLE, NC 27022		Sub	120,750.25 committed
11273	MB ASIA EXCAVATING SERVICES, INC. P. O. BOX 65153 , FAYETTEVILLE, NC 28306		Sub	192,000.00 committed
4880	WB TRICOR CONSTRUCTION, INC. 625 POPLAR STREET , SPARTANBURG, SC 29302		Sub	2,075,003.00 committed
			TOTAL:	\$5,040,571.00 \$4,280,131.00 -15.60% 13.25%

Vendor 3516's Bid Information for Call 012, Letting L121016, 10/16/12

Barnhill Contracting Company (3516)
 Call Order 012 (Proposal ID C202826)

Miscellaneous Data Info - Contractor Responses:

NON-COLLUSION AND DEBARMENT CERTIFICATION

Explanation of the prospective bidder that is unable to certify to any of the statements in this certification:

Explanation:
 NOT ANSWERED
 NOT ANSWERED
 NOT ANSWERED
 NOT ANSWERED

AWARD LIMITS ON MULTIPLE PROJECTS

By answering YES to this statement, the bidder acknowledges that they are using the award limits on multiple projects. No

It is the desire of the Bidder to be awarded contracts, the value of which

will not exceed a total of NOT ANSWERED for those projects indicated herein, for which bids will be opened on (MM/DD/YY)

The Award Limits shall apply to the following projects:

Contract Number	County
NOT ANSWERED	

Bid Bond Data Info - Contractor Responses:

=====

BondID: SNC12606096
 Surety Registry Agency: surety2000
 Verified?: Yes
 Surety Agency: Travelers Casualty and Surety Company of America
 Bond Execution Date: 10/4/2012 3
 Bond Amount: \$1,615,213.03 (Five Percent of Bid)

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
Section 0001 ROADWAY ITEMS				
Alt Group				
0001	0000100000-N MOBILIZATION	LUMP	LUMP	1,500,000.00
0002	0000400000-N CONSTRUCTION SURVEYING	LUMP	LUMP	216,000.00
0003	0001000000-E CLEARING & GRUBBING .. ACRE(S)	LUMP	LUMP	3,000,000.00
0004	0008000000-E SUPPLEMENTARY CLEARING & GRUBBING	4.000 ACR	1.00000	4.00
0005	0022000000-E UNCLASSIFIED EXCAVATION	83,500.000 CY	7.76000	647,960.00
0006	0029000000-N REINFORCED BRIDGE APPROACH FILL, STATION ***** (11+82.86 -Y3)	LUMP	LUMP	23,000.00
0007	0036000000-E UNDERCUT EXCAVATION	45,000.000 CY	0.01000	450.00
0008	0106000000-E BORROW EXCAVATION	479,000.000 CY	4.00000	1,916,000.00
0009	0134000000-E DRAINAGE DITCH EXCAVATION	1,950.000 CY	4.50000	8,775.00
0010	0141000000-E BERM DITCH CONSTRUCTION	530.000 LF	2.00000	1,060.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0011	0156000000-E REMOVAL OF EXISTING ASPHALT PAVEMENT	29,120.000 SY	2.20000	64,064.00
0012	0177000000-E BREAKING OF EXISTING ASPHALT PAVEMENT	47,400.000 SY	2.20000	104,280.00
0013	0192000000-N PROOF ROLLING	30.000 HR	200.00000	6,000.00
0014	0194000000-E SELECT GRANULAR MATERIAL, CLASS III	56,720.000 CY	4.00000	226,880.00
0015	0196000000-E GEOTEXTILE FOR SOIL STABILIZATION	4,500.000 SY	1.20000	5,400.00
0016	0262000000-N GENERIC GRADING ITEM ENERGY DISSIPATOR BASIN	1.000 EA	11,300.00000	11,300.00
0017	0318000000-E FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	3,133.000 TON	19.85000	62,190.05
0018	0320000000-E FOUNDATION CONDITIONING GEOTEXTILE	9,890.000 SY	2.00000	19,780.00
0019	0342000000-E *** SIDE DRAIN PIPE (30")	1,132.000 LF	40.00000	45,280.00
0020	0342000000-E *** SIDE DRAIN PIPE (42")	556.000 LF	68.00000	37,808.00
0021	0342000000-E *** SIDE DRAIN PIPE (48")	44.000 LF	90.00000	3,960.00
0022	0343000000-E 15" SIDE DRAIN PIPE	3,184.000 LF	20.00000	63,680.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0023	0344000000-E 18" SIDE DRAIN PIPE	1,280.000 LF	24.00000	30,720.00
0024	0345000000-E 24" SIDE DRAIN PIPE	1,316.000 LF	31.00000	40,796.00
0025	0366000000-E 15" RC PIPE CULVERTS, CLASS III	8,260.000 LF	20.00000	165,200.00
0026	0372000000-E 18" RC PIPE CULVERTS, CLASS III	1,956.000 LF	24.00000	46,944.00
0027	0378000000-E 24" RC PIPE CULVERTS, CLASS III	2,576.000 LF	31.00000	79,856.00
0028	0384000000-E 30" RC PIPE CULVERTS, CLASS III	3,240.000 LF	40.00000	129,600.00
0029	0390000000-E 36" RC PIPE CULVERTS, CLASS III	1,096.000 LF	55.00000	60,280.00
0030	0402000000-E 48" RC PIPE CULVERTS, CLASS III	304.000 LF	90.00000	27,360.00
0031	0408000000-E 54" RC PIPE CULVERTS, CLASS III	260.000 LF	130.00000	33,800.00
0032	0448200000-E 15" RC PIPE CULVERTS, CLASS IV	1,412.000 LF	21.00000	29,652.00
0033	0448300000-E 18" RC PIPE CULVERTS, CLASS IV	448.000 LF	26.00000	11,648.00
0034	0448400000-E 24" RC PIPE CULVERTS, CLASS IV	72.000 LF	34.00000	2,448.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0035	0448500000-E 30" RC PIPE CULVERTS, CLASS IV LF	296.000	48.00000	14,208.00
0036	0582000000-E 15" CS PIPE CULVERTS, 0.064" THICK LF	164.000	22.00000	3,608.00
0037	0588000000-E 18" CS PIPE CULVERTS, 0.064" THICK LF	40.000	25.00000	1,000.00
0038	0636000000-E *** CS PIPE ELBOWS, ***** THICK (15", 0.064") EA	4.000	175.00000	700.00
0039	0974000000-E *** WELDED STEEL PIPE, ***** THICK, GRADE B, (UNDER RR) (15", 0.500") LF	100.000	200.00000	20,000.00
0040	0995000000-E PIPE REMOVAL LF	8,368.000	12.00000	100,416.00
0041	1000000000-E 6" SLOPE PROTECTION SY	60.000	108.00000	6,480.00
0042	1011000000-N FINE GRADING LUMP		LUMP	1,030,000.00
0043	1077000000-E #57 STONE TON	250.000	35.00000	8,750.00
0044	1099500000-E SHALLOW UNDERCUT CY	400.000	5.00000	2,000.00
0045	1099700000-E CLASS IV SUBGRADE STABILIZA- TION TON	750.000	19.00000	14,250.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0046	1110000000-E STABILIZER AGGREGATE	250.000 TON	18.00000	4,500.00
0047	1121000000-E AGGREGATE BASE COURSE	54,990.000 TON	18.75000	1,031,062.50
0048	1220000000-E INCIDENTAL STONE BASE	100.000 TON	40.00000	4,000.00
0049	1297000000-E MILLING ASPHALT PAVEMENT, ***"DEPTH (2-1/2")	500.000 SY	15.00000	7,500.00
0050	1297000000-E MILLING ASPHALT PAVEMENT, ***"DEPTH (3")	12,000.000 SY	3.50000	42,000.00
0051	1489000000-E ASPHALT CONC BASE COURSE, TYPE B25.0B	6,950.000 TON	38.55000	267,922.50
0052	1491000000-E ASPHALT CONC BASE COURSE, TYPE B25.0C	34,010.000 TON	36.45000	1,239,664.50
0053	1503000000-E ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	40,270.000 TON	37.80000	1,522,206.00
0054	1519000000-E ASPHALT CONC SURFACE COURSE, TYPE S9.5B	5,710.000 TON	41.00000	234,110.00
0055	1523000000-E ASPHALT CONC SURFACE COURSE, TYPE S9.5C	39,800.000 TON	37.30000	1,484,540.00
0056	1575000000-E ASPHALT BINDER FOR PLANT MIX	6,430.000 TON	606.00000	3,896,580.00
0057	1693000000-E ASPHALT PLANT MIX, PAVEMENT REPAIR	880.000 TON	200.00000	176,000.00

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0058	1840000000-E MILLED RUMBLE STRIPS (ASPHALT CONCRETE)	10,000.000 LF	0.87000	8,700.00
0059	1869000000-E *****" PORT CEM CONC PAVEMENT, MISCELLANEOUS (WITHOUT DOWELS) (8")	380.000 SY	39.78000	15,116.40
0060	2022000000-E SUBDRAIN EXCAVATION	118.000 CY	25.00000	2,950.00
0061	2026000000-E GEOTEXTILE FOR SUBSURFACE DRAINS	100.000 SY	6.00000	600.00
0062	2033000000-E SUBDRAIN FINE AGGREGATE	84.000 CY	55.00000	4,620.00
0063	2036000000-E SUBDRAIN COARSE AGGREGATE	17.000 CY	85.00000	1,445.00
0064	2044000000-E 6" PERFORATED SUBDRAIN PIPE	350.000 LF	15.00000	5,250.00
0065	2070000000-N SUBDRAIN PIPE OUTLET	2.000 EA	300.00000	600.00
0066	2077000000-E 6" OUTLET PIPE	12.000 LF	45.00000	540.00
0067	2209000000-E ENDWALLS	16.200 CY	670.00000	10,854.00
0068	2220000000-E REINFORCED ENDWALLS	5.000 CY	750.00000	3,750.00

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0069	2253000000-E PIPE COLLARS	5.868 CY	800.00000	4,694.40
0070	2264000000-E PIPE PLUGS	5.392 CY	800.00000	4,313.60
0071	2275000000-E FLOWABLE FILL	57.920 CY	200.00000	11,584.00
0072	2286000000-N MASONRY DRAINAGE STRUCTURES	286.000 EA	850.00000	243,100.00
0073	2308000000-E MASONRY DRAINAGE STRUCTURES	164.000 LF	185.00000	30,340.00
0074	2354200000-N FRAME WITH GRATE, STD 840.24	2.000 EA	265.00000	530.00
0075	2364000000-N FRAME WITH TWO GRATES, STD 840.16	71.000 EA	475.00000	33,725.00
0076	2364200000-N FRAME WITH TWO GRATES, STD 840.20	7.000 EA	470.00000	3,290.00
0077	2365000000-N FRAME WITH TWO GRATES, STD 840.22	18.000 EA	435.00000	7,830.00
0078	2367000000-N FRAME WITH TWO GRATES, STD 840.29	4.000 EA	455.00000	1,820.00
0079	2374000000-N FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	20.000 EA	510.00000	10,200.00
0080	2374000000-N FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	73.000 EA	535.00000	39,055.00

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0081	2374000000-N FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	72.000 EA	535.00000	38,520.00
0082	2396000000-N FRAME WITH COVER, STD 840.54	27.000 EA	350.00000	9,450.00
0083	2440000000-N CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN	39.000 EA	250.00000	9,750.00
0084	2451000000-N CONCRETE TRANSITIONAL SECTION FOR DROP INLET	27.000 EA	250.00000	6,750.00
0085	2535000000-E **"X **" CONCRETE CURB (8" X 18")	5,850.000 LF	9.55000	55,867.50
0086	2542000000-E 1'-6" CONCRETE CURB & GUTTER	16,600.000 LF	9.75000	161,850.00
0087	2549000000-E 2'-6" CONCRETE CURB & GUTTER	30,200.000 LF	11.76000	355,152.00
0088	2556000000-E SHOULDER BERM GUTTER	50.000 LF	11.80000	590.00
0089	2591000000-E 4" CONCRETE SIDEWALK	6,200.000 SY	20.75000	128,650.00
0090	2605000000-N CONCRETE CURB RAMP	74.000 EA	701.76000	51,930.24
0091	2612000000-E 6" CONCRETE DRIVEWAY	680.000 SY	32.00000	21,760.00
0092	2619000000-E 4" CONCRETE PAVED DITCH	20.000 SY	85.00000	1,700.00

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0093	2627000000-E 4" CONCRETE ISLAND COVER	1,730.000 SY	20.50000	35,465.00
0094	2647000000-E 5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	4,020.000 SY	31.75000	127,635.00
0095	2655000000-E 5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)	200.000 SY	32.00000	6,400.00
0096	2703000000-E CONCRETE BARRIER, TYPE ***** (T)	2,790.000 LF	83.20000	232,128.00
0097	2710000000-N CONCRETE BARRIER TRANSITION SECTION	4.000 EA	7,875.00000	31,500.00
0098	2752000000-E GENERIC PAVING ITEM MEDIAN HAZARD PROTECTION	60.000 LF	301.00000	18,060.00
0099	2800000000-N ADJUSTMENT OF CATCH BASINS	17.000 EA	450.00000	7,650.00
0100	2815000000-N ADJUSTMENT OF DROP INLETS	18.000 EA	450.00000	8,100.00
0101	2830000000-N ADJUSTMENT OF MANHOLES	35.000 EA	450.00000	15,750.00
0102	2845000000-N ADJUSTMENT OF METER BOXES OR VALVE BOXES	85.000 EA	300.00000	25,500.00
0103	2875000000-N CONVERT EXISTING CATCH BASIN TO DROP INLET	1.000 EA	800.00000	800.00
0104	2893000000-N CONVERT EXISTING CATCH BASIN TO JUNCTION BOX WITH MANHOLE	4.000 EA	850.00000	3,400.00

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0105	2920000000-N CONVERT EXISTING DROP INLET TOCATCH BASIN	1.000 EA	825.00000	825.00
0106	2938000000-N CONVERT EXISTING DROP INLET TOJUNCTION BOX WITH MANHOLE	2.000 EA	850.00000	1,700.00
0107	2965000000-N CONVERT EXISTING JUNCTION BOX TO CATCH BASIN	1.000 EA	875.00000	875.00
0108	3000000000-N IMPACT ATTENUATOR UNIT, TYPE 350	5.000 EA	13,000.00000	65,000.00
0109	3030000000-E STEEL BM GUARDRAIL	1,875.000 LF	14.25000	26,718.75
0110	3045000000-E STEEL BM GUARDRAIL, SHOP CURVED	50.000 LF	14.50000	725.00
0111	3060000000-E STEEL BM GUARDRAIL, DOUBLE FACED	375.000 LF	20.00000	7,500.00
0112	3150000000-N ADDITIONAL GUARDRAIL POSTS	10.000 EA	1.00000	10.00
0113	3195000000-N GUARDRAIL ANCHOR UNITS, TYPE AT-1	1.000 EA	475.00000	475.00
0114	3210000000-N GUARDRAIL ANCHOR UNITS, TYPE CAT-1	5.000 EA	450.00000	2,250.00
0115	3270000000-N GUARDRAIL ANCHOR UNITS, TYPE 350	3.000 EA	1,600.00000	4,800.00

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0116	3285000000-N GUARDRAIL ANCHOR UNITS, TYPE M-350 EA	1.000	1,500.00000	1,500.00
0117	3317000000-N GUARDRAIL ANCHOR UNITS, TYPE B-77 EA	7.000	1,400.00000	9,800.00
0118	3360000000-E REMOVE EXISTING GUARDRAIL LF	750.000	0.25000	187.50
0119	3503000000-E WOVEN WIRE FENCE, 47" FABRIC LF	4,100.000	3.10000	12,710.00
0120	3509000000-E 4" TIMBER FENCE POSTS, 7'-6" LONG EA	260.000	15.00000	3,900.00
0121	3515000000-E 5" TIMBER FENCE POSTS, 8'-0" LONG EA	55.000	30.00000	1,650.00
0122	3533000000-E CHAIN LINK FENCE, **" FABRIC (60") LF	2,435.000	5.40000	13,149.00
0123	3536000000-E CHAIN LINK FENCE, 48" FABRIC LF	5,200.000	4.65000	24,180.00
0124	3539000000-E METAL LINE POSTS FOR **" CHAINLINK FENCE (60") EA	202.000	38.00000	7,676.00
0125	3539000000-E METAL LINE POSTS FOR **" CHAINLINK FENCE (84") EA	240.000	88.00000	21,120.00
0126	3542000000-E METAL LINE POSTS FOR 48" CHAINLINK FENCE EA	438.000	34.00000	14,892.00
0127	3545000000-E METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (60") EA	18.000	105.00000	1,890.00

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0128	3545000000-E METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (84")	20.000 EA	210.00000	4,200.00
0129	3548000000-E METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE	27.000 EA	95.00000	2,565.00
0130	3557000000-E ADDITIONAL BARBED WIRE	500.000 LF	0.50000	250.00
0131	3564000000-E SINGLE GATES, **" HIGH, **' WIDE, **' OPENING (84" HIGH, 20' WIDE, 20' OPEN)	1.000 EA	2,800.00000	2,800.00
0132	3565000000-E DOUBLE GATES, **" HIGH, **' WIDE, **' OPENING (84" HIGH, 14' WIDE, 28' OPEN)	1.000 EA	3,600.00000	3,600.00
0133	3566000000-E WOVEN WIRE FENCE RESET	50.000 LF	13.00000	650.00
0134	3572000000-E CHAIN LINK FENCE RESET	890.000 LF	21.00000	18,690.00
0135	3575000000-E GENERIC FENCING ITEM 84" CHAIN LINK SECURITY FENCE	2,900.000 LF	19.50000	56,550.00
0136	3628000000-E RIP RAP, CLASS I	590.000 TON	44.00000	25,960.00
0137	3649000000-E RIP RAP, CLASS B	250.000 TON	41.50000	10,375.00
0138	3656000000-E GEOTEXTILE FOR DRAINAGE	5,865.000 SY	2.00000	11,730.00

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0139	3883000000-N GENERIC TRACKWORK ITEM BRAGG BLVD CROSSING SIGNAL INSTALLATION	LUMP	LUMP	271,000.00
0140	3883000000-N GENERIC TRACKWORK ITEM BRAGG BLVD CROSSING SURFACE INSTALLATION	LUMP	LUMP	99,981.00
0141	3883000000-N GENERIC TRACKWORK ITEM RANDOLPH STREET CROSSING SIGNAL INSTALLATION	LUMP	LUMP	310,000.00
0142	3883000000-N GENERIC TRACKWORK ITEM RANDOLPH STREET CROSSING SURFACE INSTALLATION	LUMP	LUMP	166,640.00
0143	4048000000-E REINFORCED CONCRETE SIGN FOUNDATIONS	10.000 CY	500.00000	5,000.00
0144	4054000000-E PLAIN CONCRETE SIGN FOUNDATIONS	1.000 CY	500.00000	500.00
0145	4057000000-E OVERHEAD FOOTING	195.000 CY	1,400.00000	273,000.00
0146	4060000000-E SUPPORTS, BREAKAWAY STEEL BEAM	9,765.000 LB	4.00000	39,060.00
0147	4066000000-E SUPPORTS, SIMPLE STEEL BEAM	183.000 LB	4.00000	732.00
0148	4072000000-E SUPPORTS, 3-LB STEEL U-CHANNEL	2,687.000 LF	5.00000	13,435.00

State of NC
Dept of Transportation

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Revised: 10-05-12

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0149	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (102+50 -L-)	LUMP	LUMP	22,000.00
0150	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (120+00 -L-)	LUMP	LUMP	20,000.00
0151	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (132+00 -L-)	LUMP	LUMP	25,000.00
0152	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (149+50 -L-)	LUMP	LUMP	75,000.00
0153	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (15+00 -Y7-)	LUMP	LUMP	30,000.00
0154	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (166+00 -L-)	LUMP	LUMP	19,000.00
0155	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (182+00 -L-)	LUMP	LUMP	65,000.00
0156	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (19+50 -Y3-)	LUMP	LUMP	96,000.00
0157	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (191+45 -L-)	LUMP	LUMP	45,000.00

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0158	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (22+00 -Y4-)	LUMP	LUMP	55,000.00
0159	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (23+50 -Y3RPA-)	LUMP	LUMP	40,000.00
0160	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (26+00 -Y3-)	LUMP	LUMP	92,000.00
0161	4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ***** (93+00 -L-)	LUMP	LUMP	21,000.00
0162	4096000000-N SIGN ERECTION, TYPE D	5.000 EA	115.00000	575.00
0163	4102000000-N SIGN ERECTION, TYPE E	155.000 EA	55.00000	8,525.00
0164	4108000000-N SIGN ERECTION, TYPE F	6.000 EA	125.00000	750.00
0165	4109000000-N SIGN ERECTION, TYPE *** (OVER-HEAD) (A)	1.000 EA	3,000.00000	3,000.00
0166	4110000000-N SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)	10.000 EA	500.00000	5,000.00
0167	4110000000-N SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)	1.000 EA	500.00000	500.00
0168	4115000000-N SIGN ERECTION, OVERLAY (OVER-HEAD)	4.000 EA	500.00000	2,000.00

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0169	4116000000-N SIGN ERECTION, OVERLAY (GROUND MOUNTED)	1.000 EA	200.00000	200.00
0170	4116100000-N SIGN ERECTION, RELOCATE, TYPE ***** (GROUND MOUNTED) (A)	1.000 EA	500.00000	500.00
0171	4138000000-N DISPOSAL OF SUPPORT, STEEL BEAM	2.000 EA	100.00000	200.00
0172	4149000000-N DISPOSAL OF SIGN SYSTEM, OVER-HEAD	2.000 EA	7,000.00000	14,000.00
0173	4152000000-N DISPOSAL OF SIGN SYSTEM, STEELBEAM	3.000 EA	100.00000	300.00
0174	4155000000-N DISPOSAL OF SIGN SYSTEM, U- CHANNEL	137.000 EA	1.00000	137.00
0175	4234000000-N DISPOSAL OF SIGN, A OR B (OVERHEAD)	1.000 EA	200.00000	200.00
0176	4400000000-E WORK ZONE SIGNS (STATIONARY)	1,130.000 SF	3.45000	3,898.50
0177	4405000000-E WORK ZONE SIGNS (PORTABLE)	730.000 SF	21.00000	15,330.00
0178	4410000000-E WORK ZONE SIGNS (BARRICADE MOUNTED)	430.000 SF	9.00000	3,870.00
0179	4415000000-N FLASHING ARROW BOARD	4.000 EA	1,500.00000	6,000.00
0180	4420000000-N PORTABLE CHANGEABLE MESSAGE SIGN	5.000 EA	4,000.00000	20,000.00

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0181	4422000000-N PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)	40.000 DAY	50.00000	2,000.00
0182	4430000000-N DRUMS	500.000 EA	25.00000	12,500.00
0183	4435000000-N CONES	100.000 EA	19.00000	1,900.00
0184	4445000000-E BARRICADES (TYPE III)	612.000 LF	23.00000	14,076.00
0185	4455000000-N FLAGGER	100.000 DAY	180.00000	18,000.00
0186	4465000000-N TEMPORARY CRASH CUSHIONS	5.000 EA	6,000.00000	30,000.00
0187	4470000000-N RESET TEMPORARY CRASH CUSHION	8.000 EA	2,500.00000	20,000.00
0188	4480000000-N TMA	4.000 EA	1,000.00000	4,000.00
0189	4485000000-E PORTABLE CONCRETE BARRIER	5,300.000 LF	22.00000	116,600.00
0190	4500000000-E RESET PORTABLE CONCRETE BARRIER	8,300.000 LF	3.50000	29,050.00
0191	4507000000-E WATER FILLED BARRIER	1,720.000 LF	48.00000	82,560.00
0192	4508000000-E RESET WATER FILLED BARRIER	450.000 LF	2.50000	1,125.00

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0193	4510000000-N LAW ENFORCEMENT	100.000 HR	30.00000	3,000.00
0194	4516000000-N SKINNY DRUM	300.000 EA	15.00000	4,500.00
0195	4650000000-N TEMPORARY RAISED PAVEMENT MARKERS	2,142.000 EA	7.50000	16,065.00
0196	4685000000-E THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	22,420.000 LF	0.51000	11,434.20
0197	4686000000-E THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)	19,133.000 LF	0.59000	11,288.47
0198	4688000000-E THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	26,377.000 LF	0.78000	20,574.06
0199	4690000000-E THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS)	17,537.000 LF	0.89000	15,607.93
0200	4695000000-E THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	2,377.000 LF	1.55000	3,684.35
0201	4697000000-E THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)	1,122.000 LF	1.75000	1,963.50
0202	4700000000-E THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	3,458.000 LF	2.10000	7,261.80
0203	4702000000-E THERMOPLASTIC PAVEMENT MARKING LINES (12", 120 MILS)	1,676.000 LF	2.25000	3,771.00
0204	4705000000-E THERMOPLASTIC PAVEMENT MARKING LINES (16", 120 MILS)	374.000 LF	7.50000	2,805.00

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0205	4710000000-E THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)	1,204.000 LF	6.00000	7,224.00
0206	4721000000-E THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)	90.000 EA	75.00000	6,750.00
0207	4725000000-E THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	71.000 EA	90.00000	6,390.00
0208	4770000000-E COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (II)	1,308.000 LF	3.21000	4,198.68
0209	4770000000-E COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)	790.000 LF	4.50000	3,555.00
0210	4810000000-E PAINT PAVEMENT MARKING LINES (4")	43,050.000 LF	0.29000	12,484.50
0211	4820000000-E PAINT PAVEMENT MARKING LINES (8")	900.000 LF	0.60000	540.00
0212	4830000000-E PAINT PAVEMENT MARKING LINES (16")	224.000 LF	5.00000	1,120.00
0213	4835000000-E PAINT PAVEMENT MARKING LINES (24")	360.000 LF	3.00000	1,080.00
0214	4840000000-N PAINT PAVEMENT MARKING CHARACTER	34.000 EA	30.00000	1,020.00
0215	4845000000-N PAINT PAVEMENT MARKING SYMBOL	26.000 EA	30.00000	780.00

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0216	4855000000-E REMOVAL OF PAVEMENT MARKING LINES (6")	5,271.000 LF	0.64000	3,373.44
0217	4875000000-N REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	71.000 EA	35.00000	2,485.00
0218	4900000000-N PERMANENT RAISED PAVEMENT MARKERS	7.000 EA	7.50000	52.50
0219	4905000000-N SNOWPLOWABLE PAVEMENT MARKERS	1,640.000 EA	21.00000	34,440.00
0220	5005000000-E 80' HIGH MOUNT STANDARD	2.000 EA	16,395.00000	32,790.00
0221	5010000000-E 100' HIGH MOUNT STANDARD	3.000 EA	18,220.00000	54,660.00
0222	5020000000-N PORTABLE DRIVE UNIT	1.000 EA	4,020.00000	4,020.00
0223	5025000000-E HIGH MOUNT FOUNDATIONS	33.000 CY	675.00000	22,275.00
0224	5030000000-N HIGH MOUNT LUMINAIRES ***** (400W HPS)	16.000 EA	745.00000	11,920.00
0225	5030000000-N HIGH MOUNT LUMINAIRES ***** (750W HPS)	18.000 EA	900.00000	16,200.00
0226	5120000000-N ELECTRIC SERVICE POLE ***** (30' CLASS 4)	1.000 EA	780.00000	780.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0227	5125000000-E ELECTRIC SERVICE LATERAL ***** (3,#1/0 USE) LF	50.000	27.75000	1,387.50
0228	5145000000-N LIGHT CONTROL EQUIPMENT, TYPE RW ***** (SSPM) EA	1.000	11,320.00000	11,320.00
0229	5155000000-E ELECTRICAL DUCT, TYPE BD, SIZE ***** (2") LF	150.000	5.05000	757.50
0230	5155000000-E ELECTRICAL DUCT, TYPE BD, SIZE ***** (3") LF	110.000	5.25000	577.50
0231	5160000000-E ELECTRICAL DUCT, TYPE JA, SIZE ***** (3") LF	40.000	19.35000	774.00
0232	5160000000-E ELECTRICAL DUCT, TYPE JA, SIZE ***** (4") LF	130.000	19.35000	2,515.50
0233	5160000000-E ELECTRICAL DUCT, TYPE JA, SIZE ***** (6") LF	60.000	25.60000	1,536.00
0234	5170000000-E ** #8 W/G FEEDER CIRCUIT (2) LF	120.000	3.60000	432.00
0235	5175000000-E ** #6 W/G FEEDER CIRCUIT (2) LF	310.000	4.30000	1,333.00
0236	5180000000-E ** #4 W/G FEEDER CIRCUIT (2) LF	240.000	5.00000	1,200.00
0237	5185000000-E ** #2 W/G FEEDER CIRCUIT (2) LF	310.000	7.70000	2,387.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0238	5205000000-E ** #8 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1-1/2") LF	520.000	5.10000	2,652.00
0239	5210000000-E ** #6 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1-1/2") LF	900.000	6.35000	5,715.00
0240	5215000000-E ** #4 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1-1/2") LF	3,900.000	7.75000	30,225.00
0241	5220000000-E ** #2 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1-1/2") LF	1,760.000	9.30000	16,368.00
0242	5240000000-N ELECTRICAL JUNCTION BOXES ***** (PC18) EA	10.000	435.00000	4,350.00
0243	5240000000-N ELECTRICAL JUNCTION BOXES ***** (PC30) EA	4.000	640.00000	2,560.00
0244	5255000000-N PORTABLE LIGHTING LUMP		LUMP	110,000.00
0245	5325200000-E 2" WATER LINE LF	274.000	10.00000	2,740.00
0246	5325400000-E 4" WATER LINE LF	150.000	40.00000	6,000.00
0247	5325600000-E 6" WATER LINE LF	3,043.000	40.00000	121,720.00
0248	5325800000-E 8" WATER LINE LF	345.000	70.00000	24,150.00

State of NC
Dept of Transportation

Date: 09-18-12
Revised: 10-05-12

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0249	5326200000-E 12" WATER LINE	267.000 LF	115.00000	30,705.00
0250	5326600000-E 16" WATER LINE	841.000 LF	120.00000	100,920.00
0251	5536000000-E 2" VALVE	1.000 EA	600.00000	600.00
0252	5538000000-E 4" VALVE	1.000 EA	700.00000	700.00
0253	5540000000-E 6" VALVE	9.000 EA	750.00000	6,750.00
0254	5546000000-E 8" VALVE	1.000 EA	1,050.00000	1,050.00
0255	5558000000-E 12" VALVE	1.000 EA	1,875.00000	1,875.00
0256	5648000000-N RELOCATE WATER METER	35.000 EA	695.00000	24,325.00
0257	5649000000-N RECONNECT WATER METER	7.000 EA	680.00000	4,760.00
0258	5672000000-N RELOCATE FIRE HYDRANT	9.000 EA	3,500.00000	31,500.00
0259	5691400000-E 10" SANITARY GRAVITY SEWER	779.000 LF	65.00000	50,635.00
0260	5709100000-E 2" FORCE MAIN SEWER	510.000 LF	12.00000	6,120.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0261	5775000000-E 4' DIA UTILITY MANHOLE	10.000 EA	1,700.00000	17,000.00
0262	5781000000-E UTILITY MANHOLE WALL, 4' DIA	36.000 LF	175.00000	6,300.00
0263	5802000000-E ABANDON 10" UTILITY PIPE	947.000 LF	7.00000	6,629.00
0264	5804000000-E ABANDON 12" UTILITY PIPE	254.000 LF	8.00000	2,032.00
0265	5810000000-E ABANDON 16" UTILITY PIPE	7,150.000 LF	12.00000	85,800.00
0266	5815000000-N REMOVE WATER METER	6.000 EA	150.00000	900.00
0267	5816000000-N ABANDON UTILITY MANHOLE	4.000 EA	900.00000	3,600.00
0268	5882000000-N GENERIC UTILITY ITEM RELOCATE VALVE VAULT	1.000 EA	5,000.00000	5,000.00
0269	5882000000-N GENERIC UTILITY ITEM REMOVE UTILITY VAULT	2.000 EA	1,000.00000	2,000.00
0270	6000000000-E TEMPORARY SILT FENCE	52,100.000 LF	1.58000	82,318.00
0271	6006000000-E STONE FOR EROSION CONTROL, CLASS A	3,370.000 TON	28.00000	94,360.00
0272	6009000000-E STONE FOR EROSION CONTROL, CLASS B	9,085.000 TON	41.50000	377,027.50

State of NC
Dept of Transportation

Date: 09-18-12
Revised: 10-05-12

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0273	6012000000-E SEDIMENT CONTROL STONE	8,060.000 TON	37.00000	298,220.00
0274	6015000000-E TEMPORARY MULCHING	85.000 ACR	400.00000	34,000.00
0275	6018000000-E SEED FOR TEMPORARY SEEDING	2,150.000 LB	3.00000	6,450.00
0276	6021000000-E FERTILIZER FOR TEMPORARY SEED-ING	11.250 TON	1,200.00000	13,500.00
0277	6024000000-E TEMPORARY SLOPE DRAINS	7,500.000 LF	0.01000	75.00
0278	6029000000-E SAFETY FENCE	3,000.000 LF	1.58000	4,740.00
0279	6030000000-E SILT EXCAVATION	10,750.000 CY	0.01000	107.50
0280	6036000000-E MATTING FOR EROSION CONTROL	69,000.000 SY	1.20000	82,800.00
0281	6037000000-E COIR FIBER MAT	1,650.000 SY	5.70000	9,405.00
0282	6038000000-E PERMANENT SOIL REINFORCEMENT MAT	6,210.000 SY	6.10000	37,881.00
0283	6042000000-E 1/4" HARDWARE CLOTH	15,350.000 LF	3.10000	47,585.00
0284	6070000000-N SPECIAL STILLING BASINS	8.000 EA	100.00000	800.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0285	6071010000-E WATTLE LF	3,900.000	3.00000	11,700.00
0286	6071020000-E POLYACRYLAMIDE (PAM) LB	2,425.000	0.01000	24.25
0287	6071030000-E COIR FIBER BAFFLE LF	3,500.000	4.15000	14,525.00
0288	6071050000-E *** SKIMMER (1-1/2") EA	18.000	700.00000	12,600.00
0289	6084000000-E SEEDING & MULCHING ACR	75.000	1,820.00000	136,500.00
0290	6087000000-E MOWING ACR	35.000	75.00000	2,625.00
0291	6090000000-E SEED FOR REPAIR SEEDING LB	900.000	11.00000	9,900.00
0292	6093000000-E FERTILIZER FOR REPAIR SEEDING TON	3.750	1,200.00000	4,500.00
0293	6096000000-E SEED FOR SUPPLEMENTAL SEEDING LB	2,250.000	1.45000	3,262.50
0294	6108000000-E FERTILIZER TOPDRESSING TON	66.750	790.00000	52,732.50
0295	6111000000-E IMPERVIOUS DIKE LF	100.000	50.00000	5,000.00
0296	6114500000-N SPECIALIZED HAND MOWING MHR	100.000	52.00000	5,200.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0297	6117000000-N RESPONSE FOR EROSION CONTROL	175.000 EA	200.00000	35,000.00
0298	6123000000-E REFORESTATION	1.000 ACR	1,800.00000	1,800.00
0299	6132000000-N GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTIONDEVICE	75.000 EA	55.00000	4,125.00
0300	7048500000-E PEDESTRIAN SIGNAL HEAD (16", 1SECTION W/COUNTDOWN)	4.000 EA	895.00000	3,580.00
0301	7060000000-E SIGNAL CABLE	10,400.000 LF	2.45000	25,480.00
0302	7120000000-E VEHICLE SIGNAL HEAD (12", 3 SECTION)	71.000 EA	725.00000	51,475.00
0303	7132000000-E VEHICLE SIGNAL HEAD (12", 4 SECTION)	7.000 EA	875.00000	6,125.00
0304	7144000000-E VEHICLE SIGNAL HEAD (12", 5 SECTION)	2.000 EA	1,280.00000	2,560.00
0305	7204000000-N LOUVER	2.000 EA	250.00000	500.00
0306	7216000000-N MODIFY EXISTING VEHICLE SIGNALHEAD	3.000 EA	400.00000	1,200.00
0307	7252000000-E MESSENGER CABLE (1/4")	250.000 LF	2.50000	625.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0308	7264000000-E MESSENGER CABLE (3/8") LF	3,570.000	2.90000	10,353.00
0309	7288000000-E PAVED TRENCHING (*****) (1,2") LF	60.000	30.00000	1,800.00
0310	7300000000-E UNPAVED TRENCHING (*****) (1,2") LF	1,280.000	7.75000	9,920.00
0311	7300100000-E UNPAVED TRENCHING FOR TEMP- ORARY LEAD-IN LF	590.000	4.50000	2,655.00
0312	7301000000-E DIRECTIONAL DRILL (*****) (1,2") LF	400.000	18.00000	7,200.00
0313	7324000000-N JUNCTION BOX (STANDARD SIZE) EA	16.000	220.00000	3,520.00
0314	7348000000-N JUNCTION BOX (OVER-SIZED, HEA-VY DUTY) EA	6.000	500.00000	3,000.00
0315	7360000000-N WOOD POLE EA	15.000	800.00000	12,000.00
0316	7372000000-N GUY ASSEMBLY EA	26.000	240.00000	6,240.00
0317	7408000000-E 1" RISER WITH WEATHERHEAD EA	6.000	300.00000	1,800.00
0318	7420000000-E 2" RISER WITH WEATHERHEAD EA	26.000	365.00000	9,490.00
0319	7444000000-E INDUCTIVE LOOP SAWCUT LF	10,620.000	4.85000	51,507.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0320	7456000000-E LEAD-IN CABLE (*****)(14-2)	21,610.000 LF	1.45000	31,334.50
0321	7528000000-E DROP CABLE	400.000 LF	1.85000	740.00
0322	7541000000-N MODIFY SPLICE ENCLOSURE	1.000 EA	1,850.00000	1,850.00
0323	7575142000-N 900MHZ RADIO	3.000 EA	3,250.00000	9,750.00
0324	7576000000-N METAL STRAIN SIGNAL POLE	12.000 EA	7,250.00000	87,000.00
0325	7613000000-N SOIL TEST	12.000 EA	750.00000	9,000.00
0326	7614100000-E DRILLED PIER FOUNDATION	72.000 CY	675.00000	48,600.00
0327	7636000000-N SIGN FOR SIGNALS	12.000 EA	240.00000	2,880.00
0328	7642100000-N TYPE I POST WITH FOUNDATION	1.000 EA	1,300.00000	1,300.00
0329	7684000000-N SIGNAL CABINET FOUNDATION	4.000 EA	800.00000	3,200.00
0330	7756000000-N CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)	4.000 EA	11,325.00000	45,300.00
0331	7780000000-N DETECTOR CARD (TYPE 2070L)	31.000 EA	100.00000	3,100.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0332	7948000000-N TRAFFIC SIGNAL REMOVAL EA	1.000	500.00000	500.00
0333	7960000000-N METAL POLE FOUNDATION REMOVAL EA	4.000	2,000.00000	8,000.00
0334	7972000000-N METAL POLE REMOVAL EA	4.000	950.00000	3,800.00
0335	7980000000-N GENERIC SIGNAL ITEM 900MHZ WIRELESS REPEATER STANDALONE RADIO SYSTEM EA	1.000	6,904.00000	6,904.00
0336	7980000000-N GENERIC SIGNAL ITEM CCTV ASSEMBLY EA	1.000	5,875.00000	5,875.00
0337	7980000000-N GENERIC SIGNAL ITEM VIDEO ENCODER TRANSMITTER EA	1.000	1,250.00000	1,250.00
0338	7985000000-N GENERIC SIGNAL ITEM CENTRAL SOFTWARE MODIFICATIONS LUMP		LUMP	850.00
0369	0248000000-N GENERIC GRADING ITEM REMOVAL & DISPOSAL OF EXISTING MEDIAN BARRIER LUMP		LUMP	37,000.00
Section 0001 Total				27,073,006.62

Section 0003 RETAINING WALL ITEMS

Alt Group

0339	8802014000-E SOLDIER PILE RETAINING WALLS SF	830.000	90.50000	75,115.00
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Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0340	8839000000-E GENERIC RETAINING WALL ITEM CONCRETE BARRIER RAIL WITH MOMENT SLAB	275.000 LF	225.00000	61,875.00
0341	8847000000-E GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 1	10,450.000 SF	49.20000	514,140.00
0342	8847000000-E GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 2	6,470.000 SF	49.20000	318,324.00
0343	8847000000-E GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 3	12,500.000 SF	49.20000	615,000.00
0344	8847000000-E GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 4	4,420.000 SF	49.20000	217,464.00
0345	8847000000-E GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 5	4,160.000 SF	49.20000	204,672.00
0346	8847000000-E GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 7	1,080.000 SF	49.20000	53,136.00
0347	8847000000-E GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 8	1,060.000 SF	49.20000	52,152.00
	Section 0003 Total			2,111,878.00

Section 0004 STRUCTURE ITEMS

Alt Group

0348	8112730000-N PDA TESTING	2.000 EA	2,475.00000	4,950.00
0349	8147000000-E REINFORCED CONCRETE DECK SLAB	24,355.000 SF	19.62000	477,845.10

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0350	8161000000-E GROOVING BRIDGE FLOORS	24,889.000 SF	0.47000	11,697.83
0351	8182000000-E CLASS A CONCRETE (BRIDGE)	229.000 CY	683.61000	156,546.69
0352	8210000000-N BRIDGE APPROACH SLABS, STATION***** (132+79.28 -L-)	LUMP	LUMP	59,000.00
0353	8210000000-N BRIDGE APPROACH SLABS, STATION***** (172+95.63 -L-)	LUMP	LUMP	40,200.00
0354	8217000000-E REINFORCING STEEL (BRIDGE)	35,335.000 LB	0.92000	32,508.20
0355	8265000000-E 54" PRESTRESSED CONCRETE GIRDERS	1,007.880 LF	236.50000	238,363.62
0356	8280000000-E APPROX ***** LBS STRUCTURALSTEEL	LUMP	LUMP	1,444,200.00
0357	8364000000-E HP12X53 STEEL PILES	3,595.000 LF	38.39000	138,012.05
0358	8385200000-E PP ** X **** GALVANIZED STEEL PILES (24 X 0.50)	450.000 LF	189.66000	85,347.00
0359	8392000000-N PIPE PILE PLATES	6.000 EA	385.00000	2,310.00
0360	8393000000-N PILE REDRIVES	41.000 EA	1.00000	41.00

Contract ID: C202826 Project(s): STP-0210(23)
Letting Date: 10-16-12 Call Order: 012
Bidder: 3516 - Barnhill Contracting Company

Line No.	Item Description	Approx. Quantity and Units	Unit Price Dollars Cts	Bid Amount Dollars Cts
0361	8482000000-E THREE BAR METAL RAIL	323.700 LF	175.63000	56,851.43
0362	8503000000-E CONCRETE BARRIER RAIL	472.770 LF	60.32000	28,517.49
0363	8524000000-E **" CHAIN LINK FENCE (104")	333.700 LF	116.26000	38,795.96
0364	8531000000-E 4" SLOPE PROTECTION	1,646.000 SY	75.10000	123,614.60
0365	8650000000-N POT BEARINGS	LUMP	LUMP	50,875.00
0366	8657000000-N ELASTOMERIC BEARINGS	LUMP	LUMP	8,175.00
0367	8692000000-N FOAM JOINT SEALS	LUMP	LUMP	20,875.00
0368	8706000000-N EXPANSION JOINT SEALS	LUMP	LUMP	100,650.00
	Section 0004 Total			3,119,375.97
	Bid Total			32,304,260.59

NON-COLLUSION AND DEBARMENT CERTIFICATION

The bidder certifies that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor. In addition, submitting this electronic bid constitutes the bidder's certification of Status under penalty of perjury under the laws of the United States and in accordance with the Debarment Certification on file with the Department.

By submitting this bid, the bidder certifies to the best of his knowledge and belief that he and his principals:

- a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;
- c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and
- d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

Where the prospective bidder is unable to certify to any of the statements in this certification, the bidder shall submit an explanation in the blanks provided herein. The explanation will not necessarily result in denial of participation in a contract.

Explanation:
NOT ANSWERED
NOT ANSWERED
NOT ANSWERED
NOT ANSWERED

If the prequalified bidder's status changes, he shall immediately submit a new fully executed non-collusion affidavit and debarment certification with an explanation of the change to the Contract Office prior to submitting the bid.

Failure to furnish a certification or an explanation will be grounds for rejection of a bid

AWARD LIMITS ON MULTIPLE PROJECTS

By answering YES to this statement, the bidder acknowledges that they are using the award limits on multiple projects. No

A bidder who desires to bid on more than one project on which bids are to be opened on the same date, and who also desires to avoid receiving an award of more projects than he is equipped to handle, may bid on any number of projects but may limit the total amount of work awarded to him on selected projects by completing the AWARD LIMITS ON MULTIPLE PROJECTS.

The Award Limits on Multiple Projects must be filled in on each project bid for which the Bidder desires protection.

It is the desire of the Bidder to be awarded contracts, the value of which will not exceed a total of NOT ANSWERED for those projects indicated herein, for which bids will be opened on (MM/DD/YY)

The Award Limits shall apply to the following projects:

Contract Number	County
NOT ANSWERED	

It is agreed that if I am (we are) the low Bidder(s) on indicated projects, the total value of which is more than the above stipulated award limits, the Board of Transportation will award me (us) projects from among those indicated that have a total value not to exceed the award limit and will result in the lowest total bids to the Department of Transportation.

PROPOSAL: C202826
 LETTING: L121016 CALL: 012
 VENDOR: 3516 Barnhill Contracting Company

LINE NO.	ITEM NO.	ITEM DESC.	UNIT TYPE	SUBCONTRACTOR QUANTITY	SUBCONTRACTOR UNIT PRICE	EXTENDED AMOUNT
DBE SUBCONTRACTOR: 10650 DJP TRUCKING INC						
Will Use Quote: Yes						
0043	1077000000-E	#57 STONE	TON	250.000	6.85000	1712.50
		Haul Only				
0045	1099700000-E	CLASS IV SUB	TON	750.000	6.50000	4875.00
		Haul Only				
0046	1110000000-E	STABILIZER A	TON	250.000	6.50000	1625.00
		Haul Only				
0047	1121000000-E	AGGREGATE BA	TON	54990.000	6.50000	357435.00
		Haul Only				
0136	3628000000-E	RIP RAP, CLA	TON	590.000	9.75000	5752.50
		Haul Only				
0137	3649000000-E	RIP RAP, CLA	TON	250.000	7.85000	1962.50
		Haul Only				
0271	6006000000-E	EROS CONTRL	TON	3370.000	7.45000	25106.50
		Haul Only				
0272	6009000000-E	EROS CONTRL	TON	9085.000	7.85000	71317.25
		Haul Only				
0273	6012000000-E	SEDIMENT CON	TON	8060.000	6.85000	55211.00
		Haul Only				
0008	0106000000-E	BORROW EXCAV	CY	300000.000	1.00000	300000.00
		Haul Only				

DBE COMMITMENT TOTAL FOR SUBCONTRACTOR:	824,997.25	Committed
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor)	824,997	

DBE SUBCONTRACTOR: 4898 BULLINGTON CONSTRUCTION INC
 Will Use Quote: Yes

0001	0000100000-N	MOBILIZATION	LS	1.000	2857.00000	2857.00
		bOND				
0119	3503000000-E	WOVEN WIRE F	LF	4100.000	3.10000	12710.00
0120	3509000000-E	4" TIMBER PO	EA	260.000	15.00000	3900.00
0121	3515000000-E	5" TIMBER PO	EA	55.000	30.00000	1650.00
0122	3533000000-E	CHN LK FENCE	LF	2435.000	5.40000	13149.00
0123	3536000000-E	CHN LK FENCE	LF	5200.000	4.65000	24180.00
0124	3539000000-E	MET LINE PST	EA	202.000	38.00000	7676.00
0125	3539000000-E	MET LINE PST	EA	240.000	88.00000	21120.00
0126	3542000000-E	MET LINE PST	EA	438.000	34.00000	14892.00
0127	3545000000-E	MET TERM PST	EA	18.000	105.00000	1890.00
0128	3545000000-E	MET TERM PST	EA	20.000	210.00000	4200.00
0129	3548000000-E	MET TERM PST	EA	27.000	95.00000	2565.00
0130	3557000000-E	ADDITIONAL B	LF	500.000	0.50000	250.00
0131	3564000000-E	SGL GATE **H	EA	1.000	2800.00000	2800.00
0132	3565000000-E	DBL GATE **H	EA	1.000	3600.00000	3600.00
0133	3566000000-E	WOVEN WIRE F	LF	50.000	13.00000	650.00

LINE NO.	ITEM NO.	ITEM DESC.	UNIT TYPE	SUBCONTRACTOR QUANTITY	SUBCONTRACTOR UNIT PRICE	EXTENDED AMOUNT
0134	3572000000-E	CHAIN LINK F	LF	890.000	21.00000	18690.00
0135	3575000000-E	GENERIC FENC	LF	2900.000	19.50000	56550.00
DBE COMMITMENT TOTAL FOR SUBCONTRACTOR:						193,329.00 Committed
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor)						193,329

DBE SUBCONTRACTOR: 4761 TRAFFIC CONTROL SAFETY SERVICES, INC.
 Will Use Quote: Yes

0176	4400000000-E	WORK ZONE SI	SF	1130.000	3.45000	3898.50
0191	4507000000-E	WATER FILLED	LF	1720.000	48.00000	82560.00
0192	4508000000-E	RESET WATER	LF	450.000	2.50000	1125.00
DBE COMMITMENT TOTAL FOR SUBCONTRACTOR:						87,583.50 Committed
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor)						87,583.

DBE SUBCONTRACTOR: 3346 LINEBERRY, INC.
 Will Use Quote: Yes

0001	0000100000-N	MOBILIZATION	LS	1.000	4268.00000	4268.00
bond premium						
0274	6015000000-E	TEMPORARY MU	ACR	85.000	400.00000	34000.00
0275	6018000000-E	SEED FOR TEM	LB	2150.000	3.00000	6450.00
0276	6021000000-E	FERT FOR TEM	TON	11.250	1200.00000	13500.00
0280	6036000000-E	MATTING FOR	SY	69000.000	1.20000	82800.00
0281	6037000000-E	COIR FIBER M	SY	1650.000	5.70000	9405.00
0282	6038000000-E	PERM SOIL RE	SY	6210.000	6.10000	37881.00
0289	6084000000-E	SEEDING AND	ACR	75.000	1820.00000	136500.00
0290	6087000000-E	MOWING	ACR	35.000	75.00000	2625.00
0291	6090000000-E	SEED FOR REP	LB	900.000	11.00000	9900.00
0292	6093000000-E	FERT FOR REP	TON	3.750	1200.00000	4500.00
0293	6096000000-E	SEED FOR SUP	LB	2250.000	1.45000	3262.50
0294	6108000000-E	FERTILIZER T	TON	66.750	790.00000	52732.50
0296	6114500000-N	SPECIALIZED	MHR	100.000	52.00000	5200.00
0297	6117000000-N	RESPONSE FOR	EA	87.000	150.00000	13050.00
0298	6123000000-E	REFORESTATIO	ACR	1.000	1800.00000	1800.00
DBE COMMITMENT TOTAL FOR SUBCONTRACTOR:						417,874.00 Committed
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor)						417,874

DBE SUBCONTRACTOR: 3080 CURTIN TRUCKING & DRAINAGE, INC.
 Will Use Quote: Yes

0001	0000100000-N	MOBILIZATION	LS	1.000	2446.00000	2446.00
Bond						
0186	4465000000-N	TEMPORARY CR	EA	5.000	6000.00000	30000.00
0187	4470000000-N	RESET CRASH	EA	8.000	2500.00000	20000.00
0189	4485000000-E	PORT CONC BA	LF	5300.000	22.00000	116600.00
0190	4500000000-E	RESET PORT C	LF	8300.000	3.50000	29050.00

LINE NO.	ITEM NO.	ITEM DESC.	UNIT TYPE	SUBCONTRACTOR QUANTITY	SUBCONTRACTOR UNIT PRICE	EXTENDED AMOUNT
DBE COMMITMENT TOTAL FOR SUBCONTRACTOR:						198,096.00 Committed
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor)						198,096
DBE SUBCONTRACTOR: 12278 CLIFTON CONSTRUCTION CO., INC.						
Will Use Quote: Yes						
0001	0000100000-N	MOBILIZATION	LS	1.000	1500.00000	1500.00
0060	2022000000-E	SUBDRAIN EXC	CY	118.000	25.00000	2950.00
0061	2026000000-E	GEOTEXTILE F	SY	100.000	6.00000	600.00
0062	2033000000-E	SUBDRAIN FIN	CY	84.000	55.00000	4620.00
0063	2036000000-E	SUBDRAIN COA	CY	17.000	85.00000	1445.00
0064	2044000000-E	6" PERF SUBD	LF	350.000	15.00000	5250.00
0065	2070000000-N	SUBDRN PIPE	EA	2.000	300.00000	600.00
0066	2077000000-E	6" OUTLET PI	LF	12.000	45.00000	540.00
DBE COMMITMENT TOTAL FOR SUBCONTRACTOR:						17,505.00 Committed
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor)						17,505.
DBE SUBCONTRACTOR: 4247 SEAL BROTHERS CONTRACTING LLC						
Will Use Quote: Yes						
0001	0000100000-N	MOBILIZATION	LS	1.000	3800.00000	3800.00
		Bond				
0270	6000000000-E	TEMPORARY SI	LF	52100.000	1.58000	82318.00
0278	6029000000-E	SAFETY FENCE	LF	2500.000	1.58000	3950.00
0283	6042000000-E	1/4" HARDWAR	LF	10000.000	3.10000	31000.00
0287	6071030000-E	COIR FIBER B	LF	3500.000	4.15000	14525.00
0297	6117000000-N	RESPONSE FOR	EA	87.000	200.00000	17400.00
DBE COMMITMENT TOTAL FOR SUBCONTRACTOR:						152,993.00 Committed
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor)						152,993
DBE SUBCONTRACTOR: 2549 CLARK TRUCKING OF HOPE MILLS, INC.						
Will Use Quote: Yes						
0051	1489000000-E	ASP CONC BAS	TON	6950.000	6.00000	41700.00
		Stockpile Plant				
0052	1491000000-E	ASP CONC BAS	TON	34010.000	6.00000	204060.00
		Stockpile Plant				
0053	1503000000-E	ASP CONC INT	TON	40270.000	6.00000	241620.00
		Stockpile Plant				
0054	1519000000-E	ASP CONC SUR	TON	5710.000	6.00000	34260.00
		Stockpile Plant				
0055	1523000000-E	ASP CONC SUR	TON	39800.000	6.00000	238800.00
		Stockpile Plant				
DBE COMMITMENT TOTAL FOR SUBCONTRACTOR:						760,440.00 not committed
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor)						760,440

LINE NO.	ITEM NO.	ITEM DESC.	UNIT TYPE	SUBCONTRACTOR QUANTITY	SUBCONTRACTOR UNIT PRICE	EXTENDED AMOUNT
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DBE SUBCONTRACTOR: 12802 NICKELSTON INDUSTRIES, INC.
Will Use Quote: Yes

0001	0000100000-N	MOBILIZATION	LS	1.000	1784.00000	1784.00
		Bond				
0108	3000000000-N	IMPACT ATTEN	EA	5.000	13000.00000	65000.00
0109	3030000000-E	STL BM GUARD	LF	1875.000	14.25000	26718.75
0110	3045000000-E	SBGR SHOP CU	LF	50.000	14.50000	725.00
0111	3060000000-E	SBGR DOUBLE	LF	375.000	20.00000	7500.00
0112	3150000000-N	ADDIT GUARDR	EA	10.000	1.00000	10.00
0113	3195000000-N	GR ANCHOR TY	EA	1.000	475.00000	475.00
0114	3210000000-N	GR ANCHOR TY	EA	5.000	450.00000	2250.00
0115	3270000000-N	GR ANCHOR TY	EA	3.000	1600.00000	4800.00
0118	3360000000-E	REMOVE EXIST	LF	750.000	0.25000	187.50
0117	3317000000-N	GR ANCHOR TY	EA	7.000	1400.00000	9800.00
0116	3285000000-N	GR ANCHOR TY	EA	1.000	1500.00000	1500.00

DBE COMMITMENT TOTAL FOR SUBCONTRACTOR: 120,750.25 Committed
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor) 120,750

DBE SUBCONTRACTOR: 11273 ASIA EXCAVATING SERVICES, INC.
Will Use Quote: Yes

0003	0001000000-E	CLEARING & G	LS	1.000	192000.00000	192000.00
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DBE COMMITMENT TOTAL FOR SUBCONTRACTOR: 192,000.00 Committed
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor) 192,000

DBE SUBCONTRACTOR: 4880 TRICOR CONSTRUCTION, INC.
Will Use Quote: Yes

0001	0000100000-N	MOBILIZATION	LS	1.000	25000.00000	25000.00
		Mob				
0339	8802014000-E	SOLDIER PILE	SF	830.000	90.50000	75115.00
0341	8847000000-E	GENERIC RET	SF	10450.000	49.20000	514140.00
0342	8847000000-E	GENERIC RET	SF	6470.000	49.20000	318324.00
0343	8847000000-E	GENERIC RET	SF	12500.000	49.20000	615000.00
0344	8847000000-E	GENERIC RET	SF	4420.000	49.20000	217464.00
0345	8847000000-E	GENERIC RET	SF	4160.000	49.20000	204672.00
0346	8847000000-E	GENERIC RET	SF	1080.000	49.20000	53136.00
0347	8847000000-E	GENERIC RET	SF	1060.000	49.20000	52152.00

DBE COMMITMENT TOTAL FOR SUBCONTRACTOR: 2,075,003.00 Committed
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor) 2,075,0

TOTAL DBE COMMITMENT FOR VENDOR: Entered: 13.25% \$4,280,131.00
Required: ~~15.60%~~ or 5040571.00
13.00% or 4199553.88
<GOAL MET>

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
ROADWAY ITEMS						
0001	0000100000-N	800	MOBILIZATION	Lump Sum LS	1,500,000.00	1,500,000.00
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum LS	216,000.00	216,000.00
0003	0001000000-E	200	CLEARING & GRUBBING .. ACRE(S)	Lump Sum LS	3,000,000.00	3,000,000.00
0004	0008000000-E	200	SUPPLEMENTARY CLEARING & GRUB- BING	4 ACR	1.00	4.00
0005	0022000000-E	225	UNCLASSIFIED EXCAVATION	83,500 CY	7.76	647,960.00
0006	0029000000-N	SP	REINFORCED BRIDGE APPROACH FILL, STATION ***** (11+82.86 -Y3)	Lump Sum LS	23,000.00	23,000.00
0007	0036000000-E	225	UNDERCUT EXCAVATION	45,000 CY	0.01	450.00
0008	0106000000-E	230	BORROW EXCAVATION	479,000 CY	4.00	1,916,000.00
0009	0134000000-E	240	DRAINAGE DITCH EXCAVATION	1,950 CY	4.50	8,775.00
0010	0141000000-E	240	BERM DITCH CONSTRUCTION	530 LF	2.00	1,060.00
0011	0156000000-E	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	29,120 SY	2.20	64,064.00
0012	0177000000-E	250	BREAKING OF EXISTING ASPHALT PAVEMENT	47,400 SY	2.20	104,280.00
0013	0192000000-N	260	PROOF ROLLING	30 HR	200.00	6,000.00
0014	0194000000-E	SP	SELECT GRANULAR MATERIAL, CLASS III	56,720 CY	4.00	226,880.00
0015	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZA- TION	4,500 SY	1.20	5,400.00
0016	0262000000-N	SP	GENERIC GRADING ITEM ENERGY DISSIPATOR BASIN	1 EA	11,300.00	11,300.00
0017	0318000000-E	300	FOUNDATION CONDITIONING MATE- RIAL, MINOR STRUCTURES	3,133 TON	19.85	62,190.05
0018	0320000000-E	300	FOUNDATION CONDITIONING GEO- TEXTILE	9,890 SY	2.00	19,780.00

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0019	0342000000-E	310	*** SIDE DRAIN PIPE (30")	1,132 LF	40.00	45,280.00
0020	0342000000-E	310	*** SIDE DRAIN PIPE (42")	556 LF	68.00	37,808.00
0021	0342000000-E	310	*** SIDE DRAIN PIPE (48")	44 LF	90.00	3,960.00
0022	0343000000-E	310	15" SIDE DRAIN PIPE	3,184 LF	20.00	63,680.00
0023	0344000000-E	310	18" SIDE DRAIN PIPE	1,280 LF	24.00	30,720.00
0024	0345000000-E	310	24" SIDE DRAIN PIPE	1,316 LF	31.00	40,796.00
0025	0366000000-E	310	15" RC PIPE CULVERTS, CLASS III	8,260 LF	20.00	165,200.00
0026	0372000000-E	310	18" RC PIPE CULVERTS, CLASS III	1,956 LF	24.00	46,944.00
0027	0378000000-E	310	24" RC PIPE CULVERTS, CLASS III	2,576 LF	31.00	79,856.00
0028	0384000000-E	310	30" RC PIPE CULVERTS, CLASS III	3,240 LF	40.00	129,600.00
0029	0390000000-E	310	36" RC PIPE CULVERTS, CLASS III	1,096 LF	55.00	60,280.00
0030	0402000000-E	310	48" RC PIPE CULVERTS, CLASS III	304 LF	90.00	27,360.00
0031	0408000000-E	310	54" RC PIPE CULVERTS, CLASS III	260 LF	130.00	33,800.00
0032	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	1,412 LF	21.00	29,652.00
0033	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	448 LF	26.00	11,648.00
0034	0448400000-E	310	24" RC PIPE CULVERTS, CLASS IV	72 LF	34.00	2,448.00
0035	0448500000-E	310	30" RC PIPE CULVERTS, CLASS IV	296 LF	48.00	14,208.00
0036	0582000000-E	310	15" CS PIPE CULVERTS, 0.064" THICK	164 LF	22.00	3,608.00

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0037	0588000000-E	310	18" CS PIPE CULVERTS, 0.064" THICK	40 LF	25.00	1,000.00
0038	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (15", 0.064")	4 EA	175.00	700.00
0039	0974000000-E	SP	*** WELDED STEEL PIPE, ***** THICK, GRADE B, (UNDER RR) (15", 0.500")	100 LF	200.00	20,000.00
0040	0995000000-E	340	PIPE REMOVAL	8,368 LF	12.00	100,416.00
0041	1000000000-E	462	6" SLOPE PROTECTION	60 SY	108.00	6,480.00
0042	1011000000-N	500	FINE GRADING	Lump Sum LS	1,030,000.00	1,030,000.00
0043	1077000000-E	SP	#57 STONE	250 TON	35.00	8,750.00
0044	1099500000-E	505	SHALLOW UNDERCUT	400 CY	5.00	2,000.00
0045	1099700000-E	505	CLASS IV SUBGRADE STABILIZATION	750 TON	19.00	14,250.00
0046	1110000000-E	510	STABILIZER AGGREGATE	250 TON	18.00	4,500.00
0047	1121000000-E	520	AGGREGATE BASE COURSE	54,990 TON	18.75	1,031,062.50
0048	1220000000-E	545	INCIDENTAL STONE BASE	100 TON	40.00	4,000.00
0049	1297000000-E	607	MILLING ASPHALT PAVEMENT, **** DEPTH (2-1/2")	500 SY	15.00	7,500.00
0050	1297000000-E	607	MILLING ASPHALT PAVEMENT, **** DEPTH (3")	12,000 SY	3.50	42,000.00
0051	1489000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0B	6,950 TON	38.55	267,922.50
0052	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	34,010 TON	36.45	1,239,664.50
0053	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	40,270 TON	37.80	1,522,206.00

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0054	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	5,710 TON	41.00	234,110.00
0055	1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	39,800 TON	37.30	1,484,540.00
0056	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	6,430 TON	606.00	3,896,580.00
0057	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	880 TON	200.00	176,000.00
0058	1840000000-E	665	MILLED RUMBLE STRIPS (ASPHALT CONCRETE)	10,000 LF	0.87	8,700.00
0059	1869000000-E	710	***** PORT CEM CONC PAVEMENT, MISCELLANEOUS (WITHOUT DOWELS) (8")	380 SY	39.78	15,116.40
0060	2022000000-E	815	SUBDRAIN EXCAVATION	118 CY	25.00	2,950.00
0061	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	100 SY	6.00	600.00
0062	2033000000-E	815	SUBDRAIN FINE AGGREGATE	84 CY	55.00	4,620.00
0063	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	17 CY	85.00	1,445.00
0064	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	350 LF	15.00	5,250.00
0065	2070000000-N	815	SUBDRAIN PIPE OUTLET	2 EA	300.00	600.00
0066	2077000000-E	815	6" OUTLET PIPE	12 LF	45.00	540.00
0067	2209000000-E	838	ENDWALLS	16.2 CY	670.00	10,854.00
0068	2220000000-E	838	REINFORCED ENDWALLS	5 CY	750.00	3,750.00
0069	2253000000-E	840	PIPE COLLARS	5.868 CY	800.00	4,694.40
0070	2264000000-E	840	PIPE PLUGS	5.392 CY	800.00	4,313.60
0071	2275000000-E	SP	FLOWABLE FILL	57.92 CY	200.00	11,584.00
0072	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	286 EA	850.00	243,100.00

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0073	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	164 LF	185.00	30,340.00
0074	2354200000-N	840	FRAME WITH GRATE, STD 840.24	2 EA	265.00	530.00
0075	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	71 EA	475.00	33,725.00
0076	2364200000-N	840	FRAME WITH TWO GRATES, STD 840.20	7 EA	470.00	3,290.00
0077	2365000000-N	840	FRAME WITH TWO GRATES, STD 840.22	18 EA	435.00	7,830.00
0078	2367000000-N	840	FRAME WITH TWO GRATES, STD 840.29	4 EA	455.00	1,820.00
0079	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	20 EA	510.00	10,200.00
0080	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	73 EA	535.00	39,055.00
0081	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	72 EA	535.00	38,520.00
0082	2396000000-N	840	FRAME WITH COVER, STD 840.54	27 EA	350.00	9,450.00
0083	2440000000-N	852	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN	39 EA	250.00	9,750.00
0084	2451000000-N	852	CONCRETE TRANSITIONAL SECTION FOR DROP INLET	27 EA	250.00	6,750.00
0085	2535000000-E	846	***X*** CONCRETE CURB (8" X 18")	5,850 LF	9.55	55,867.50
0086	2542000000-E	846	1'-6" CONCRETE CURB & GUTTER	16,600 LF	9.75	161,850.00
0087	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	30,200 LF	11.76	355,152.00
0088	2556000000-E	846	SHOULDER BERM GUTTER	50 LF	11.80	590.00
0089	2591000000-E	848	4" CONCRETE SIDEWALK	6,200 SY	20.75	128,650.00
0090	2605000000-N	848	CONCRETE CURB RAMP	74 EA	701.76	51,930.24

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0091	2612000000-E	848	6" CONCRETE DRIVEWAY	680 SY	32.00	21,760.00
0092	2619000000-E	850	4" CONCRETE PAVED DITCH	20 SY	85.00	1,700.00
0093	2627000000-E	852	4" CONCRETE ISLAND COVER	1,730 SY	20.50	35,465.00
0094	2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	4,020 SY	31.75	127,635.00
0095	2655000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)	200 SY	32.00	6,400.00
0096	2703000000-E	854	CONCRETE BARRIER, TYPE ***** (T)	2,790 LF	83.20	232,128.00
0097	2710000000-N	854	CONCRETE BARRIER TRANSITION SECTION	4 EA	7,875.00	31,500.00
0098	2752000000-E	SP	GENERIC PAVING ITEM MEDIAN HAZARD PROTECTION	60 LF	301.00	18,060.00
0099	2800000000-N	858	ADJUSTMENT OF CATCH BASINS	17 EA	450.00	7,650.00
0100	2815000000-N	858	ADJUSTMENT OF DROP INLETS	18 EA	450.00	8,100.00
0101	2830000000-N	858	ADJUSTMENT OF MANHOLES	35 EA	450.00	15,750.00
0102	2845000000-N	858	ADJUSTMENT OF METER BOXES OR VALVE BOXES	85 EA	300.00	25,500.00
0103	2875000000-N	859	CONVERT EXISTING CATCH BASIN TO DROP INLET	1 EA	800.00	800.00
0104	2893000000-N	859	CONVERT EXISTING CATCH BASIN TO JUNCTION BOX WITH MANHOLE	4 EA	850.00	3,400.00
0105	2920000000-N	859	CONVERT EXISTING DROP INLET TO CATCH BASIN	1 EA	825.00	825.00
0106	2938000000-N	859	CONVERT EXISTING DROP INLET TO JUNCTION BOX WITH MANHOLE	2 EA	850.00	1,700.00
0107	2965000000-N	859	CONVERT EXISTING JUNCTION BOX TO CATCH BASIN	1 EA	875.00	875.00
0108	3000000000-N	SP	IMPACT ATTENUATOR UNIT, TYPE 350	5 EA	13,000.00	65,000.00

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0109	3030000000-E	862	STEEL BM GUARDRAIL	1,875 LF	14.25	26,718.75
0110	3045000000-E	862	STEEL BM GUARDRAIL, SHOP CURVED	50 LF	14.50	725.00
0111	3060000000-E	862	STEEL BM GUARDRAIL, DOUBLE FACED	375 LF	20.00	7,500.00
0112	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	10 EA	1.00	10.00
0113	3195000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE AT-1	1 EA	475.00	475.00
0114	3210000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE CAT-1	5 EA	450.00	2,250.00
0115	3270000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE 350	3 EA	1,600.00	4,800.00
0116	3285000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE M-350	1 EA	1,500.00	1,500.00
0117	3317000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE B-77	7 EA	1,400.00	9,800.00
0118	3360000000-E	863	REMOVE EXISTING GUARDRAIL	750 LF	0.25	187.50
0119	3503000000-E	866	WOVEN WIRE FENCE, 47" FABRIC	4,100 LF	3.10	12,710.00
0120	3509000000-E	866	4" TIMBER FENCE POSTS, 7'-6" LONG	260 EA	15.00	3,900.00
0121	3515000000-E	866	5" TIMBER FENCE POSTS, 8'-0" LONG	55 EA	30.00	1,650.00
0122	3533000000-E	866	CHAIN LINK FENCE, *** FABRIC (60")	2,435 LF	5.40	13,149.00
0123	3536000000-E	866	CHAIN LINK FENCE, 48" FABRIC	5,200 LF	4.65	24,180.00
0124	3539000000-E	866	METAL LINE POSTS FOR *** CHAIN LINK FENCE (60")	202 EA	38.00	7,676.00
0125	3539000000-E	866	METAL LINE POSTS FOR *** CHAIN LINK FENCE (84")	240 EA	88.00	21,120.00

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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0126	3542000000-E	866	METAL LINE POSTS FOR 48" CHAIN LINK FENCE	438 EA	34.00	14,892.00
0127	3545000000-E	866	METAL TERMINAL POSTS FOR *** CHAIN LINK FENCE (60")	18 EA	105.00	1,890.00
0128	3545000000-E	866	METAL TERMINAL POSTS FOR *** CHAIN LINK FENCE (84")	20 EA	210.00	4,200.00
0129	3548000000-E	866	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE	27 EA	95.00	2,565.00
0130	3557000000-E	866	ADDITIONAL BARBED WIRE	500 LF	0.50	250.00
0131	3564000000-E	866	SINGLE GATES, *** HIGH, *** WIDE, *** OPENING (84" HIGH, 20' WIDE, 20' OPEN)	1 EA	2,800.00	2,800.00
0132	3565000000-E	866	DOUBLE GATES, *** HIGH, *** WIDE, *** OPENING (84" HIGH, 14' WIDE, 28' OPEN)	1 EA	3,600.00	3,600.00
0133	3566000000-E	867	WOVEN WIRE FENCE RESET	50 LF	13.00	650.00
0134	3572000000-E	867	CHAIN LINK FENCE RESET	890 LF	21.00	18,690.00
0135	3575000000-E	SP	GENERIC FENCING ITEM 84" CHAIN LINK SECURITY FENCE	2,900 LF	19.50	56,550.00
0136	3628000000-E	876	RIP RAP, CLASS I	590 TON	44.00	25,960.00
0137	3649000000-E	876	RIP RAP, CLASS B	250 TON	41.50	10,375.00
0138	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	5,865 SY	2.00	11,730.00
0139	3883000000-N	SP	GENERIC TRACKWORK ITEM BRAGG BLVD CROSSING SIGNAL INSTALLATION	Lump Sum LS	271,000.00	271,000.00
0140	3883000000-N	SP	GENERIC TRACKWORK ITEM BRAGG BLVD CROSSING SURFACE INSTALLATION	Lump Sum LS	99,981.00	99,981.00
0141	3883000000-N	SP	GENERIC TRACKWORK ITEM RANDOLPH STREET CROSSING SIGNAL INSTALLATION	Lump Sum LS	310,000.00	310,000.00

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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0142	3883000000-N	SP	GENERIC TRACKWORK ITEM RANDOLPH STREET CROSSING SURFACE INSTALLATION	Lump Sum LS	166,640.00	166,640.00
0143	4048000000-E	902	REINFORCED CONCRETE SIGN FOUN- DATIONS	10 CY	500.00	5,000.00
0144	4054000000-E	902	PLAIN CONCRETE SIGN FOUNDA- TIONS	1 CY	500.00	500.00
0145	4057000000-E	SP	OVERHEAD FOOTING	195 CY	1,400.00	273,000.00
0146	4060000000-E	903	SUPPORTS, BREAKAWAY STEEL BEAM	9,765 LB	4.00	39,060.00
0147	4066000000-E	903	SUPPORTS, SIMPLE STEEL BEAM	183 LB	4.00	732.00
0148	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	2,687 LF	5.00	13,435.00
0149	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (102+50 -L-)	Lump Sum LS	22,000.00	22,000.00
0150	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (120+00 -L-)	Lump Sum LS	20,000.00	20,000.00
0151	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (132+00 -L-)	Lump Sum LS	25,000.00	25,000.00
0152	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (149+50 -L-)	Lump Sum LS	75,000.00	75,000.00
0153	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (15+00 -Y7-)	Lump Sum LS	30,000.00	30,000.00
0154	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (166+00 -L-)	Lump Sum LS	19,000.00	19,000.00
0155	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (182+00 -L-)	Lump Sum LS	65,000.00	65,000.00
0156	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ***** (19+50 -Y3-)	Lump Sum LS	96,000.00	96,000.00

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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0157	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ***** (191+45 -L-)	Lump Sum LS	45,000.00	45,000.00
0158	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ***** (22+00 -Y4-)	Lump Sum LS	55,000.00	55,000.00
0159	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ***** (23+50 -Y3RPA-)	Lump Sum LS	40,000.00	40,000.00
0160	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ***** (26+00 -Y3-)	Lump Sum LS	92,000.00	92,000.00
0161	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ***** (93+00 -L-)	Lump Sum LS	21,000.00	21,000.00
0162	4096000000-N	904	SIGN ERECTION, TYPE D	5 EA	115.00	575.00
0163	4102000000-N	904	SIGN ERECTION, TYPE E	155 EA	55.00	8,525.00
0164	4108000000-N	904	SIGN ERECTION, TYPE F	6 EA	125.00	750.00
0165	4109000000-N	904	SIGN ERECTION, TYPE *** (OVERHEAD) (A)	1 EA	3,000.00	3,000.00
0166	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)	10 EA	500.00	5,000.00
0167	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)	1 EA	500.00	500.00
0168	4115000000-N	904	SIGN ERECTION, OVERLAY (OVERHEAD)	4 EA	500.00	2,000.00
0169	4116000000-N	904	SIGN ERECTION, OVERLAY (GROUND MOUNTED)	1 EA	200.00	200.00
0170	4116100000-N	904	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (A)	1 EA	500.00	500.00
0171	4138000000-N	907	DISPOSAL OF SUPPORT, STEEL BEAM	2 EA	100.00	200.00

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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0172	4149000000-N	907	DISPOSAL OF SIGN SYSTEM, OVER-HEAD	2 EA	7,000.00	14,000.00
0173	4152000000-N	907	DISPOSAL OF SIGN SYSTEM, STEEL BEAM	3 EA	100.00	300.00
0174	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	137 EA	1.00	137.00
0175	4234000000-N	907	DISPOSAL OF SIGN, A OR B (OVERHEAD)	1 EA	200.00	200.00
0176	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	1,130 SF	3.45	3,898.50
0177	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	730 SF	21.00	15,330.00
0178	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	430 SF	9.00	3,870.00
0179	4415000000-N	1115	FLASHING ARROW BOARD	4 EA	1,500.00	6,000.00
0180	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	5 EA	4,000.00	20,000.00
0181	4422000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)	40 DAY	50.00	2,000.00
0182	4430000000-N	1130	DRUMS	500 EA	25.00	12,500.00
0183	4435000000-N	1135	CONES	100 EA	19.00	1,900.00
0184	4445000000-E	1145	BARRICADES (TYPE III)	612 LF	23.00	14,076.00
0185	4455000000-N	1150	FLAGGER	100 DAY	180.00	18,000.00
0186	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	5 EA	6,000.00	30,000.00
0187	4470000000-N	1160	RESET TEMPORARY CRASH CUSHION	8 EA	2,500.00	20,000.00
0188	4480000000-N	1165	TMA	4 EA	1,000.00	4,000.00
0189	4485000000-E	1170	PORTABLE CONCRETE BARRIER	5,300 LF	22.00	116,600.00
0190	4500000000-E	1170	RESET PORTABLE CONCRETE BARRIER	8,300 LF	3.50	29,050.00

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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0191	4507000000-E	1170	WATER FILLED BARRIER	1,720 LF	48.00	82,560.00
0192	4508000000-E	1170	RESET WATER FILLED BARRIER	450 LF	2.50	1,125.00
0193	4510000000-N	SP	LAW ENFORCEMENT	100 HR	30.00	3,000.00
0194	4516000000-N	1180	SKINNY DRUM	300 EA	15.00	4,500.00
0195	4650000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	2,142 EA	7.50	16,065.00
0196	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	22,420 LF	0.51	11,434.20
0197	4686000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)	19,133 LF	0.59	11,288.47
0198	4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	26,377 LF	0.78	20,574.06
0199	4690000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS)	17,537 LF	0.89	15,607.93
0200	4695000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	2,377 LF	1.55	3,684.35
0201	4697000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)	1,122 LF	1.75	1,963.50
0202	4700000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	3,458 LF	2.10	7,261.80
0203	4702000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 120 MILS)	1,676 LF	2.25	3,771.00
0204	4705000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (16", 120 MILS)	374 LF	7.50	2,805.00
0205	4710000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)	1,204 LF	6.00	7,224.00
0206	4721000000-E	1205	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)	90 EA	75.00	6,750.00
0207	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	71 EA	90.00	6,390.00

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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0208	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (II)	1,308 LF	3.21	4,198.68
0209	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)	790 LF	4.50	3,555.00
0210	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	43,050 LF	0.29	12,484.50
0211	4820000000-E	1205	PAINT PAVEMENT MARKING LINES (8")	900 LF	0.60	540.00
0212	4830000000-E	1205	PAINT PAVEMENT MARKING LINES (16")	224 LF	5.00	1,120.00
0213	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	360 LF	3.00	1,080.00
0214	4840000000-N	1205	PAINT PAVEMENT MARKING CHARACTER	34 EA	30.00	1,020.00
0215	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	26 EA	30.00	780.00
0216	4855000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (6")	5,271 LF	0.64	3,373.44
0217	4875000000-N	1205	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	71 EA	35.00	2,485.00
0218	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	7 EA	7.50	52.50
0219	4905000000-N	1253	SNOWPLOWABLE PAVEMENT MARKERS	1,640 EA	21.00	34,440.00
0220	5005000000-E	1401	80' HIGH MOUNT STANDARD	2 EA	16,395.00	32,790.00
0221	5010000000-E	1401	100' HIGH MOUNT STANDARD	3 EA	18,220.00	54,660.00
0222	5020000000-N	1401	PORTABLE DRIVE UNIT	1 EA	4,020.00	4,020.00
0223	5025000000-E	SP	HIGH MOUNT FOUNDATIONS	33 CY	675.00	22,275.00
0224	5030000000-N	1403	HIGH MOUNT LUMINAIRES ***** (400W HPS)	16 EA	745.00	11,920.00

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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0225	5030000000-N	1403	HIGH MOUNT LUMINAIRES ***** (750W HPS)	18 EA	900.00	16,200.00
0226	5120000000-N	1407	ELECTRIC SERVICE POLE **** ***** (30' CLASS 4)	1 EA	780.00	780.00
0227	5125000000-E	1407	ELECTRIC SERVICE LATERAL ***** (3,#1/0 USE)	50 LF	27.75	1,387.50
0228	5145000000-N	1408	LIGHT CONTROL EQUIPMENT, TYPE RW ***** (SSPM)	1 EA	11,320.00	11,320.00
0229	5155000000-E	1409	ELECTRICAL DUCT, TYPE BD, SIZE ***** (2")	150 LF	5.05	757.50
0230	5155000000-E	1409	ELECTRICAL DUCT, TYPE BD, SIZE ***** (3")	110 LF	5.25	577.50
0231	5160000000-E	1409	ELECTRICAL DUCT, TYPE JA, SIZE ***** (3")	40 LF	19.35	774.00
0232	5160000000-E	1409	ELECTRICAL DUCT, TYPE JA, SIZE ***** (4")	130 LF	19.35	2,515.50
0233	5160000000-E	1409	ELECTRICAL DUCT, TYPE JA, SIZE ***** (6")	60 LF	25.60	1,536.00
0234	5170000000-E	1410	** #8 W/G FEEDER CIRCUIT (2)	120 LF	3.60	432.00
0235	5175000000-E	1410	** #6 W/G FEEDER CIRCUIT (2)	310 LF	4.30	1,333.00
0236	5180000000-E	1410	** #4 W/G FEEDER CIRCUIT (2)	240 LF	5.00	1,200.00
0237	5185000000-E	1410	** #2 W/G FEEDER CIRCUIT (2)	310 LF	7.70	2,387.00
0238	5205000000-E	1410	** #8 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1-1/2")	520 LF	5.10	2,652.00

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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0239	5210000000-E	1410	** #6 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1-1/2")	900 LF	6.35	5,715.00
0240	5215000000-E	1410	** #4 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1-1/2")	3,900 LF	7.75	30,225.00
0241	5220000000-E	1410	** #2 W/G FEEDER CIRCUIT IN ***** CONDUIT (2, 1-1/2")	1,760 LF	9.30	16,368.00
0242	5240000000-N	1411	ELECTRICAL JUNCTION BOXES ***** (PC18)	10 EA	435.00	4,350.00
0243	5240000000-N	1411	ELECTRICAL JUNCTION BOXES ***** (PC30)	4 EA	640.00	2,560.00
0244	5255000000-N	1413	PORTABLE LIGHTING	Lump Sum LS	110,000.00	110,000.00
0245	5325200000-E	1510	2" WATER LINE	274 LF	10.00	2,740.00
0246	5325400000-E	1510	4" WATER LINE	150 LF	40.00	6,000.00
0247	5325600000-E	1510	6" WATER LINE	3,043 LF	40.00	121,720.00
0248	5325800000-E	1510	8" WATER LINE	345 LF	70.00	24,150.00
0249	5326200000-E	1510	12" WATER LINE	267 LF	115.00	30,705.00
0250	5326600000-E	1510	16" WATER LINE	841 LF	120.00	100,920.00
0251	5536000000-E	1515	2" VALVE	1 EA	600.00	600.00
0252	5538000000-E	1515	4" VALVE	1 EA	700.00	700.00
0253	5540000000-E	1515	6" VALVE	9 EA	750.00	6,750.00
0254	5546000000-E	1515	8" VALVE	1 EA	1,050.00	1,050.00
0255	5558000000-E	1515	12" VALVE	1 EA	1,875.00	1,875.00
0256	5648000000-N	1515	RELOCATE WATER METER	35 EA	695.00	24,325.00

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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0257	5649000000-N	1515	RECONNECT WATER METER	7 EA	680.00	4,760.00
0258	5672000000-N	1515	RELOCATE FIRE HYDRANT	9 EA	3,500.00	31,500.00
0259	5691400000-E	1520	10" SANITARY GRAVITY SEWER	779 LF	65.00	50,635.00
0260	5709100000-E	1520	2" FORCE MAIN SEWER	510 LF	12.00	6,120.00
0261	5775000000-E	1525	4' DIA UTILITY MANHOLE	10 EA	1,700.00	17,000.00
0262	5781000000-E	1525	UTILITY MANHOLE WALL, 4' DIA	36 LF	175.00	6,300.00
0263	5802000000-E	1530	ABANDON 10" UTILITY PIPE	947 LF	7.00	6,629.00
0264	5804000000-E	1530	ABANDON 12" UTILITY PIPE	254 LF	8.00	2,032.00
0265	5810000000-E	1530	ABANDON 16" UTILITY PIPE	7,150 LF	12.00	85,800.00
0266	5815000000-N	1530	REMOVE WATER METER	6 EA	150.00	900.00
0267	5816000000-N	1530	ABANDON UTILITY MANHOLE	4 EA	900.00	3,600.00
0268	5882000000-N	SP	GENERIC UTILITY ITEM RELOCATE VALVE VAULT	1 EA	5,000.00	5,000.00
0269	5882000000-N	SP	GENERIC UTILITY ITEM REMOVE UTILITY VAULT	2 EA	1,000.00	2,000.00
0270	6000000000-E	1605	TEMPORARY SILT FENCE	52,100 LF	1.58	82,318.00
0271	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	3,370 TON	28.00	94,360.00
0272	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	9,085 TON	41.50	377,027.50
0273	6012000000-E	1610	SEDIMENT CONTROL STONE	8,060 TON	37.00	298,220.00
0274	6015000000-E	1615	TEMPORARY MULCHING	85 ACR	400.00	34,000.00
0275	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	2,150 LB	3.00	6,450.00
0276	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEED- ING	11.25 TON	1,200.00	13,500.00

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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0277	6024000000-E	1622	TEMPORARY SLOPE DRAINS	7,500 LF	0.01	75.00
0278	6029000000-E	SP	SAFETY FENCE	3,000 LF	1.58	4,740.00
0279	6030000000-E	1630	SILT EXCAVATION	10,750 CY	0.01	107.50
0280	6036000000-E	1631	MATTING FOR EROSION CONTROL	69,000 SY	1.20	82,800.00
0281	6037000000-E	SP	COIR FIBER MAT	1,650 SY	5.70	9,405.00
0282	6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	6,210 SY	6.10	37,881.00
0283	6042000000-E	1632	1/4" HARDWARE CLOTH	15,350 LF	3.10	47,585.00
0284	6070000000-N	1639	SPECIAL STILLING BASINS	8 EA	100.00	800.00
0285	6071010000-E	SP	WATTLE	3,900 LF	3.00	11,700.00
0286	6071020000-E	SP	POLYACRYLAMIDE (PAM)	2,425 LB	0.01	24.25
0287	6071030000-E	1640	COIR FIBER BAFFLE	3,500 LF	4.15	14,525.00
0288	6071050000-E	SP	*** SKIMMER (1-1/2")	18 EA	700.00	12,600.00
0289	6084000000-E	1660	SEEDING & MULCHING	75 ACR	1,820.00	136,500.00
0290	6087000000-E	1660	MOWING	35 ACR	75.00	2,625.00
0291	6090000000-E	1661	SEED FOR REPAIR SEEDING	900 LB	11.00	9,900.00
0292	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	3.75 TON	1,200.00	4,500.00
0293	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	2,250 LB	1.45	3,262.50
0294	6108000000-E	1665	FERTILIZER TOPDRESSING	66.75 TON	790.00	52,732.50
0295	6111000000-E	SP	IMPERVIOUS DIKE	100 LF	50.00	5,000.00
0296	6114500000-N	1667	SPECIALIZED HAND MOWING	100 MHR	52.00	5,200.00
0297	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	175 EA	200.00	35,000.00

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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0298	6123000000-E	1670	REFORESTATION	1 ACR	1,800.00	1,800.00
0299	6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION DEVICE	75 EA	55.00	4,125.00
0300	7048500000-E	1705	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	4 EA	895.00	3,580.00
0301	7060000000-E	1705	SIGNAL CABLE	10,400 LF	2.45	25,480.00
0302	7120000000-E	1705	VEHICLE SIGNAL HEAD (12", 3 SECTION)	71 EA	725.00	51,475.00
0303	7132000000-E	1705	VEHICLE SIGNAL HEAD (12", 4 SECTION)	7 EA	875.00	6,125.00
0304	7144000000-E	1705	VEHICLE SIGNAL HEAD (12", 5 SECTION)	2 EA	1,280.00	2,560.00
0305	7204000000-N	1705	LOUVER	2 EA	250.00	500.00
0306	7216000000-N	1705	MODIFY EXISTING VEHICLE SIGNAL HEAD	3 EA	400.00	1,200.00
0307	7252000000-E	1710	MESSENGER CABLE (1/4")	250 LF	2.50	625.00
0308	7264000000-E	1710	MESSENGER CABLE (3/8")	3,570 LF	2.90	10,353.00
0309	7288000000-E	1715	PAVED TRENCHING (***** (1,2"))	60 LF	30.00	1,800.00
0310	7300000000-E	1715	UNPAVED TRENCHING (***** (1,2"))	1,280 LF	7.75	9,920.00
0311	7300100000-E	1715	UNPAVED TRENCHING FOR TEMP- ORARY LEAD-IN	590 LF	4.50	2,655.00
0312	7301000000-E	1715	DIRECTIONAL DRILL (***** (1,2"))	400 LF	18.00	7,200.00
0313	7324000000-N	1716	JUNCTION BOX (STANDARD SIZE)	16 EA	220.00	3,520.00
0314	7348000000-N	1716	JUNCTION BOX (OVER-SIZED, HEA- VY DUTY)	6 EA	500.00	3,000.00
0315	7360000000-N	1720	WOOD POLE	15 EA	800.00	12,000.00

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0316	7372000000-N	1721	GUY ASSEMBLY	26 EA	240.00	6,240.00
0317	7408000000-E	1722	1" RISER WITH WEATHERHEAD	6 EA	300.00	1,800.00
0318	7420000000-E	1722	2" RISER WITH WEATHERHEAD	26 EA	365.00	9,490.00
0319	7444000000-E	1725	INDUCTIVE LOOP SAWCUT	10,620 LF	4.85	51,507.00
0320	7456000000-E	1726	LEAD-IN CABLE (***** (14-2)	21,610 LF	1.45	31,334.50
0321	7528000000-E	1730	DROP CABLE	400 LF	1.85	740.00
0322	7541000000-N	1731	MODIFY SPLICE ENCLOSURE	1 EA	1,850.00	1,850.00
0323	7575142000-N	1736	900MHZ RADIO	3 EA	3,250.00	9,750.00
0324	7576000000-N	SP	METAL STRAIN SIGNAL POLE	12 EA	7,250.00	87,000.00
0325	7613000000-N	SP	SOIL TEST	12 EA	750.00	9,000.00
0326	7614100000-E	SP	DRILLED PIER FOUNDATION	72 CY	675.00	48,600.00
0327	7636000000-N	1745	SIGN FOR SIGNALS	12 EA	240.00	2,880.00
0328	7642100000-N	1743	TYPE I POST WITH FOUNDATION	1 EA	1,300.00	1,300.00
0329	7684000000-N	1750	SIGNAL CABINET FOUNDATION	4 EA	800.00	3,200.00
0330	7756000000-N	1751	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)	4 EA	11,325.00	45,300.00
0331	7780000000-N	1751	DETECTOR CARD (TYPE 2070L)	31 EA	100.00	3,100.00
0332	7948000000-N	1757	TRAFFIC SIGNAL REMOVAL	1 EA	500.00	500.00
0333	7960000000-N	SP	METAL POLE FOUNDATION REMOVAL	4 EA	2,000.00	8,000.00
0334	7972000000-N	SP	METAL POLE REMOVAL	4 EA	950.00	3,800.00
0335	7980000000-N	SP	GENERIC SIGNAL ITEM 900MHZ WIRELESS REPEATER STANDALONE RADIO SYSTEM	1 EA	6,904.00	6,904.00

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0336	7980000000-N	SP	GENERIC SIGNAL ITEM CCTV ASSEMBLY	1 EA	5,875.00	5,875.00
0337	7980000000-N	SP	GENERIC SIGNAL ITEM VIDEO ENCODER TRANSMITTER	1 EA	1,250.00	1,250.00
0338	7985000000-N	SP	GENERIC SIGNAL ITEM CENTRAL SOFTWARE MODIFICATIONS	Lump Sum LS	850.00	850.00
0369	0248000000-N	SP	GENERIC GRADING ITEM REMOVAL & DISPOSAL OF EXISTING MEDIAN BARRIER	Lump Sum LS	37,000.00	37,000.00

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0339	8802014000-E	SP	SOLDIER PILE RETAINING WALLS	830 SF	90.50	75,115.00
0340	8839000000-E	SP	GENERIC RETAINING WALL ITEM CONCRETE BARRIER RAIL WITH MOMENT SLAB	275 LF	225.00	61,875.00
0341	8847000000-E	SP	GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 1	10,450 SF	49.20	514,140.00
0342	8847000000-E	SP	GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 2	6,470 SF	49.20	318,324.00
0343	8847000000-E	SP	GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 3	12,500 SF	49.20	615,000.00
0344	8847000000-E	SP	GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 4	4,420 SF	49.20	217,464.00
0345	8847000000-E	SP	GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 5	4,160 SF	49.20	204,672.00
0346	8847000000-E	SP	GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 7	1,080 SF	49.20	53,136.00
0347	8847000000-E	SP	GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 8	1,060 SF	49.20	52,152.00

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0348	8112730000-N	450	PDA TESTING	2 EA	2,475.00	4,950.00
0349	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	24,355 SF	19.62	477,845.10
0350	8161000000-E	420	GROOVING BRIDGE FLOORS	24,889 SF	0.47	11,697.83
0351	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	229 CY	683.61	156,546.69
0352	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (132+79.28 -L-)	Lump Sum LS	59,000.00	59,000.00
0353	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (172+95.63 -L-)	Lump Sum LS	40,200.00	40,200.00
0354	8217000000-E	425	REINFORCING STEEL (BRIDGE)	35,335 LB	0.92	32,508.20
0355	8265000000-E	430	54" PRESTRESSED CONCRETE GIR- DERS	1,007.88 LF	236.50	238,363.62
0356	8280000000-E	440	APPROX LBS STRUCTURAL STEEL	1,083,400 LS	1,444,200.00	1,444,200.00
0357	8364000000-E	450	HP12X53 STEEL PILES	3,595 LF	38.39	138,012.05
0358	8385200000-E	450	PP ** X **** GALVANIZED STEEL PILES (24 X 0.50)	450 LF	189.66	85,347.00
0359	8392000000-N	450	PIPE PILE PLATES	6 EA	385.00	2,310.00
0360	8393000000-N	450	PILE REDRIVES	41 EA	1.00	41.00
0361	8482000000-E	460	THREE BAR METAL RAIL	323.7 LF	175.63	56,851.43
0362	8503000000-E	460	CONCRETE BARRIER RAIL	472.77 LF	60.32	28,517.49
0363	8524000000-E	SP	*** CHAIN LINK FENCE (104")	333.7 LF	116.26	38,795.96
0364	8531000000-E	462	4" SLOPE PROTECTION	1,646 SY	75.10	123,614.60
0365	8650000000-N	SP	POT BEARINGS	Lump Sum LS	50,875.00	50,875.00
0366	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum LS	8,175.00	8,175.00

Contract Item Sheets For C202826

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0367	8692000000-N	SP	FOAM JOINT SEALS	Lump Sum LS	20,875.00	20,875.00
0368	8706000000-N	SP	EXPANSION JOINT SEALS	Lump Sum LS	100,650.00	100,650.00

TOTAL AMOUNT OF BID FOR ENTIRE PROJECT

\$32,304,260.59

1351/Oct26/Q2784881.18/D1617269696000/E369



Contract No. G202826
County Cumberland

Rev. 5-19-11

**EXECUTION OF CONTRACT
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION**

CORPORATION

The Contractor being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this Contract, that the Contractor has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Contractor intends to do the work with its own bonafide employees or subcontractors and did not bid for the benefit of another contractor.

By submitting this Execution of Contract, Non-Collusion Affidavit and Debarment Certification, the Contractor is certifying his status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

Barnhill Contracting Company

Full name of Corporation

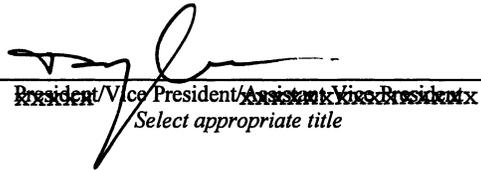
P. O. Box 1529, Tarboro, North Carolina, 27886

Address as Prequalified

Attest


Secretary/Assistant Secretary
~~President/Vice President/Assistant Vice President~~
Select appropriate title

By


~~President/Vice President/Assistant Vice President~~
Select appropriate title

Sophia B. Hardy

Print or type Signer's name

Drew M. Johnson, P. E.

Print or type Signer's name

CORPORATE SEAL

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

5 day of November 2012.


Signature of Notary Public

Judith Sessoms

NOTARY SEAL

of Edgecombe County

State of North Carolina

My Commission Expires: 8-9-2015

DEBARMENT CERTIFICATION

Conditions for certification:

1. The prequalified bidder shall provide immediate written notice to the Department if at any time the bidder learns that his certification was erroneous when he submitted his debarment certification or explanation filed with the Department, or has become erroneous because of changed circumstances.
2. The terms *covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded*, as used in this provision, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. A copy of the Federal Rules requiring this certification and detailing the definitions and coverages may be obtained from the Contract Officer of the Department.
3. The prequalified bidder agrees by submitting this form, that he will not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in NCDOT contracts, unless authorized by the Department.
4. For Federal Aid projects, the prequalified bidder further agrees that by submitting this form he will include the Federal-Aid Provision titled *Required Contract Provisions Federal-Aid Construction Contract (Form FHWA PR 1273)* provided by the Department, without subsequent modification, in all lower tier covered transactions.
5. The prequalified bidder may rely upon a certification of a participant in a lower tier covered transaction that he is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless he knows that the certification is erroneous. The bidder may decide the method and frequency by which he will determine the eligibility of his subcontractors.
6. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this provision. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
7. Except as authorized in paragraph 6 herein, the Department may terminate any contract if the bidder knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available by the Federal Government.

DEBARMENT CERTIFICATION

The prequalified bidder certifies to the best of his knowledge and belief, that he and his principals:

- a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;
- c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and
- d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- e. Will submit a revised Debarment Certification immediately if his status changes and will show in his bid proposal an explanation for the change in status.

If the prequalified bidder cannot certify that he is not debarred, he shall provide an explanation with this submittal. An explanation will not necessarily result in denial of participation in a contract.

Failure to submit a non-collusion affidavit and debarment certification will result in the prequalified bidder's bid being considered non-responsive.

Check here if an explanation is attached to this certification.

Contract No. C202826

County (ies): Cumberland

ACCEPTED BY THE
DEPARTMENT OF TRANSPORTATION

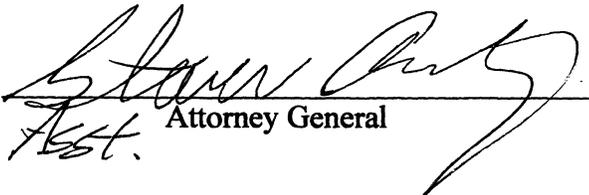


Contract Officer



Date

Execution of Contract and Bonds
Approved as to Form:



Asst. Attorney General

Contract No.
County

C202826
Cumberland

Rev 2-1-10

105820453

CONTRACT PAYMENT BOND

Date of Payment Bond Execution 10/26/2012

Name of Principal Contractor Barnhill Contracting Company

Name of Surety: Travelers Casualty And Surety Company of America

Name of Contracting Body: North Carolina Department of Transportation
Raleigh, North Carolina

Amount of Bond: THIRTY-TWO MILLION THREE HUNDRED FOUR THOUSAND TWO HUNDRED SIXTY AND 59/100THS

Contract ID No.: C202826

County Name: Cumberland

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL CONTRACTOR (hereafter, PRINCIPAL) and SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Contract No.
County

C202826
Cumberland

Rev 2-1-10

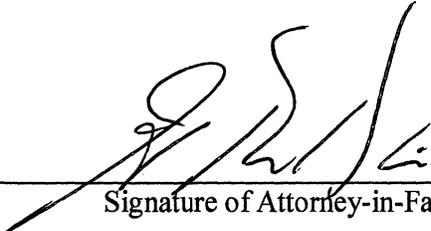
CONTRACT PAYMENT BOND

Affix Seal of Surety Company

Travelers Casualty And Surety Company of America
Print or type Surety Company Name

By **H. Thomas Dawkins**

Print, stamp or type name of Attorney-in-Fact


Signature of Attorney-in-Fact


Signature of Witness

Jenny Peterson

Print or type Signer's name

2820 Selwyn Avenue, Suite 375
Charlotte, NC 28209

Address of Attorney-in-Fact

Contract No.
County

C202826
Cumberland

Rev 2-1-10

CONTRACT PAYMENT BOND

CORPORATION

SIGNATURE OF CONTRACTOR (Principal)

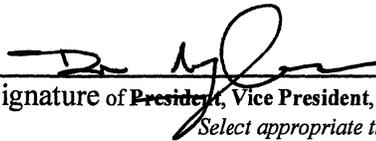
Barnhill Contracting Company

Full name of Corporation

P.O. Box 1529, Tarboro, NC 27886

Address as prequalified

By



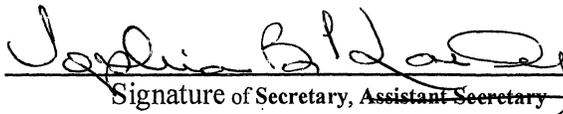
Signature of ~~President~~, Vice President, Assistant ~~Vice President~~
Select appropriate title

Drew M. Johnson

Print or type Signer's name

Affix Corporate Seal

Attest



Signature of Secretary, Assistant Secretary
Select appropriate title

Sophia B Hardy

Print or type Signer's name

Contract No.
County

C202826
Cumberland

Rev 2-1-10

105820453

CONTRACT PERFORMANCE BOND

Date of Performance Bond Execution: 10/26/2012

Name of Principal Contractor: Barnhill Contracting Company

Name of Surety: Travelers Casualty And Surety Company of America

Name of Contracting Body: North Carolina Department of Transportation
Raleigh, North Carolina

Amount of Bond: THIRTY-TWO MILLION THREE HUNDRED FOUR THOUSAND TWO HUNDRED SIXTY AND 59/100THS

Contract ID No.: C202826

County Name: Cumberland

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL CONTRACTOR (hereafter, PRINCIPAL) and SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Contract No.
County

C202826
Cumberland

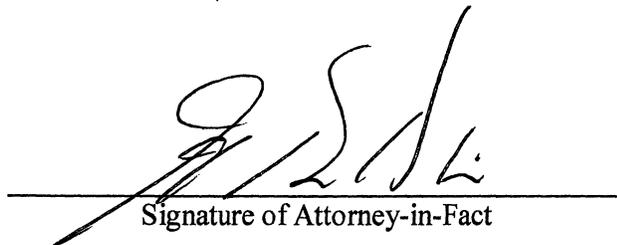
Rev 2-1-10

CONTRACT PERFORMANCE BOND

Affix Seal of Surety Company

Travelers Casualty And Surety Company of America
Print or type Surety Company Name

By **H. Thomas Dawkins**
Print, stamp or type name of Attorney-in-Fact


Signature of Attorney-in-Fact


Signature of Witness

Jenny Peterson
Print or type Signer's name

2820 Selwyn Avenue, Suite 375
Charlotte, NC 28209
Address of Attorney-in-Fact

Contract No.
County

C202826
Cumberland

Rev 2-1-10

CONTRACT PERFORMANCE BOND

CORPORATION

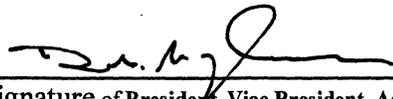
SIGNATURE OF CONTRACTOR (Principal)

Barnhill Contracting Company

Full name of Corporation

P.O. Box 1529, Tarboro, NC 27886

Address as prequalified

By 
Signature of ~~President~~, Vice President, Assistant Vice President
Select appropriate title

Drew M. Johnson
Print or type Signer's name

Affix Corporate Seal

Attest 
Signature of Secretary, Assistant Secretary
Select appropriate title

Sophia B Hardy
Print or type Signer's name



POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 223862

Certificate No. 004933813

KNOW ALL MEN BY THESE PRESENTS: That St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company and St. Paul Mercury Insurance Company are corporations duly organized under the laws of the State of Minnesota, that Farmington Casualty Company, Travelers Casualty and Surety Company, and Travelers Casualty and Surety Company of America are corporations duly organized under the laws of the State of Connecticut, that United States Fidelity and Guaranty Company is a corporation duly organized under the laws of the State of Maryland, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

H. Thomas Dawkins, and Hunter T. Dawkins

of the City of Charlotte, State of North Carolina, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 22nd day of June, 2012

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss.

By: [Signature]
George W. Thompson, Senior Vice President

On this the 22nd day of June, 2012, before me personally appeared George W. Thompson, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal. My Commission expires the 30th day of June, 2016.



[Signature]
Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 26th day of October, 2012

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

Kevin E. Hughes
Kevin E. Hughes, Assistant Secretary



To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.