STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 6

PROPOSAL

DATE AND TIME OF BID OPENING:	**JULY 18, 2018 AT 2:00 PM**
CONTRACT ID:	**DF00222**
TIP NO.:	**W-5601FV**
FEDERAL AID NO.:	**HSIP-0027(016)**
WBS ELEMENT NO.:	**50138.3.179**
ROUTE NO.:	**NC 27**
LOCATION:	**NC 27 @ SR 1116 (DOCS ROAD)**
COUNTY:	**HARNETT**
LENGTH OF PROJECT:	**0.214 MILES**
TYPE OF WORK:	**GRADING, DRAINAGE, WIDENING, PAVING & PVT. MKGS.**

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. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

THIS IS A ROADWAY PROPOSAL. **5% BID BOND OR BID DEPOSIT REQUIRED.**

NC DEPARTMENT OF TRANSPORTATION,

RALEIGH, NORTH CAROLINA

The Bidder has carefully examined the location of the proposed work; 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 Department 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 2018 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 this contract, 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 2018* 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 or Division Engineer.

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.

TABLE OF CONTENTS

INSTRUCTIONS TO BIDDERS

PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE PREPARING AND SUBMITTING YOUR BID.

All bids shall be prepared and submitted in accordance with the following requirements. Failure to comply with any requirement may cause the bid to be considered irregular and may be grounds for rejection of the bid.

For preparing and submitting the bid electronically using the on-line system Bid Express®, refer to Article 102-8(B) of the *2018 Standard Specifications.*

Bidders that bid electronically on Raleigh Central-Let projects will need a separate Digital Signature from Bid Express® for Division Contracts.

ELECTRONIC ON-LINE BID THRU BID EXPRESS:

1. Download entire proposal from Connect NCDOT website. Download EBS file from Bid Express website.
2. Prepare and submit EBS file using Expedite software.
3. Expedite software necessary for electronic bid preparation may be downloaded from the Connect NCDOT website at: https://connect.ncdot.gov/letting/Pages/EBS-Information.aspx or from Bid Express.

PROJECT SPECIAL PROVISIONS

GENERAL

DIVISION LET CONTRACT PREQUALIFICATION:

(07-01-14)(12-1-16) SPD 01-410

Any firm that wishes to bid as a prime contractor shall be prequalified as a Bidder or PO Prime Contractor prior to submitting a bid. Information regarding prequalification can be found at: https://connect.ncdot.gov/business/Prequal/Pages/default.aspx.

Prior to performing the work, the prime contractor and/or subcontractor(s) shall be prequalified in the work code(s) which are identified as work items in the prime contractor's construction progress schedule that they will complete themselves. Any contractor identified as working outside their expertise may be considered in default of contract.

BOND REQUIREMENTS:

(06-01-16) 102-8, 102-10 SPD 01-420A

A Bid Bond is required in accordance with Article 102-10 of the *2018 Standard Specifications for Roads and Structures.*

Contract Payment and Performance Bonds are required in accordance with Article 103-7 of the *2018 Standard Specifications for Roads and Structures*.

CONTRACT TIME AND LIQUIDATED DAMAGES:

(7-1-95) (Rev. 12-18-07) 108 SP1 G10 A

The date of availability for this contract is **September 10, 2018**.

The completion date for this contract is **November 15, 2019.** *includes an *additional 6 months beyond construction completion date for Permanent Vegetation Establishment* *

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.

INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES:

(7-1-95) (Rev. 2-21-12) 108 SP1 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 **September 10, 2018**.

The completion date for this intermediate contract time is **May 15, 2019**. ***construction substantial completion date***

The liquidated damages for this intermediate contract time are **Six Hundred Dollars ($ 600.00)** 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 SP1 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 **any road** during the following time restrictions:

DAY AND TIME RESTRICTIONS

Monday thru Friday
6:00 A.M. thru 8:00 A.M
4:30 P.M. thru 6:30 P.M.

In addition, the Contractor shall not close or narrow a lane of traffic on **any road**, 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 **6:00 A.M.** December 31st and **9:00 P.M**. January 2nd. If New Year's Day is on a Friday, Saturday, Sunday or Monday, then until **9:00 P.M.** the following Tuesday.

3. For **Easter**, between the hours of **6:00 A.M.** Thursday and **9:00 P.M.** Monday.

4. For **Memorial Day**, between the hours of **6:00 A.M.** Friday and **9:00 P.M.** Tuesday.

5. For **Independence Day**, between the hours of **6:00 A.M.** the day before Independence Day and **9:00 P.M.** the day after Independence Day.

   If **Independence Day** is on a Friday, Saturday, Sunday or Monday, then between the hours of **6:00 A.M.** the Thursday before Independence Day and **9:00 P.M.** the Tuesday after Independence Day.

6. For **Labor Day**, between the hours of **6:00 A.M.** Friday and **9:00 P.M.** Tuesday.

7. For **Thanksgiving Day**, between the hours of **6:00 A.M.** Tuesday and **9:00 P.M.** Monday.

8. For **Christmas**, between the hours of **6:00 A.M.** the Friday before the week of Christmas Day and **9:00 P.M.** the following Tuesday after the week of Christmas Day.

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 Fifty Dollars ($ 250.00)** per hour.

PERMANENT VEGETATION ESTABLISHMENT:

(2-16-12) (Rev. 10-15-13) 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 permanent vegetation on all erodible areas 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 *2018 Standard Specifications*. All work required for initial vegetation planting shall be performed as a part of the work necessary for the completion and acceptance of the Intermediate Contract Time (ICT). Between the time of ICT and Final Project acceptance, or otherwise referred to as the vegetation establishment period, the Department will be responsible for preparing the required National Pollutant Discharge Elimination System (NPDES) inspection records.

Once the Engineer has determined that the permanent vegetation establishment requirement has been achieved at an 80% vegetation density (the amount of established vegetation per given area to stabilize the soil) and no erodible areas exist within the project limits, 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 *2018 Standard Specifications*. No additional compensation will be made for maintenance and removal of temporary erosion control items.

AUTHORITY OF THE ENGINEER:

(01-30-14) 105-1 SPD 01-460

The Engineer for this project shall be the Division Engineer, Division 6, Division of Highways, North Carolina Department of Transportation, acting directly or through his duly authorized representative. **The Resident Engineer for this project shall be Donavon Hunt.**

The Engineer will decide all questions which may arise as to the quality and acceptability of work performed and as to the rate of progress of the work; all questions which may arise as to the interpretation of the contract; and all questions as to the acceptable fulfillment of the contract on the part of the Contractor. His decision shall be final and he shall have executive authority to enforce and make effective such decisions and orders as the Contractor fails to carry out promptly.

PROSECUTION AND PROGRESS:

(3-16-10) 108 SPD 1-700

The Contractor shall pursue the work diligently with workmen in sufficient numbers, abilities, and supervision, and with equipment, materials, and methods as may be required to complete the work described in the contract by the completion date and in accordance with the *2018 Standard Specifications.*

The Contractor's operations are restricted to daylight hours. No work may be performed on Sundays and legal State holidays, unless otherwise approved by the Engineer. Work shall only be performed when weather and visibility conditions allow safe operations.

RAILROAD GRADE CROSSING:

(7-1-95) (Rev. 1-15-13) 107-9 SP1 G17R

Provide at least 2 weeks advance notice to the railroad's local Roadmaster or Track Supervisor when the use of slow-moving or stopped equipment is required over at-grade railroad crossings.

DELAY IN RIGHT OF ENTRY:

(7-1-95) (Rev. 7-15-14) 108 SP1 G22

The Contractor will not be allowed right of entry to the following parcel(s) prior to the listed date(s) unless otherwise permitted by the Engineer.

Parcel No.	Property Owner	Date
006	Robert Brian Holder	July 20, 2018

NO MAJOR CONTRACT ITEMS:

(2-19-02) (Rev. 8-21-07) 104 SP1 G31

None of the items included in this contract will be major items.

NO SPECIALTY ITEMS:

(7-1-95) 108-6 SP1 G34

None of the items included in this contract will be specialty items (see Article 108-6 of the *2018 Standard Specifications*).

FUEL PRICE ADJUSTMENT:

(11-15-05) (Rev. 2-18-14) 109-8 SP1 G43

Revise the *2018 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 **$ 2.4505** 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
Sub-Ballast	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
Permeable Asphalt Drainage Course, Type ____	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. 5-16-17) 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)
2018	(7/01/17 - 6/30/18)	**45**% of Total Amount Bid
2019	(7/01/18 - 6/30/19)	**45**% of Total Amount Bid
2020	(7/01/19 - 6/30/20)	**5**% of Total Amount Bid

The Contractor shall also furnish his own progress schedule in accordance with Article 108-2 of the *2018 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 (DIVISIONS):

(10-16-07)(Rev.1-16-18) 102-15(J) SP1 G62

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.
https://connect.ncdot.gov/business/Turnpike/Documents/Form%20DBE-IS%20Subcontractor%20Payment%20Information.pdf

RF-1 *DBE Replacement Request Form* - Form for replacing a committed DBE.

http://connect.ncdot.gov/projects/construction/Construction%20Forms/DBE%20MBE%20WBE%20Replacement%20Request%20Form.pdf

SAF *Subcontract Approval Form* - Form required for approval to sublet the contract. http://connect.ncdot.gov/projects/construction/Construction%20Forms/Subcontract%20Approval%20Form%20Rev.%202012.zip

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.
http://connect.ncdot.gov/projects/construction/Construction%20Forms/Joint%20Check%20Notification%20Form.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://connect.ncdot.gov/letting/LetCentral/Letter%20of%20Intent%20to%20Perform%20as%20a%20Subcontractor.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://connect.ncdot.gov/municipalities/Bid%20Proposals%20for%20LGA%20Content/08%20DBE%20Subcontractors%20(Federal).docx

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://connect.ncdot.gov/business/SmallBusiness/Documents/DBE%20Subcontractor%20Quote%20Comparison%20Example.xls

DBE Goal

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

Disadvantaged Business Enterprises **5.0** %

(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:// www.ebs.nc.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

(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. **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.

(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,* entries on the *Listing of DBE Subcontractors* are not required, however any DBE participation that is achieved during the project shall be reported in accordance with requirements contained elsewhere in the special provision.

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 or 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 Engineer no later than 2:00 p.m. of the fifth calendar day following opening of bids, unless the fifth day falls on Saturday, Sunday or an official state holiday. In that situation, it is due in the office of the Engineer no later than 10:00 a.m. 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 Engineer no later than 2:00 p.m. on the eighth calendar day following opening of bids, unless the eighth day falls on Saturday, Sunday or an official state holiday. In that situation, it is due in the office of the Engineer no later than 10:00 a.m. 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.

One complete set and 6 copies of this information shall be received in the office of the Engineer no later than 2:00 p.m. of the fifth calendar day following opening of bids, unless the fifth day falls on Saturday, Sunday or an official state holiday. In that situation, it is due in the office of the Engineer no later than 10:00 a.m. on the next official state business day.

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, written notices, use of verifiable electronic means 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.

(1) Where appropriate, break 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.

(2) Negotiate with subcontractors to assume part of the responsibility to meet the contract DBE goal when the work to be sublet includes potential for DBE participation (2^{nd} and 3^{rd} tier subcontractors).

(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 Opportunity and Work Force Development Unit at DBE@ncdot.gov 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 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 Engineer. 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. The prime contractor must give the DBE firm five (5) calendar days to respond to the prime contractor's notice of termination and advise the prime contractor and the Department of the reasons, if any, why the firm objects to the proposed termination of its subcontract and why the Department should not approve the action.

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 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.

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

Failure to Meet Contract Requirements

Failure to meet contract requirements in accordance with Subarticle 102-15(J) of the *2018 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.

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.

CARGO PREFERENCE ACT:
(2-16-16)

Privately owned United States-flag commercial vessels transporting cargoes are subject to the Cargo Preference Act (CPA) of 1954 requirements and regulations found in 46 CFR 381.7. Contractors are directed to clause (b) of 46 CFR 381.7 as follows:

(b) Contractor and Subcontractor Clauses. "Use of United States-flag vessels: The contractor agrees-

"(1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

(2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

(3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract."

SUBSURFACE INFORMATION:
(7-1-95) 450 SP1 G112 A

There is **no** subsurface information available on this project. The Contractor shall make his own investigation of subsurface conditions.

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.

EROSION AND SEDIMENT CONTROL/STORMWATER CERTIFICATION:

(1-16-07) (Rev 11-22-16) 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 and within 24 hours after a rainfall event of 0.5 inch that occurs within a 24 hour period. Additional monitoring may be required at the discretion of Division of Water Resources personnel if the receiving stream is 303(d) listed for turbidity and the project has had documented problems managing turbidity.
(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 C*ease 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) (Rev. 3-19-13) 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 *2018 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.gov/doh/operations/dp_chief_eng/roadside/fieldops/downloads/

Files/TurbidityReductionOptionSheet.pdf 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.

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 *2018 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 Crotalaria, Smooth Crotalaria, Sicklepod, 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:

Restricted Noxious **Weed**	Limitations per Lb. Of Seed	Restricted Noxious **Weed**	Limitations per Lb. of Seed
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)
Kobe Lespedeza
Korean Lespedeza
Weeping Lovegrass
Carpetgrass
Bermudagrass
Browntop Millet
German Millet – Strain R
Clover – Red/White/Crimson

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

(2-12-18) Z-4

Revise the *2018 Standard Specifications* as follows:

Division 7

Page 7-27, line 4, Article 725-1 MEASUREMENT AND PAYMENT, replace article number "725-1" with "724-4".

Page 7-28, line 10, Article 725-1 MEASUREMENT AND PAYMENT, replace article number "725-1" with "725-3".

Division 10

Page 10-162, line 1, Article 1080-50 PAINT FOR VERTICAL MARKERS, replace article number "1080-50" with "1080-10".

Page 10-162, line 5, Article 1080-61 EPOXY RESIN FOR REINFORCING STEEL, replace article number "1080-61" with "1080-11".

Page 10-162, line 22, Article 1080-72 ABRASIVE MATERIALS FOR BLAST CLEANING STEEL, replace article number "1080-72" with "1080-12".

Page 10-163, line 25, Article 1080-83 FIELD PERFORMANCE AND SERVICES, replace article number "1080-83" with "1080-13".

STANDARD SPECIAL PROVISION

PLANT AND PEST QUARANTINES

(Imported Fire Ant, Gypsy Moth, Witchweed, Emerald Ash Borer, And Other Noxious Weeds)

(3-18-03) (Rev. 12-20-16) 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, 919-707-3730, or *http://www.ncagr.gov/plantindustry/* 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, emerald ash borer, or other noxious weeds.

STANDARD SPECIAL PROVISION

TITLE VI AND NONDISCRIMINATION:

(6-28-77)(Rev 6/19/2018) Z-6

Revise the *2018 Standard Specifications* as follows:

Replace Article 103-4(B) with the following:

The North Carolina Department of Transportation is committed to carrying out the U.S. Department of Transportation's policy of ensuring nondiscrimination in the award and administration of contracts.

The provisions of this section related to United States Department of Transportation (US DOT) Order 1050.2A, Title 49 Code of Federal Regulations (CFR) part 21, 23 United States Code (U.S.C.) 140 and 23 CFR part 200 (or 49 CFR 303, 49 U.S.C. 5332 or 49 U.S.C. 47123) are applicable to all North Carolina Department of Transportation (NCDOT) contracts and to all related subcontracts, material supply, engineering, architectural and other service contracts, regardless of dollar amount. Any Federal provision that is specifically required not specifically set forth is hereby incorporated by reference.

(1) **Title VI Assurances (USDOT Order 1050.2A, Appendix A)**

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

(a) Compliance with Regulations

The contractor (hereinafter includes consultants) shall comply with the Acts and the Regulations relative to Nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration (FHWA), as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

(b) Nondiscrimination

The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

(c) Solicitations for Subcontractors, Including Procurements of Materials and Equipment

In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Nondiscrimination on the grounds of race, color, or national origin.

(d) Information and Reports

The contractor shall provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the FHWA to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who

fails or refuses to furnish the information, the contractor shall so certify to the Recipient or the FHWA, as appropriate, and shall set forth what efforts it has made to obtain the information.

(e) Sanctions for Noncompliance:

In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it and/or the FHWA may determine to be appropriate, including, but not limited to:

(i) Withholding payments to the contractor under the contract until the contractor complies; and/or

(ii) Cancelling, terminating, or suspending a contract, in whole or in part.

(f) Incorporation of Provisions

The contractor shall include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor shall take action with respect to any subcontract or procurement as the Recipient or the FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

(2) **Title VI Nondiscrimination Program (23 CFR 200.5(p))**

The North Carolina Department of Transportation (NCDOT) has assured the USDOT that, as a condition to receiving federal financial assistance, NCDOT will comply with Title VI of the Civil Rights Act of 1964 and all requirements imposed by Title 49 CFR part 21 and related nondiscrimination authorities to ensure that no person shall, on the ground of race, color, national origin, limited English proficiency, sex, age, or disability (including religion/creed or income-level, where applicable), be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any programs, activities, or services conducted or funded by NCDOT. Contractors and other organizations under contract or agreement with NCDOT must also comply with Title VI and related authorities, therefore:

(a) During the performance of this contract or agreement, contractors (e.g., subcontractors, consultants, vendors, prime contractors) are responsible for complying with NCDOT's Title VI Program. Contractors are not required to prepare or submit Title VI Programs. To comply with this section, the prime contractor shall:

1. Post NCDOT's Notice of Nondiscrimination and the Contractor's own Equal Employment Opportunity (EEO) Policy in conspicuous locations accessible to all employees, applicants and subcontractors on the jobsite.

2. Physically incorporate the required Title VI clauses into all subcontracts on federally-assisted and state-funded NCDOT projects, and ensure inclusion by subcontractors into all lower-tier subcontracts.

3. Required Solicitation Language. The Contractor shall include the following notification in all solicitations for bids and requests for work or material, regardless of funding source:

"The North Carolina Department of Transportation, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 US.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract

entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award. In accordance with other related nondiscrimination authorities, bidders and contractors will also not be discriminated against on the grounds of sex, age, disability, low-income level, creed/religion, or limited English proficiency in consideration for an award."

4. Physically incorporate the FHWA-1273, in its entirety, into all subcontracts and subsequent lower tier subcontracts on Federal-aid highway construction contracts only.
5. Provide language assistance services (i.e., written translation and oral interpretation), free of charge, to LEP employees and applicants. Contact NCDOT OCR for further assistance, if needed.
6. For assistance with these Title VI requirements, contact the NCDOT Title VI Nondiscrimination Program at 1-800-522-0453.

(b) Subrecipients (e.g. cities, counties, LGAs, planning organizations) may be required to prepare and submit a Title VI Plan to NCDOT, including Title VI Assurances and/or agreements. Subrecipients must also ensure compliance by their contractors and subrecipients with Title VI. (23 CFR 200.9(b)(7))

(c) If reviewed or investigated by NCDOT, the contractor or subrecipient agrees to take affirmative action to correct any deficiencies found within a reasonable time period, not to exceed 90 calendar days, unless additional time is granted by NCDOT. (23 CFR 200.9(b)(15))

(d) The Contractor is responsible for notifying subcontractors of NCDOT's External Discrimination Complaints Process.

1. Applicability

   Title VI and related laws protect participants and beneficiaries (e.g., members of the public and contractors) from discrimination by NCDOT employees, subrecipients and contractors, regardless of funding source.

2. Eligibility

   Any person—or class of persons—who believes he/she has been subjected to discrimination based on race, color, national origin, Limited English Proficiency (LEP), sex, age, or disability (and religion in the context of employment, aviation, or transit) may file a written complaint. The law also prohibits intimidation or retaliation of any sort.

3. Time Limits and Filing Options

   Complaints may be filed by the affected individual(s) or a representative and must be filed no later than 180 calendar days after the following:

   (i) The date of the alleged act of discrimination; or

   (ii) The date when the person(s) became aware of the alleged discrimination; or

   (iii) Where there has been a continuing course of conduct, the date on which that conduct was discontinued or the latest instance of the conduct.

   Title VI and related discrimination complaints may be submitted to the following entities:

   - North Carolina Department of Transportation, Office of Civil Rights, Title VI Program, 1511 Mail Service Center, Raleigh, NC 27699-1511; toll free 1-800-522-0453
   - Federal Highway Administration, North Carolina Division Office, 310 New Bern Avenue, Suite 410, Raleigh, NC 27601, 919-747-7010

- US Department of Transportation, Departmental Office of Civil Rights, External Civil Rights Programs Division, 1200 New Jersey Avenue, SE, Washington, DC 20590; 202-366-4070

4. Format for Complaints

   Complaints must be in writing and signed by the complainant(s) or a representative, and include the complainant's name, address, and telephone number. Complaints received by fax or e-mail will be acknowledged and processed. Allegations received by telephone will be reduced to writing and provided to the complainant for confirmation or revision before processing. Complaints will be accepted in other languages, including Braille.

5. Discrimination Complaint Form

   Contact NCDOT Civil Rights to receive a full copy of the Discrimination Complaint Form and procedures.

6. Complaint Basis

   Allegations must be based on issues involving race, color, national origin (LEP), sex, age, disability, or religion (in the context of employment, aviation or transit). "Basis" refers to the complainant's membership in a protected group category.

TABLE 103-1
COMPLAINT BASIS

Protected Categories	Definition	Examples	Applicable Nondiscrimination Authorities
Race and Ethnicity	An individual belonging to one of the accepted racial groups; or the perception, based usually on physical characteristics that a person is a member of a racial group	Black/African American, Hispanic/Latino, Asian, American Indian/Alaska Native, Native Hawaiian/Pacific Islander, White	Title VI of the Civil Rights Act of 1964; 49 CFR Part 21; 23 CFR 200; 49 U.S.C. 5332(b); 49 U.S.C. 47123. *(Executive Order 13166)*
Color	Color of skin, including shade of skin within a racial group	Black, White, brown, yellow, etc.	
National Origin *(Limited English Proficiency)*	Place of birth. Citizenship is not a factor. (*Discrimination based on language or a person's accent is also covered)*	Mexican, Cuban, Japanese, Vietnamese, Chinese	
Sex	Gender. The sex of an individual. *Note:* Sex under this program does not include sexual orientation.	Women and Men	1973 Federal-Aid Highway Act; 49 U.S.C. 5332(b); 49 U.S.C. 47123.
Age	Persons of any age	21-year-old person	Age Discrimination Act of 1975 49 U.S.C. 5332(b); 49 U.S.C. 47123.
Disability	Physical or mental impairment, permanent or temporary, or perceived.	Blind, alcoholic, para-amputee, epileptic, diabetic, arthritic	Section 504 of the Rehabilitation Act of 1973; Americans with Disabilities Act of 1990

Religion (in the context of employment) *(Religion/ Creed in all aspects of any aviation or transit-related construction)*	An individual belonging to a religious group; or the perception, based on distinguishable characteristics that a person is a member of a religious group. In practice, actions taken as a result of the moral and ethical beliefs as to what is right and wrong, which are sincerely held with the strength of traditional religious views. ***Note:*** Does not have to be associated with a recognized religious group or church; if an individual sincerely holds to the belief, it is a protected religious practice.	Muslim, Christian, Sikh, Hindu, etc.	Title VII of the Civil Rights Act of 1964; 23 CFR 230; FHWA-1273 Required Contract Provisions. *(49 U.S.C. 5332(b);* *49 U.S.C. 47123)*

(3) **Pertinent Nondiscrimination Authorities**

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest agrees to comply with the following non-discrimination statutes and authorities, including, but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability) and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);

(g) The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);

(h) Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;

(i) The Federal Aviation Administration's Nondiscrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);

(j) Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures Nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;

(k) Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of Limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

(l) Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

(m) Title VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000e et seq., Pub. L. 88-352), (prohibits employment discrimination on the basis of race, color, religion, sex, or national origin).

(4) **Additional Title VI Assurances**

***The following Title VI Assurances (Appendices B, C and D) shall apply, as applicable*

(a) Clauses for Deeds Transferring United States Property (1050.2A, Appendix B)

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4.

NOW, THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the North Carolina Department of Transportation (NCDOT) will accept title to the lands and maintain the project constructed thereon in accordance with the North Carolina General Assembly, the Regulations for the Administration of the Federal-Aid Highway Program, and the policies and procedures prescribed by the Federal Highway Administration of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the U.S Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the NCDOT all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto the North Carolina Department of Transportation (NCDOT) and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the NCDOT, its successors and assigns.

The NCDOT, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the NCDOT will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended [, and (3) that in the event of breach of any of the above-mentioned nondiscrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

(b) Clauses for Transfer of Real Property Acquired or Improved Under the Activity, Facility, or Program (1050.2A, Appendix C)

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the North Carolina Department of Transportation (NCDOT) pursuant to the provisions of Assurance 7(a):

1. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:

   (i.) In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

2. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Nondiscrimination covenants, the NCDOT will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued. *

3. With respect to a deed, in the event of breach of any of the above Nondiscrimination covenants, the NCDOT will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the NCDOT and its assigns. *

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

(c) Clauses for Construction/Use/Access to Real Property Acquired Under the Activity, Facility or Program (1050.2A, Appendix D)

The following clauses will be included in deeds, licenses, permits, or similar instruments/ agreements entered into by the North Carolina Department of Transportation (NCDOT) pursuant to the provisions of Assurance 7(b):

1. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.
2. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non¬ discrimination covenants, the NCDOT will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued. *
3. With respect to deeds, in the event of breach of any of the above Nondiscrimination covenants, the NCDOT will there upon revert to and vest in and become the absolute property of the NCDOT and its assigns. *

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

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

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 contacting 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 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. 4-21-15) 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.

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 NC180104 01/05/2018 NC104

Z-104

Date: January 5, 2018

General Decision Number: NC180104 01/05/2018 NC104

Superseded General Decision Numbers: NC20170104

State: North Carolina

Construction Type: HIGHWAY

COUNTIES:

Beaufort	Granville	Pasquotank
Bertie	Halifax	Perquimans
Bladen	Harnett	Robeson
Camden	Hertford	Sampson
Carteret	Hyde	Scotland
Chowan	Jones	Tyrrell
Columbus	Lenoir	Vance
Craven	Martin	Warren
Dare	Northampton	Washington
Duplin	Pamlico	Wilson
Gates		

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract for calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2) – (60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number
0

Publication Date
01/05/2018

SUNC2014-006 11/17/2014

	Rates	Fringes
BLASTER	21.85	
CARPENTER	13.72	
CEMENT MASON/CONCRETE FINISHER	14.26	
ELECTRICIAN		
Electrician	18.69	2.66
Telecommunications Technician	14.72	1.67
IRONWORKER	16.32	
LABORER		
Asphalt Raker and Spreader	12.42	
Asphalt Screed/Jackman	13.48	
Carpenter Tender	10.85	
Cement Mason/Concrete Finisher Tender	11.35	
Common or General	10.12	
Guardrail/Fence Installer	13.39	
Pipelayer	13.31	
Traffic Signal/Lighting Installer	16.88	
PAINTER		
Bridge	19.62	
POWER EQUIPMENT OPERATORS		
Asphalt Broom Tractor	13.28	
Bulldozer Fine	18.46	
Bulldozer Rough	14.09	
Concrete Grinder/Groover	24.66	
Crane Boom Trucks	17.25	
Crane Other	21.48	
Crane Rough/All-Terrain	19.00	
Drill Operator Rock	15.43	1.61
Drill Operator Structure	19.12	
Excavator Fine	17.61	
Excavator Rough	12.99	
Grader/Blade Fine	16.73	
Grader/Blade Rough	15.28	
Loader 2 Cubic Yards or Less	10.28	
Loader Greater Than 2 Cubic Yards	13.58	
Material Transfer Vehicle (Shuttle Buggy)	17.39	
Mechanic	18.63	
Milling Machine	14.38	
Off-Road Hauler/Water Tanker	9.30	
Oiler/Greaser	13.45	
Pavement Marking Equipment	11.87	
Paver Asphalt	15.53	
Roller Asphalt Breakdown	12.13	
Roller Asphalt Finish	13.65	
Roller Other	10.48	
Scraper Finish	13.98	
Scraper Rough	10.17	
Slip Form Machine	19.29	
Tack Truck/Distributor Operator	14.56	
TRUCK DRIVER		
GVWR of 26,000 Lbs or Less	10.35	
GVWR of 26,000 Lbs or Greater	12.04	

Welders – Receive rate prescribed for craft performing operation to which welding is incidental.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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 a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 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. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE:

UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

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

PROJECT SPECIAL PROVISIONS

ROADWAY

RIGHT OF WAY AND EASEMENT STAKING:

(3-7-2017)

Description

The work covered by this provision will be in addition to all elements of work in the following Sections of the *Standard Specifications for Roads* and *Structures*:

- 801 – Construction Stakes, Lines and Grade

In lieu of the Department establishing the location of markers and easements as described in Section 801-2 (D), The Contract Surveyor shall be responsible for establishing the location and subsequent staking of all proposed or existing right-of-way markers, control-of-access markers and permanent easement markers. The Department will provide both the right-of-way monument cap and carsonite witness stake for all the requirements. This work shall be considered part of Construction Surveying.

Measurement and Payment

Construction Surveying will be paid at the Contract Lump Sum price for the work detailed in Section 801 and this special provision.

Payment will be made under:

Pay Item	Pay Unit
Construction Surveying	Lump Sum

CLEARING AND GRUBBING - METHOD II:

(9-17-02) (Rev.8-18-15) 200 SP2 R02A

Perform clearing on this project to the limits established by Method "II" shown on Standard Drawing No. 200.02 of the *2018 Roadway Standard Drawings*. Conventional clearing methods may be used except where permit drawings or conditions have been included in the proposal which require certain areas to be cleared by hand methods.

GRADING:

(9-27-2016)

Description

The work covered by this provision consists of all elements of work in the following Sections of the Standard Specifications for Roads and Bridges:

- 200 – Clearing and Grubbing
- 225 – Unclassified Excavation
- 235 – Embankment
- 250 – Removal of Existing Pavement
- 500 – Fine Grading Subgrade, Shoulders and Ditches

- 560 – Shoulder Borrow

In addition Borrow Excavation as described in Section 230, will also be included in the work, unless a separate line item is included for this work.

Construction Method
Shape, compact, and grade the slopes, ditches, subgrade and shoulders to the lines, grades, and typical sections established by the plans or as directed by the Engineer. Roadway ditches shall be cleaned, reshaped, and maintained until final acceptance of the project.

Excavated areas shall be uniformly graded, well compacted, and free of debris and loose material. Excavated areas adjacent to existing pavement having more than a 2 inch drop-off, shall be backfilled to a 6:1 slope. Remove and satisfactorily dispose of vegetation and debris from within the project limits. Dispose of any waste material only at an approved location. No material may be wasted or removed from the project unless approved by the Engineer. All waste disposal shall be in accordance with the Specifications, as well as state, federal and local regulations regarding the disposal of waste material. All permits and fees for any such disposal shall be the responsibility of the Contractor, and the Department shall not be held liable for disposal of any materials outside the project right of way.

Top soil shall be placed on the top six inches of all embankments and shoulders. On projects containing *Borrow Excavation*, when top soil is stockpiled on the project for later use, no measurement will be made borrow excavation as this will be considered incidental to 'Grading'.

Measurement and Payment

Grading will be paid for at the contract lump sum price. Partial payments will be equal to the percentage of such item that is complete as estimated by the Engineer. No separate payment will be made for clearing and grubbing, shoulder and fill slope material or draining borrow sources as such work will be incidental to the work covered by this section.

Undercut Excavation will be measured and paid at the contract unit price per cubic yard. No separate payment will be made for materials used in backfilling the undercut areas, shoulders and slope areas as payment at the contract unit price per cubic yard for Undercut Excavation will be full compensation for furnishing such material. Where the contract does not include a pay item for Undercut Excavation, payment for such excavation will be made in accordance with Article 104-7. 21

Payment will be made under:

Pay Item	**Pay Unit**
Grading	Lump Sum
Undercut Excavation	Cubic Yard

SHOULDER RECONSTRUCTION & AGGREGATE SHOULDER BORROW:

Description
This work consists of reconstructing each shoulder (including median shoulders as applicable) in accordance with Standard Drawing No. 560.01 and 560.02 of the 2018 Roadway Standard Drawings except that the rate of slope and width will be as shown on typical section, or to the existing shoulder point, whichever is nearer, as long as the desired typical is achieved. This work shall be performed immediately after the resurfacing operations are complete as directed by the Engineer.

Materials
The Contractor shall use Aggregate Shoulder Borrow (ASB) as directed by the Engineer. The ASB shall meet the following gradation:

Sieve	Percent Passing
1 1/2"	100
1/2"	55 - 95
#4	35 - 74

Construction Methods
Obtain material from an approved borrow source. The material shall be compacted to the satisfaction of the Engineer.

Any excess material generated by the shoulder reconstruction shall be disposed of by the contractor in an approved disposal site.

Measurement and Payment
Shoulder Reconstruction will be incidental to lump sum grading. This work includes but is not limited to, clipping high shoulders, repairing low shoulders, and the placement of ASB.

Aggregate Shoulder Borrow (ASB) will be measured and paid at the contract unit price per ton that has been incorporated into the completed and accepted work. This quantity will be measured as provided for in Article 520-11. Such price will include disposing of any excess material in an approved disposal site, and for all labor, tools, equipment, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Aggregate Shoulder Borrow (ASB)	Ton
Grading	Lump Sum

COAL COMBUSTION PRODUCTS IN EMBANKMENTS:
(4-16-02) (Rev. 5-19-15) 235 SP02 R70

Description

This specification allows the Contractor an option, with the approval of the Engineer, to use coal combustion products (CCPs) in embankments as a substitute for conventional borrow material. The amount of CCPs allowed to be used for this project will be less than 80,000 tons total and less than 8,000 tons per acre.

Materials

Supply coal combustion products from the Department list of potential suppliers maintained by the Value Management Unit. Site specific approval of CCP material will be required prior to beginning construction.

The following CCPs are unacceptable:
(A) Frozen material,
(B) Ash from boilers fired with both coal and petroleum coke, and

(C) Material with a maximum dry unit weight of less than 65 pounds per cubic foot when tested in accordance with AASHTO T-99 Method A or C.

Collect and transport CCPs in a manner that will prevent nuisances and hazards to public health and safety. Moisture condition the CCPs as needed and transport in covered trucks to prevent dusting.

Preconstruction Requirements

When CCPs are to be used as a substitute for earth borrow material, request written approval from the Engineer at least ninety (90) days in advance of the intent to use CCPs and include the following details using the NCDOT Form #CCP-2015-V1 in accordance with NCGS § 130A-309.219(b)(1):

(A) Description, purpose and location of project.
(B) Estimated start and completion dates of project.
(C) Estimated volume of CCPs to be used on project with specific locations and construction details of the placement.
(D) Toxicity Characteristic Leaching Procedure analysis from a representative sample of each different CCP source to be used in the project for, at minimum, all of the following constituents: arsenic, barium, cadmium, lead, chromium, mercury, selenium, and silver.
(E) The names, address, and contact information for the generator of the CCPs.
(F) Physical location of the project at which the CCPs were generated.

Submit the form to the Engineer and the State Value Management Engineer at valuemanagementunit@ncdot.gov for review. The Engineer and the State Value Management Engineer will coordinate the requirements of NCGS § 130A-309.219(a)(1) and notify the Contractor that all the necessary requirements have been met before the placement of structural fill using coal combustion products is allowed.

Construction Methods

In accordance with the detail in the plans, place CCPs in the core of the embankment section with at least 4 feet of earth cover to the outside limits of the embankments or subgrade and at least 5 feet above the seasonal high ground-water table. CCPs used in embankments shall not be placed as follows:

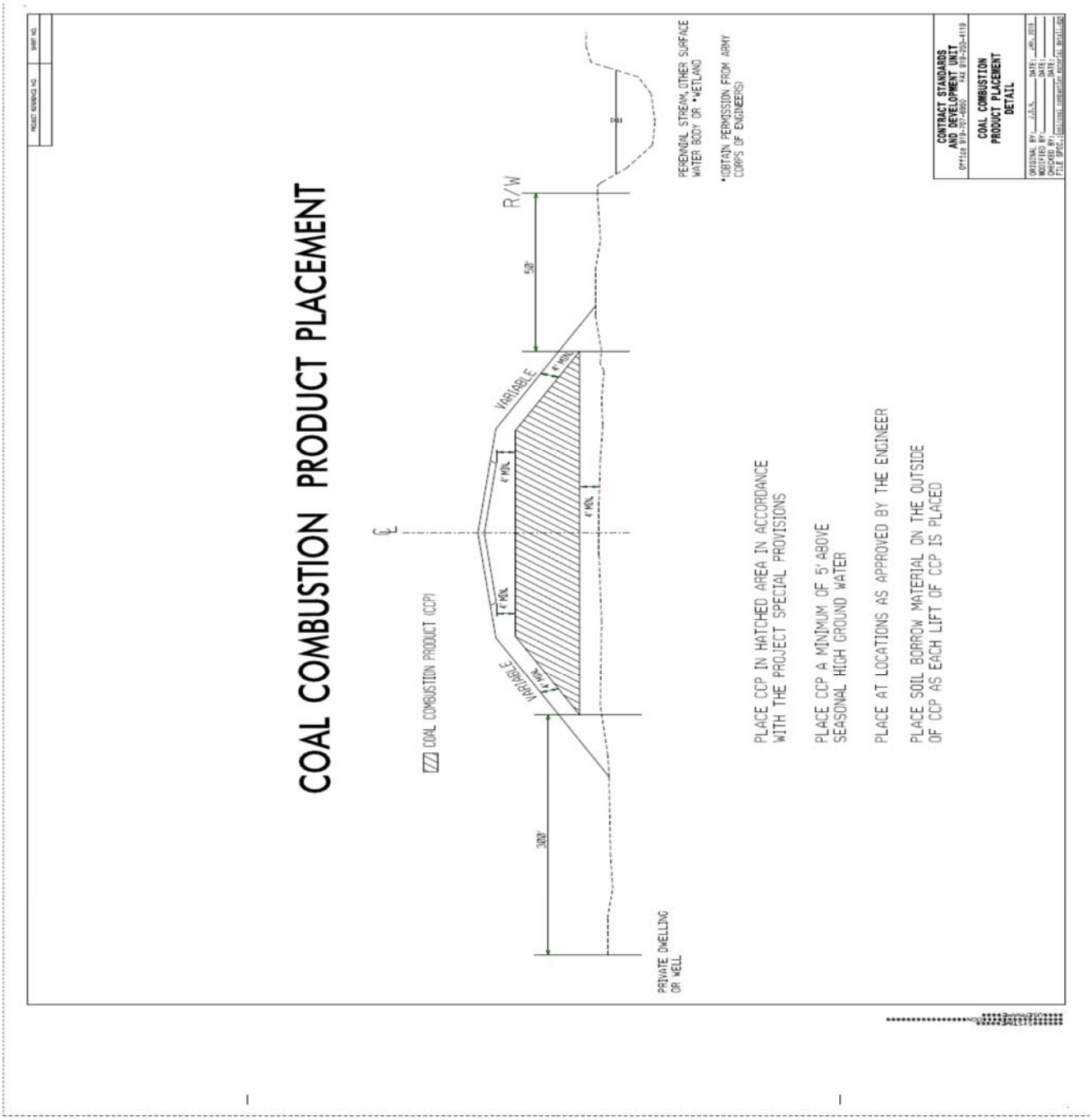
(A) Within 50 feet of any property boundary.
(B) Within 300 horizontal feet of a private dwelling or well.
(C) Within 50 horizontal feet of the top of the bank of a perennial stream or other surface water body.
(D) Within a 100-year floodplain except as authorized under NCGS § 143-215.54A(b). A site located in a floodplain shall not restrict the flow of the 100-year floodplain or result in washout of solid waste so as to pose a hazard to human life, wildlife or land and water resources.
(E) Within 50 horizontal feet of a wetland, unless, after consideration of the chemical and physical impact on the wetland, the United States Army Corps of Engineers issues a permit or waiver for the fill.

Construct embankments by placing CCPs in level uniform lifts with no more than a lift of 10 inches and compacted to at least a density of 95 percent as determined by test methods in AASHTO T-99, Determination of Maximum Dry Density and Optimum Moisture Content, Method A or C depending upon particle size of the product. Provide a moisture content at the time of compaction of within 4 percent of optimum but not greater than one percent above optimum as determined by AASHTO T-99, Method A or C.

Divert surface waters resulting from precipitation from the CCPs placement area during filling and construction activities. Construct embankments such that rainfall will not run directly off of the CCPs. Provide dust control to minimize airborne emissions. Construct fill in a manner that prevents water from accumulating and ponding and do not pump nor discharge waters from CCP's filling and construction areas.

Measurement and Payment

Borrow Excavation will be measured by truck volume and paid in cubic yards in accordance with Article 230-5 of the *2018 Standard Specifications*.



MANUFACTURED QUARRY FINES IN EMBANKMENTS:

(01-17-17) 235 SP02 R72

Description

This specification addresses the use of manufactured quarry fines that are not classified as select materials. The specification allows the Contractor an option, with the approval of the Engineer, to use manufactured quarry fines (MQFs) in embankments as a substitute for conventional borrow material. Furnish and place geotextile for pavement stabilization in accordance with the Geotextile for Pavement Stabilization special provision and detail. Geotextile for pavement stabilization is required to prevent pavement cracking and provide separation between the subgrade and pavement section at embankment locations where manufactured quarry fines are utilized and as directed by the Engineer.

Materials

Manufactured Quarry Fines.

Site specific approval of MQFs material will be required prior to beginning construction as detailed in the preconstruction requirements of this provision.

The following MQFs are unacceptable:

(A) Frozen material,

(B) Material with a maximum dry unit weight of less than 90 pounds per cubic foot when tested in accordance with AASHTO T-99 Method A or C.

(C) Material with greater than 80% by weight Passing the #200 sieve

Collect and transport MQFs in a manner that will prevent nuisances and hazards to public health and safety. Moisture condition the MQFs as needed and transport in covered trucks to prevent dusting. If MQFs are blended with natural earth material, follow Borrow Criteria in Section 1018 of the *Standard Specifications.*

Geotextiles

Areas of embankment where MQFs are incorporated, Geotextile for Pavement Stabilization shall be used. If the Geotextile for Pavement Stabilization special provision is not included elsewhere in this contract, then it along with a detail will be incorporated as part of the contractors request to use. Notification of subgrade elevation, sampling and waiting period as required in the Construction Methods section of the Geotextile for Pavement Stabilization special provision are not required.

Preconstruction Requirements

When MQFs are to be used as a substitute for earth borrow material, request written approval from the Engineer at least ninety (90) days in advance of the intent to use MQFs and include the following details:

(A) Description, purpose and location of project.

(B) Estimated start and completion dates of project.

(C) Estimated volume of MQFs to be used on project with specific locations and construction details of the placement.

(D) The names, address, and contact information for the generator of the MQFs.

(E) Physical location of the site at which the MQFs were generated.

The Engineer will forward this information to the State Materials Engineer for review and material approval.

Construction Methods

Place MQFs in the core of the embankment section with at least 4 feet of earth cover to the outside limits of the embankments or subgrade.

Construct embankments by placing MQFs in level uniform lifts with no more than a lift of 10 inches and compacted to at least a density of 95 percent as determined by test methods in AASHTO T-99, Determination of Maximum Dry Density and Optimum Moisture Content, Method A or C depending upon particle size of the product. Provide a moisture content at the time of compaction of within 4 percent of optimum but not greater than one percent above optimum as determined by AASHTO T-99, Method A or C.

Areas of embankment where MQFs are incorporated, Geotextile for Pavement Stabilization shall be used. See Geotextile for Pavement Stabilization special provision for geotextile type and construction method.

Measurement and Payment

Borrow Excavation will be measured by truck volume and paid in cubic yards in accordance with Article 230-5 of the *2018 Standard Specifications*. As an alternate weigh tickets can be provided and payment made by converting weight to cubic yards based on the verifiable unit weight.

Where the pay item of *Geotextile for Pavement Stabilization* is included in the original contract the material will be measured and paid in square yards (see Geotextile for Pavement Stabilization special provision). Where the pay item of *Geotextile for Pavement Stabilization* is not included in the original contract then no payment will be made for this item and will be considered incidental to the use of MQFs in embankment.

INCIDENTAL STONE BASE:

(7-1-95) (Rev.8-21-12) 545 SP5 R28R

Description

Place incidental stone base on driveways, mailboxes, etc. immediately after paving and do not have the paving operations exceed stone base placement by more than one week without written permission of the Engineer.

Materials and Construction

Provide and place incidental stone base in accordance with Section 545 of the *2018 Standard Specifications*.

Measurement and Payment

Incidental Stone Base will be measured and paid in accordance with Article 545-6 of the *2018 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 *2018 Standard Specifications.*

The base price index for asphalt binder for plant mix is **$ 501.67** per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **June 1, 2018**.

ASPHALT CONCRETE PLANT MIX PAVEMENTS:

(2-20-18) 610, 1012 SP6 R65

Revise the 2018 Standard Specifications as follows:

Page 6-17, Table 610-1, MIXING TEMPERATURE AT THE ASPHALT PLANT, replace with the following:

TABLE 610-1
MIXING TEMPERATURE AT THE ASPHALT PLANT

Binder Grade	JMF Temperature
PG 58-28; PG 64-22	250 - 290°F
PG 76-22	300 - 325°F

Page 6-17, Subarticle 610-3(C), Job Mix Formula (JMF), lines 38-39, delete the fourth paragraph.

Page 6-18, Subarticle 610-3(C), Job Mix Formula (JMF), line 12, replace "SF9.5A" with "S9.5B".

Page 6-18, Table 610-3, MIX DESIGN CRITERIA, replace with the following:

TABLE 610-3
MIX DESIGN CRITERIA

Mix Type	Design ESALs millions [A]	Binder PG Grade [B]	Compaction Levels G_{mm} @ N_{ini}	Compaction Levels G_{mm} @ N_{des}	Max. Rut Depth (mm)	Volumetric Properties VMA % Min.	VTM %	VFA Min.-Max.	$\%G_{mm}$ @ N_{ini}
S4.75A	< 1	64 - 22	6	50	11.5	16.0	4.0 - 6.0	65 - 80	≤ 91.5
S9.5B	0 - 3	64 - 22	6	50	9.5	16.0	3.0 - 5.0	70 - 80	≤ 91.5
S9.5C	3 - 30	64 - 22	7	65	6.5	15.5	3.0 - 5.0	65 - 78	≤ 90.5
S9.5D	> 30	76 - 22	8	100	4.5	15.5	3.0 - 5.0	65 - 78	≤ 90.0
I19.0C	ALL	64 - 22	7	65	-	13.5	3.0 - 5.0	65 - 78	≤ 90.5
B25.0C	ALL	64 - 22	7	65	-	12.5	3.0 - 5.0	65 - 78	≤ 90.5
	Design Parameter					**Design Criteria**			
All Mix Types	Dust to Binder Ratio ($P_{0.075}$ / P_{be})					0.6 - 1.4 [C]			
	Tensile Strength Ratio (TSR) [D]					85% Min. [E]			

A. Based on 20 year design traffic.
B. Volumetric Properties based on specimens compacted to N_{des} as modified by the Department.
C. Dust to Binder Ratio ($P_{0.075}$ / P_{be}) for Type S4.75A is 1.0 - 2.0.
D. NCDOT-T-283 (No Freeze-Thaw cycle required).
E. TSR for Type S4.75A & B25.0C mixes is 80% minimum.

Page 6-19, Table 610-5, BINDER GRADE REQUIREMENTS (BASED ON RBR%), replace with the following:

TABLE 610-5
BINDER GRADE REQUIREMENTS (BASED ON RBR%)

Mix Type	%RBR ≤ 20%	21% ≤ %RBR ≤ 30%	%RBR > 30%

S4.75A, S9.5B, S9.5C, I19.0C, B25.0C	PG 64-22	PG 64-22[A]	PG 58-28
S9.5D, OGFC	PG 76-22[B]	n/a	n/a

A. If the mix contains any amount of RAS, the virgin binder shall be PG 58-28.

B. Maximum Recycled Binder Replacement (%RBR) is 18% for mixes using PG 76-22 binder.

Page 6-20, Table 610-6, PLACEMENT TEMPERATURES FOR ASPHALT, replace with the following:

TABLE 610-6
PLACEMENT TEMPERATURES FOR ASPHALT

Asphalt Concrete Mix Type	Minimum Surface and Air Temperature
B25.0C	35°F
I19.0C	35°F
S4.75A, S9.5B, S9.5C	40°F [A]
S9.5D	50°F

A. If the mix contains any amount of RAS, The virgin binder shall be PG 58-28.

Page 6-23, Table 610-7, DENSITY REQUIREMENTS, replace with the following:

TABLE 610-7
DENSITY REQUIREMENTS

Mix Type	Minimum % G_{mm} (Maximum Specific Gravity)
S4.75A	85.0 [A]
S9.5B	90.0
S9.5C, S9.5D, I19.0C, B25.0C	92.0

A. Compaction to the above specified density will be required when the S4.75A mix is applied at a rate of 100 lbs/sy or higher.

Page 6-32, Article 610-16 MEASUREMENT AND PAYMENT, replace with the following:

Pay Item	Pay Unit
Asphalt Concrete Base Course, Type B25.0C	Ton
Asphalt Concrete Intermediate Course, Type I19.0C	Ton
Asphalt Concrete Surface Course, Type S4.75A	Ton
Asphalt Concrete Surface Course, Type S9.5B	Ton
Asphalt Concrete Surface Course, Type S9.5C	Ton
Asphalt Concrete Surface Course, Type S9.5D	Ton

Page 10-30, Table 1012-1, AGGREGATE CONSENSUS PROPERTIES, replace with the following:

TABLE 1012-1
AGGREGATE CONSENSUS PROPERTIES[A]

Mix Type	Coarse Aggregate Angularity[B]	Fine Aggregate Angularity % Minimum	Sand Equivalent % Minimum	Flat and Elongated

				5 : 1 Ratio % Maximum
Test Method	*ASTM D5821*	*AASHTO T 304*	*AASHTO T 176*	*ASTM D4791*
S4.75A; S9.5B	75 / -	40	40	-
S9.5C; I19.0C; B25.0C	95 / 90	45	45	10
S9.5D	100 / 100	45	50	10
OGFC	100 / 100	45	45	10
UBWC	100 / 85	45	45	10

A. Requirements apply to the design aggregate blend.

B. 95 / 90 denotes that 95% of the coarse aggregate has one fractured face and 90% has 2 or more fractured faces.

PAVEMENT DESIGN MIX TYPE MODIFICATIONS:

(2-20-18) 610 SP6 R66

Description

In an effort to reduce the number of asphalt concrete pavement mix types, the department has made the following changes:

Where the “Pavement Schedule” in the plans calls for Asphalt Concrete Surface Course Type SF9.5A, Asphalt Concrete Surface Course Type S9.5B shall be used.

Where the “Pavement Schedule” in the plans calls for either Asphalt Concrete Intermediate Course Type B, C or D, Asphalt Concrete Intermediate Course Type I19.0C shall be used.

Where the “Pavement Schedule” in the plans call for Asphalt Concrete Base Course Type B25.0B, Asphalt Concrete Base Course Type B25.0C shall be used.

In addition, see the project special provision entitled “Asphalt Concrete Plant Mix Pavements” contained elsewhere in the proposal.

Measurement and Payment

The pay items in this proposal reflects these changes. The pavement schedule in the plans will not be revised to reflect these changes.

PATCHING EXISTING PAVEMENT:

(1-15-02) (Rev. 3-11-18) 610 SP6 R88R

Description

The Contractor's attention is directed to the fact that there are areas of existing pavement on this project that will require repair prior to resurfacing. Patch the areas that, in the opinion of the Engineer, need repairing. The areas to be patched will be delineated by the Engineer prior to the Contractor performing repairs.

Materials

The patching consists of Asphalt Concrete Base Course, Asphalt Concrete Intermediate Course, Asphalt Concrete Surface Course, or a combination of base, binder and surface course.

Construction Methods

Remove existing pavement at locations directed by the Engineer in accordance with Section 250 of the *2018 Standard Specifications*.

Place Asphalt Concrete Base Course, in lifts not exceeding 5.5 inches. Utilize compaction equipment suitable for compacting patches as small as 3.5 feet by 6 feet on each lift. Use an approved compaction pattern to achieve proper compaction. If patched pavement is to be open to traffic for more than 48 hours prior to overlay, use Asphalt Surface Course in the top 1.5 inches of the patch.

Schedule operations so that all areas where pavement has been removed will be repaired on the same day of the pavement removal and all lanes of traffic restored.

Measurement and Payment

Patching Existing Pavement will be measured and paid as the actual number of tons of asphalt plant mix complete in place that has been used to make completed and accepted repairs. The asphalt plant mixed material will be measured by being weighed in trucks on certified platform scales or other certified weighing devices. The above price and payment will be full compensation for all work covered by this provision, including but not limited to removal and disposal of all types of pavement; furnishing and applying tack coat; furnishing, placing, and compacting of asphalt plant mix; furnishing of asphalt binder for the asphalt plant mix; and furnishing scales.

Any provisions included in the contract that provides for adjustments in compensation due to variations in the price of asphalt binder will not be applicable to payment for the work covered by this provision.

Payment will be made under:

Pay Item	Pay Unit
Patching Existing Pavement	Ton

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.

DRIVEWAYS AND PRIVATE PROPERTY:

The Contractor shall maintain access to driveways for all residents and property owners throughout the life of the project. The Contractor shall not perform work for private citizens or agencies in conjunction with this project or within the project limits of this contract. Any driveway paved by a Contractor, which ties into a NCDOT system road being paved by the Contractor, must be paved either prior to the road paving project or after its completion.

Driveways shall be removed to a sufficient distance to provide for a smooth tie-in to future edge of pavement as directed by the Engineer. Driveways shall be sawcut. This work will be included in lump sum of grading.

PROJECT SPECIAL PROVISIONS

TRAFFIC CONTROL

LUMP SUM PAYMENT FOR TRAFFIC CONTROL:

(02/06/2013) LS-TC

The Contractor shall maintain traffic on **all roads** during construction and shall provide, install and maintain all traffic control devices as shown in the *Roadway Standard Drawings* or as directed by the Engineer.

The lump sum price bid for traffic control shall include but not be limited to **Signs (portable, stationary, or barricade), which includes detour signing, portable lighting, Truck Mounted Attenuators (TMA), Changeable Message Signs (CMS), Flashing Arrow Boards (FAB), Flaggers, Cones, Skinny Drums and Drums** and all labor, tools, equipment and incidentals necessary to furnish, install, maintain and remove traffic control devices when no longer required.

Basis of Payment

Partial payments will be made on each payment estimate based on the following: Fifty percent of the contract lump sum price bid will be paid on the first monthly estimate and the remaining 50% of the contract lump sum price bid will be paid on each subsequent estimate based on the percent of the project completed.

Payment will be made under:

Pay Item	Pay Unit
Traffic Control	Lump Sum

LAW ENFORCEMENT:

(02/06/13)

Description

Furnish Law Enforcement Officers and marked Law Enforcement vehicles 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	Pay Unit
Law Enforcement	Hour

PROJECT SPECIAL PROVISIONS

UTILITY CONSTRUCTION

UTILITY CONFLICTS:

It shall be the responsibility of the Contractor to contact all affected utility owners and determine the precise locations of all utilities prior to beginning construction. Utility owners shall be contacted a minimum of 48 hours prior to the commencement of operations. Special care shall be used in working around or near existing utilities, protecting them when necessary to provide uninterrupted service. In the event that any utility service is interrupted, the Contractor shall notify the utility owner immediately and shall cooperate with the owner, or his representative, in the restoration of service in the shortest time possible. Existing fire hydrants shall be kept accessible to fire departments at all times.

The existing clearance between the sewer/water and cross line drainage pipes is minimal. Care should be taken when collaring and extending the existing drainage pipes (STR # 401 - # 404). Notify project utility coordinator John Walters, (910) 495-5845 and utility distribution supervisor, Jason Ray (910)-984-6989 at least 1 week prior to collaring and extending STR # 401 - # 404.

Notify project utility coordinator John Walters, (910) 495-5845 and utility distribution supervisor, Jason Ray (910)-984-6989 at least 1 week prior to beginning fire hydrant removal and installation.

The Contractor shall adhere to all applicable regulations and follow accepted safety procedures when working in the vicinity of utilities in order to insure the safety of construction personnel and the public.

2016 HCDPU REQUIRED UTILITY NOTES

(Revision 6 – June 2016)

The following utility notes should be added to the coversheet of utility plans for projects located in Harnett County:

WATER

A. The Fire Marshal's Office shall approve all hydrant types and locations in new subdivisions. However, Harnett County Department of Public Utilities (HCDPU) prefers the contractors to install one of the following fire hydrants:

1. **Mueller - Super Centurion 250 A-423 model with a 5¼" main valve opening three way (two hose nozzles and one pumper nozzle);**
2. **American Darling - Mark B-84-B model with a 5¼" main valve opening three way (two hose nozzles and one pumper nozzle);**
3. **Waterous - Pacer B-67-250 model with a 5¼" main valve opening three way (two hose nozzles and one pumper nozzle) or approved equal for standardization.**

B. Fire hydrants are installed at certain elevations. Any grade change in the vicinity of any fire hydrant which impedes its operation shall become the responsibility of the Utility Contractor for correction. Corrections will be monitored by the HCDPU Utility Construction Inspector and the Harnett County Fire Marshal.

C. The Professional Engineer (PE) shall obtain and provide the NCDENR "Authorization to Construct" permit to the Utility Contractor before the construction of the water line shall begin. The Utility Contractor must post a copy of the NCDENR "Authorization to Construct" permit issued by the North Carolina Department of Environment and Natural Resources – Division of Environmental Health, Public Water Supply Section (NCDENR-DEH,PWSS) on site prior to the start of construction. The permit must be maintained on site throughout the entire construction process of the proposed water lines that will serve this project.

D. The Utility Contractor shall notify Harnett County Department of Public Utilities (HCDPU) and the Professional Engineer (PE) at least two days prior to construction commencing. The Utility Contractor must schedule a pre-construction conference with Mr. Alan Moss, HCDPU Utility Construction Inspector at least two (2) days before construction will begin and the Utility Contractor must coordinate with HCDPU for regular inspection visitations and acceptance of the water system(s). Construction work shall be performed only during the normal working hours of HCDPU which is 8:00 am – 5:00 pm Monday through Friday. Holiday and weekend work is not permitted by HCDPU.

E. **The Professional Engineer (PE) shall provide HCDPU and the Utility Contractor with a set of NCDENR approved plans marked "Released For Construction" at least two days prior to construction commencing. The Registered Land Surveyor (RLS) should stake out all lot corners and the grade stakes for the proposed finish grade for each street before the Utility Contractor begins construction of the water line(s). The grade stakes should be set with a consistent offset from the street centerline so as not to interfere with the street grading and utility construction.**

F. **The Utility Contractor shall provide the HCDPU Utility Construction Inspector with material submittals and shop drawings for all project materials prior to the construction of any water line extension(s), and associated water services in Harnett County. The materials to be used on the project must meet the established specifications of HCDPU and be approved by the Engineer of Record prior to construction. All substandard materials or materials not approved for use in Harnett County found on the project site must be removed immediately when notified by the HCDPU Utility Construction Inspector.**

G. **The water main(s), fire hydrants, service lines, meter setters and all associated appurtenances shall be constructed in strict in accordance with the standard specifications of the Harnett County Department of Public Utilities (HCDPU). The Utility Contractor shall be responsible to locate the newly installed water main(s), water service lines and all associated meter setters and meter boxes for other utility companies and their contractors until the new water main(s) have been approved by the North Carolina Department of Environment and Natural Resources – Division of Environmental Health, Public Water Supply Section (NCDENR-DEH, PWSS)and accepted by HCDPU.**

H. **Prior to acceptance, all services will be inspected to insure that they are installed at the proper depth. All meter boxes must be flush with the ground level at finish grade and the meter setters must be a minimum of 8" below the meter box lid. Meter setters shall be centered in the meter box and supported by brick, block or stone.**

I. **The Utility Contractor shall provide the Professional Engineer (PE) and HCDPU Utility Construction Inspector with a set of red line drawings identifying the complete water system installed for each project. The red line drawings should identify the materials, pipe sizes and approximate depths of the water lines as well as the gate valves, fire hydrants, meter setters, blow off assemblies and all associated appurtenances for all water line(s)**

constructed in Harnett County. The red line drawings should clearly identify any deviations from the NCDENR approved plans. All change orders must be approved by HCDPU and the Professional Engineer (PE) in writing and properly documented in the red line field drawings.

J. Potable water mains crossing other utilities and non-potable water lines (sanitary sewer, storm sewer, RCP, etc.) shall be laid to provide a minimum vertical distance of twenty-four (24") inches between the potable water main and all other utilities. NCDOT requires the new water mains to be installed under the storm water lines. The potable water main shall be installed with twenty-four (24") inches of vertical separation and with ductile iron pipe when designed to be placed under a non-potable water line such as sanitary sewer or storm sewer lines. If these separations cannot be maintained then the water main shall be installed with ductile iron pipe. Both the potable water main and the non-potable water line must be cast iron or ductile iron pipe (DIP) if the state minimum separations cannot be maintained. The ductile iron pipe must be laid so the mechanical joints are at least (10') feet from the point where the potable water main crosses the non-potable water line.

K. Potable water mains installed parallel to non-potable water lines (sanitary sewer, storm sewer, RCP, etc.) shall be laid to provide a minimum horizontal distance of ten (10') feet between the potable water main and sanitary sewer mains, sewer laterals and services. The horizontal separation between the potable water main and any other utility or storm sewer shall not be less than five (5') feet. The potable water main must be ductile iron pipe if this horizontal separation of ten (10') feet cannot be maintained. The ductile iron pipe shall extend at least ten (10') feet beyond the point where the minimum required horizontal separation of ten (10') feet can be re-established.

L. Meter setters shall be installed in pairs on every other lot line where possible to leave adequate space for other utilities to be installed at a later time. The meter setters shall be installed at least one (1') foot inside the right-of-way and at least three (3') to five (5') feet from the property line between the lots.

M. HCDPU requires that meter boxes for ¾" services shall be 12" wide x 17" long ABS plastic boxes at least 18" in height with cast iron lids/covers. Meter boxes for 1" services shall be 17" wide x 21" long ABS plastic boxes at least 18" in height with plastic lids and cast iron flip covers in the center of the lids. Meter boxes for 2" services shall be 20" wide x 32" long ABS plastic boxes at least 20" in height with plastic lids and cast iron flip covers in the center of the lids.

N. Master meters must be installed in concrete vaults sized for the meter assembly and associated appurtenances so as to provide at least eighteen (18") inches of clearance between the bottom of the concrete vault and the bottom of the meter setter. The master meter must be provided test ports if the meter is not equipped with test ports from the manufacturer in accordance with the HCDPU established standard specifications and details. Ductile iron pipe must be used for the master meter vault piping and valve vault piping. The Utility Contractor must provide shop drawings for the meter vaults to HCDPU prior to ordering the concrete vaults.

O. The Utility Contractor will install polyethylene SDR-9 water service lines that cross under the pavement inside a schedule 40 PVC conduit to allow for removal and replacement in the future. Two (2) independent ¾" water service lines may be installed inside one (1) – two (2") inch schedule 40 PVC conduit or two (2) independent 1" water service lines may be installed inside one (1) – three (3") inch schedule 40 PVC conduit, but each water service shall be tapped directly to the water main. Split services are not allowed by HCDPU.

P. The water main(s), fire hydrants, gate valves, service lines, meter setters and associated appurtenances must be rated for 200 psi and hydrostatically pressure tested to 200 psi. The hydrostatic pressure test(s) must be witnessed by the HCDPU Utility Construction Inspector. The Utility Contractor must notify HCDPU when they are ready to begin filling in lines and coordinate with Harnett County to witness all pressure testing.

Q. The Utility Contractor shall conduct a pneumatic pressure test using compressed air or other inert gas on the stainless steel tapping sleeve(s) prior to making the tap on the existing water main. This pneumatic pressure test must be witnessed by the HCDPU Utility Construction Inspector. The Utility Contractor shall use Romac brand stainless steel tapping sleeve(s) or approved equal for all taps made in Harnett County. All new water line extensions must begin with a resilient wedge type gate valve sized equal to the diameter of the new water line extension in order to provide a means of isolation between Harnett County's existing water mains and the new water line extensions under construction.

R. **All water mains will be constructed with SDR-21 PVC Pipe or Class 50 Ductile Iron Pipe rated for at least 200 psi or greater. All pipes must be protected during loading, transport, unloading, staging, and installation. PVC pipe must be protected from extended exposure to sunlight prior to installation.**

S. **All water mains will be flushed and disinfected in strict accordance with the standard specifications of the Harnett County Department of Public Utilities. All water samples collected for bacteria testing will be collected by the HCDPU Utility Construction Inspector and tested in the HCDPU Laboratory.**

T. **All fittings larger than two (2") inches diameter shall be ductile iron. HCDPU requires that mechanical joints be assembled with grip rings as "Megalug" fittings are not approved by Harnett County for pipe sizes smaller than twelve inches (12") diameter. PVC pipe used for water mains shall be connected by slip joint or mechanical joint with grip rings. Glued pipe joints are not allowed on PVC pipe used for water mains in Harnett County.**

U. **HCDPU requires that the Utility Contractor install tracer wire in the trench with all water lines. The tracer wire shall be 12 ga. insulated, solid copper conductor and it shall be terminated at the top of the valve boxes or manholes. No spliced wire connections shall be made underground on tracer wire installed in Harnett County. The tracer wire may be secured with duct tape to the top of the pipe before backfilling.**

V. **The Utility Contractor will provide Professional Engineer (PE) and the HCDPU Utility Construction Inspector with a set of red line field drawings to identify the installed locations of the water line(s) and all associated services. All change orders must be pre-approved by HCDPU and the Professional Engineer (PE) in writing and properly documented in the red line field drawings.**

W. **The Utility Contractor shall spot dig to expose each utility pipe or line which may conflict with construction of proposed water line extensions well in advance to verify locations of the existing utilities. The Utility Contractor shall provide both horizontal and vertical clearances to the Professional Engineer (PE) to allow the PE to adjust the water line design in order to avoid conflicts with existing underground utilities. The Utility Contractor shall coordinate with the utility owner and be responsible for temporary relocation and/or securing existing utility poles, pipes, wires, cables, signs and/or utilities including services in accordance with the utility owner requirements during water line installation, grading and street construction.**

X. **Prior to the commencement of any work within established utility easements or NCDOT right-of-ways the Utility Contractor is required to have a signed NCDOT encroachment agreement**

posted on site and notify all concerned utility companies in accordance with G.S. 87-102. The Utility Contractor must call the NC One Call Center at 811 or (800) 632-4949 to verify the location of existing utilities prior to the beginning of construction. Existing utilities shown in these plans are taken from maps furnished by various utility companies and have not been physically located or verified by the P.E. (i.e. TELEPHONE, CABLE, WATER, SEWER, ELECTRICAL POWER, FIBER OPTIC, NATURAL GAS, ETC.). The Utility Contractor will be responsible to repair any and all damages to the satisfaction of the related utility company.

Y. The Utility Contractor shall provide HCDPU with at least one (1) fire hydrant wrench and one (1) break-away flange kit for every subdivision with fire hydrants developed in Harnett County. These items must be provided to HCDPU before the final inspection will be scheduled by the HCDPU Utility Construction Inspector. In addition, the Utility Contractor shall install a 4" x 4" concrete valve marker at the edge of the right-of-way to identify the location of each gate valve installed in the new water system with the exception of the fire hydrant isolation valves. The contractor shall measure the distance from the center of the concrete marker to the center of the valve box. This distance (in linear feet) shall be stamped on the brass plate located on the top of the concrete valve marker. In lieu of installing the concrete valve markers, the Utility Contractor may provide at least two measurements from two independent permanent above ground structures to the Professional Engineer (PE) in the red line drawings to identify the valve locations. The Professional Engineer (PE) must include these measurements in the As-Built Record Drawings submitted to HCDPU.

Z. The Utility Contractor will be responsible for any and all repairs due to leakage damage from poor workmanship during the one (1) year warranty period once the water system improvements have been accepted by Harnett County. Harnett County will provide maintenance and repairs when requested and bill the Developer and/or Utility Contractor if necessary due to lack of response within 48 hours of notification of warranty work. The Utility Contractor will be responsible for any and all repairs due to damages resulting from failure to locate the new water lines and associated appurtenances for other utilities and their contractors until the water lines have been approved by NCDENR and accepted by HCDPU. The final inspection of water system improvements cannot be scheduled with HCDPU until the streets have been paved; the rights-of-way and utility easements have been seeded and stabilized with an adequate stand of grass in place to prevent erosion issues on site.

AA **The Engineer of Record is responsible to insure that construction is, at all times, in compliance with accepted sanitary engineering practices and approved plans and specifications. No field changes to the approved plans are allowed without prior written approval by HCDPU. A copy of each engineer's field report is to be submitted to HCDPU as each such inspection is made on system improvements or testing is performed by the contractor. Water and sewer infrastructure must pass all tests required by HCDPU specifications and those of all applicable regulatory agencies. These tests include, but are not limited to: air test, vacuum test, mandrel test, visual test, pressure test, bacteriological test, etc. A HCDPU Inspector must be present during testing and all test results shall be submitted to HCDPU. All tests must be satisfied before the final inspection will be scheduled with the HCDPU Inspector. The Engineer of Record must request in writing to schedule the final inspection once all construction is complete. The Developer's Engineer of Record and the HCDPU Utility Construction Inspector shall prepare a written punch list of any defects or deficiencies noted during the final inspection, should any exist. Upon completion of the punch list, the Developer's Engineer of Record will schedule another inspection. In the event the number of inspections performed by the HCDPU exceeds two, additional fees may be accessed to the Developer.**

SANITARY SEWER

A. **The Professional Engineer (PE) shall obtain and supply a copy of the sewer permit for the construction and operation of the wastewater collection system to the Utility Contractor before the construction of the sanitary sewer line, sewer lift station and associated force main shall begin. The Utility Contractor must post a copy of the sewer permit issued by the North Carolina**

Department of Environment and Natural Resources – Division of Water Quality (NCDENR-DWQ) on site prior to the start of construction. The permit must be maintained on site during the construction of the sewer system improvements.

B. The Utility Contractor shall notify Harnett County Department of Public Utilities (HCDPU) and the Professional Engineer (PE) at least two days prior to construction commencing. The Utility Contractor must schedule a pre-construction conference with Mr. Alan Moss, HCDPU Utility Construction Inspector at least two (2) days before construction will begin and the Utility Contractor must coordinate with HCDPU for regular inspection visitations and acceptance of the wastewater system(s). Construction work shall be performed only during the normal working hours of HCDPU which is 8:00 am – 5:00 pm Monday through Friday. Holiday and weekend work is not permitted by HCDPU.

C. The Professional Engineer (PE) shall provide HCDPU with a set of NCDENR approved plans marked "Released For Construction" at least two days prior to construction commencing. HCDPU will stamp the approved plans as "Released for Construction" and provide copies to the utility contractor. The Registered Land Surveyor (RLS) shall stake out all lot corners and establish grade stakes for the proposed finish grade for each street and sewer line before the Utility Contractor begins construction or installation of the manholes, sanitary sewer gravity line(s), sewer lift stations and/or sanitary sewer force main(s). The grade stakes should be set with a consistent offset from the street centerline so as not to interfere with the street grading or utility construction.

D. The Utility Contractor shall provide the HCDPU Utility Construction Inspector with material submittals and shop drawings for all project materials prior to the construction of any gravity sewer line(s), manhole(s), sewer lift station(s) and associated force main(s) in Harnett County. The materials to be used on the project must meet the established specifications of HCDPU and be approved by the Engineer of Record prior to construction. All substandard materials or materials not approved for use in Harnett County found on the project site must be removed immediately when notified by the HCDPU Utility Construction Inspector.

E. The sanitary sewer lateral connections should be installed 90° (perpendicular) to the sanitary sewer gravity lines with schedule 40 PVC pipe. HCDPU requires the Utility Contractor to provide the Professional Engineer (PE) with accurate measurements for locating sanitary sewer service lateral and associated each sanitary sewer clean-out. These measurements should be taken

from the nearest downstream manhole up along the sanitary sewer main to the in-line wye fitting (or tapping saddle) and then another measurement from the in-line wye fitting (or tapping saddle) to the 4" x 4" long sweep combination wye fitting at the bottom of the sewer clean-out stack. These field measurements must be provided to the Professional Engineer (PE) in the red line drawings from the Utility Contractor for proper documentation in the As-Built Record Drawings submitted to HCDPU.

F. The Utility Contractor shall be responsible to locate the newly installed sanitary sewer gravity line(s), sanitary sewer force main(s), sanitary sewer service lateral(s) and all associated sewer clean-out(s) in the proposed sanitary sewer system for other utility companies and their contractors until the new sanitary sewer line(s) and associated appurtenances have been approved by the North Carolina Department of Environment and Natural Resources – Division of Water Quality (NCDENR-DWQ) and accepted by HCDPU. All new sanitary sewer lines must have at least three (3 ft.) feet of cover and extend under all existing water main and storm water lines with a least 24" of vertical clearance below the bottom of the existing water main and storm water lines.

G. The sanitary sewer gravity line(s), manhole(s), sanitary sewer service lateral(s) and associated clean-out(s) shall be constructed in strict accordance with the standard specifications of the Harnett County Department of Public Utilities. The sanitary sewer gravity line(s) must pneumatically pressure tested with compressed air at 5 psi and the sanitary sewer force main(s) must hydrostatically pressure tested with water or air at 200 psi. Sanitary sewer manholes must be vacuum tested to 10 inches of mercury and cannot drop below 9 inches in 60 seconds for 4 ft. diameter manholes, 75 seconds for 5 ft. diameter manholes. All tests mentioned above must be witnessed by the HCDPU Utility Construction Inspector and Engineer.

H. Prior to acceptance, all sewer service laterals will be inspected to insure that they are installed at the proper depth. All sewer clean-outs must be installed so the 4" x 4" long sweep combination wye is at least three (3') feet but no more than four (4') feet below the finish grade unless otherwise approved in writing by HCDPU. The sewer cleanouts shall have a four (4") schedule 40 PVC pipe stubbed up from both ends of the 4" x 4" long sweep combination wye to be at least two (2') feet above the finish grade and cover each end with a four (4") inch temporary cap to keep out dirt, sand, rocks, water and construction debris. The vertical stack on each clean-out must be provided with a concrete donut for protection.

I. **Once the sanitary sewer gravity line(s) have been installed, pneumatically pressure tested and in place for at least 30 days, the Utility Contractor must contact the HCDPU Utility Construction Inspector to witness the mandrel test on each PVC sanitary sewer gravity line. The Utility Contractor will notify HCDPU to schedule the mandrel testing. The mandrel and proving ring must be supplied by the Utility Contractor. Closed circuit video camera inspections (at the Utility Contractor's expense) may be required by the HCDPU Utility Construction Inspector if the mandrel and mirror tamping testing cannot be completed with satisfactory results. The sanitary sewer lines should be flushed clean using a sewer ball of the proper diameter before any mandrel testing can be performed. The Utility Contractor is responsible to remove all dirt, sand, silt, gravel, mud and debris from the newly constructed sewer lines exercising care to keep the Harnett County's existing sanitary sewer systems clean. Sanitary sewer force main(s) shall be pressure tested to 200 psi for at least 2 hours like water lines.**

J. **The Utility Contractor shall be responsible to locate the newly installed sanitary sewer system(s) for other utility companies and their contractors until the new sanitary sewer system(s) have been approved by the North Carolina Department of Environment and Natural Resources – Division of Water Quality (NCDENR-DWQ)and accepted by HCDPU.**

K. **HCDPU requires that the Utility Contractor install tracer wire in the trench with all sanitary sewer force mains. The tracer wire shall be 12 ga. insulated, solid copper conductor and it shall be terminated at the top of the valve boxes or manholes. No spliced wire connections shall be made underground on tracer wire installed in Harnett County. The tracer wire may be secured with duct tape to the top of the pipe before backfilling. The tracer wire is not required for the gravity sewer line(s) between manholes.**

L. **The Utility Contractor shall provide the Professional Engineer (PE) and HCDPU Utility Construction Inspector with a set of red line drawings identifying the complete sewer system installed for each project. The red line drawings should identify the materials, pipe sizes and approximate depths of the sewer lines as well as the installed locations of the manhole(s), sanitary sewer gravity line(s), sanitary sewer service laterals, clean-outs, sewer lift station(s) and associated force main(s). The red line drawings should clearly identify any deviations from the NCDENR approved plans. All change orders must be approved by HCDPU and the Professional Engineer (PE) in writing and properly documented in the red line field drawings.**

M. **Prior to the commencement of any work within established utility easements or NCDOT right-of-ways the Utility Contractor is required to notify all concerned utility companies in accordance with G.S. 87-102. The Utility Contractor must call the NC One Call Center at 811 or (800) 632-4949 to verify the location of existing utilities prior to the beginning of construction. Existing utilities shown in these plans are taken from maps furnished by various utility companies and have not been physically located by the P.E. (i.e. TELEPHONE, CABLE, WATER, SEWER, ELECTRICAL POWER, FIBER OPTIC, NATURAL GAS, ETC.).**

N. **The Utility Contractor shall spot dig to expose each existing utility pipe or line which may conflict with construction of proposed sanitary sewer line extensions well in advance to verify locations of the existing utilities. The Utility Contractor shall provide both horizontal and vertical clearances to the Professional Engineer (PE) to allow the PE to adjust the sanitary sewer line design in order to avoid conflicts with existing underground utilities. The Utility Contractor shall coordinate with the utility owner and be responsible for temporary relocation of existing utilities and/or securing existing utility poles, pipes, wires, cables, signs and/or utilities including services in accordance with the utility owner's requirements during sanitary sewer line installation, grading and street construction.**

O. **When making a tap on an existing sewer force main, the Utility Contractor must have a permit from the North Carolina Department of Environment and Natural Resources – Division of Water Quality (NCDENR-DWQ) prior to begin the tap work. The Utility Contractor shall conduct a pneumatic pressure test using compressed air or other inert gas on the stainless steel tapping sleeve and gate valve prior to making the tap on an existing sanitary sewer force main. This pneumatic pressure test must be witnessed by the HCDPU Utility Construction Inspector. The Utility Contractor shall use Romac brand stainless steel tapping sleeve(s) or approved equal for all taps made on sanitary sewer force mains in Harnett County. The Utility Contractor shall use Romac brand Style "CB" sewer saddles with stainless steel bands or approved equal for all taps made on existing sanitary sewer gravity lines in Harnett County.**

P. **The Utility Contractor shall provide a grease trap for each sanitary sewer service lateral that will be connected to a restaurant, food processing facility and any other commercial or industrial facility as required by the Harnett County Fat, Oil & Grease Ordinance. The grease trap must be rated for a minimum capacity of at least 1,000 gallons unless otherwise approved in**

writing by the HCDPU Pre-Treatment Coordinator. Garbage disposals should not be installed in homes and businesses that discharge wastewater to the Harnett County Sanitary Sewer System as they are not approved by HCDPU.

Q. Each sewer lift station must be provided with three phase power (at least 480 volts) and constructed to meet the minimum requirements of the latest version of the National Electrical Code (NEC) and Harnett County standard specifications and details. If three phase power is not available from the power company other arrangements must be approved by HCDPU Engineering prior to the start of construction.

R. Where a new sanitary sewer force main is connected to an existing manhole in the Harnett County sewer collections system, the Utility Contractor must provide a protective coating (coal tar epoxy) for the interior surfaces of the manhole to protect it against corrosion, erosion and deterioration from the release of sewer gases such as methane and hydrogen sulfide.

S. The sewer lift station design and associated equipment must meet or exceed the MINIMUM REQUIREMENTS FOR HARNETT COUNTY SEWER LIFT STATIONS 2009 edition. Each sanitary sewer lift station must be constructed with an all-weather access road that is at least 20 feet wide. The lift station site must be covered with weed blocking material and at least six (6") inches of # 57 stone (crush and run).

T. Once a sewer lift station has been installed, the Utility Contractor is responsible to schedule a draw down test with HCDPU Engineering and Collections staff, the Professional Engineer (PE), the Electrician, the original equipment manufacturer's (OEM) representatives [For both the Pumps and the Generator]. This draw down test must be completed with power supplied from the electrical utility company and with power supplied by the emergency generator with satisfactory results before final inspections are conducted by the HCDPU Utility Construction Inspector.

U. Once the Utility Contractor completes the installation of a sewer lift station, the Professional Engineer (PE) must submit the sewer permit certification and As-Built Record Drawings to the North Carolina Department of Environment and Natural Resources – Division of Water Quality (NCDENR-DWQ) and HCDPU for final approval. The Utility Contractor must supply HCDPU Engineering staff with three original Operation & Maintenance (O&M) Manuals along with the associated pump curves and electrical schematics for the associated sewer lift station equipment including all warranty information and documentation.

V. Once the Utility Contractor completes the installation of a sewer lift station, the Developer must pay HCDPU the established System Control and Data Acquisition (SCADA) fees before the SCADA system will be installed at the new sewer lift station. The SCADA system must be installed and operational before the utilities may be accepted by HCDPU and placed into operation.

W. HCDPU requires the Utility Contractor to provide all necessary equipment and devices for the testing and inspection of the sanitary sewer system. The equipment and devices may include but not limited to lamping with mirrors, mandrels, sewer balls, plugs, air compressors and associated compressed air lines. If the HCDPU Utility Construction Inspector deems that a closed circuit video camera inspection of the newly constructed sewer system is necessary, then all costs for the closed circuit camera inspection will be the responsibility of the Utility Contractor. All closed circuit video camera inspections must be recorded on VHS tapes that will released to HCDPU for record keeping, review and approval of the sewer system.

X. Any use of sewer plugs to temporarily block Harnett County's existing sanitary sewer lines must be coordinated with the HCDPU Collections Supervisor at least two (2) days in advance of installing the plugs. The sewer plugs must be removed as soon as possible once the new sanitary sewer lines have been inspected, pressure tested, mandrel tested, approved by the North Carolina Department of Environment and Natural Resources – Division of Water Quality (NCDENR-DWQ) and accepted by HCDPU to allow the sewer to flow as designed in Harnett County's existing sanitary sewer lines or when so ordered by the HCDPU Collections Supervisor to limit interruptions to the normal flow of the sanitary sewer collection system(s). The Utility Contractor must provide the pumps hoses and necessary connectors for a temporary pump around setup if required by the HCDPU Collections Supervisor. Mr. Randolph Clegg, HCDPU Collections Supervisor may be contacted between 8:00 am and 5:00 pm Monday through Friday at (910) 893-7575 extension 3241.

Y. The Utility Contractor will be responsible for any and all repairs due to leakage or damage resulting from poor workmanship during the one (1) year warranty period once the sewer system improvements have been approved by the North Carolina Department of Environment and Natural Resources – Division of Water Quality (NCDENR-DWQ) and accepted by HCDPU. The Utility Contractor will be responsible for any and all repairs due to damages resulting from failure to locate the new sanitary sewer lines and associated appurtenances for other utilities and their contractors until the sanitary sewer lines have been

approved by NCDENR and accepted by HCDPU. HCDPU will provide maintenance and warranty repairs if necessary due to lack of response within 48 hours of notification of warranty work. HCDPU will invoice the Developer and/or Utility Contractor for materials and labor in such cases.

Z. **In developments and projects that require utility easements to be established for future HCDPU right-of-way, the Registered Land Surveyor (RLS) must provide the HCDPU Right-of-Way Agent with an official copy of the recorded plat and legal description of the said easement as recorded with the Harnett County Register of Deeds. The recorded documents must be provided to the HCDPU Right-of-Way Agent before the utility improvements within the said easement can be placed into operation. Any and all easements that must be obtained from adjoining property owners must be provided to HCDPU by the Developer at no cost to Harnett County. The final inspection of all sanitary sewer system improvements cannot be scheduled with HCDPU until the streets have been paved; the rights-of-way and utility easements have been seeded and stabilized with an adequate stand of grass in place to prevent erosion issues on site.**

AA. **The Engineer of Record is responsible to insure that construction is, at all times, in compliance with accepted sanitary engineering practices and approved plans and specifications. No field changes to the approved plans are allowed without prior written approval by HCDPU. A copy of each engineer's field report is to be submitted to HCDPU as each such inspection is made on system improvements or testing is performed by the contractor. Water and sewer infrastructure must pass all tests required by HCDPU specifications and those of all applicable regulatory agencies. These tests include, but are not limited to: air test, vacuum test, mandrel test, visual test, pressure test, bacteriological test, etc. A HCDPU Inspector must be present during testing and all test results shall be submitted to HCDPU. All tests must be satisfied before the final inspection will be scheduled with the HCDPU Inspector. The Engineer of Record must request in writing to schedule the final inspection once all construction is complete. The Developer's Engineer of Record and the HCDPU Utility Construction Inspector shall prepare a written punch list of any defects or deficiencies noted during the final inspection, should any exist. Upon completion of the punch list, the Developer's Engineer of Record will schedule another**

inspection. In the event the number of inspections performed by the HCDPU exceeds two, additional fees may be accessed to the Developer.

CHAPTER 9

WATER SYSTEM STANDARDS AND SPECIFICATIONS

Chapter 9 Table of Contents/Index

CHAPTER 9 WATER SYSTEM STANDARDS AND SPECIFICATIONS

Section 9.1 Design of Water System Improvements

All line extensions and improvements to the Harnett County existing water distribution system shall be designed by a Professional Engineer (P.E.). The Engineer's plans and details shall be approved by HCDPU and permitted by the North Carolina Department of Environment and Natural Resources – Division of Water Resources, Public Water Supply Section (NCDENR-DWR, PWSS) before any construction may begin on proposed water system improvements. The Professional Engineer must follow the Plan and General Requirements described in Chapters 2-4.The Contractor shall notify the Engineer if site conditions prevent the construction of the water system improvements as planned by the Engineer, approved by the HCDPU and permitted by the NCDENR-DWR, PWSS. Should site conditions warrant plan revisions then follow the procedures outlined in Chapter 4 under Section 4. 1. 11 above for plan approval of all system improvements. All materials used in the water system improvements shall meet the requirements specified in the specifications unless otherwise approved by the HCDPU Engineering Representative or the HCDPU Director in writing.

Once each project has been approved and permitted by the state, the approved plans will be returned to the HCDPU and then copies will be made for the contractor and the HCDPU Utility Construction Inspector. Copies of the state approved plans will be stamped by the HCDPU Engineering Representative as "Released For Construction," signed and dated to verify all plan changes requested by the state and the HCDPU have been addressed by the design engineer. During the pre-construction conference, the HCDPU Engineering Representative will provide a copy of the state approved plans stamped as "Released For Construction" to the contractor/developer and the HCDPU Utility Construction Inspector. Only the HCDPU approved plans as permitted by the NCDENR-DWR, PWSS stamped by the HCDPU Engineering Representative as "Released For Construction" shall be used for construction of any water system improvements to the existing Harnett County water treatment plant or the water distribution system.

Section 9.2 Materials & Design Requirements

The Professional Engineer (P.E.) shall design the water system improvements using only materials approved under Rules Governing Public Water Systems NCAC Title 15A DENR Subchapter 18C Sections .0100 through .2200 or latest edition, Harnett County Public Utilities Standards and Specifications latest edition, and included herein. Unless otherwise noted, the materials listed below are acceptable to the HCDPU for use in the design of any line extension or system improvement of the County's water distribution system. Should the P.E. desire to use materials not listed in these specifications, written permission must be obtained from both the HCDPU Director and the HCDPU Engineering Representative or designated personnel as approved by the HCDPU Director.

All material shall be free from defects impairing strength and durability and be of the best commercial quality for the purposes specified. It shall have structural properties sufficient to safely sustain or withstand strains and stresses to which it is normally subjected and be true to detail. Connection to existing water mains as indicated under the direct supervision of the HCDPU Utility Construction Inspector or equivalent engineering representative of HCDPU. Provide water main pipe, fittings, accessories, resilient seat or resilient wedge type gate valves, rubber seated butterfly valves, fire hydrants, combination air valves, air/vacuum valves, altitude control valves, check valves, cast iron valve boxes, tapping saddles, service saddles, corporation stops, polyethylene (CTS) plastic tubing, soft "K" copper tubing, meter setters, meter boxes, concrete valve box protective rings (donuts) and concrete valve markers as specified and where indicated per project utility plans approved by the HCDPU and permitted by the

North Carolina Department of Environment and Natural Resources – Division of Water Resources, Public Water Supply Section.

Any engineer designing project(s) to improve the Harnett County water distribution system or to extend new water mains, water service lines or repair of the existing water distribution system shall abide the specifications herein and shall have a copy of these specifications. The specifications shall govern the design of any such system improvements and be submitted to the North Carolina Department of Environment and Natural Resources – Division of Water Resources, Public Water Supply Section (NCDENR-DWR, PWSS) along with the utility plans and an engineer's report to obtain the appropriate "Authorization to Construct" (water) DWR permit issued by the NCDENR-DWR, PWSS for the proposed project. In addition, the P.E. shall obtain an Erosion and Sedimentation Control permit issued by the North Carolina Department of Environment and Natural Resources – Division of Land Quality (NCDENR-DLQ) for any land disturbing activity that disturbs more than one (1) acre of soil. In addition, the P.E. shall obtain Wetland permit issued by the state of North Carolina and/or United States Army Corps of Engineers (USACE) for any wetland disturbance that may be caused by the project construction. The P.E. shall complete the North Carolina Department of Transportation (NCDOT) encroachment agreement to cover all work proposed within the right-of-way of any state maintained street or road. All of these permits and agreements shall be obtained by the P.E. for the Contractor to post on the project job site for any authority having jurisdiction over the project to see the appropriate permits and agreements have been issued to the county or the developer as required by state law.

Section 9.3 Water Main Design

9.3.1 Pressure

All water mains, including those not designed to provide fire protection, shall be sized after a hydraulic analysis based on the flow demands and pressure requirements. The system shall be designed to maintain a minimum pressure of 20 psi at ground level at all points in the distribution system under all conditions of flow including domestic fire flow of 500 gpm in residential communities and 500 gpm in commercial areas. The normal working pressure in the distribution system should be approximately 60 psi and not less than 35 psi. All pipe to be selected for water system improvements shall be able to withstand system pressures up to 200 psi. Water distribution mains shall be sized to provide a minimum pressure at all points within the distribution system of not less than 20 pounds per square inch (gauge) during periods of peak demand (fire flow), but in any case water mains shall not be less than two-inch standard nominal diameter. Fire hydrants shall not be installed on water mains of less than six inches diameter or on water mains or water systems not designed to carry fire protection flows. All systems shall have the capacity to maintain a pressure of at least 30 pounds per square inch (gauge) throughout the system during periods of peak domestic flow.

9.3.2 Diameter

Pipe sizes acceptable to the HCDPU are based upon nominal diameters of 2 inch, 4 inch, 6 inch, 8 inch, 12 inch, 16 inch, 20 inch, 24 inch, 30 inch and 36 inch. Larger pipe diameters shall be designed by the Professional Engineer (P.E.). Pipe diameters less than 2 inches are not acceptable for water mains. The minimum size of water main for providing fire protection and serving fire hydrants shall be 6 inches diameter. Larger size mains shall be required if necessary to allow for the withdrawal of the required fire flow while maintaining the minimum residual pressure specified herein.

9.3.3 Fire Protection

When fire protection is provided, system design shall be such that fire flows and facilities are in accordance with the requirements of the UDO (Chapter 7 Section 6.4.4) or latest revision, or a minimum of 500 gpm delivery in

residential areas 500 gpm in commercial areas with 20 psi residual pressure. The local Fire Marshal having jurisdictional authority over the project may require greater flow than the minimum flows listed above.

9.3.4 Small Water Mains

Any departure from minimum requirements shall be justified by hydraulic analysis and future water use, and may be considered only in special circumstances. Generally, pipe diameters of less than 4 inches are not acceptable. However, a pipe 2 inches in diameter may be acceptable by the HCDPU on a case by case basis (short extensions, dead ends, cul-de-sacs). All pipe under 4inches in diameter shall bear the NSF # 61 certification label.

9.3.5 Hydrants

Water mains less than six (6”) inches diameter or water mains not designed to carry fire flows shall not have fire hydrants connected to them. Fire hydrants shall satisfy the requirements set forth in Section 7.4.5 below and shall be installed on water mains six (6”) inches in diameter or greater. The Harnett County Fire Marshal requires that fire hydrants shall be placed at each intersection including the entrance to each new development. The fire hydrants shall be located on the right side of the street as firefighting apparatus would travel into the development. Fire hydrants should be spaced out evenly along each new street with the spacing in between each fire hydrant not to exceed 1,000 feet.

9.3.6 Dead Ends and Reductions in Size of Water Line Pipe

Dead ends shall be minimized by looping of all mains whenever practical. The construction drawings shall include a two (2”) inch blow off assembly at the end of each dead end water line in accordance with Detail W-2 to allow the HCDPU staff to flush the dead-end water line on a regular basis. Since the Harnett County Fire Marshal requires that each and every residential lot be within 500 feet of the nearest fire hydrant, the HCDPU requires the design engineer to measure the 500 feet along the centerline of the street from the rear property line of the last lot on any cul-de-sac or dead-end street to determine the point where the last fire hydrant should be placed on the dead-end street. Then the water line should be reduced down to a smaller water line of at least two (2”) inches in diameter to serve the lots at the end of the street not to exceed 12 lots. The water line design shall include an in-line gate valve at each location where the water line diameter is reduced and the gate valve shall be located on the smaller side of the reducer fitting. This will enable the HCDPU staff to determine where the water line has been reduced in diameter.

9.3.7 Flushing

Where dead end streets will be served by water mains, there shall be provided a fire hydrant if flow and pressure are sufficient or with an approved flushing hydrant. No flushing device shall be directly connected to any sewer. Post hydrants or flushing hydrants shall be Mueller 24058 or approved equal. If the water line cannot support a flushing hydrant then the engineer shall design a two (2”) inch blow off assembly to be installed at the end of the water main. The blow off assembly shall be located on the opposite corner from the last meter setter on the end of the water main. The blow off assembly shall be located at least one (1 ft.) foot within the NCDOT right-of-way at the property corner. A temporary two (2”) inch blow off assembly shall be required at the end of all temporary water line terminations and the design of the blow off assembly shall include a gate valve sized equal to the main water line.

9.3.8 Size of Mains

All water mains designed to be installed within public streets and NCDOT state maintained rights-of-ways shall be sized in accordance with the HCDPU Water Distribution System Master Plan. Generally, all water mains installed within public streets and NCDOT state maintained rights-of-ways shall be at least eight (8”) inches in diameter

unless otherwise approved by the HCDPU Engineer. The Professional Engineer (P.E.) designing any project to extend water mains from Harnett County's existing water distribution system shall consult with the HCDPU Engineering Representative to assure the requirements of the HCDPU Water Distribution System Master Plan will be satisfied by the design of the new project. The HCDPU Water Distribution System Master Plan is subject to change at any time to meet the needs of the growing population of Harnett County and the surrounding areas.

9.3.9 Materials and Locations

The Professional Engineer must design the proposed water main extensions with the materials specified herein.

Section 9.4 Materials

9.4.1 Standards

All materials used in the construction of water line extensions to be added to the Harnett County's water distribution system shall comply with the requirements of the Safe Drinking Water Act and meet the requirements established by the American Society for Testing Materials (ASTM), the American Water Works Association (AWWA), the Ductile Iron Pipe Research Association (DIPRA), the American Association of State Highway and Transportation Officials (AASHTO) and the American National Standards Institute (ANSI), American Society of Sanitary Engineering (ASSE) and all other federal, state, county and local requirements. See Section 9.15.3 for Material Submittals and Shop Drawings.

9.4.2 Water Main Materials

A. PVC PIPE – THINWALL POLYVINYL CHLORIDE (PVC) PRESSURE PIPE

As a minimum, PVC 2 inch through 12 inch shall conform to pressure rated Class 200 PSI standard dimension ratio SDR 21 as required by AWWA Standard C-905 unless otherwise specified. All pipe less than four (4") inches in diameter shall bear the NSF # 61 certification label indicating approval for use in public water systems. All PVC pipe shall meet the requirements of ASTM Standard D-2241. Pipe supplied with gasketed joint shall meet the requirements of ASTM Standard D-3139 and the joint gasket shall conform to the requirements of ASTM Standard F-477. All PVC pipe shall meet the requirements of NSF Standard # 14, "Plastic Piping Components and Related Materials," and Standard # 61, "Drinking Water System Components-Health Effects." The PVC pipe shall display the "NSF-PW" listing mark signifying use in potable water applications. Pipe shall be installed and tested in accordance with theses specifications and the manufacturers‟ suggested procedures. The PVC compound material for extruding shall meet ASTM Standard D1784. The rubber coupling rings shall meet ASTM standard D2672 or ASTM D3139.

Pipe shall be furnished in factory packaged units and each pipe shall be plainly marked with the manufacturer's name, size, material (PVC), type, grade or compound pressure rating and reference to appropriate product standards each pipe length shall bear the stamped seals of approval from Underwriters Laboratory (UL) and National Sanitation Foundation (NSF).

Harnett County Department of Public Utilities does not allow the use of glued pipe, joints or fittings to be installed in the Harnett County water distribution system. Pipe specimens shall be subjected to tests by an independent testing laboratory at such time as the HCDPU staff may direct or as specified herein. Pipe not meeting these specifications will be ordered remove from the project site by the HCDPU Utility Construction Inspector and such pipe shall be immediately

removed from the job site and not transported to any portion of the project being constructed or any other project to be extended from or integrally connected to the Harnett County water distribution system.

B. DUCTILE IRON PIPE

Ductile Iron Pipe, except flange pipe, shall conform to the ANSI/AWWA C151/A21.51-02. All Ductile Iron Pipe shall be NSF # 61 certified, Pressure Class 350 for pipe 12" diameter and smaller. All larger pipes shall be Pressure Class 250. Flanged pipe shall conform to ANSI/AWWA C115/A21.15-05. The ends of pipe and fittings shall be suitable for the specified joints. Pipe and fittings shall have cement-mortar lining per ANSI/AWWA C104/A21.4-03 standard thickness and all ductile iron shall conform to the requirements of ASTM A-536, latest revision, Grade 70-50-05.

9.4.3 Joints

A. Mechanical Joints

Packing and jointing materials used in the joints of all pressure pipe shall meet the current standards of the AWWA and the HCDPU. All joints on pressure pipe installed underground shall be mechanical joint ductile iron fittings with grip rings for reinforcement.

B. Slip-On or Push-On Joints

PVC pipe shall require slip on joints with rubber gaskets. Fittings for pipe 4" up to 12" shall be DI Push Joint IPS/PVC, Class 250, ASTM A-536 and F-477 or DI Mechanical Joint with Grip Rings, Class 350, AWWA C110. For pipe smaller than 4", fittings shall be PVC Push Joint 200 psi PR with elastomeric gaskets (synthetic type) must meet ASTM Standard D-1784, D-3139, and F-477.

C. Flanged Joints

The flanged joints shall be used in above ground connections or connection installed inside concrete vaults. Flanged joints cannot be approved for use in direct burial pipe. Flanged joints shall be manufactured by a domestic foundry in accordance with applicable ASME Code Section IX and ASNI B31.1 for pressure piping. The flanged fittings shall meet o9r exceed the requirements of AWWA C115/ANSI 21.15-05 for Flanged Ductile Iron Pipe with Ductile Iron or Gray Iron Threaded Flanges and AWWA C207-01 for Steel Pipe Flanges for waterworks Service – Size 4 Inches through 144 inches.

D. Locking Joints

The locking joints shall be used in instances where the Engineer deems appropriate for the reinforcement of the joint. The locking joints shall be Griffin Field-Lok or approved equal for use with direct burial pipe. Locking joints must be assembled in compliance with the manufacturer's standards and recommended guidelines.

9.4.4 Tapping Sleeves

‘

All tapping sleeves installed in the Harnett County water distribution system shall be constructed with stainless steel material and meet the requirements established in AWWA Standard C223-02. Stainless steel fabricated tapping

sleeves shall be Romac model SST or approved equal made from stainless steel material that meets or exceeds the requirements of ANSI/AWWA C220. Cast Iron tapping sleeves are not permitted to be used in the Harnett County water distribution system. Tapping flanges for stainless steel fabricated tapping sleeves shall meet or exceed the requirements of ASTM A240, ASTM A743/A743M, or ASTM A744/A744M.

The tapping sleeve shall be installed per the manufacturer's installation instructions provided with the fabricated tapping sleeve. The manufacturer's instructions must be followed regarding support of the valve and the tapping machine during the tapping procedure. The contractor shall hydrostatically test the seal between the gasket of the tapping sleeve on the pipe of the existing water main and the gate valve before the tapping machine may be set up to perform the tap. The contractor may tap into the existing water main only after the hydrostatic pressure test has been completed with satisfactory results. For personal safety reasons, do not use a compressible fluid medium (such as air) to check for water tightness.

The HCDPU Utility Construction Inspector must witness the hydrostatic testing on the tapping sleeve and valve assembly as well as the tapping procedure on the existing water main. The coupon removed from the existing water main when the water line is tapped shall be given to the HCDPU Utility Construction Inspector. The HCDPU Utility Construction Inspector shall return the coupon to the HCDPU Engineering Representative for a visual analysis. Additional non-destructive analysis may be performed by the HCDPU Engineering Representative on the coupon to determine the condition of the existing water main. Coupons removed from AC pipe shall be sealed in a plastic bag to reduce the potential for fraying or dispersal of asbestos material. 135

9.4.5 Gaskets

Gaskets shall be molded or extruded natural or synthetic rubber free of porous areas and visible defects. Reclaimed rubber shall not be used. Unless otherwise specified, gaskets shall be suitable for water service to 150°F (65°C). Gaskets for the body of the tapping sleeve shall meet the requirements of ASTM D2000. Gaskets needed for the body of the tapping sleeve shall have a minimum diameter of 50 and minimum tensile strength of 800 psi. Gaskets for flanges shall conform to ANSI/AWWA C207.

9.4.6 Valves

A. Gate Valves (12 inches and smaller)

Gate valves installed in the Harnett County water distribution system shall be manufactured by Mueller, American Flow Control, M&H, Kennedy, Waterous or approved equal. Gate valves shall be cast iron conforming to AWWA standard C500 and rated for a working pressure of 200 psi for valves up to 12 inches in diameter and 150 psi for valves larger than 12 inches in diameter. Gate valves shall be mechanical joint, resilient seat type valves with non-rising stem, "0" ring seal, open left with 2-inch square operating nut. Gate valves shall be of one manufacturer. It is strongly recommended that instruction manuals supplied by the valve manufacturer be reviewed in detail before installing gate valves. The contractor should inspect the valve and accessories on the jobsite prior to installation.

Gate valves shall be resilient seated or resilient wedge type gate valves suitable for use with buried piping. All gate valves shall conform to AWWA standard C509-01 or latest version and/or AWWA standard C515-01 or latest version and they shall be NSF 61 certified. All valves smaller than 24 inches in diameter shall be configured and installed in a vertical position. Gate valve end connections shall be mechanical joint with grip rings for buried pipe or flanged joint for pipe installed above ground and for pipe installed inside an underground vault or enclosed structure as

indicated by the project drawings. Gate valves with flanged joints shall only specified for installation within an underground vault permitting personnel access and they must be equipped with hand wheels for operation. Gate valves shall have a non-rising valve stem with a 2-inch square operating nut. Gate valves shall open by counter-clockwise rotation of the operating nut. Stuffing boxes shall have "0" ring stem seals, except for those valves for which gearing is specified, in which case use conventional packing in place of the "0" ring stem seal. Stuffing boxes shall be bolted and constructed so as to permit easy removal of the parts for repair. The wedge shall be cast iron, completely encapsulated with resilient material. The resilient sealing material shall be permanently bonded to the cast iron wedge with rubber-tearing bond to meet ASTM standard D-429. The gate valve stem and stem nut shall be copper alloy. The body and bonnet shall be coated both interior and exterior with a fusion bonded heat cured thermo setting material meeting all application and performance requirements of the AWWA standard C550-05.

B. Check Valves

Check valves shall be manufactured by Mueller, American Flow Control, M&H, Kennedy or approved equal in accordance with AWWA standard C508-01 or latest version. Check valves shall be swing type check valves with iron or steel body and cover and flanged ends. Check valves shall have iron disc with bronze disc ring and seat ring. Valve to be lever and weight controlled with lever and weight on left side of valve when viewing valve in the direction of flow. All internal iron surfaces of the valve shall be coated with a minimum of 10 mils of fusion bonded or liquid epoxy, approved for potable water.

C. Butterfly Valves

Butterfly valves installed in the Harnett County water distribution system shall be manufactured by Mueller, Kennedy, Pratt, American Flow Control, Dezurik Water Controls, Keystone or approved equal. Butterfly valves shall conform to AWWA standard C504-06 or latest version for Class 150B service and shall be NSF 61 certified. Valve bodies shall be constructed of cast iron meeting the ASTM standard A-126 Class B and conform to AWWA standard C504-06 for laying lengths and minimum body shell thickness. Butterfly valves end connections shall be mechanical joint or flanged joint as indicated by the project drawings. Butterfly valves with flanged joints shall only specified for installation within an underground vault permitting personnel access and they must be equipped with hand wheels. 136

Valve discs shall also be made of cast iron meeting the ASTM standard A-126 Class B or ASTM standard A-48 Class 40 in sizes 24” and smaller. Disc shall be furnished with 316 stainless steel seating edge to mate with rubber seat on the body. Valve seat shall be Buna-N rubber located on the valve body. Valves 20 inches in diameter and smaller shall have bonded seats that meet test pressures outlined in the ASTM standard D-429 Method B. For valve sizes 24 inches in diameter and larger, the valve seats shall be retained in the valve body by mechanical means without the use of metal retainers or other devices located in the flow stream.

Butterfly valve shafts shall be manufactured of 18-8 type 304 stainless steel conforming to ASTM standard A-276. Shaft seals shall be standard self-adjusting split V packing and shaft seals shall be of a design allowing replacement without removing the shaft. Valve bearings shall be sleeve-type, corrosion resistant and self-lubricating. The valve shaft bearings shall be heavy duty bronze, properly fitted into thee hubs which are integrally cast into the valve body.

Valve actuators shall be fully grease packed and have stops in the open position. The actuator shall have a mechanical stop which will withstand an input torque of 450 ft.-lbs against the stop. The traveling nut shall engage alignment groves in the housing. The actuator shall have a built in packing leak bypass to eliminate possible packing leakage into the actuator housing. All internal and external surfaces shall be covered with a polyamide cured epoxy coating applied over a sand blasted “new white metal surface” per SSPC-SP10 to a minimum of 6 mils in compliance with AWWA standard C-550-05 or latest version. External painting, hydrostatic testing, travel stop adjustments and crating for shipment shall be completed by the manufacturer in accordance with the AWWA standard C504-06 or latest version. It is strongly recommended that instruction manuals supplied by the valve manufacturer be reviewed in detail before installing butterfly valves. The contractor should inspect the valve and accessories on the jobsite prior to installation.

Valve actuators shall be fully grease packed and have stops in the open position. The actuator shall have a mechanical stop which will withstand an input torque of 450 ft.-lbs against the stop. The traveling nut shall engage alignment groves in the housing. The actuator shall have a built in packing leak bypass to eliminate possible packing leakage into the actuator housing. All internal and external surfaces shall be covered with a polyamide cured epoxy coating applied over a sand blasted “new white metal surface” per SSPC-SP10 to a minimum of 6 mils in compliance with AWWA standard C-550-05 or latest version. External painting, hydrostatic testing, travel stop adjustments and crating for shipment shall be completed by the manufacturer in accordance with the AWWA standard C504-06 or latest version. It is strongly recommended that instruction manuals supplied by the valve manufacturer be reviewed in detail before installing butterfly valves. The contractor should inspect the valve and accessories on the jobsite prior to installation.

D. Surge Relief and Backpressure Valves

Surge relief and backpressure valves shall be flanged iron globe body; fully bronze mounted; external pilot operated with free floating piston; operated without springs, diaphragm, or levers; single seat with seat bore equal to size of valve. Valves shall be manufactured in accordance with AWWA standard C506. All surfaces of iron castings shall be coated with a minimum of two coats of a serviceable grade of asphaltic base metal paint. The valve design shall be such that repairs and internal dismantling of the main valve may be done without removing the valve from the water main. Valve working and surge pressures will be shown on the drawings or designated in the "Special Conditions." . It is strongly recommended that instruction manuals supplied by the valve manufacturer be reviewed in detail before installing surge relief and backpressure valves. The contractor should inspect the valve and accessories on the jobsite prior to installation.

E. Air Release/Air Relief Combination Valves for Water Lines

The air release/air relief valve shall include a vacuum check unit. The air release valve shall be installed at the highest point(s) on the water main as indicated by the project plans in order to release air in the main as the water main is filling and allow air to enter when the water main is being emptied to prevent pipe collapse when subject to negative pressure or vacuum. The air release valve shall be manufactured to meet or exceed the requirements of ANSI/AWWA C512-04 or latest edition and shall be NSF 61 certified. Valves shall be iron manufactured with screwed inlet connections and rated for a working pressure of 150 psi. The air release valves shall be Crispin Universal Air Valve model U20 with 1/4" orifice, Val-Matic, A.R.I. or approved equal. The valve shall be operated through a compound level system that will seal both the pressure orifice and the air vacuum orifice simultaneously. This lever system shall permit a ¼” orifice to

release an accumulation of air from the valve body at a capacity of 98 cfm of air at 150 psig. The function lever of the valve shall permit a positive disengagement of the main valve from the large orifice. As the float drops the pressure decreases, the disengagement of the main valve from the large orifice shall be immediate and not limited to an initial draw of vacuum. The air release valve(s) shall be two (2") inches in diameter with national pipe threads (NPT) or ANSI Class 125 flanged inlet connection and shall be a cast iron body, top and inlet flange (where required), stainless steel float and trim with a BUNA-N rubber seat. Valves, which operate the pressure plunger via a single lever and fulcrum, will not be acceptable. A protect top shall be supplied to keep debris from entering the outlet of the valve. Air release valve(s) shall be two (2") inches in diameter include a two (2") inches in diameter, non-rising stem (NRS) solid disc, inside screw bonnet gate valve with a 200 WOG pressure rating and conforming to Federal Specifications MSS SP-80. Each air release valve shall be installed inside a manhole as shown in detail sheet of the project plans if included with the project. Air release valves are not required for most water line extensions.

F. Indicator Posts

Indicator Posts shall be supplied for gate valves and butterfly valves as specified in the project plans. Indicator Posts shall be FM approved and installed to meet the established requirements of the Harnett County Fire Marshal having jurisdiction over the project. Indicator posts shall have a means to lock the valve open or closed.

9.4.7 Fittings and Bends

Pipe manufacturers have a specified amount of deflection that the pipe can bend. If the design of any water line will exceed the manufacturer's tolerance for deflection then the design shall incorporate the use of bends and fittings to accomplish turns, offsets and other adjustments for water line alignment. All fittings and bends shall be installed with mechanical joints and grip rings for pipe sizes up to 12" diameter and be installed with appropriate concrete reaction blocking. All fittings and bends shall be installed with mechanical joints and Megalugs for pipe sizes over 12" diameter and be installed with appropriate concrete reaction blocking. The fittings shall conform to the following applicable AWWA standards:

C104/A21.4-03	Cement- Mortar Lining for Ductile Iron Pipe & Fittings for Water
C110/A21.10-03	Ductile Iron & Gray Iron Fittings for Water
C111/A21.11-00	Rubber Gasketed Joints for Ductile Iron Pressure Pipe &Fittings
C900-97	Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4" through 12"
C901-02	Polyethylene (PE) Pressure Pipe and Tubing, ½" through 3" for Water Service
C903-05	Polyethylene-Aluminum-Polyethylene & Crossed- Linked Polyethylene-Aluminum-Cross-Linked Polyethylene Composite Pressure Pipes, ½" through 2" for Water Service
C905-97	Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14" through 48", For Water Transmission and Distribution
C906-99	Polyethylene (PE) Pressure Pipe and Fittings, 4" Through 63", For Water Transmission and Distribution
C907-04	Injection-Molded Polyvinyl Chloride (PVC) Pressure Fittings, 4" Through 12", For Water Distribution.

Section 9.5 Main Line Valves

9.5.1 Valve Location

Sufficient valves shall be provided on all new water mains so that inconvenience and sanitary hazards will be minimized during repairs. Valves shall be located at intervals not to exceed 700 feet in any commercial district and not more than 1,000 feet in residential districts. Two valves are required on each tee, one on the main line and one on the lateral line unless the water mains are looped. Three valves are required for all tees where the water mains are looped. Four valves are required for all crosses, two valves on the branches or laterals and two in-line valves. An in-line gate valve shall be included with each hydrant tee except at fire hydrants located at intersections. Each valve shall be provided with and concrete valve marker with brass insert stamped with distance and direction denoted. All valves shall require concrete valve location markers, except within interior subdivisions, where the Professional Engineer (P.E.) shall reference valves on the "As-built" Record Drawings to at least two permanent above ground structures. The concrete valve location markers should be included on the "As-built" Record Drawings.

9.5.2 Location of Bends in Water Mains

Bends and fittings shall be depicted in plans where the water mains shall turn more than the allowable deflection will be exceeded by the design. All bends greater than 22.5° degrees shall be marked in the field by setting two concrete markers at the edge of the right-of-way or easement in line with the bends. The top of the markers shall be stamped with the distance to each bend or fitting and the markers shall be turned backwards so the HCDPU staff will not confuse them for valve markers or blow off markers.

9.5.3 Valve Operation and Protection

All valves (gate valves, butterfly valves, plug valves, etc.) installed in the Harnett County Water Distribution System shall meet AWWA standards and be provided with an adjustable cast iron valve box with an 18" x 18" x 6" concrete collar in accordance with the HCDPU Standard Details. The valves that are installed more than eight (8 ft.) feet below finished grade shall be provided with extensions on the operating nuts to raise them up to be within six (6 ft.) feet of the finished grade.

Section 9.6 Fire Hydrants

9.6.1 Location and Spacing

Hydrants shall be provided at each street intersection and at intermediate points between intersections as recommended by the Harnett County Fire Marshal. Generally, hydrant spacing may range from 500 to 1,000 feet depending on the area being served. Larger spacing increments may be allowed in very rural areas upon approval of the HCDPU. The fire hydrants installed to serve new residential subdivisions shall be installed on the right side of the street in which fire and rescue vehicles travel when entering the subdivision and the water main shall be installed on the same side of the street to avoid having hydrant legs installed under the paved streets. The location of the fire hydrant shall be approved by the Fire Marshal having jurisdiction over the project site.

9.6.2 Valves and Nozzles

Fire hydrants shall have a bottom valve size of at least 5-1/4 inches, one 4 1/2 inch pumper nozzle and two 2 1/2 inch hose nozzles.

9.6.3 Hydrant Leads

The hydrant lead shall be a minimum of six inches in diameter. Auxiliary valves shall be installed in all hydrant leads and bolted firmly to the hydrant tee with threaded rod. The threaded rod shall be coated to prevent corrosion.

9.6.4 Drainage

Hydrant drains shall have a gravel pocket or dry well provided unless the natural soil will provide adequate drainage. Hydrant drains shall not be connected to or located within 10 feet of sanitary sewers or storm drains.

9.6.5 Type

Fire hydrants shall conform to the latest edition of AWWA C502-05 for Dry Barrel Fire Hydrants. Fire hydrants must have main opening valves of 5¼"diameter. All fire hydrants must be installed in accordance with the requirements established by the HCDPU standard details and the Harnett County Fire Marshal. In order to reduce the number of different brands and models that HCDPU must stock parts and repair kits for and for standardization and maintenance reasons, HCDPU only the following fire hydrants are permitted to be installed in Harnett County:

A. Mueller - Super Centurion 250 A-423 model with a 5¼" main valve opening three way (two hose nozzles and one pumper nozzle);

B. American Darling - Mark B-84-B model with a 5¼" main valve opening three way (two hose nozzles and one pumper nozzle);

C. Waterous - Pacer B-67-250 model with a 5¼" main valve opening three way (two hose nozzles and one pumper nozzle).

Fire hydrants shall meet or exceed the AWWA C502, latest edition and have a rated working pressure of at least 250 psig. All fire hydrants shall be dry-barrel type with two – 2 ½" hose nozzles and one – 4 ½" pumper nozzle all having standard NPT threads. All fire hydrants shall carry a 10 year warranty from the date stamped on the fire hydrant. Fire hydrant(s) shall be listed by Underwriters Laboratories, Inc., as meeting their standard UL 246, latest edition and approved by the Factory Mutual Research Corporation (FMRC) and installed to meet the established requirements of the Fire Marshal having jurisdiction over the project.

9.6.6 Fire Hydrant Testing, Painting and Color Coding

Fire hydrants shall be painted solid red before installation by the manufacturer. Once the fire hydrant has been inspected, pressure tested and accepted for service by HCDPU, and then the utility contractor shall paint another coat of red paint on all fire hydrants and then notify the Harnett County Fire Marshal or the Fire Marshal having jurisdiction over the project to request an inspection of each fire hydrant installation. Any deficiencies noted by the Fire Marshal shall be corrected before the fire hydrant will be accepted by the HCDPU and allowed to be placed into operation.

The contractor shall provide the HCDPU with one fire hydrant wrench for each fire hydrant installed in the Harnett County water distribution system up to a maximum of two wrenches per project. The local fire department shall be responsible to conduct any additional pressure testing and/or fire flow testing annually on the fire hydrants following acceptance by the HCDPU. Each fire hydrant shall be provided with chains for each nozzle cap. The fire hydrants shall be installed with a four (4 ft.) feet bury depth with three feet of cover to allow the base of the hydrant to be slightly above finished grade. Should the hydrant tee be installed at depths greater than four (4 ft.) feet then the contractor shall provide all bends, fittings, pipe and joints to raise the fire hydrant to the proper elevation so the base of the fire hydrant shall be no more than twelve (12") inches above the finished grade.

Each fire hydrant may be Color Coded as necessary by the local fire department. The top cap may be repainted by the local fire department which will designate the specific pressure and flow characteristics of each fire hydrant. The National Fire Protection Association (NFPA) standard calls for bonnets and caps to be color-coded to indicate the hydrant's available flow at 20 psi. Standard color codes stipulated by the National Fire Protection Association (NFPA) are as follows:

NFPA 291, Chap. 3

Class C	Less than 500 GPM	**Red**
Class B	500-999 GPM	**Orange**
Class A	1000-1499 GPM	**Green**
Class AA	1500 GPM & above	**Light Blue**

Section 9.7 Air Relief Valves

9.7.1 Air Relief Valves

At high points in water mains where air can accumulate, provisions shall be made to remove the air by means of hydrants or air relief valves. Automatic air relief valves shall not be used in situations where flooding of the manhole or chamber may occur.

9.7.2 Air Relief Valve Piping

The open end of an air relief pipe from automatic valves shall be extended to at least one foot above finished grade and provided with a stainless steel screened, downward facing elbow. The pipe from a manually operated valve shall be extended to the top of the pit.

9.7.3 Chamber Drainage

Chambers, pits or manholes containing valves, blow offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to any storm drain or sanitary sewer, nor shall blow offs or air relief valves be connected directly to any sewer. Such chambers or pits shall be drained to the surface or the ground where they are not subject to flooding by surface water or to absorption pits underground. If gravity drainage is impractical, a small sump pump with float control shall be included in the design along with the electrical service connection to provide power for the sump pump. Generally, the HCDPU prefers to avoid the use of sump pumps unless absolutely necessary for the proper operation of the system.

Section 9.8 Bore and Jack Method for Water Lines to Cross NCDOT Right-of-Ways

9.8.1 Bore and Jack Method

All water lines that will cross an established NCDOT maintained street shall be permitted by the North Carolina Department of Transportation (NCDOT) District Engineer in a three party NCDOT Encroachment Agreement. Any bore and jack work shall be accurately described in the three party NCDOT Encroachment Agreement between the

developer, the HCDPU and the NCDOT. All water lines that will cross an established NCDOT maintained street shall be designed to be installed by the bore and jack method to avoid open cuts in the existing pavement. Open cuts on established streets and roads are not allowed by the HCDPU unless approved by NCDOT in writing in the three-party NCDOT Encroachment Agreement.

9.8.2 Carrier Pipe

The carrier pipe for any road crossing should be sized equal to or larger than the water line being extended to accommodate future development when practical. The carrier pipe shall be the same material as the water line unless conditions will prevent the installation of the water line using the same material. Generally, the HCDPU prefers that all carrier pipe shall be ductile iron pipe installed inside a steel casing pipe. The use of PVC pipe material should be avoided under the paved street inside the NCDOT right-of-ways. The carrier pipe shall include a valve on each side of the street to afford the HCDPU staff a means to isolate the water line on both sides of the street. The valves may not be required if the water line is greater than 20 inches in diameter.

9.8.3 Casing Pipe

Where indicated on the plans and/or as required by the NCDOT, water lines shall be installed under highways by bore and jack method with the carrier pipe (water line) installed inside a spiral wound steel casing. The contractor shall be required to notify NCDOT's District Engineer and Harnett County Department of Public Utilities at least five (5) days prior to work starting. Casing shall have a minimum cover of three (3) feet of cover and extend a minimum of two (2) feet either side of pavement but preferably from ditch line to ditch line where practical as stipulated in the approved project plans. The utility contractor must verify all grades and alignment prior to set up. Contractor shall install casing in a manner not to create drainage beneath the highway. Casing shall be welded steel to conform to ASTM A-53 Grade "B", ASTM A-139 Grade "B" or better. Although the casing is not considered a pressure vessel, the welding on the casing shall be performed by a qualified welder in accordance with Section IX of the ASME Boiler and Pressure Vessel Code. The minimum inside diameter of the casing as compared to the largest diameter outside diameter of the carrier pipe, joints or couplings shall be as follows:

Casing Pipe Nominal Size Diameter O.D.	Casing Pipe Diameter Amount Greater than Carrier Pipe
Less than 6 inches	Not less than 4 inches
6 inches and larger	Not less than 6 inches

Casing Pipe Diameter	Minimum Wall Thickness
6”-14”	1/4"
16”-18”	5/16”
20”-22”	3/8”
24”-26”	7/16”
28”-32”	1/2"
34”-42”	9/16”

Section 9.9 Separations

9.9.1 General

The following factors shall be considered in providing adequate separation:

A. Materials and type of joints for water and other non-potable water lines,

B. Soil conditions,

C. Service and branch connections into the water main and other non-potable water lines,

D. Compensating variations in the horizontal and vertical separations,

E. Space for repair and alterations of water and sewer pipes, and

F. Offsetting of pipes around manholes.

9.9.2 Vertical Separations

The following minimum vertical separations shall be provided for any water line extension of Harnett County's existing water distribution system:

	Utilities or Structures	Vertical Separation Distance
A.	Storm sewers and other utilities not listed below;	2 feet
B.	Water mains (potable water over potable water)	2 feet
C.	Reclaimed water lines (potable water over reclaimed water);	2 feet
D.	Final earth grade (finished grade);	3 feet

i. Crossing a Water Main Over a Sewer. Whenever it is necessary for a water main to cross over a sewer, the water main shall be laid at such an elevation that the bottom of the water main is at least 24 inches above the top of the sewer, unless local conditions or barriers prevent an 24 inch vertical separation--in which case both the water main and sewer shall be constructed of ferrous materials and with joints that are equivalent to water main standards for a distance of 10 feet on each side of the point of crossing.

ii. Crossing a Water Main Under a Sewer. Whenever it is necessary for a water main to cross under a sewer, both the water main and the sewer shall be constructed of ferrous materials and with joints equivalent to water main standards for a distance of 10 feet on each side of the point of crossing. A section of water main pipe shall be centered at the point of crossing. The design shall maintain vertical separations to satisfy state minimum requirements where the ductile iron pipe is used to satisfy the HCDPU requirements above.

Ductile iron pipe shall be used for any line extension of County's existing water distribution system where the above minimum vertical separations cannot be maintained, except for the edge of pavement (EOP). The design shall maintain horizontal separations to satisfy state minimum requirements where the ductile iron pipe is used to satisfy the HCDPU requirements above.

9.9.3 Horizontal Separations

The following minimum horizontal separations shall be provided for any water line extension of Harnett County's existing water distribution system:

Utilities or Structures	Horizontal Separation Distance

A.	Edge of Pavement (EOP);	3-5 feet
B.	Storm sewers, power poles and other utilities not listed below;	5 feet
C.	Sanitary sewers and reclaimed water mains or associated lines;	10 feet
D.	Any non-permanent structures or improvements (fencing, landscape material, etc.) ;	10 feet
E.	Any building foundation, basement or subsurface structure;	25 feet
F.	Any swimming pool	30 feet

i. Lateral Separation of Sewers and Water Mains. Water mains shall be laid at least 10 feet laterally from existing or proposed sewers, unless local conditions or barriers prevent a 10-foot lateral separation--in which case:

ii. The water main is laid in a separate trench, with the elevation of the bottom of the water main at least 24 inches above the top of the sewer; or

iii. The water main is laid in the same trench as the sewer with the water main located at one side on a bench of undisturbed earth, and with the elevation of the bottom of the water main at least 24 inches above the top of the sewer.

Ductile iron pipe shall be used for any line extension of County's existing water distribution system where the above minimum horizontal separations cannot be maintained, except for the edge of pavement (EOP). The design shall maintain horizontal separations to satisfy state minimum requirements where the ductile iron pipe is used to satisfy the HCDPU requirements above.

9.9.4 Sewer Manholes/Storm Drainage

No water pipe shall pass through or come in contact with any part of a sewer manhole or storm drain.

9.9.5 Exception

The HCDPU and the North Carolina Department of Environment & Natural Resources, Division of Environmental Health – Public Water Supply Section must specifically approve any variance from the separation requirements of Sections 9.10.2, 9.10.3 and 9.10.4 when it is impossible to obtain the specified separation distances.

Section 9.10 Surface Water Crossings

Surface water crossings or under water crossings present special problems. The HCDPU shall be consulted before final plans are prepared. Generally, the HCDPU will design and build the water lines in these areas with specific approval of the Harnett County Board of Commissioners as permitted by the state, unless a developer or land owner desires to fund the project engineering and construction costs. These water crossings will be designed and constructed in accordance with all federal, state and local requirements. An Engineer working on a project design that will include the crossing of a lake, river or stream must consult with the HCDPU Engineer before submitting plans to the HCDPU for review or approval.

9.10.1 Above Water Crossing

The pipe shall be adequately supported and anchored, protected from damage and freezing and accessible for repair or replacement.

9.10.2 Under Water Crossing

A minimum cover of five (5 ft.) feet shall be provided over the pipe. When crossing water courses which are greater than 15 feet in width, the following shall be provided.

A. The pipe shall be of special construction, having flexible watertight joints;

B. Valves shall be provided at both ends of water crossings so that the section can be isolated for testing or repair. The valves shall be easily accessible and not subject to flooding; and

C. A blow off shall be provided on the side opposite the supply of service.

Section 9.11 Easements

In all cases when it is necessary to construct water mains abutting private property, an easement designated specifically for construction, operation and maintenance of water/sewer improvements shall be dedicated exclusively to the Harnett County Department of Public Utilities. In no event shall the easement be allowed to be upon privately held single family lots. Dimensions of the easement shall be in keeping with the herein stated separation requirements. A minimum permanent easement width of 20' shall be provided where it is necessary to install water mains outside of public highway right-of-ways, such as planned unit developments, private road right-of-ways and commercial areas, etc. or a combination of 15' common property easement and 15‟ building setback for lines installed between adjacent parcels.

Section 9.12 Cross Connections and Interconnections

9.12.1 Cross Connections

There shall be no connection between the distribution system and any pipe, pumps, hydrants, or tanks whereby unsafe water or other contaminating materials may be discharged or drawn into the system. Connections between private individual's wells shall not be allowed. This procedure is not acceptable by the North Carolina Department of Environment & Natural Resources (NCDENR) No fire protection water line, irrigation water system, commercial or industrial water system shall be allowed to connect to the Harnett County water distribution system without the proper backflow protection. At a minimum, these connections shall have a dual check valve assembly (DCVA) or reduced pressure zone (RPZ) assembly installed between their water system and the Harnett County water distribution system to provide adequate backflow protection. Each service connection shall be evaluated by the HCDPU Backflow and Cross Connection Operator in Charge (ORC) for proper compliance to this requirement. Each business owner shall be responsible to satisfy all current and future requirements with respect to the backflow and cross connection regulations as set forth in all federal, state, county, and local regulations. All connections to the Harnett County water distribution system shall be tied into the potable water system without prior approval and in keeping with the County's Water Conservation Resolution, as amended. Whenever there is a question of cross connection the engineer shall provide reduce pressure zone backflow prevention.

9.12.2 Cooling Water

Neither steam condensation nor cooling water from engine jackets, cooling towers, heat exchangers or any other heat transfer devices shall be returned to the sanitary sewer collection system. Potable water supply shall not be connected without proper back flow prevention. 145

9.12.3 Interconnections

The approval of the HCDPU shall be obtained for interconnections between potable water supplies and non-potable water sources (i. e. irrigation systems). in the event the interconnections are allowed by the HCDPU, such connections shall be designed in keeping with the Ten States Standards, the State Primary Drinking Water Regulations and the HCDPU Water Conservation Resolution.

Section 9.13 Water Services and Plumbing

9.13.1 Water Services

The County will be responsible for the initial installation of a water service connection for all single family lots, including a main line tap, water service from the main line to the user's property line (or within the defined public or private road right-of-way), a meter box, a meter, a check valve or backflow prevention device, and a cut off valve. It shall be the property owner's responsibility to maintain and/or install all pertinent lines, connection fittings beyond the check valve/back flow prevention device and/or gate valve to the premises or building units being served.

9.13.2 Service Lines

All 3/4", 1"and 2" water service lines shall be copper tubing size (CTS) SDR-9 polyethylene plastic tubing or approved equal conforming with ASTM D2737 with a NSF marking and Awwa Standard for polyethylene plastic tubing.

When service mains are installed under roadways or sidewalks the must be installed inside a casing. Copper water service lines shall be at „K" copper. The 3/4" water service lines shall be installed inside a schedule 40 PVC or steel casing of at least two (2") inches in diameter. The and 1" water service lines shall be installed inside a schedule 40 PVC or steel casing of at least three (3") inches in diameter. The 2" water service lines shall be installed inside a schedule 40 PVC or steel casing of at least four (4") inches in diameter. Each casing shall be installed by an open cut for new streets or by the bore and jack method for all existing paved streets. The casing shall be at a minimum of three (3 ft.) feet below surface of street and each ditch line on either side of the street.

9.13.3 Plumbing

Water services and plumbing shall conform to relevant local and/or state plumbing codes, or to the National Plumbing Code. All water service lines beyond the meter shall be inspected by the building code inspector having jurisdiction over the project. The HCDPU will require the plumber to install a valve (gate valve or ball valve) on the customer's side of the meter setter within 12 to 18 inches of the meter box. The HCDPU meter readers will not release a meter to be installed in the meter setter unless the valve has been installed by the plumber.

9.13.4 Booster Pumps

Individual home booster pumps shall not be considered or required for any individual service from the public water supply mains.

9.13.5 Fire Protection

Connections to the HCDPU system for the purpose of individual sprinkler systems in commercial buildings, shall provide a remote double detector check valve (double check) assembly located outside of the structure being served that can be readily accessible by HCDPU staff at all times for inspection. Fire lines entering private property shall be the full responsibility of the owner and must be supplied with a shut-off valve at or before the property line to delineate the responsibility of the HCDPU. Sprinkler systems in commercial and industrial projects must meet all requirements established by the state and local fire codes as well as the standards established by the National Fire Protection Association (NFPA). The Harnett County Fire Marshal shall review plans for all sprinkler systems and be present for a system test before the sprinkler system can be accepted and placed into operation.

Section 9.14 Service Meters

Each service connection shall be individually metered and conform to the latest AWWA standards. All brass meters shall be required. ABB, Kent, Dewey Brothers C700 meters shall be used for service connections between three-fourths (¾") inch and 1" shall be required. ABB, Kent, Dewey Brothers C3000 shall be used for service connections greater than or equal to two (2") inches shall be required. Meter boxes for the services two (2") inches or smaller shall be constructed with ABS plastic. Solid cast iron lids shall be installed for service connections of three-fourths (¾") inch. Solid ABS plastic lids with cast iron reader windows in the center shall be installed for service connections of one (1") inch up to two (2") inches. 146

All metered services greater than two (2") inches shall be installed inside a prefabricated, pre-stressed concrete vault in accordance with Harnett County's standard details. Meters two (2") inches and under shall be installed by the HCDPU. Metered services over two (2") inches shall be installed by the contractor and the contractor shall provide the meter for the project; however, the meter should be purchased through the HCDPU supplier and only released once the project has been approved by the NCDENR – DWQ, PWSS and the HCDPU. Concrete meter vaults shall house the bypass line, the gate valves, the meter, the strainer, flanges, couplings and have positive head for drainage or be equipped with a sump pump and a 120 volt GFCI receptacle for a light and a sump pump. The GFCI receptacle shall be installed in accordance with the NEC requirements. If the power is supplied for the sump pump then the vault shall be equipped with a fluorescent light having a zero (0°) degree ballast. 147

Please see Chapter 12, General and Special Conditions, Special Construction Technical Specifications for additional information and requirements for construction.

Section 9.15 Construction of Approved Final Drawings and Plans

9.15.1 Design Plans and Construction of Water System Improvements

Contractors shall install all water system improvements per the Professional Engineer's design as approved by HCDPU and permitted by the North Carolina Department of Environment and Natural Resources – Division of Water Resources, Public Water Supply Section (NCDENR-DWQ, PWSS) unless the existing site conditions preclude such installation or site conditions significantly impact the project construction. Should site conditions warrant plan revisions then the contractor shall follow the procedures outlined in Section 4. 1. 11 above. All materials used in the construction of any water system improvements to the existing Harnett County water distribution system shall meet the requirements specified in the sections below unless otherwise approved by the HCDPU Engineering staff.

Once each project has been approved and permitted by the state, the approved plans will be returned to the HCDPU and then copies will be made for the contractor and the HCDPU Utility Construction Inspector. Copies of the state approved plans will be stamped by the HCDPU Engineering Representative as "Released For Construction," signed and dated to verify all plan changes requested by the state and the HCDPU have been addressed by the design engineer of record. During the pre-construction conference, the HCDPU Engineer or designated staff shall provide a copy of the NCDENR-DWR, PWSS (state) approved plans, marked as Final drawings by the Professional Engineer (P.E.) and stamped by the HCDPU as "Released For Construction" to the contractor/developer and the HCDPU Utility Construction Inspector. Only the state approved plans stamped by the HCDPU Engineer as "Released For Construction" shall be used for construction of any water system improvements to Harnett County's existing water distribution system.

9.15.2 Materials & Design Requirements

The utility contractor shall furnish all types of pipe and other incidentals required for the construction of a complete water system as shown on the plan drawings and as specified herein. Unless otherwise noted, the materials listed below are acceptable to the HCDPU for use in the construction of any extension of Harnett County's water distribution system. Should the contractor desire to use materials not listed in these specifications, written permission must be obtained from both the Professional Engineer (P.E.) of record and the HCDPU Engineering Representative or designated personnel as approved by the HCDPU Director. The developer's Engineer of Record will review all shop drawings for conformance with HCDPU specifications prior to submittal to HCDPU. The shop drawing submittal to HCDPU shall include a cover letter by the developer's Engineer of Record certifying conformance with HCDPU specifications and summarizing any exceptions or concerns relative to approved drawings and/or HCDPU standards.

9.15.3 Material Submittals and Shop Drawings

All materials to be used in the extension of or connection to the existing Harnett County water distribution system must be approved by the Developers Engineer and HCDPU Engineering Representative prior to purchase and delivery to any project site. Submit three (3) copies of the material specification sheets and all associated shop drawings including a cover letter summarizing all material to be used in the in the proposed project to the Developers Engineer and HCDPU Engineering Representative prior to the Pre-Construction conference to demonstrate compliance with the stipulated requirements as set forth herein these specifications under the "General Conditions." The developer's Engineer of Record will review all shop drawings for conformance with HCDPU specifications prior to submittal to HCDPU. The shop drawing submittal to HCDPU shall include a cover letter by the developer's Engineer of Record certifying conformance with HCDPU specifications and summarizing any exceptions or concerns relative to approved drawings and/or HCDPU standards.

9.15.4 Project Specifications, Encroachments and Permits

Any utility contractor performing work to the Harnett County water distribution system to extend new water mains, water service lines or repair of the existing water distribution system shall abide the specifications herein and shall have a copy of these specifications on the job site along with the appropriate "Authorization to Construct" (water) permit issued by the North Carolina Department of Environment and Natural Resources – Division of Water Resources, Public Water Supply Section (NCDENR-DWR, PWSS) for the proposed project. The contractor shall have a copy of the Erosion and Sedimentation Control permit issued by the North Carolina Department of Environment and Natural Resources – Division of Land Quality (NCDENR-DLQ) for any land disturbing activity that disturbs more than one (1) acre of soil. The contractor shall have a copy of any Wetland permit issued by the state of North Carolina and/or United States Army Corps of Engineers (USACE) for any wetland disturbance that

may be caused by the project construction. The contractor shall have a valid copy of the North Carolina Department of Transportation (NCDOT) encroachment agreement to cover all work proposed within the right-of-way of any state maintained street or road. Connection of new streets or driveways to the existing streets and roads shall be made by only with the approved Driveway Permits issued by the NCDOT. All of these permits, agreements, etc. shall be posted on the project site during the construction for any authority having jurisdiction over the project to see the appropriate permits and agreements have been issued to the county and/or the developer as required by state law. Contractors shall provide the HCDPU Engineer with copies of any permits, encroachment agreements or other documents obtained by the Professional Engineer during the Pre-Construction Conference.

9.15.5 Material Transportation, Storage and Protection

The Contractor shall receive at least one (1) of the three (3) copies stamped as reviewed by the Engineer and HCDPU Utility Construction Inspector prior to ordering any material. All materials shall be transported by the supplier to the contractor at the project site and handled by both parties in a manner to avoid damage. All items damaged in transit shall be returned to the supplied for full credit and similar materials in new condition shall be provided to replace any damaged materials. The contractor shall store and protect all materials that will not be installed immediately. PVC pipe shall be provided protection against sunlight exposure. All materials shall be kept clean and free of contamination. Contaminated materials shall be removed from the project site and replaced with similar material in new condition.

Section 9.16 Site Work

9.16.1 Site Clearing

A. General: The Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services necessary for or incidental to the performance and completion of all site clearing, tree protection, and demolition as shown on drawings and as specified in accordance with provisions of the contract documents and completely coordinated with that of all other trades.

Work included within the project consists of but is not limited to the following:

- Clearing for Booster Pump Stations as needed.
- Clearing for Elevated Tank as needed.
- Clearing for all water line installation as needed.

Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, and complete installation shall be furnished and installed as part of this work.

B. Quality Standards: Perform all work in accordance with OSHA requirements and requirements of Environmental Protection Agency in addition to State and Local requirements.

C. Protection of Work Area: Provide barricades, coverings, or other types of protection necessary to prevent damage to existing improvements indicated to remain in place. Protect improvements on adjoining properties as well as those on Owner's property. Restore any improvements damaged by this work to their original condition, as acceptable to Owner or other parties or authorities having jurisdiction. Protect existing trees and other vegetation indicated to remain against unnecessary cutting, breaking or skinning of roots, skinning and bruising of bark, smothering of trees by

stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary fences, barricades or guards as required to protect trees and vegetation to be left standing.

D. Improvements on Adjoining Property: Authority for performing removal and alteration work on property adjoining owner's property will be obtained by Owner prior to award of contract.

E. Site Clearing: Remove trees, shrubs, grass, weeds, and other vegetation, improvements, or obstructions that interfere with new construction. Also remove such items elsewhere on site or premises as specifically indicated. Removal includes new and old stumps of trees and their roots. Carefully and cleanly cut roots and branches of trees indicated to be left standing where such roots and branches obstruct new construction.

F. Clearing and Grubbing: Clear project site of trees, shrubs, and other vegetation, except for those indicated to be left standing. Completely remove stumps, roots, and other debris protruding through ground surface. Use only hand methods for grubbing inside drip line of trees indicated to be left standing. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated. Place fill material in horizontal layers not exceeding 6 inches loose depth and thoroughly compact to a density equal to adjacent original ground.

G. Removal of Improvements: Remove surfacing and pavements, including bases for pavements. Remove wood headers, posts, poles, fences, and other work as specifically indicated. Removal of abandoned underground pipe(s) or conduit(s) which interferes with construction is included under this section.

H. Disposal of Waste Materials: Burning of combustible cleared and grubbed materials is permitted providing the Contractor obtains such permits and approvals required by state, county, and local authorities. Remove all waste materials and unsuitable and excess topsoil from Owner's property, and legally dispose of it.

9.16.2 Site Excavation and Grading

A. General: The Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services necessary for or incidental to the furnishing and installation complete of all operations in connection with excavation, construction of fills, borrow, rough grading, finish site grading and disposal of excess material as shown on the drawings and as specified in accordance with provisions of the contract drawings and completely coordinate with that of all other trades.

Work included within the project consists of but is not limited to the following:

- Excavations for Booster Pump Stations.
- Excavations for Elevated Tank Foundation System.
- Excavations for water main installation.

Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, complete, and compatible installation shall be furnished and installed as part of this work.

Unclassified Excavation: Remove and dispose of rock excavation, clay, silt, gravel, hard pan, loose shale, and loose stone as directed by the Engineer. All excavation on this project shall be considered as unclassified.

B. Site Grading: Plans indicate both existing grade and finished grade required for construction of project. The Contractor shall stake out all units, structures, piping, roads, parking areas and walks and establish their elevations and perform all other layout work required. Replace property corner markers to original location if disturbed or destroyed.

It shall be the Contractor's responsibility to maintain existing utility lines (either overhead or underground), sidewalks, and pavement designated on drawings, shown or mentioned in specifications free of damage. For any item unknown or not properly located inadvertently damaged shall be repaired to original condition. Notify the Engineer and Owner of said utility at once so that emergency repair may be made.

During construction, shape and drain embankment and excavations. Maintain ditches and excavations to provide drainage at all times. Protect graded areas against action of elements prior to acceptance of work. Reestablish elevations and slopes where settlement or washing may have occurred.

C. Construction of Embankments and Fills: Construct embankments and fills at locations shown on plans to lines of grade indicated on drawings. Completed fill shall correspond to shape of typical cross section or contour shown on plans whichever method is used to show shape, size, and extent of line and grade of completed work.

Provide only fill material which is free from roots, organic matter, trash, frozen material, and stones having a maximum dimension greater than six (6) inches. Insure that stones larger than four (4) inches, maximum dimensions, are not placed in upper six (6) inches of fill or embankment. Do not place materials in layers greater than eight (8) inches of loose thickness. Place layers in horizontally and compact each layer prior to placing additional fill.

Compact by sheep foot rollers, pneumatic rollers, vibrators or other equipment approved by Engineer. Add moisture to or dry by aeration each layer as necessary to meet requirements of compaction. Do not place materials in embankments or fills which exceed optimum moisture content by 5 percent or are 3 percent below optimum moisture content for the material.

Under structures & roadways compact to density not less than 95 percent maximum dry density as measured by AASHO Method T99.

Under other embankments and fills, compact to not less than 90 percent of maximum dry density as measured by AASHO Method T99. (ASTM D698)

In place moisture-density tests will be ordered to insure that all work complies with these specifications. Tests will be taken at locations determined by the Engineer. Compaction will be tested by the standard cone method, nuclear density test, or drive shoe method as required or approved by the Engineer. Tests shall be performed through recognized testing laboratory or by the Engineer and all costs to be paid by the Owner. Copies of test results will be furnished to Contractor and Engineer.

Materials not meeting specified moisture-density test requirements shall be re-compacted and re-tested at Contractor's expense.

Provide, at no extra cost, the necessary amount of approved borrow material compacted to a density equal to that obtained in the laboratory by vibration and inundation. Compact to 100 percent maximum density measured by AASHO T99. Borrow or fill cannot be obtained on site except when specifically permitted by Engineer.

9.16.3 Trenching, Backfilling and Compacting

A. General: The Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services necessary for or incidental to the furnishing and installation complete of all operations in connection with excavation, trenching, and backfilling of underground utilities as shown on drawings and as specified in accordance with provisions of the contract documents and completely coordinated with that of all other trades. 152

Work included in the project consists of but is not limited to the following utility items:

- Installation of water distribution system.
- Installation of buried appurtenances.

Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, complete, and compatible installation shall be furnished and installed as part of this work.

B. Protection of Existing Utilities: Verify location and existence of all underground utilities. Omission from or inclusion of located utility items does not constitute non-existence or definite location. Secure and examine local utility records for available location data.

Take necessary precautions to protect existing utilities from damage due to any construction activity. Repair all damages to utility items at sole expense. Assess no cost to Owner, Engineer, or auxiliary party for any damages.

Avoid surcharging ditch banks by placing excavated material a sufficient distance back from edge of excavation to prevent slides or caving. Maintain and trim excavated materials in such a manner to be as little inconvenience as possible to public and adjoining property owners.

Provide full access to public and private premises, to fire hydrants, at street crossings, sidewalks and other points as may be designated by the Engineer to prevent serious interruption of travel.

C. Unclassified Excavation: Remove and dispose of rock excavation, clay, silt, gravel, hard pan, loose shale, and loose stone as directed by the Engineer. All excavation on this project shall be considered as unclassified.

D. Trench Excavation: Unless given permission to do otherwise, excavate trenches by open cut method to depth shown on plans and necessary to accommodate the work. Permission may be granted for tunnel work for crossing under crosswalks, driveways or existing utility lines; however, such tunnels are limited to ten (10) feet in length.

Open only the length of trench at one time allowed by the Engineer. Do not open more than 400 lineal feet trench at one time. Failure to comply may necessitate shutdown of entire project until backfilling is performed.

Observe the following trenching criteria:

1. Trench size: Excavate only sufficient width to accommodate free working space. In no case shall trench width at the top of pipe or conduit exceed outside diameter of utility service by following dimensions:

Outside Diameter of Utility Service	Excess Dimension
33 inches and less	18 inches
more than 33 inches	24 inches

Cut trench walls vertically from bottom of trench to one (1) foot above the top of pipe, conduit, or utility service.

2. Dewatering: Keep trenches free of water. Include cost of dewatering in original bid. No additional remuneration for this item is permitted.

3. Sheeting and Bracing: Brace and sheet trenches as soil conditions dictate and in full observation of OSHA requirements. Do not remove sheeting until backfilling has progressed to a stage that no damage to piping, utility service, or conduit will result due to removal. 153

E. Preparation of Foundation For Pipe Laying: Exercise care to avoid excavations below established grade where firm earth conditions exist. If over-excavation occurs, backfill in 6-inch lifts and thoroughly compact with pneumatic tampers. In case of rock excavation, carry excavation a minimum of 12 inches below established grade and backfill to grade with suitable earth or sand. Material used shall be free of rocks, roots, sod or organic matter and shall be firmly compacted. Form bell holes in trench such that only the barrel of pipe is firmly supported by bedding material.

F. Backfilling: Use only backfill material for trenches which are free from boulders, large roots, sod, other vegetative or organic matter, and frozen material. Hand or pneumatic tamp backfill under and around pipe up to 24 inches above top of pipe in lifts not exceeding 8 inches loose thickness. Backfill and compact remainder of trench in 8-inch lifts to density specified.

Perform mechanical tamping evenly on both sides of pipe to top of excavation or to a depth such that pipe will not be injured by subsequent method of compaction used to achieve required density. Exercise extreme care in backfilling operations to avoid displacing pipe joints either horizontally or vertically and avoid breaking the pipe. Water ponding for backfill consolidation is not permitted.

G. Compaction: Compact all trench backfill in areas under roads, parking areas and sidewalks as directed by Engineer to a density of 95 percent of maximum dry density (STANDARD PROCTOR) as determined by AASHTO Method T99 (ASTM D-698). In locations where trench will not be under paved areas or roads but is inside, Department of Transportation rights-of-way, compact trench backfill to a density equal to its density before disturbance or 95 percent maximum dry density (STANDARD PROCTOR), whichever is less. In all locations not covered above,

compact trench backfill to a density equal to its density before disturbance or minimum 90 percent of maximum dry density (STANDARD PROCTOR), as determined by AASHTO Method T99 (ASTM D-698) whichever is less.

H. Testing: Perform in-place moisture-density tests as ordered by Engineer to insure trench backfill complies with requirements. Tests shall be performed through recognized testing laboratory and all costs to be paid by the Owner. Copies of test results will be furnished to Contractor and Engineer. Where backfill compaction does not pass moisture-density test requirements and after backfill has been removed as directed by Engineer and situation corrected, additional tests will be directed until compaction meets or exceeds requirements. The Contractor shall pay the cost of any additional testing required as a result of his failure to meet minimum compaction requirements.

I. Pavement Cuts: All pavement cuts shall be made to true line by a method acceptable to the Engineer and the pavement removed just prior to the trenching operation. The Contractor will be allowed to excavate no more trench width than the pipe outside diameter plus 18 inches for pipe up to 33 inches in diameter and 24 inches for pipe over 33 inches in diameter, in all paved areas. The pavement will be trimmed an additional twelve inches (12") beyond the trench edge to give firm bearing for the patching operations.

The Contractor shall backfill all trenches to a point ten inches (10") below the existing pavement and then backfill with crushed stone flush with the existing pavement. It shall be the Contractor's responsibility to maintain all pavement cuts in good order until asphaltic patching is completed. At the time of patching, all broken down, ragged edges shall be trimmed to true line.

It shall be the contractor's responsibility to provide drag boxes, ditch jacks, sheeting, etc., as required to maintain the trench width as specified. The Owner will pay only for the width of pavement removal as specified above.

It is intended that no section of streets or road (3,000 linear feet of line) shall be left in an incomplete condition for a period in excess of thirty days. This completion shall include all phases of work on the lines to be constructed in the area of the section, including trenching, placing pipe, backfilling, setting valves, hydrants, and fittings, installing house services as required preparation for paving repair, repair of paving, grassing and clean-up for delivery of the completed section to the Owners. This requirement shall be adhered to in its entirety unless waived in writing by the Owners through the Engineers. Flushing, testing and disinfection maybe delayed until a sufficient amount of line is ready. Failure to comply with this condition for more than 30 days will result in reduction of payment to the contractor.

9.16.4 Pipe Laying – Pressure Pipe

A. General: The Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services necessary for or incidental to the furnishing and installation complete of all pressure pipe construction as shown on drawings and as specified in accordance with provisions of the contract documents and completely coordinated with that of all other trades.

Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, and complete installation shall be furnished and installed as part of this work.

B. Quality Standards: Procedures for handling, laying, protection, and use of pipe shall be in accordance with the pipe manufacturer's recommendations and these specifications.

C. Submittals: The Contractor is to submit to the Engineer the manufacturer's name and type of material for all materials used on this project. Such materials shall meet with the approval of the Engineer. If the materials submitted do not meet with the approval of the Engineer, the Contractor is to submit other types and makes that may be approved.

D. Product Delivery, Storage, and Handling: Units shall be delivered, handled, and maintained in a manner to avoid damage to the pipe.

E. Materials: Refer to the approved plans and the material specifications in Chapter 9 for the materials specified.

F. Clearing Rights-of-Ways: When piping system to be constructed under this project is outside of the streets rights-of-way, the rights-of-way are to be cleared by the Contractor to a width satisfactory for the installation and the cost of same is to be included in the price bid for the line in place. No extra allowance will be made for rights-of-way clearing.

G. Installation: The work included under this article consists of but is not limited to furnishing and installing piping systems used for the purposes of carrying fluids under pressure and shall include pressure testing. Disinfection shall be included for potable water lines.

H. Tapping Sleeves: All tapping sleeves installed in Harnett County’s existing water distribution system shall be constructed with stainless steel material and meet the requirements established in AWWA Standard C223-02. Stainless steel fabricated tapping sleeves shall be Romac model SST or approved equal made from stainless steel material that meets or exceeds the requirements of ANSI/AWWA C220. Cast Iron tapping sleeves are not permitted to be used in the Harnett County water distribution system. Tapping flanges for stainless steel fabricated tapping sleeves shall meet or exceed the requirements of ASTM A240, ASTM A743/A743M, or ASTM A744/A744M.

The tapping sleeve shall be installed per the manufacturer’s installation instructions provided with the fabricated tapping sleeve. The manufacturer’s instructions must be followed regarding support of the valve and the tapping machine during the tapping procedure. The contractor shall hydrostatically test the seal between the gasket of the tapping sleeve on the pipe of the existing water main and the gate valve before the tapping machine may be set up to perform the tap. The contractor may tap into the existing water main only after the hydrostatic pressure test has been completed with satisfactory results. For personal safety reasons, do not use a compressible fluid medium (such as air) to check for water tightness.

The HCDPU Utility Construction Inspector must witness the hydrostatic testing on the tapping sleeve and valve assembly as well as the tapping procedure on the existing water main. The coupon removed from the existing water main when the water line is tapped shall be given to the HCDPU Utility Construction Inspector. The HCDPU Utility Construction Inspector shall return the coupon to the HCDPU Engineer for a visual analysis. Additional non-destructive analysis may be performed by the HCDPU Engineer on the coupon to determine the condition of the existing water main. Coupons removed from AC pipe shall be sealed in a plastic bag to reduce the potential for fraying or dispersal of asbestos material.

I. Pipe & Fittings: Materials at all times shall be handled in such a manner as to protect them from damage. Pipe and fittings should be handled with mechanical equipment at all times that the work site will permit. At no time shall pipe and fittings be dropped or pushed into ditches. Pipe and fitting interiors shall be protected from foreign matter and shall be inspected for damage and defects prior to installation. In the event foreign matter is present in pipe and fittings, it shall be removed before installation.

All pipe shall be in manufacturer's full nominal lengths and shall have a minimum of (36") thirty-inches of cover. Pipe shall be laid on true lines as directed by the Engineer. Ditches are to be dug of sufficient width to adjust the alignment. Bell holes shall be dug at each joint to permit proper making of the joints. The pipe shall be laid and adjusted so that the alignment with the next succeeding joint will be centered in the joint and the entire pipeline will be in continuous alignment both horizontally and vertically. Pipe joints shall be fitted so that a thoroughly watertight joint will result. All joints will be made in conformance with the manufacturer's recommendations for the type of joint selected. In no case shall two types of pipe be used in this project, except where ductile or cast iron pipe is required. All transition joints between different types of pipe shall be made with transition couplings approved on shop drawings showing the complete assembly to scale.

J. Existing Utilities: Prior to beginning construction, the Contractor will contact local utility companies and verify the location of utilities. When existing utilities are in conflict with construction, they shall be exposed prior to beginning construction to prevent injury to the utilities.

K. Trenching Along Roadways and Unpaved Areas:

In paved areas, the Contractor shall compact the backfill as specified to a point 10" below the pavement surface and will then backfill with crushed stone, as shown on the plans.

All pavement cuts will be patched no later than two (2) days after backfilling. The unpaved areas of the rights-of-way shall be grassed as described in a later article of these specifications when disturbed by this work.

For work along highways, no more than 3,000 feet of disturbed shoulder shall be unseeded at any time. Ditches shall be maintained by the Contractor in good condition until the project is accepted by the Owners.

Any unpaved side road, dwelling entrance road, commercial entrance, or any other area presently stabilized by use of rock material shall be protected from erosion during construction and shall be stabilized by use of crusher run stone after backfilling. This stone stabilization shall be approximately four (4) inches thick unless otherwise directed by the Engineer. The Contractor shall submit his price for this stone placed as described under "Stone for Shoulder Stabilization" in the Proposal. Stone used in the repair of paved roads and streets shall be paid for separately and shall be included in the proposal under "Stone for Pavement Repairs."

The Contractor shall schedule his work to cause the least inconvenience to the public and will maintain traffic at all times. If the work shall require the existing water mains to be temporarily closed or shut off, then the contractor shall coordinate the work activity with the HCDPU staff and provide at least 48 hours to all existing water customers that will be affected by the outage. The

contractor will be responsible for properly safeguarding the public against accidents and shall save harmless the County or developer/owner and shall assume responsibility for any suits or actions for damages of other law suits, which may be instituted against the County or developer/owner because of any incident arising from the construction. The contractor shall follow all traffic control measures using NCDOT work Zone methods in accordance with all NCDOT requirements.

Excavated materials shall be placed on one side of the trench; and when backfilling is completed, all excess materials will be hauled off and the work shall be left in an acceptable manner. Excavated materials will never be piled beyond the centerline of the road or street. Attention is called to the fact that under no condition shall the work be accepted until completed and finished in a workmanlike manner. Barriers shall be placed and lights furnished by the Contractor as directed by the Engineers and as covered elsewhere in these specifications.

The contractor shall leave no block of streets (3,000 linear feet of line) in an incomplete condition for a period in excess of thirty days. This completion shall include all phases of work on the lines to be constructed, including trenching, placing pipe, backfilling, setting valves, hydrants and fittings, installing house services as required, testing, preparation for paving repair, repair of paving and clean-up for delivery of the completed section to the Owners. This requirement shall be adhered to in its entirety unless waived in writing by the Owners through the Engineers. The intent shall be to place the section of line into service as soon as possible. It shall be required to begin construction at the connection to the existing water system in order that water for testing, flushing and placing the line into service can be brought along with the construction. Failure to construct the project in this matter (unless otherwise impossible) will result in reduction in the amount of partial pay requests that the contractor may submit on the line section in question.

L. Pressure Testing: After installation and backfilling of the pressure mains, each section (as required by the Engineers) of the pipeline system shall be subject to a hydrostatic pressure test equal to 200 psig. Before applying the specified test pressure, all piping shall be thoroughly flushed and all air shall be expelled from the pipe. If outlets are not available at high places, the Contractor shall make the necessary taps at points of highest elevations before the test is made. The test pressure shall be maintained in the section tested for a period of three (3) hours. Allowable leakage in the three (3) hour period shall not exceed the allowable leakage using the following formula:

$$L = [S \times D \times (P)^{0.5}] / 148{,}000$$

Where:
L = testing allowance (makeup water), in gallons per hour
S = length of pipe tested, in feet
D = nominal diameter of the pipe, in inches
P = average test pressure during the hydrostatic test, in pounds per square inch (gauge)

Tests may be made of isolated portions of such piping as will facilitate general progress of the installation. Any revisions made in the piping systems will subsequently necessitate retesting of such affected portions of the piping systems.

When water service is available from the Owner, reasonable amounts of water will be provided the Contractor for line flushing and testing at no cost. The availability of water for this purpose is subject to the Owner's own needs or requirements. Water loss, as the result of line breakage,

blocking movement, blow outs, or other reasons directly attributable to the Contractor's work, shall be paid for by the Contractor at the Owner's prevailing rates.

The hydrostatic test shall be conducted by the Contractor under the direct observation HCDPU Utility Construction Inspector and the Professional Engineer. Any defective material causing excessive leakage shall be repaired or replaced and the test repeated until satisfactory results are achieved by the pipe or pipe section holding the pressure for at least two (2) hours.

M. Disinfection:

After pressure testing, the new water lines are to be disinfected in accordance with AWWA All new, cleaned or repaired water mains shall be disinfected in accordance with AWWA C651 “section 4.4.3” and as specified herein. The water lines are to be flushed thoroughly to remove all dirt and debris which may have collected in the line. After flushing has been completed, the pipelines shall be tapped on top at a point furthest from the point that the lines are to be filled with water. The valve at the end of the line shall then be closed, and the valve between the new water line and the Municipal Water System closed.

Chlorine is then to be applied under pressure by an ejector pump (or equal) to the water entering the new pipeline. Chlorine will be added in sufficient quantities to give an overall chlorine residual to the water of at least fifty (50) parts per million. The pipeline is to be completely isolated from the system by closed valve(s) and the chlorinated water allowed to remain in the line for at least twenty-four hours. At the end of this period, the pipeline is to be thoroughly flushed until no evidence of chlorine exists as determined by the Ortho-Tolidine Test.

These specifications still include detailed procedures for the adequate flushing, disinfection, and microbiological testing of all water mains. In accordance with T15A NCAC 18C .1003 or latest NCDENR PWS version, the waterline shall be disinfected by continuous feed disinfection method.

1. Initial Flushing

All new water lines extended from Harnett County’s existing water distribution system shall be thoroughly flushed to remove foreign matter, dirt and debris that may have entered the pipe during the construction process. Preliminary flushing removes light particulates from the main but not from the pipe-joint spaces. The initial flushing of any water line shall be conducted to maintain a flushing velocity of at least 2.5 feet per second. Once the initial flushing procedures have been completed and the pipe is clear of foreign matter, dirt and debris, then the contractor shall sterilize the pipe using the continuous feed method for water lines.

Flushing and cleaning shall be the responsibility of the contractor. The contractor shall pump dry and dispose of all extraneous ground water and other sand gravel and foreign objects within the water main. Such material shall not be flushed into the existing operating sewer mains, pump stations or pertinent facilities. Flushing of water main lines under construction into sewer main lines of the HCDPU is prohibited. Water for flushing and cleaning shall be provided by the HCDPU upon payment of the appropriate fees for a fire hydrant meter in keeping with HCDPU established standards rates and regulations. The water mains shall be flushed at the end of the blow off.

2. Chlorination Methods

Water main chlorination must be completed in accordance with AWWA C651 “section 4.4.3” for the Continuous Feed Method. The continuous-feed method consists of placing calcium hypochlorite granules in the main during construction (optional), completely filling the main to remove air pockets, flushing the completed main to remove particulates, and filling the main with potable water. The potable water shall be chlorinated so that after a 24-hr holding period in the main there will be a free chlorine residual of not less than 10 mg/L.

At the option of the contractor, calcium hypochlorite granules shall be placed in pipe sections to provide a strong chlorine concentration in the first flow of flushing water that flows down the main. In particular, this procedure is recommended when the type of pipe is such that this first flow of water will flow into annular spaces at pipe joints. Before the main is chlorinated, it shall be filled to eliminate air pockets and flushed to remove particulates. The flushing velocity in the main shall not be less than 2.5 ft/sec (0.76 m/sec) unless the purchaser determines that conditions do not permit the required flow to be discharged to waste. Note that flushing is no substitute for preventive measures during construction. Certain contaminants, such as caked deposits, resist flushing at any feasible velocity and pigging of the main may be required.

In accordance with T15A NCAC 18C .1003 or latest NCDENR PWS version, the waterline shall be disinfected by continuous feed disinfection method.

3. Final Flushing

After the applicable retention period, heavily chlorinated water should not remain in prolonged contact with pipe. In order to prevent damage to the pipe lining or to prevent corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main fittings, valves, and branches until chlorine measurements show that the concentration in the water leaving the main is no higher than that generally prevailing in the distribution system or that is acceptable for domestic use. The environment to which the chlorinated water is to be discharged shall be inspected. If there is any possibility that the chlorinated discharge will cause damage to the environment, a neutralizing chemical shall be applied to the water to be wasted to thoroughly neutralize the residual chlorine. Where necessary, federal, state, local, or provincial regulatory agencies should be contacted to determine special provisions for the disposal of heavily chlorinated water. Thorough consideration should be given to the impact of highly chlorinated water flushed into the waste environment. If there is any question that damage may be caused by chlorinated-waste discharge (to fish life, plant life, physical installations, or other downstream water uses of any type), then an adequate amount of reducing agent should be applied to water being disposed of in order to thoroughly neutralize the chlorine residual remaining in the water

4. Bacteria Testing of Water Samples

The purpose of chlorination is to clean and disinfect water lines, resulting in an absence of coliforms as confirmed by laboratory analysis. All water samples collected for testing must be analyzed in a state certified laboratory and for this reason all water samples will be tested by the HCDPU laboratory.

Water samples for bacteriological analysis shall be collected in sterile bottles treated with sodium thiosulfate and they shall be tested for bacteriological (chemical and physical) quality in accordance with *Standard Methods for the Examination of Water and Wastewater*; and shall show the absence of coliform organisms; and, if required, the presence of a chlorine residual. Turbidity, pH, and a standard heterotrophic plate count (HPC) test may be required at the option of the

county because new material does not typically contain coliforms but does typically contain HPC bacteria.

After flushing the line, the Contractor shall be responsible to furnish sample points at various points along the line under the direct observation HCDPU Utility Construction Inspector and the Professional Engineer. While the Contractor is responsible to furnish sterilized bottles and take water samples for testing the HCDPU Utility Construction Inspector will generally furnish sterilized bottles and take water samples to the HCDPU laboratory for testing and bacteria analysis. The HCDPU laboratory is a state certified laboratory and this service is free of charge at this time, but subject to change if lab fees become necessary to maintain the state certified laboratory.

A minimum of three samples shall be taken in any instance. The Contractor may send additional samples to an approved laboratory for bacteriological analysis at the contractor's expense. If the analysis reveals that no bacteria is present, the line or lines may be approved to be placed into service upon notification of the Engineer, and Final Approval by the North Carolina Department of Environment and Natural Resources – Division of Water Resources, Public Water Supply Section (NCDENR-DWR, PWSS).

At least one set of water samples shall be collected from every 1,200 ft (366 m) of the new water main, plus one set from the end of the line and at least one set from each branch. The sampling pipe must be dedicated and clean and disinfected and flushed prior to sampling. A corporation cock may be installed in the main with a copper-tube gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed and retained for future use. The gooseneck assembly shall be stored in a clean, dry area between uses to avoid potential contamination from the assembly entering the water samples. Water samples shall have no coliforms present and the HPC is less than 500 cfu/mL.

5. Repeat Disinfection Procedures Until All Water Samples Test Negative For Coliform
If test results from the lab indicate a measured HPC greater than 500 colony-forming units (cfu) per mL for any water sample then, flushing and disinfection procedures should be resumed and continued for another 24 hour contact period. Following the second final flushing procedure, another set of water samples shall be collected and analyzed for the presence of coliform and HPC and the disinfection process shall be repeated until a set of water samples have no coliforms present and the HPC is less than 500 cfu/mL. The record of compliance shall be the bacteriological test results certifying that the water sampled from the new water main is free of coliform bacteria contamination and is equal to or better than the bacteriologic water quality in the distribution system. The HCDPU laboratory will forward all test results to the HCDPU Engineer to verify the disinfection process is complete and the results are satisfactory.

N. Protecting Open Pipelines: All water mains installed under this contract shall be thoroughly blocked against access to the pipe of any water from extraneous sources, any vermin, animals, mud, silt or other deleterious materials by installation of plugs designed for the purpose at every pipe end at all times when the pipe ending is not attended by contractor personnel.

O. Relation of Water Mains to Sewers: The Contractor shall adhere to the location of the water and sewer lines as shown on the plans (if applicable). If conditions change in the field that require relocation of either water or sewer mains, the Contractor shall insure that the water main is laid at least 10 feet laterally from existing or proposed sewers. If the 10 foot lateral separation is not

possible then the water main shall be laid in a separate trench with the bottom of the water main at least 24 inches above the top of the sewer. If neither the 10 foot lateral or 24 inch vertical separation is possible then the water and sewer lines shall both be constructed of ductile iron pipe (class 50 w/pressure tight joints) for a distance of 10 feet on each side of the point of crossing and the state minimum 18 inch vertical separation shall be maintained.

9.16.5 Boring and Jacking Under Highways

A. General: The Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services necessary for or incidental to the furnishing and installation to complete all boring and jacking under highways as shown on drawings and as specified in accordance with provisions of the contract documents and completely coordinated with that of all other trades. The contractor shall be responsible for the work performed by a subcontractor to meet all NCDOT requirements and satisfy all requirements outlined herein these specifications. The contractor shall be responsible to repair any and all damage to existing street pavement or the right-of-way caused by the boring the jacking procedure. The areas where the contractor shall dig the bore pits shall be restored to the same condition before the bore and jacking operation started leaving the right-of-way in as good or better condition once the work is complete.

Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, and complete and compatible installation shall be furnished and installed as part of this work.

B. Quality Standards: Procedures for boring and jacking shall be in accordance with the best accepted practice of the industry and these specifications.

C. Submittals: The Contractor shall submit to the Engineer the manufacturer's name for all materials to be used in this project, along with such other information the Engineer may request.

D. Product Delivery, Storage, and Handling: Units shall be delivered, stored and handled in such a manner to avoid damage to the material.

E. Job Conditions: Verify all grade and alignment prior to setting up boring rig. Installation assumes responsibility for performance.

F. General Requirements: Lines installed under major highways shall be performed by boring under the highway or tunneling as may be required by the North Carolina Department of Transportation. Where boring under pavement is required by the Department of Transportation, the Contractor will be paid the unit price bid in the Proposal for each linear foot of pipe so placed of the type bid upon in the proposal.

In placing the pipe, any annular space exceeding one-quarter inch in width between casing and tunnel shall be fitted with 1:2 Portland cement mortar grout, pumped into the space to form a tight fit between casing and tunnel walls. Cost of grouting shall be an integral part of the price submitted in the Proposal for the type and size pipe, "Boring Under Highways" required by the installation.

The Engineer may require "Boring and Jacking" under objects or pavement not indicated on the plans but required in the best interest of the Owners, in which case the payment for each linear foot required will be made at the unit price given in the Proposal for "Boring Under Highways".

Where North Carolina Department of Transportation (NCDOT) requires casings to be installed at primary highway crossings, the Contractor shall install the casings in accordance with the following requirements:

The Contractor shall be required to notify the Department of Transportation on the contemplated construction and secure the necessary permit for performing the work.

G. Installation: All work on boring and/or casing under highways shall be under the supervision of the District Engineer of the Department of Transportation or his authorized representative who shall be notified at least five (5) days before actual work or installation begins. Pipelines shall be installed under highways by boring and jacking where shown on the plans.

H. Carrier Pipe: Carrier line pipe and joints under primary highways shall be of approved material and construction satisfactory to the District Engineer of the Department of Transportation. Pipelines operating under pressure must be of a material and type capable of withstanding the internal stresses generated in the lines. Joints may be welded, screwed or mechanical type. Pipe must be supported by a minimum of (2) two pipe carrier spacers per length of pipe.

I. Casing Pipe for Primary Highways: The inside diameter of casing pipe for carrier pipe less than 6 inches in diameter shall be not less than 2 inches greater than the largest outside diameter of the carrier pipe, joints or couplings and not less than 4 inches greater for carrier pipe 6 inches and larger in diameter. It shall, in all cases, be great enough to afford easy removal of the carrier pipe without disturbing the casing pipe or roadbed.

The casing pipe must be capable of withstanding highway loadings and must be so constructed as to prevent leakage of any matter throughout its length, except in cases where the ends are not sealed. Casing shall be installed in a manner to prevent the formation of a waterway under the highway. It must have an even bearing throughout its length, except in cases where the ends are not sealed. Casing shall be installed in a manner to prevent the formation of a waterway under the highway. It must have an even bearing throughout its length and slope to one end.

If installed by the open trench method ductile iron pipe with restrained joints may be used with approval by the NCDOT, the Professional Engineer and the HCDPU Engineer. Sizes 12 inches and under shall be not less than Class 50. Sizes 14 inches through 48 inches shall be not less than Class 51 or as shown on plans or directed by the Engineer.

Standard weight (Schedule 40) wrought steel or wrought iron pipe having wall thickness as listed below may be used as casing pipe in sizes 8 inches and smaller.

WROUGHT STEEL DIAMETER OF PIPE (Inches)	WROUGHT IRON WALL THICKNESS (Inches)	WALL THICKNESS (Inches)
2-1/2	.203	.208
3	.216	.221
3-1/2	.226	.231

4	.237	.242
5	.258	.263
6	.280	.286
8	.322	.329

Steel pipe in sizes 8 inches and larger manufactured from steel having minimum yield strength of 35,000 psi and having minimum permissible wall thickness as listed below may be used as casing pipe. Adjust the thickness for other grades of pipe, except that the wall thickness shall be not less than .3125 (5/16") inch:

DIAMETER OF PIPE (Inches)	MINIMUM WALL THICKNESS (Inches)
12	.188
16	.250
18	.250
DIAMETER OF PIPE (Inches)	MINIMUM WALL THICKNESS (Inches)
20	.250
24	.250
30	.312
36	.375

J. Depth of Casing Pipe: The depth from surface of roadway to top of pipe at its closest point shall be not less than 3 feet.

K. Protection at Ends of Casing Pipe: Where ends of casing are below ground, they shall be suitably sealed to protect against the entrance of foreign material.

L. Shoring of Ditches: Shoring shall be done in a neat, safe and workmanlike manner so as to prevent any cave-ins or settlement of the roadway and so as not to endanger any personnel working in the ditch. Contractor shall be required to provide shoring of pits, trenches and other excavation in accordance with the latest requirements of the North Carolina Department of Transportation and the Federal Occupational Health and Safety Act.

M. Length of Casing Pipe: Casing pipe shall be of a length as determined to be necessary by the Department of Transportation District Engineer and the Project Engineer.

N. Removal of Casing Pipe: In the event that an obstruction is encountered during the dry boring operation, the auger and spiral welded steel pipe encasement are to be withdrawn and the void is to be completely filled with grout at 25 psi pressure before moving to another boring site.

O. Payments: The Contractor shall be paid the unit price bid in the proposal for the size of casing in place complete under the primary highways, including the furnishing of all labor, tools, equipment, and materials required for the various installations. Water mains through casing will be paid for at the unit price bid in addition to the price paid for casings under the highways.

9.16.6 Horizontal Directional Boring

A. General:
Directional boring is a method of trenchless construction using a surface launched steerable drilling tool controlled from a mobile drilling frame, and includes a field power unit, mud mixing system and mobile spoils extraction system. The drilling frame is sited and aligned to bore a pilot

borehole that conforms to the planned installation of the main. The drilling frame is set back from an access pit that has been dug (typically at the location of a proposed manhole or other appurtenance) and a high-pressure fluid jet tool head that uses a mixture of bentonite clay and water is launched. Pits are normally dug at the start point and endpoint of the proposed pipe installation and are used to align the tool head, attach other equipment, and to collect and remove excess spoils. Using an electronic guidance system, the tool head is guided through the soil to create a pilot borehole. Upon reaching the endpoint joint, the tool head is removed and a reamer with the product pipe attached is joined to the drill string and pulled back through the borehole. In large diameter installations, pre-reaming of the borehole will usually be done prior to attaching the product pipe for the final pullback. A vacuum spoils extraction system removes any excess spoils generated during the installation. The connections, manholes or other appurtenances are then completed at both the start point and endpoint locations and the surface restored to its original condition. **The Contractor must follow HDPE pipe installation guidelines per AWWA Manual M55 and to provide anchorage to offset the Poisson Effect contraction.**

B. Site Conditions for Directional Borings

Drilling operations must not interfere with, interrupt or endanger surface and activity upon the surface. Contractor must comply with all applicable jurisdictional codes and OSHA requirements. When rock stratum, boulders, underground obstructions, or other soil conditions that impede the progress of drilling operations are encountered, the Contractor and Engineer shall review the situation and jointly determine the feasibility of continuing drilling operations.

C. Qualifications for Directional Boring Contractors

Directional boring Contractors will have actively engaged in the installation of pipe using directional boring techniques for a minimum of three years. Field supervisory personnel employed by the Directional Boring Contractor will have at least three years' experience in the performance of the work and tasks. Submit documentation indicating experience. Information must include, but not be limited to, date and duration of work, location, pipe information (i.e., length, diameter, depth of installation, pipe material, etc.), project owner information, (i.e., name, address, telephone number, contact person), and the contents handled by the pipeline (water, wastewater, etc.). Submit a list of field supervisory personnel and their experience with directional boring operations. At least one of the field supervisors listed must be at the site and be responsible for all work at all times when directional boring operations are in progress. Directional boring operations will not proceed until the resume(s) of the Contractor's field supervisory personnel have been received and reviewed by the Engineer.

D. Submittal Drawings for Directional Boring

The Directional Boring Contractor shall provide working drawings and written procedure describing in detail the proposed method of installation. This will include, but not be limited to, size, capacity and setup requirements of equipment; location of drilling and receiving pits; dewatering if applicable; method of fusion and type of equipment for joining pipe; type of cutting tool head; and method of monitoring and controlling line and depth. If the Contractor determines that modifications to the method and equipment as stated in the submittal are necessary during construction, the contractor will submit a plan describing such modifications, including the reasons for the modification.

E. Drilling Fluid:

Drilling Fluid for Directional Bores will be an inert fluid mixture of water and bentonite clay.

F. Conformance:
Directional Boring shall conform to ASTM F1962. The Contractor will furnish all labor, components, materials, tools and appurtenances necessary or proper for the performance and completion of the contract. The Engineer shall be notified immediately if any obstruction is encountered that stops the forward progress of drilling operations.

G. Preparation:
Excavate required pits in accordance with the working drawings. The drilling procedures and equipment shall provide protection of workers, particularly against electrical shock. As a minimum, grounding mats, grounded equipment, hot boots, hot gloves, safety glasses and hard hats shall be used by crewmembers. The drilling equipment shall have an audible alarm system capable of detecting electrical current. Removal of trees, landscaping, pavement or concrete shall be performed as specified.

H. Equipment:
The drilling equipment must be capable of placing the pipe within the limits indicated on the contract plans. Directional boring equipment shall consist of a surface launched steerable drilling tool controlled from a mobile drilling frame, and include a field power unit, mud mixing system and mobile spoils extraction system. The number of access pits shall be kept to a minimum and the equipment must be capable of boring the following lengths in a single bore.

I. Safety Equipment:
During drilling operations all equipment shall be effectively grounded and incorporate a system that protects operating personnel from electrical hazards. The system shall be equipped with an audible alarm that can sense if contact is made with an energized electric cable. Proper operation of the alarm system will be confirmed prior to the drilling of each tunnel. All equipment will be connected to ground with a copper conductor capable of handling the maximum anticipated fault current. Crew members operating drilling equipment and handling rods will do so while standing on grounded wire mesh mats, ensuring that all equipment is grounded, and wearing hot boots, hot gloves, safety glasses and hard hats. Crewmembers operating handheld locating equipment will wear hot boots.

J. Pilot Hole Boring / Adjustments / Restarts
The entry angle of the pilot hole and the boring process will maintain a curvature that does not exceed the allowable bending radii of the product pipe. The Contractor shall follow the pipeline alignment as shown on the Drawings, within the specifications stated. If adjustments are required, the Contractor shall notify the Engineer for approval prior to making the adjustments.

K. Product Pipe Installation:
After the pilot hole is completed, the Contractor shall install a swivel to the reamer and commence pullback operations. Pre-reaming of the tunnel may be necessary and is at the option of the Contractor.

1. Reaming diameter will not exceed 1.5 times the diameter of the product pipe being installed.

2. The product pipe being pulled into the tunnel will be protected and supported so that it moves freely and is not damaged by stones and debris on the ground during installation. The drilling fluid should remain in the tunnel to ensure the stability of the tunnel, reduce drag on the pulled pipe, and provide backfill with the annulus of the pipe and tunnel.

Pullback forces will not exceed the allowable pulling forces for the product pipe.

The Contractor shall allow sufficient lengths of product pipe to extend past the termination point to allow connections to the diffuser assembly. Pulled pipe will be allowed 24 hours of stabilization prior to making tie-ins. The length of extra product pipe will be at the Contractor's discretion.

The contractor shall allow at a minimum of 20 linear feet of directional-drilled pipe on each end of the installation. The additional pipe lengths shall be on a parallel plane with the existing grade at the point of connection to the Ductile Iron or PVC main.

L. Cleanup and Disposal of Drilling Fluid:

The Contractor shall maintain the work site in a neat and orderly condition throughout the period of work and after completing the work at each site, remove debris, surplus material and temporary structures erected by the Contractor. The site shall be restored to a condition equal to the existing condition prior to being disturbed. Disposal of excess drilling fluid and spoils will be the responsibility of the Contractor who must comply with all relevant regulations, right-of-way, work space, permits and encroachment agreements. Excess drilling fluid and spoils will be disposed at an approved location. The Contractor is responsible for transporting all excess drilling fluid and spoils to the disposal site and paying any disposal costs. Excess drilling fluid and spoils will be transported in a manner that prevents accidental spillage onto roadways. Excess drilling fluid and spoils will not be discharged into sanitary or storm drain systems, ditches or waterways.

Drilling fluid returns (caused by fracturing of formations) at locations other than the entry and exit points will be minimized. The Contractor will immediately clean up any drilling fluid that surfaces through fracturing. Cleanup of excess drilling fluid shall be accomplished by the means of mobile spoils removal equipment.

Mobile spoils removal equipment capable of quickly removing spoils from entry or exit pits and areas with returns caused by fracturing will be present during drilling operations to fulfill the requirements of paragraph "a" above. The Contractor shall not commence drilling operations without the presence of drilling fluid removal equipment. All excess drilling fluid shall be removed from the site(s) and disposed of properly.

The Contractor will be responsible for making provisions for a clean water supply for the mixing of drilling fluid. Water purchased from the HCDPU water distribution system must be metered through fire hydrant meters and paid for by the Contractor. The Contractor shall contact the HCDPU Administrative Office to obtain a fire hydrant meter and return the same to the HCDPU Administrative Office along with payment for the water used on site.

The contractor shall contain all drilling fluids from the site until such time that the excess fluid may be removed from the site by mobile spoils removal equipment. At no time shall the contractor allow excess drilling fluids to drain into water bodies such as streams, rivers, lakes, wetlands etc.

M. As-Builts

The Contractor shall provide to the Engineer a bore plan (boring log) to provide the as-built condition of the bore. This information shall include the pipe depth at intervals of 50 lf, which shall indicate the horizontal alignment with respect to a horizontal baseline.

9.16.7 Work Along Highways

A. General: The Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services necessary for or incidental to the furnishing and installation to complete all work along highways construction as shown on drawings and as specified in accordance with provisions of the contract documents and completely coordinated with that of all other trades. ~~165~~

Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, and complete installation shall be furnished and installed as part of this work.

B. Quality Standards: All work within the rights-of-way of the Department of Transportation shall be governed by DOT Standard Specifications.

C. Job Conditions: The Contractor shall verify all existing conditions prior to beginning work with the rights-of-way of DOT. Any unusual conditions should be brought to the attention of the Engineer.

D. Work Along Highways: The Contractor shall be responsible for notifying the North Carolina Department of Transportation of the proposed construction, shall secure necessary permits, and shall be responsible for any damage to existing roadways by reason of his work. The Contractor will be required to replace paving cut on account of this work. The Contractor shall also be entirely responsible for backfilling and maintaining the ditches cut along and across highways in accordance with the permits received from the North Carolina Department of Transportation and as is required by these specifications.

It will be absolutely necessary for the Contractor to schedule on-the-site inspection prior to beginning work at highway bridges and/or box culverts by contacting the Head of Bridge Maintenance.

Lines installed under major highways shall be performed by boring under highway or tunneling as may be required by the North Carolina Department of Transportation.

Where lines to be installed by the open-cut method pass under culverts on the Department of Transportation right-of-way, the Contractor shall fill the void from the bottom of the line to the bottom of the culvert with pea gravel (DOT No. 78M). When the Contractor tunnels under culverts, any voids shall be filled with pea gravel (DOT No. 78M) or concrete as directed by the Engineer. The Contractor shall include the cost for placing this item in the appropriate lump sum or unit price item.

The Contractor shall conduct his work in accordance with the requirements of the Department of Transportation; and in particular, he shall be required to control traffic in the vicinity of the work as required by the latest revision of the North Carolina Construction and Maintenance Operations Supplement to the Manual of Uniform Traffic Control Devices (MUTCD) for Streets and Highways. This publication may be obtained from the Traffic Engineering Branch, Division of Highways, Department of Transportation, and Highway Safety. Contractor will be required to obtain and have in his possession one copy of the above-referenced publication and to comply with the requirements therein.

The use of this supplement manual does not preclude the use of the MUTCD, and it is recommended that Part VI of the MUTCD be read before attempting any construction or maintenance signing. Any conflicts found to occur between the Supplement Manual and the MUTCD shall be resolved in favor of the MUTCD.

E. Unpaved Roadways: Any unpaved road, side road, dwelling entrance road, commercial entrance, road shoulder, or any other area presently stabilized by use of rock material shall be protected from erosion during construction and shall be stabilized by use of #57 (crusher run) stone after backfilling. This stone stabilization shall not be less than approximately four inches (4") thick unless otherwise directed by the Engineer.

F. Pavement Cuts: In pavement cuts, the Contractor shall compact the backfill as hereinbefore specified and then remove compacted earth to a point ten inches (10") below the pavement surface and will then backfill with crushed stone as shown on the plans.

The Contractor shall maintain in good condition the ditch line in pavement cuts until paving is authorized to be replaced. The Contractor, upon notification from the Engineer, shall replace any and all paving cut on this project by placing a paving of similar nature to that cut to the specifications of the North Carolina Department of Transportation. 166

The Contractor will not be reimbursed for pavement damaged on the opposite side of the roadway from the construction. The Contractor shall repair and replace such damaged pavement at his own expense.

G. Service Lines: All service lines crossing highways shall be installed by boring under highway unless special permission for open cutting is obtained by the Contractor from the Division Engineer of the Department of Transportation.

9.16.8 Asphalt Paving

A. General: The Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services necessary for or incidental to the furnishing and installation complete of all asphalt paving construction as shown on drawings and as specified in accordance with provisions of the contract documents and completely coordinated with that of all other trades.

Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, and complete installation shall be furnished and installed as part of this work.

B. Quality Standards: Contractors shall perform all work in accordance with the North Carolina Department of Transportation Standard Specifications for asphalt paving and these specifications.

C. Submittals: The Contractor shall submit the names of the suppliers of all materials to be used in this project.

D. Job Conditions: The Contractor shall verify suitability of sub grade prior to placing the stone base or asphaltic paving. Installation assumes responsibility for performance.

E. Materials: All suppliers and sources of materials shall be approved for use by the Department of Transportation of the State of North Carolina.

F. Stone Base Course: All work on this project will have six-inch minimum compacted thickness, except as is otherwise designated on the plans or as given in written instruction by the Engineer. CABC shall consist of one or more natural materials proportioned and blended on the area to be paved and shall meet the requirements of the N. C. Department of Transportation Standard Specifications for roads and pavements.

The contractor shall utilize the stone placed in the trench after backfilling of the line in so far as possible. Additional stone may be required to bring the minimum stone thickness up to the required depth.

Prior to placing asphalt, the surface shall be thoroughly rolled for its full length and width with a power roller or vibrating tamp to thoroughly compact the stone base. Rolling and and/or tamping shall be continued alternately until the surface is smooth and the entire base is compacted.

Irregularities or depressions developed by rolling shall be corrected by loosening the material and compacting to form a uniform surface. Along curbs, headers and walls and at places not accessible to the roller the base shall be compacted thoroughly with mechanical tampers or with hand tampers. Mechanical tamping shall be done with an approved rapid hitting mechanical tamper capable for delivering 185 pounds per square foot of tamping area per blow. Hand tampers shall weigh not less than 50 pounds with a face area of not more than 100 square inches.

G. Asphaltic Concrete: The Contractor will be required to place a surface course consisting of a mixture of aggregate and liquid asphalt mixed in an approved type batch plant. Asphaltic concrete shall be placed and compacted on a prepared base course to the lines, grades, and compacted thickness called for on the plans or shown in the Bid Form.

The asphaltic wearing surface shall be N. C. Department of Transportation Asphaltic Concrete Mix Type I-2. The mix shall be prepared in a N. C. Department of Transportation approved plant and shall meet N. C. Department of Transportation Specifications Section 645 in every respect.

H. Placing: No asphaltic concrete shall be placed when temperature is less than 40° degrees F in the shade away from artificial heat.

The Contractor shall be equipped to place the mixture with approved spreading and finishing equipment, which shall spread the material to uniform density and strike a smooth finish true to cross-section and free from inequalities. Asphaltic concrete shall be placed in one course unless otherwise instructed by the Engineer.

While still hot, the mixture shall be rolled or tamped in places inaccessible to the rollers to give the required stability and density. Rolling shall be with 8- or 10-ton tandem rollers, weighing not less than 250 pounds per inch of width of roller tread. In rolling, care shall be taken not to damage structures of any type against which the mixture abuts.

Placing of the mixture shall be as nearly continuous as practicable; rollers shall not pass over unprotected end of the mixture except when laying of the course is discontinued for a length of

time that will allow the mixture to become chilled, in which case the joint shall be cut back to expose an unsealed or granular surface for the full depth and width of the joint so a bond will be formed with the fresh mixture. When laying is resumed, the exposed edge of the joint shall be painted with a thin coat of hot asphalt cement or asphalt thinned with naphtha and the fresh mixture raked against the joint thoroughly tamped with hot tamps and rolled. At the beginning of each day's work, joints shall be formed as above described and at all other times when laying of the course is interrupted for a sufficient time to allow the material to chill. Longitudinal joints shall be formed in a similar manner as that described above when longitudinal joints are required.

Newly compacted surface shall be protected from traffic until it has become properly hardened by cooling.

9.16.9 Erosion Control and Grassing

A. General: The Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services necessary for or incidental to the furnishing and installation, complete, of all Erosion Control and Grassing construction as shown on drawings and as specified, in accordance with provisions of the contract documents and completely coordinated with that of all other trades.. 170

Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, and complete installation shall be furnished and installed as part of this work.

B. Quality Standards: The Contractor shall utilize the best materials available and shall complete all work in accordance with Department of Transportation, Sedimentation and Pollution Control Act and these specifications.

C. Submittals: The Contractor shall submit data on the suppliers of all materials to be used in this project, germination results, seed content, etc.

D. Product Delivery, Storage, and Handling: Units shall be delivered and stored in a manner to provide full protection to all materials until ready to use.

E. Job Conditions: Verify suitability and condition of all areas to receive grassing.

F. Erosion Control - General: Contractor to take all precautions to avoid excessive siltation of nearby watercourses during the construction of this project. The erosion control used shall comply with the rules and regulations set forth in the latest edition of the North Carolina Administrative Code, Title 15, Chapter 4 "Sedimentation Control". Contractor to refer to notes on plans regarding erosion control. Temporary measures will be required as shown and described on the plans. Temporary measures shall remain in place until further possibility of stream siltation has passed at which time all temporary measures will be removed by the Contractor. Permanent measures will be required as shown and described on the plans. The Contractor shall be responsible for maintenance of the permanent measures until the completion of the project.

G. Methods and Measures: The following list of methods and measures for sediment controls should be considered and implemented by the Contractor:

1. Plan buffer zone erosion control measures in advance.

2. Install preliminary controls in advance of clearing and grubbing.
3. Prohibit pumping of ditches directly into any stream or lake. Provide settling basins.
4. Require excavated materials to be piled uphill from ditch - NOT on stream side of ditch.
5. Protect backfill material against accelerated erosion.
6. Tamp, seed and mulch within 30 days after disruption or final installation of materials.
7. Maintain buffer zone protection until area is stabilized.

H. Grassing - General: All unpaved areas disturbed by cause of construction under this project shall be seeded, fertilized and mulched under this contract. Preparation of seedbed and application of fertilizer, seed and mulch shall be performed in accordance with N. C. Board of Transportation Standard Specifications and the N.C Department of Environment and Natural Resources. Type of seed, fertilizer, lime and mulch shall be as called for on the plans for the season at the time of construction.

The above requirements shall be strictly adhered to as required by the Owners through the Engineers. The Contractor shall include his charge for all required grassing in the unit price proposed for erosion control. There will be no separate payment for grassing.

Please see Chapter 12, General and Special Conditions, Special Construction Technical Specifications for additional information and requirements for construction.

PROJECT SPECIAL PROVISIONS

UTILITIES BY OTHERS

The following utility companies have facilities that are in conflict with the construction of this project.

A) Harnett County Public Utilities (Water and Sewer) – Shane Cummings (scummings@harnett.org) (910) 893-7575 ext.3275 / Jason Ray (jray@harnett.org) (910) 984-6989
B) Windstream (Fiber Optic/Pedestals) – Don Fradel (Donald.Fradel@windstream.com) (919) 795-7693
    a. Windstream has 2 pedestals that are in conflict and will need to be relocated. Currently these are not expected to be relocated prior to availability.
    b. Contact utility coordinator John Walters, (910) 495-5845 for an updated status prior to beginning work.

The following utility companies have facilities that are not expected to but may be in conflict with the construction of this project.

A) Duke Energy – Mark Blackman (Mark.Blackman@duke-energy.com) (919) 654-6588
B) Spectrum – Rex Gray (rex.gray@charter.com) (910) 814-9317

The conflicting facilities of the Utility Companies may be adjusted after the date of availability, and are listed therefore in these special provisions for the benefit of the Contractor.

PROJECT SPECIAL PROVISIONS

EROSION CONTROL

EROSION AND STORMWATER CONTROL FOR SHOULDER CONSTRUCTION AND RECONSTRUCTION:

(11-16-10) (Rev. 8-21-12) 105-16, 225-2, Division 16 SP16 R03R

Land disturbing operations associated with shoulder construction/reconstruction may require erosion and sediment control/stormwater measure installation. National Pollutant Discharge Elimination System (NPDES) inspection and reporting may be required.

Erosion control measures shall be installed per the erosion control detail in any area where the vegetated buffer between the disturbed area and surface waters (streams, wetlands, or open waters) or drainage inlet is less than 10 feet. The Engineer may reduce the vegetated buffer threshold for this requirement to a value between 5 and 10 feet. Erosion control measures shall be spot checked every 14 days until permanent vegetative establishment.

In areas where shoulder construction/reconstruction includes disturbance or grading on the front slope or to the toe of fill, relocating ditch line or backslope, or removing vegetation from the ditch line or swale, NPDES inspection and monitoring are required every 14 days or within 24 hours of a rainfall event of 0.5" or greater. Maintain daily rainfall records. Install erosion control measures per detail.

In areas where the vegetated buffer is less than 10 feet between the disturbed area and waters of the State classified as High Quality Water (HQW), Outstanding Resource Water (ORW), Critical Areas, or Unique Wetlands, NPDES inspection and monitoring are required every 14 days or within 24 hours of a rainfall event of 0.5" or greater. The Engineer may reduce the vegetated buffer threshold for this requirement to a value between 5 and 10 feet. The plans or provisions will indicate the presence of these water classifications. Maintain daily rainfall records. Install erosion control measures per detail.

Land disturbances hardened with aggregate materials receiving sheet flow are considered non-erodible.

Sites that require lengthy sections of silt fence may substitute with rapid permanent seeding and mulching as directed by the Engineer.

NPDES documentation shall be performed by a Level II Erosion and Sediment Control/Stormwater certificate holder.

Materials used for erosion control will be measured and paid as stated in the contract.

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

06 Dust	Escalade	Justice	Scorpion
2nd Millennium	Essential	Kalahari	Serengeti
3rd Millennium	Evergreen 2	Kentucky 31*	Shelby
Apache III	Falcon IV	Kitty Hawk 2000	Sheridan
Avenger	Falcon NG	Legitimate	Signia
Barlexas	Falcon V	Lexington	Silver Hawk
Barlexas II	Faith	LSD	Sliverstar
Bar Fa	Fat Cat	Magellan	Shenandoah Elite
Barrera	Festnova	Matador	Sidewinder
Barrington	Fidelity	Millennium SRP	Skyline
Barrobusto	Finelawn Elite	Monet	Solara
Barvado	Finelawn Xpress	Mustang 4	Southern Choice II
Biltmore	Finesse II	Ninja 2	Speedway
Bingo	Firebird	Ol' Glory	Spyder LS
Bizem	Firecracker LS	Olympic Gold	Sunset Gold
Blackwatch	Firenza	Padre	Taccoa
Blade Runner II	Five Point	Patagonia	Tanzania
Bonsai	Focus	Pedigree	Trio
Braveheart	Forte	Picasso	Tahoe II
Bravo	Garrison	Piedmont	Talladega
Bullseye	Gazelle II	Plantation	Tarheel
Cannavaro	Gold Medallion	Proseeds 5301	Terrano
Catalyst	Grande 3	Prospect	Titan ltd
Cayenne	Greenbrooks	Pure Gold	Titanium LS
Cessane Rz	Greenkeeper	Quest	Tracer
Chipper	Gremlin	Raptor II	Traverse SRP
Cochise IV	Greystone	Rebel Exeda	Tulsa Time
Constitution	Guardian 21	Rebel Sentry	Turbo
Corgi	Guardian 41	Rebel IV	Turbo RZ
Corona	Hemi	Regiment II	Tuxedo RZ
Coyote	Honky Tonk	Regenerate	Ultimate
Darlington	Hot Rod	Rendition	Venture
Davinci	Hunter	Rhambler 2 SRP	Umbrella

Desire	Inferno	Rembrandt	Van Gogh
Dominion	Innovator	Reunion	Watchdog
Dynamic	Integrity	Riverside	Wolfpack II
Dynasty	Jaguar 3	RNP	Xtremegreen
Endeavor	Jamboree	Rocket	

***Note: Kentucky 31 will no longer be an approved NCDOT Tall Fescue Cultivar after December 31, 2015.**

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.

Measurement and Payment

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

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.

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 within project limits to the maximum extent practicable. Vegetation along stream banks and adjacent to other jurisdictional resources outside the construction limits shall only be removed upon approval of Engineer. No additional payment will be made for this minimization work.

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:

1. 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.
2.

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.

All offsite Staging Areas, Borrow and Waste sites shall be in accordance with "Borrow and Waste Site Reclamation Procedures for Contracted Projects" located at:

http://www.ncdot.gov/doh/operations/dp_chief_eng/roadside/fieldops/downloads/Files/ContractedReclamationProcedures.pdf

All forms and documents referenced in the "Borrow and Waste Site Reclamation Procedures for Contracted Projects" shall be included with the reclamation plans for offsite staging areas, and borrow and waste sites.

LAWN TYPE APPEARANCE:

All areas adjacent to lawns must be hand finished as directed by the Field Operations Engineer to give a lawn type appearance. Remove all trash, debris, and stones ¾ " 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. Work shall be in accordance with Section 1660 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. Posts shall be installed a minimum of 2 ft. into the ground. 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)(5) 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

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

CONCRETE WASHOUT STRUCTURE:
(12-01-15)

Description

Concrete washout structures are enclosures above or below grade to contain concrete waste water and associated concrete mix from washing out ready-mix trucks, drums, pumps, or other equipment. Concrete washouts must collect and retain all the concrete washout water and solids, so that this material does not migrate to surface waters or into the ground water. These enclosures are not intended for concrete waste not associated with wash out operations.

The concrete washout structure may include constructed devices above or below ground and or commercially available devices designed specifically to capture concrete waste water.

Materials

Item	Section
Temporary Silt Fence	1605

Safety Fence shall meet the specifications as provided elsewhere in this contract.

Geomembrane basin liner shall meet the following minimum physical properties for low permeability; it shall consist of a polypropylene or polyethylene 10 mil think geomembrane. If the minimum setback dimensions can be achieved the liner is not required. (5 feet above groundwater, 50 feet from top of bank of perennial stream, other surface water body, or wetland.)

Construction Methods

Build an enclosed earthen berm or excavate to form an enclosure in accordance with the details and as directed.

Install temporary silt fence around the perimeter of the enclosure in accordance with the details and as directed if structure is not located in an area where existing erosion and sedimentation control devices are capable to containing any loss of sediment.

Post a sign with the words “Concrete Washout” in close proximity of the concrete washout area, so it is clearly visible to site personnel.

The construction details for the above grade and below grade concrete washout structures can be found on the following web page link:

http://www.ncdot.gov/doh/operations/dp_chief_eng/roadside/soil_water/details/

Alternate details for accommodating concrete washout may be submitted for review and approval.

The alternate details shall include the method used to retain and dispose of the concrete waste water within the project limits and in accordance with the minimum setback requirements. (5 feet above groundwater, 50 feet from top of bank of perennial stream, other surface water body, or wetland.)

Maintenance and Removal

Maintain the concrete washout structure(s) to provide adequate holding capacity plus a minimum freeboard of 12 inches. Remove and dispose of hardened concrete and return the structure to a functional condition after reaching 75% capacity.

Inspect concrete washout structures for damage and maintain for effectiveness.

Remove the concrete washout structures and sign upon project completion. Grade the earth material to match the existing contours and permanently seed and mulch area.

Measurement and Payment

Concrete Washout Structure will be paid for per each enclosure installed in accordance with the details. If alternate details are approved then those details will also be paid for per each approved and installed device.

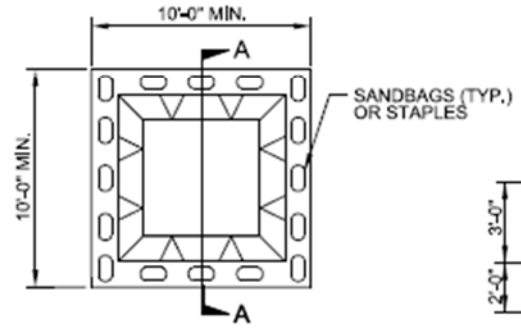
Temporary Silt Fence will be measured and paid for in accordance with Article 1605-5 of the *Standard Specifications*.

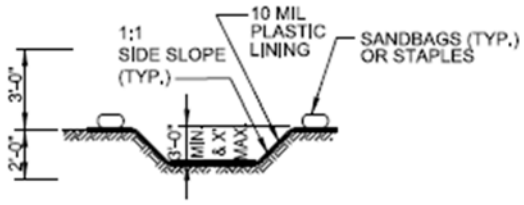
No measurement will be made for other items or for over excavation or stockpiling. Payment will be made under:

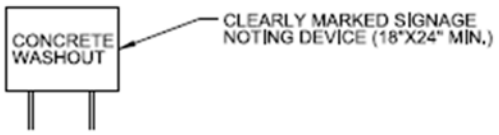
Pay Item	Pay Unit
Concrete Washout Structure	Each

WITH LINER, NO GRAVEL APPROACH

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER







PLAN

SECTION A-A

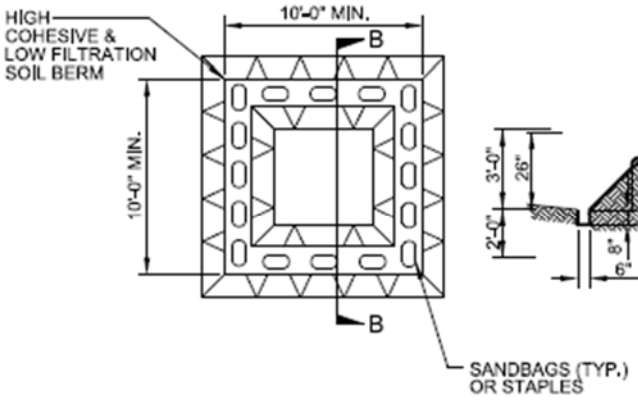
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

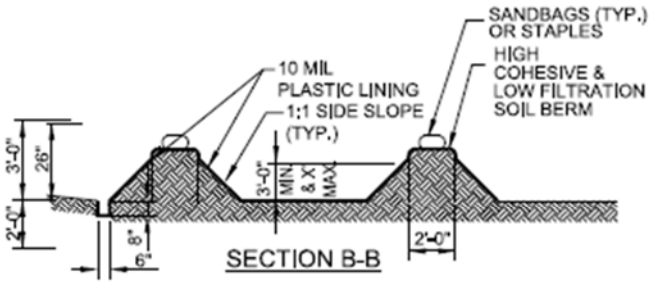
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.

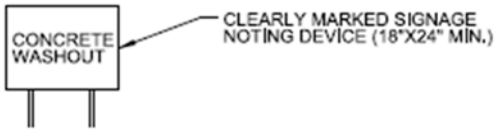
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE







PLAN

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

		PRELIMINARY DESIGN NOT FOR CONSTRUCTION

Contract No: DF00222

County: Harnett

ACCEPTED BY THE DEPARTMENT OF TRANSPORTATION

_____

Division Proposals Engineer

_____

Date

EXECUTION OF CONTRACT AND BONDS APPROVED AS TO FORM:

_____

Division Proposals Engineer

_____

Date

County : Harnett

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			ROADWAY ITEMS			
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum	L.S.	
0003	0050000000-E	226	SUPPLEMENTARY CLEARING & GRUBBING	1 ACR		
0004	0057000000-E	226	UNDERCUT EXCAVATION	100 CY		
0005	0063000000-N	SP	GRADING	Lump Sum	L.S.	
0006	0134000000-E	240	DRAINAGE DITCH EXCAVATION	15 CY		
0007	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	10 TON		
0008	0320000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	30 SY		
0009	0342000000-E	310	**" SIDE DRAIN PIPE (12")	24 LF		
0010	0343000000-E	310	15" SIDE DRAIN PIPE	24 LF		
0011	0372000000-E	310	18" RC PIPE CULVERTS, CLASS III	28 LF		
0012	0995000000-E	340	PIPE REMOVAL	35 LF		
0013	1220000000-E	545	INCIDENTAL STONE BASE	100 TON		
0014	1260000000-E	SP	AGGREGATE SHOULDER BORROW	100 TON		
0015	1330000000-E	607	INCIDENTAL MILLING	640 SY		
0016	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	600 TON		
0017	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	640 TON		
0018	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	620 TON		
0019	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	95 TON		

County : Harnett

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0020	1704000000-E	SP	PATCHING EXISTING PAVEMENT	20 TON		
0021	2209000000-E	838	ENDWALLS	2 CY		
0022	2253000000-E	840	PIPE COLLARS	1.786 CY		
0023	2830000000-N	858	ADJUSTMENT OF MANHOLES	1 EA		
0024	2845000000-N	858	ADJUSTMENT OF METER BOXES OR VALVE BOXES	5 EA		
0025	3649000000-E	876	RIP RAP, CLASS B	15 TON		
0026	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	25 SY		
0027	4457000000-N	SP	TEMPORARY TRAFFIC CONTROL	Lump Sum	L.S.	
0028	4510000000-N	1190	LAW ENFORCEMENT	10 HR		
0029	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	3,050 LF		
0030	4686000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)	5,675 LF		
0031	4695000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	300 LF		
0032	4710000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)	40 LF		
0033	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	6 EA		
0034	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	3,050 LF		
0035	4820000000-E	1205	PAINT PAVEMENT MARKING LINES (8")	300 LF		
0036	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	40 LF		
0037	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	6 EA		

County : Harnett

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0038	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	1,500 LF		
0039	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	85 EA		
0040	5571800000-E	1515	8" TAPPING SLEEVE & VALVE	1 EA		
0041	5666000000-N	1515	FIRE HYDRANT	1 EA		
0042	5673000000-E	1515	FIRE HYDRANT LEG	20 LF		
0043	5815500000-N	1530	REMOVE FIRE HYDRANT	1 EA		
0044	6000000000-E	1605	TEMPORARY SILT FENCE	700 LF		
0045	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	25 TON		
0046	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	25 TON		
0047	6012000000-E	1610	SEDIMENT CONTROL STONE	25 TON		
0048	6015000000-E	1615	TEMPORARY MULCHING	0.5 ACR		
0049	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	25 LB		
0050	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEED-ING	0.1 TON		
0051	6029000000-E	SP	SAFETY FENCE	100 LF		
0052	6036000000-E	1631	MATTING FOR EROSION CONTROL	80 SY		
0053	6042000000-E	1632	1/4" HARDWARE CLOTH	20 LF		
0054	6071010000-E	SP	WATTLE	70 LF		
0055	6071020000-E	SP	POLYACRYLAMIDE (PAM)	5 LB		
0056	6084000000-E	1660	SEEDING & MULCHING	1 ACR		
0057	6087000000-E	1660	MOWING	1 ACR		

County : Harnett

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0058	6090000000-E	1661	SEED FOR REPAIR SEEDING	25 LB		
0059	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.125 TON		
0060	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	25 LB		
0061	6108000000-E	1665	FERTILIZER TOPDRESSING	0.125 TON		
0062	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	5 EA		
0063	6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	1 EA		

1534/Jun26/Q18354.636/D237415330000/E63 **Total Amount Of Bid For Entire Project :**