STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 3

PROPOSAL

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

CONTRACT ID: N/A

WBS ELEMENT NO.: 34601.3.1

FEDERAL AID NO.: STP-OOOS (492)

COUNTY: BRUNSWICK AND NEW HANOVER

TIP NO.: R-4049

MILES: N/A

ROUTE NO.: US 74/76 & US 17

LOCATION: VARIOUS

TYPE OF WORK: CAPE FEAR MEMORIAL BRIDGE
HIGHWAY ADVISORY RADIO SYSTEM

NOTICE:

ALL PROPOSERS 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 PROPOSER 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. PROPOSERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOT WITHSTANDING THESE LIMITATIONS ON BIDDING, THE PROPOSER WHO IS AWARDED ANY PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING, REGARDLESS OF FUNDING SOURCES.

BIDS WILL BE RECEIVED AS SHOWN BELOW:

THIS IS A STRUCTURE PROJECT

BID BOND NOT REQUIRED

RETURN BIDS TO:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
LLOYD G. ROYALL, JR., PLS
DIVISION THREE ENGINEER'S OFFICE
5501 BARBADOS BLVD.
CASTLE HAYNE, NC 28429

PROPOSAL FOR THE CONSTRUCTION OF

CONTRACT No. 34601.3.1 IN BRUNSWICK AND NEW HANOVER COUNTY, NORTH CAROLINA

Date: July 26, 2012

DEPARTMENT OF TRANSPORTATION,

CASTLE HAYNE, NORTH CAROLINA

The Bidder has carefully examined the location of the proposed work to be known as Contract No. **34601.3.1**; has carefully examined the plans and specifications, which are acknowledged to be part of the proposal, the special provisions, the proposal, the form of contract, and the forms of contract payment bond and contract performance bond; and thoroughly understands the stipulations, requirements and provisions. The undersigned bidder agrees to bound upon his execution of the bid and subsequent award to him by the Board of Transportation in accordance with this proposal to provide the necessary contract payment bond and contract performance bond within fourteen days after the written notice of award is received by him. The undersigned Bidder further agrees to provide all necessary machinery, tools, labor, and other means of construction; and to do all the work and to furnish all materials, except as otherwise noted, necessary to perform and complete the said contract in accordance with *the 2012 Standard Specifications for Roads and Structures* by the dates(s) specified in the Project Special Provisions and in accordance with the requirements of the Engineer, and at the unit or lump sum prices, as the case may be, for the various items given on the sheets contained herein.

The Bidder shall provide and furnish all the materials, machinery, implements, appliances and tools, and perform the work and required labor to construct and complete State Highway Contract No. **34601.3.1** in **Brunswick & New Hanover County**, for the unit or lump sum prices, as the case may be, bid by the Bidder in his bid and according to the proposal, plans, and specifications prepared by said Department, which proposal, plans, and specifications show the details covering this project, and hereby become a part of this contract.

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

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

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

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

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

State Contract Officer

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PROJECT SPECIAL PROVISIONS

GENERAL

CONTRACT TIME AND LIQUIDATED DAMAGES:

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

The date of availability for this contract is **September 10, 2012.**

The completion date for this contract is **October 26, 2012.**

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 **Five Hundred Dollars ($500.00)** per calendar day.

INTERMEDIATE CONTRACT TIME NUMBER [ICT 1] 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 **US 74/76** during the following time restrictions:

DAY AND TIME RESTRICTIONS

6AM to 9AM and 3PM to 7PM
Monday thru Friday

In addition, the Contractor shall not close or narrow a lane of traffic on **US 74/76**, 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.

6. For **Labor Day**, between the hours of **3PM** Friday and **9AM** Tuesday.

9. For **Riverfest**, between the hours of **6AM** the **Thursday** of the week of the **Riverfest** and **9AM** the following **Monday** after the week of the **Riverfest** And/or

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 **One Thousand Dollars** (**$ 1000.00**) per hour.

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.

REVISION TO FHWA-1273 CONCERNING PERSONAL INFORMATION ON PAYROLL SUBMISSIONS:

(1-20-09) (Rev. 1-17-12) SP1 G59

Revise the *Standard Special Provision FHWA-1273 Required Contract Provisions Federal-Aid Construction Contracts* as follows:

The first sentence of Section V, Paragraph 2b is replaced with the following:

The payroll records shall contain the name, and the last four digits of the social security number of each such employee, his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof 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.

DISADVANTAGED BUSINESS ENTERPRISE (DIVISIONS):

(10-16-07)(Rev. 1-17-12) 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. http://www.ncdot.org/doh/forms/files/DBE-IS.xls

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

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

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

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

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

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

DBE Goal

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

Disadvantaged Business Enterprises 0%

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

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

Directory of Transportation Firms (Directory)

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

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

Listing of DBE Subcontractors

At the time of bid, bidders shall submit <u>all</u> 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:

<u>Blank forms will not be deemed to represent zero participation</u>. 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.

(A) *If the DBE goal is more than zero,*

(1) 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.

(2) 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.

(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) *If the DBE goal is zero,* bidders, at the time the bid proposal is submitted, shall enter the word "None"; or the number "0"; or if there is participation, add the value on the *Listing of DBE Subcontractors* contained elsewhere in the contract documents.

DBE Prime Contractor

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

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

DBE prime contractors shall also follow Sections A 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 12:00 noon of the sixth calendar day following opening of bids, unless the sixth 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 12:00 noon on the next official state business day.

If the bidder fails to submit the Letter of Intent from each committed DBE to be used toward the DBE goal, or if the form is incomplete (i.e. both signatures are not present), the

DBE participation will not count toward meeting the DBE goal. If the lack of this participation drops the commitment below the DBE goal, the Contractor shall submit evidence of good faith efforts, completed in its entirety, to the Engineer no later than 12:00 noon 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 12:00 noon on the next official state business day.

Submission of Good Faith Effort

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

One complete set and (No. of Copies) copies of this information shall be received in the office of the Engineer no later than 12:00 noon of the sixth calendar day following opening of bids, unless the sixth 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 12:00 noon 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 and/or written notices through the use of the NCDOT Directory of Transportation Firms) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within at least 10 days prior to bid opening to allow the DBEs to respond to the solicitation. Solicitation shall provide the opportunity to DBEs within the Division and surrounding Divisions where the project is located. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

(B) Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.

(C) Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

(D) (1) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.

(2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidding contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

(E) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associates and political or social affiliations (for example, union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.

(F) Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or bidder.

(G) Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

(H) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; Federal, State, and local minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide

assistance in the recruitment and placement of DBEs. Contact within 7 days from the bid opening the Business Development Manager in the Business Opportunity and Work Force Development Unit to give notification of the bidder's inability to get DBE quotes.

(I) Any other evidence that the bidder submits which shows that the bidder has made reasonable good faith efforts to meet the DBE goal.

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

(1) Whether the bidder's documentation reflects a clear and realistic plan for achieving the DBE goal.

(2) The bidders' past performance in meeting the DBE goals.

(3) The performance of other bidders in meeting the DBE goal. For example, when the apparent successful bidder fails to meet the DBE goal, but others meet it, you may reasonably raise the question of whether, with additional reasonable efforts the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the DBE goal, but meets or exceeds the average DBE participation obtained by other bidders, the Department may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made a good faith effort.

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

Non-Good Faith Appeal

The 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.

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

Failure to Meet Contract Requirements

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

CERTIFICATION FOR FEDERAL-AID CONTRACTS:

(3-21-90) SPI G85

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

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

(B) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, *Disclosure Form to Report Lobbying*, in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by *Section 1352, Title 31, U.S. Code.* Any person who

fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

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

CONTRACTOR'S LICENSE REQUIREMENTS:

(7-1-95) 102-14 SP1 G88

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

U.S. DEPARTMENT OF TRANSPORTATION HOTLINE:

(11-22-94) 108-5 SP1 G100

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

The U.S. Department of Transportation (DOT) operates the above toll-free hotline Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the hotline to report such activities.

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

SUBSURFACE INFORMATION:

(7-1-95) 450 SP1 G112 A

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

MAINTENANCE OF THE PROJECT:

(11-20-07) (Rev. 1-17-12) 104-10 SP1 G125

Revise the *2012 Standard Specifications* as follows:

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

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

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

The Contractor shall perform weekly inspections of guardrail and guiderail and shall report damages to the Engineer on the same day of the weekly inspection. *Where damaged guardrail or guiderail is repaired or replaced as a result of maintaining the project in* accordance with this article, such repair or replacement shall be performed within 7 consecutive calendar days of such inspection report.

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

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

COOPERATION BETWEEN CONTRACTORS:

(7-1-95) 105-7 SP1 G133

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

[Other Project Location-See Insert]

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

GIFTS FROM VENDORS AND CONTRACTORS:

(12-15-09) 107-1 SP1 G152

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

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

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

Executive Order 24 also encouraged and invited other State Agencies to implement the requirements and prohibitions of the Executive Order to their agencies. Vendors and contractors should contact other State Agencies to determine if those agencies have adopted Executive Order 24.

EMPLOYMENT:
(11-15-11) (Rev. 1-17-12) 108, 102 SP1 G184

Revise the *2012 Standard Specifications* as follows:

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

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

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

FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES:
(1-17-12) (Rev. 8-21-12) 9, 14, 17 SP9 R05

Description

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

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

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

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

Materials

Refer to the *2012 Standard Specifications*.

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

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

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

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

(A) Straight anchor rods,

(B) Heavy hex top and leveling nuts and flat washers on exposed ends of rods, and

(C) Nuts and either flat plates or washers on the other ends of anchor rods embedded in foundations.

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

Construction Methods

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

(A) Drilled Piers

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

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

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

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

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

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

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

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

proposes leaving temporary casings in place, do not begin drilling until a casing installation method is approved.

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

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

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

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

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

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

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

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

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

(B) Footings, Pedestals, Grade Beams and Wings

Excavate as necessary for footings, grade beams and wings in accordance with the plans, accepted submittals and Section 410 of the *2012 Standard Specifications*. If unstable, caving or sloughing materials are anticipated or encountered, shore foundation excavations as needed with an approved method. Notify the Engineer when foundation excavation is complete. Do not place concrete or reinforcing steel until excavation dimensions and foundation material are approved.

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

(C) Anchor Rod Assemblies

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

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

Arrange anchor rods symmetrically about center of base plate locations as shown in the plans. Set anchor rod elevations based on required projections above top of foundations.

Securely brace and hold rods in the correct position, orientation and alignment with a steel template. Do not weld to reinforcing steel, temporary casings or anchor rods.

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

(1) Turn leveling nuts onto anchor rods to a distance of one nut thickness between the top of foundation and bottom of leveling nuts. Place washers over anchor rods on top of leveling nuts.

(2) Determine if nuts are level using a flat rigid template on top of washers. If necessary, lower leveling nuts to level the template in all directions or if applicable, lower nuts to tilt the template so the metal pole or upright truss will lean as shown in the plans. If leveling nuts and washers are not in full contact with the template, replace washers with galvanized beveled washers.

(3) Verify the distance between the foundation and leveling nuts is no more than one nut thickness.

(4) Place base plate with metal pole or upright truss over anchor rods on top of washers. High mount luminaires may be attached before erecting metal poles but do not attach cables, mast arms or trusses to metal poles or upright trusses at this time.

(5) Place washers over anchor rods on top of base plate. Lubricate top nut bearing surfaces and exposed anchor rod threads above washers with beeswax, paraffin or other approved lubricant.

(6) Turn top nuts onto anchor rods. If nuts are not in full contact with washers or washers are not in full contact with the base plate, replace washers with galvanized beveled washers.

(7) Tighten top nuts to snug-tight with the full effort of one workman using a 12" wrench. Do not tighten any nut all at once. Turn top nuts in increments. Follow a star pattern cycling through each nut at least twice.

(8) Repeat (7) for leveling nuts.

(9) Replace washers above and below the base plate with galvanized beveled washers if the slope of any base plate face exceeds 1:20 (5%), any washer is not in firm contact with the base plate or any nut is not in firm contact with a washer. If any washers are replaced, repeat (7) and (8).

(10) With top and leveling nuts snug-tight, mark each top nut on a corner at the intersection of 2 flats and a corresponding reference mark on the base plate. Mark top nuts and base plate with ink or paint that is not water-soluble. Use the turn-of-nut method for pretensioning. Do not pretension any nut all at once. Turn top nuts in increments for a total turn that meets the following nut rotation requirements:

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

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

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

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

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

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

(13) Do not grout under base plate.

Measurement and Payment

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

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

Revise the *2012 Standard Specifications* as follows:

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

TABLE 1005-1
AGGREGATE GRADATION - COARSE AGGREGATE

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

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

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

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

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

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

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

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

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

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

TEMPORARY TRAFFIC CONTROL DEVICES:
(1-17-12) 1105 SP11 R05

Revise the *2012 Standard Specifications* as follows:

Page 11-5, Article 1105-6 Measurement and Payment, add the following paragraph after line 24:

Partial payments will be made on each payment estimate based on the following: 50% 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.

HIGHWAY ADVISORY RADIO SYSTEM

STANDARD SPECIAL PROVISION

AVAILABILITY OF FUNDS – TERMINATION OF CONTRACTS

(5-20-08) Z-2

General Statute 143C-6-11. (h) Highway Appropriation is hereby incorporated verbatim in this contract as follows:

(h) Amounts Encumbered. – Transportation project appropriations may be encumbered in the amount of allotments made to the Department of Transportation by the Director for the estimated payments for transportation project contract work to be performed in the appropriation fiscal year. The allotments shall be multiyear allotments and shall be based on estimated revenues and shall be subject to the maximum contract authority contained in *General Statute 143C-6-11(c).* Payment for transportation project work performed pursuant to contract in any fiscal year other than the current fiscal year is subject to appropriations by the General Assembly. Transportation project contracts shall contain a schedule of estimated completion progress, and any acceleration of this progress shall be subject to the approval of the Department of Transportation provided funds are available. The State reserves the right to terminate or suspend any transportation project contract, and any transportation project contract shall be so terminated or suspended if funds will not be available for payment of the work to be performed during that fiscal year pursuant to the contract. In the event of termination of any contract, the contractor shall be given a written notice of termination at least 60 days before completion of scheduled work for which funds are available. In the event of termination, the contractor shall be paid for the work already performed in accordance with the contract specifications.

Payment will be made on any contract terminated pursuant to the special provision in accordance with Subarticle 108-13(E) of the *2012 Standard Specifications.*

ERRATA

(1-17-12) (Rev. 5-15-12) Z-4

Revise the *2012 Standard Specifications* as follows:

Division 2

Page 2-7, line 31, Article 215-2 Construction Methods, replace "Article 107-26" with "Article 107-25".

Page 2-17, Article 226-3, Measurement and Payment, line 2, delete "pipe culverts,".

Page 2-20, Subarticle 230-4(B), Contractor Furnished Sources, change references as follows: Line 1, replace "(4) Buffer Zone" with "(c) Buffer Zone"; **Line 12,** replace "(5) Evaluation for Potential Wetlands and Endangered Species" with "(d) Evaluation for Potential Wetlands and Endangered Species"; and **Line 33,** replace "(6) Approval" with "(4) Approval".

Division 4

Page 4-77, line 27, Subarticle 452-3(C) Concrete Coping, replace "sheet pile" with "reinforcement".

Division 6

Page 6-7, line 31, Article 609-3 Field Verification of Mixture and Job Mix Formula Adjustments, replace "30" with "45".

Page 6-10, line 42, Subarticle 609-6(C)(2), replace "Subarticle 609-6(E)" with "Subarticle 609-6(D)".

Page 6-11, Table 609-1 Control Limits, replace "Max. Spec. Limit" for the Target Source of $P_{0.075}/P_{be}$ Ratio with "1.0".

Page 6-40, Article 650-2 Materials, replace "Subarticle 1012-1(F)" with "Subarticle 1012-1(E)"

Division 10

Page 10-74, Table 1056-1 Geotextile Requirements, replace "50%" for the UV Stability (Retained Strength) of Type 5 geotextiles with "70%".

Division 12

Page 12-8, Table 1205-4 and 1205-5, replace "THERMOPLASTIC" in the title of these tables with "POLYUREA".

Division 15

Page 15-6, Subarticle 1510-3(B), after line 21, replace the allowable leakage formula with the following: $W = LD\sqrt{P} \div 148,000$

Page 15-6, Subarticle 1510-3(B), line 32, delete "may be performed concurrently or" and replace with "shall be performed".

Page 15-17, Subarticle 1540-3(E), line 27, delete "Type 1".

Division 17

Page 17-26, line 42, Subarticle 1731-3(D) Termination and Splicing within Interconnect Center, delete this subarticle.

Revise the *2012 Roadway Standard Drawings* as follows:

1633.01 Sheet 1 of 1, English Standard Drawing for Matting Installation, replace "1633.01" with "1631.01".

PLANT AND PEST QUARANTINES

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

(3-18-03) Z-04a

Within Quarantined Area

This project may be within a county regulated for plant and/or pests. If the project or any part of the Contractor's operations is located within a quarantined area, thoroughly clean all equipment prior to moving out of the quarantined area. Comply with federal/state regulations by obtaining a certificate or limited permit for any regulated article moving from the quarantined area.

Originating in a Quarantined County

Obtain a certificate or limited permit issued by the N.C. Department of Agriculture/United States Department of Agriculture. Have the certificate or limited permit accompany the article when it arrives at the project site.

Contact

Contact the N.C. Department of Agriculture/United States Department of Agriculture at 1-800-206-9333, 919-733-6932, or *http://www.ncagr.com/plantind/* to determine those specific project sites located in the quarantined area or for any regulated article used on this project originating in a quarantined county.

Regulated Articles Include

1. Soil, sand, gravel, compost, peat, humus, muck, and decomposed manure, separately or with other articles. This includes movement of articles listed above that may be associated with cut/waste, ditch pulling, and shoulder cutting.
2. Plants with roots including grass sod.
3. Plant crowns and roots.
4. Bulbs, corms, rhizomes, and tubers of ornamental plants.
5. Hay, straw, fodder, and plant litter of any kind.
6. Clearing and grubbing debris.
7. Used agricultural cultivating and harvesting equipment.
8. Used earth-moving equipment.
9. Any other products, articles, or means of conveyance, of any character, if determined by an inspector to present a hazard of spreading imported fire ant, gypsy moth, witchweed or other noxious weeds.

AWARD OF CONTRACT
(6-28-77) Z-6

"The North Carolina Department of Transportation, in accordance with the provisions of *Title VI of the Civil Rights Act of 1964* (78 Stat. 252) and the Regulations of the Department of Transportation (*49 C.F.R., Part 21*), issued pursuant to such act, hereby notifies all bidders that it will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded to the lowest responsible bidder without discrimination on the ground of race, color, or national origin".

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%

REQUIRED CONTRACT PROVISIONS FEDERAL - AID CONSTRUCTION CONTRACTS

FHWA - 1273 Electronic Version - March 10, 1994 Z-8

I. General
II. Nondiscrimination
III. Nonsegregated Facilities
IV. Payment of Predetermined Minimum Wage
V. Statements and Payrolls
VI. Record of Materials, Supplies, and Labor
VII. Subletting or Assigning the Contract
VIII. Safety: Accident Prevention
IX. False Statements Concerning Highway Project
X. Implementation of Clean Air Act and Federal Water Pollution Control Act
XI. Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion
XII. Certification Regarding Use of Contract Funds for lobbying

ATTACHMENTS

A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

I. GENERAL

1. 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 superintendent and to all work performed on the contract by piecework, station work, or by subcontract.
2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.
3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.
4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:
   Section I, paragraph 2;
   Section IV, paragraphs 1, 2, 3, 4, and 7;
   Section V, paragraphs 1 and 2a through 2g.
5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 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 DOL, or the contractor's employees or their representatives.
6. **Selection of Labor:** During the performance of this contract, the contractor shall not:
   a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
   b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

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 and 41 CFR 60) 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 Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American 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 State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.
   b. The contractor will accept as his 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, preapprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO 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 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 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 minority group employees.
    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 minority groups 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 minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group 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, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
    c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group 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 his 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 his avenues of appeal.
6. **Training and Promotion:**
    a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
    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. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.
    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 minority group and women employees 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 his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. 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 best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
    b. The contractor will use best 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 SHA 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 minority and women 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 minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) 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 SHA.

8. **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.
   a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.
   b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.
   c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.
9. **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 completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.
   a. The records kept by the contractor shall document the following:
      1. The number 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;
      3. The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
      4. The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.
   b. The contractors will submit an annual report to the SHA 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. If on-the job training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. **General:**
   a. All mechanics and laborers 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 (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) 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. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf

of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, 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 paragraphs 4 and 5 of this Section IV.

b. 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.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. **Classification:**

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

1. the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

2. the additional classification is utilized in the area by the construction industry;

3. the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

4. with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification 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 DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour 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.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional 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. Said 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

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. **Payment of Fringe Benefits:**

a. 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 or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a 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.

4. **Apprentices and Trainees (Programs of U.S. DOL) and Helpers:**

a. Apprentices:

1. 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 DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/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 Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

2. The allowable ratio of apprentices to journeyman-level employees 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 employee 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 listed in 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 or subcontractor 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-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

3. 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 journeyman-level 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 for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

4. In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

1. 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 DOL, Employment and Training Administration.

2. The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. 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.

3. Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level 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-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

4. In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor 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. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under a approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. **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.

6. **Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor 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, as 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 SHA contracting officer 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.

7. **Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. **Violation:**

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her 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, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. **Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies 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 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. **Compliance with Copeland Regulations (29 CFR 3):**
   The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.
2. **Payrolls and Payroll Records:**
   a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.
   b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof 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. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found 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 and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.
   c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.
   d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
      1. that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;
      2. that such 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 the Regulations, 29 CFR 3;
      3. that each laborer or mechanic has been paid not less that the applicable wage rate and fringe benefits or cash equivalent for the classification of worked performed, as specified in the applicable wage determination incorporated into the contract.
   e. 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 2d of this Section V.
   f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.
   g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, 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 SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions 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.

VI. RECORD OF MATERIALS, SUPPLIES AND LABOR. THIS SECTION DELETED JUNE 4, 2007.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

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 State. 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).
   a. "Its own organization" shall be construed to include only workers employed and paid directly 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, assignee, or agent of the prime contractor.

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 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 VII 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 SHA 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 SHA 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 SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

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 SHA 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. 333).

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. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

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, the following notice 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:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

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 not more that $10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.
3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.
4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. **Instructions for Certification - Primary Covered Transactions:**
(Applicable to all Federal-aid contracts - 49 CFR 29)
   a. By signing and submitting this proposal, the prospective primary 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 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 primary 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 department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.
   d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary 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," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.
   f. The prospective primary 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 primary 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 Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
   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 may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.
   i. 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.
   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.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
   a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
   b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
   c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
   d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
2. Where the prospective primary 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 Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)

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," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

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.

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 may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

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 Covered Transactions:

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 participation in this transaction 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.

* * * * *

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(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 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 recipients shall certify and disclose accordingly.

ON-THE-JOB TRAINING

(10-16-07) (Rev. 7-21-09) Z-10

Description

The North Carolina Department of Transportation will administer a custom version of the Federal On-the-Job Training (OJT) Program, commonly referred to as the Alternate OJT Program. All contractors (existing and newcomers) will be automatically placed in the Alternate Program. Standard OJT requirements typically associated with individual projects will no longer be applied at the project level. Instead, these requirements will be applicable on an annual basis for each contractor administered by the OJT Program Manager.

On the Job Training shall meet the requirements of 23 CFR 230.107 (b), 23 USC – Section 140, this provision and the On-the-Job Training Program Manual.

The Alternate OJT Program will allow a contractor to train employees on Federal, State and privately funded projects located in North Carolina. However, priority shall be given to training employees on NCDOT Federal-Aid funded projects.

Minorities and Women

Developing, training and upgrading of minorities and women toward journeyman level status is a primary objective of this special training provision. Accordingly, the Contractor shall make every effort to enroll minority and women as trainees to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

Assigning Training Goals

The Department, through the OJT Program Manager, will assign training goals for a calendar year based on the contractors' past three years' activity and the contractors' anticipated upcoming year's activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific number of annual training goals agreed to by both parties. The number of training assignments may range from 1 to 15 per contractor per calendar year. The Contractor shall sign an agreement to fulfill their annual goal for the year. A sample agreement is available at www.ncdot.org/business/ocs/ojt/.

Training Classifications

The Contractor shall provide on-the-job training aimed at developing full journeyman level workers in the construction craft/operator positions. Preference shall be given to providing training in the following skilled work classifications:

Equipment Operators	Office Engineers
Truck Drivers	Estimators
Carpenters	Iron / Reinforcing Steel Workers
Concrete Finishers	Mechanics
Pipe Layers	Welders

The Department has established common training classifications and their respective training requirements that may be used by the contractors. However, the classifications established are not all-inclusive. Where the training is oriented toward construction applications, training will be allowed in lower-level management positions such as office engineers and estimators. Contractors shall submit new classifications for specific job functions that their employees are performing. The Department will review and recommend for acceptance to FHWA the new classifications proposed by contractors, if applicable. New classifications shall meet the following requirements:

Proposed training classifications are reasonable and realistic based on the job skill classification needs, and

The number of training hours specified in the training classification is consistent with common practices and provides enough time for the trainee to obtain journeyman level status.

The Contractor may allow trainees to be trained by a subcontractor provided that the Contractor retains primary responsibility for meeting the training and this provision is made applicable to the subcontract. However, only the Contractor will receive credit towards the annual goal for the trainee.

Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journeyman level status or in which they have been employed as a journeyman.

Records and Reports

The Contractor shall maintain enrollment, monthly and completion reports documenting company compliance under these contract documents. These documents and any other information as requested shall be submitted to the OJT Program Manager.

Upon completion and graduation of the program, the Contractor shall provide each trainee with a certification Certificate showing the type and length of training satisfactorily completed.

Trainee Interviews

All trainees enrolled in the program will receive an initial and Trainee/Post graduate interview conducted by the OJT program staff.

Trainee Wages

Contractors shall compensate trainees on a graduating pay scale based upon a percentage of the prevailing minimum journeyman wages (Davis-Bacon Act). Minimum pay shall be as follows:

60 percent	of the journeyman wage for the first half of the training period
75 percent	of the journeyman wage for the third quarter of the training period
90 percent	of the journeyman wage for the last quarter of the training period

In no instance shall a trainee be paid less than the local minimum wage. The Contractor shall adhere to the minimum hourly wage rate that will satisfy both the NC Department of Labor (NCDOL) and the Department.

Achieving or Failing to Meet Training Goals

The Contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and who receives training for at least 50 percent of the specific program requirement. Trainees will be allowed to be transferred between projects if required by the Contractor's scheduled workload to meet training goals.

If a contractor fails to attain their training assignments for the calendar year, they may be taken off the NCDOT's Bidders List.

Measurement and Payment

No compensation will be made for providing required training in accordance with these contract documents.

MINIMUM WAGES

GENERAL DECISION NC120095 01/06/2012 NC95

Z-95

Date: January 6, 2012

General Decision Number: NC120095 01/06/2012 NC95

Superseded General Decision Numbers: NC20100132

State: North Carolina

Construction Type: HIGHWAY

COUNTIES:

Brunswick	New Hanover	Pender

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

Modification Number	Publication Date
0	01/06/2012

	Rates	Fringes
CARPENTER (Form Work Only)	13.69	
CEMENT MASON/CONCRETE FINISHER	12.35	
IRONWORKER (Reinforcing)	14.88	
LABORER		
Asphalt, Asphalt Distributor, Raker, and Spreader	12.20	
Common or General		
Brunswick County	10.04	
New Hanover and Pender Counties	10.88	
Concrete Saw	13.52	
Landscape	9.34	
Luteman	12.73	
Mason Tender (Cement/Concrete)	11.43	
Pipelayer	12.05	
Traffic Control (Cone Setter)	11.15	
Traffic Control (Flagger)	9.89	
POWER EQUIPMENT OPERATORS		
Backhoe/Excavator/Trackhoe	13.86	
Broom/Sweeper	13.97	
Bulldozer	12.88	
Crane	19.87	
Curb Machine	14.43	
Distributor	15.27	
Drill	18.28	
Grader/Blade	16.47	
Loader	14.16	
Mechanic	17.37	
Milling Machine	14.38	
Oiler	13.58	
Paver	15.64	
Roller	13.94	
Scraper	14.35	
Screed	14.86	
Tractor	14.47	
TRUCK DRIVER		
Distributor	16.75	
Dump Truck	11.13	
Flatbed Truck	15.02	
Lowboy Truck	15.34	
Off the Road Truck	13.78	
Single Axle Truck	12.13	
Tack Truck	16.51	
Water Truck	13.39	

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

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

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rate.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

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

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

END OF GENERAL DECISION

Traffic Control:
(01-17-12) RWZ-1

Maintain traffic in accordance with Divisions 10, 11 and 12 of the *2012 Standard Specifications* and the following provisions:

Install Work Zone Advance Warning Signs in accordance with Standard Drawing No. 1101.01 of the *2012 Roadway Standard Drawings* prior to beginning any other work. Use a lane closure or slow moving operation to complete the work, as necessary, unless otherwise indicated (refer to Standard Drawing No. 1101.02, 1101.11, 1110.01, 1110.02 and 1130.01 of the *2012 Roadway Standard Drawings*. Use a moving operation only if the minimum speed maintained at all times is 3 mph with no stops that narrow or close a lane of travel. If the moving operation is progressing slower than 3 mph at any time, install a lane closure. Maintain the existing traffic pattern at all times, except in the immediate work zone where lane closures are allowed as determined by the Engineer.

Refer to attached details and Standard Drawing No. 1101.01, 1101.02, 1101.03, 1101.04, 1101.05, 1101.11, 1110.01, 1110.02, 1115.01, 1130.01, 1135.01, 1145.01, 1150.01, 1165.01, 1170.01 and 1180.01 of the *2012 Roadway Standard Drawings* when closing a lane of travel in a stationary work zone such as pavement patching resurfacing, or pavement marking removal. Properly ballasted cones may be used instead of drums for lane closures during daylight hours. However, drums are required for the upstream taper portion of lane closures in all applications. The stationary work zone shall be a maximum of 3 miles in length at any given time unless otherwise directed by the Engineer. A pilot vehicle operation may be used in conjunction with flaggers and the appropriate pilot vehicle warning signing as directed by the Engineer. During periods of construction inactivity, return the traffic pattern to the existing alignment and remove or cover any work zone signs. When covering work zone signs, use an opaque material that prevents reading of the sign at night by a driver using high beam headlights. Use material, which does not damage the sign sheeting. Replace any obliterated markings as required by other sections of the *2012 Standard Specifications* and the Engineer.

When personnel and/or equipment are working on the shoulder adjacent to an undivided facility and within 5 feet of an open travel lane, close the nearest open travel lane using Standard Drawing No. 1101.02 of the *2012 Roadway Standard Drawings* unless the work area is protected by barrier or guardrail. When personnel and/or equipment are working on the shoulder, adjacent to a divided facility and within 10 feet of an open travel lane, close the nearest open travel lane using Standard Drawing No. 1101.02 of the *2012 Roadway Standard Drawings* unless the work area is protected by barrier or guardrail. When personnel and/or equipment are working within a lane of travel of an undivided or divided facility, close the lane according to the traffic control plans, *2012 Roadway Standard Drawings* or as directed by the Engineer. Conduct the work so that all personnel and/or equipment remain within the closed travel lane. Do not work simultaneously, on both sides of an open travel way, within the same location, on a two-lane, two-way road. Do not perform work involving heavy equipment within 15 feet of the edge of travel way when work is being performed behind a lane closure on the opposite side of the travel way. Perform work only when weather and visibility conditions allow safe operations as directed by the Engineer.

Do not exceed a difference of 2 inches in elevation between open lanes of traffic for nominal lifts of 1.5 inches. Install advance warning UNEVEN LANES signs (W8-11 at 48" X 48") 500 feet in advance and a minimum of once every half mile throughout the uneven area.

Backfill at a 6:1 slope up to the edge and elevation of existing pavement in areas adjacent to an open travel lane that has an edge of pavement drop-off as follows:

(A) Drop-off that exceeds 2 inches on roadways with posted speed limits of 45 mph or greater.

(B) Drop-off that exceeds 3 inches on roadways with posted speed limit less than 45 mph.

Backfill the unacceptable drop-off with suitable compacted material, as approved by the Engineer, at no expense to the Department. This work is not considered part of shoulder reconstruction.

When utilizing a slow-moving operation for such items as pavement marking placement, pavement marker installation and pesticide spraying, the slow moving operation caravan shall consist, as a minimum, of the vehicles and devices shown on the Moving Operation Caravan Details as shown on Standard Drawing No. 1101.02, sheets 11, 12 and 13 of the *2012 Roadway Standard Drawings*. Traffic cones may be used when necessary to provide additional protection of wet pavement markings. Ballast all traffic cones so they will not be blown over by traffic.

Failure to comply with the following requirements will result in a suspension of all other operations:

1. Before working on ANY MAP, the Contractor shall submit a written construction sequence for traffic control and construction lighting for ALL MAPS to the Engineer at the first pre-construction meeting and the sequence must be approved before closing a lane of traffic. The Contractor and Engineer will coordinate with the Traffic Management Unit at 919-773-2800 or Traffic Services for additional traffic control guidance, as necessary.
2. Coordinate the installation of items required by the contract documents and resurfacing operations such that these operations are completed in the order as agreed upon with the Engineer at the first pre-construction meeting. Refer to the Provisions, Typicals and Details unless otherwise directed by the Engineer.
3. Once the Contractor has started work at a location, the Contractor should prosecute the work in a continuous and uninterrupted manner from the time he begins the work until completion and final acceptance unless determined otherwise by the Engineer.
4. Obtain written approval of the Engineer before working in more than one location or setting up additional lane closures.
5. Mainline pavement shall not be left milled, unmarked or uneven at the end of a paving season.
6. Contractor shall mill and pave lanes in an order such that water shall not accumulate.

Notify the Engineer 48 hours before milling or resurfacing will interfere with the existing Signal Loops. Loops may need to be placed in milled surface before resurfacing occurs. Coordinate all signal loop operations with the Engineer.

Notify the Engineer 15 consecutive calendar days before resurfacing a bridge or its approaches. Patch and make repairs to bridge surface and its approaches before resurfacing occurs. Coordinate all operations on the bridge and its approaches with the Engineer.

Notify the Engineer 48 hours before resurfacing the areas of existing pavement that require patching. Patch these areas before resurfacing occurs. Allow full depth asphalt patching to cool to the point of supporting traffic without displacement or rutting before reopening closed lane. Coordinate the resurfacing operations of the patched areas with the Engineer.

During a resurfacing only operation, bring all newly resurfaced lanes to the same elevation within 72 hours for nominal lifts of 1.5 inches or less of asphalt course and by the end of each work day for nominal lifts of greater than 1.5 inches of asphalt course.

For partial or wheel track milling operations on two-way, two-lane facilities, mill and pave back by the end of each work day. For partial or wheel track milling operations on multi-lane facilities, the lane being milled may be left closed and paved back within 72 hours.

The following options are available during Resurfacing and milling operations on two-way, two-lane facilities when the entire roadway or entire lane is to be milled:

(A) Mill a single lane and pave back by the end of each work day.
(B) Mill the entire width of roadway and pave back within 72 hours.

The following options are available during Resurfacing and milling operations on multi-lane facilities when all lanes or a single lane in one direction are to be milled:

(A) Mill a single lane and pave back by the end of each work day.
(B) Mill the entire width of pavement for all lanes to be milled in any direction daily and pave back within 72 hours.

When resurfacing facilities with ramps, resurface the ramp and gore area of the ramp as agreed upon with the Engineer. Place the transverse joint on the ramp at the terminal point of the gore unless the ramp is being resurfaced beyond this limit.

Slope the pavement at the beginning and ending of the daily milling operation as directed by the Engineer. Sweep and remove all milled material from the roadway as soon as the daily milling operation is completed. Continue milling operations until the particular section of roadway being milled is complete. Remove any existing pavement adjacent to the milled area that has been damaged and replace with patch material as directed by the Engineer.

Maintain vehicular access in accordance with Article 1101-14 of the *2012 Standard Specifications* using suitable backfill material approved by the Engineer.

Operate equipment and conduct operations in the same direction as the flow of traffic. Do not cross medians with equipment, except at properly designated interchanges.

Review and record the existing pavement markings and markers prior to resurfacing. Use the record of existing pavement markings and markers in accordance with the *2012 Roadway Standard Drawings* to re-establish the proposed pavement markings and markers unless otherwise directed by the Engineer.

Provide appropriate lighting in accordance with Section 1413 of the *2012 Standard Specifications*.

Remove existing pavement markers in preparation for paving. Repair any pavement damage due to existing pavement marker removal prior to the end of the work day. Dispose of existing pavement markers as directed by the Engineer. No direct payment will be made for this work, as it will be incidental to the paving operation.

Payment will be made for the traffic control items that have been included in the contract. No direct payment will be made for providing other traffic control as required herein, as the cost of same will be considered incidental to the work being paid for under those various traffic control items that have been included. Where the Contractor maintains traffic as required herein but no specific pay items have been included in the contract, all associated costs will be considered incidental to the work being paid for under the various items in the contract.

WORK ZONE SIGNING:

(01-17-12) RWZ-3

Description

Install and maintain signing in accordance with Divisions 11 and 12 of the *2012 Standard Specifications*, the *2012 Roadway Standard Drawings* and the following provisions:

Furnish, install, maintain and remove advance warning work zone signs and any required lane closure signing.

Furnish, install and maintain general work zone warning signs for resurfacing and milling such as ROUGH ROAD (W8-8 at 48" X 48") (for milling only), UNEVEN LANES (W8-11 at 48" X 48"), LOW SHOULDER (W8-9 at 48" X 48"), LOW / SOFT SHOULDER (DOT No. 16-79860 at 48" X 48"), UNMARKED PAVEMENT AHEAD (DOT No. 116087130 at 48" X 48") and DO NOT PASS (R4-1 at 24" X 30"). When construction is completed in any area of the project, relocate signs to the next work site, as directed by the Engineer. Remove these signs at the completion of the project.

All work zone signs may be portable.

Construction Methods

(A) General

Install all warning work zone signs before beginning work on a particular map. If signs are installed three days prior to the beginning of work on a particular map, cover the signs until the work begins. Install each work zone warning sign separately and not on the same post or stand with any other sign except where an advisory speed plate or directional arrow is used.

(B) Advance Warning Work Zone Signs

Install advance warning work zone signs in accordance with Standard Drawing No. 1101.01, 1101.02 and 1110.01 of the *2012 Roadway Standard Drawings* prior to beginning of work and remove upon final completion of the project. If there is a period of construction inactivity longer than two weeks, remove or cover advance warning work zone signs. Uncover advance warning work zone signs no more than 3 days before work resumes. All other operations could be suspended upon failure to comply with the above requirements. Such suspended operations would not be resumed until the above requirements are fulfilled.

(C) Lane Closure Work Zone Signs

Install any required lane closure signing needed during the life of the project in accordance with the Standard Drawing No. 1101.02, 1101.11 and 1110.02 of the *2012 Roadway Standard Drawings*.

(D) General Work Zone Warning Signs

Install general work zone warning signs for resurfacing and milling such as ROUGH ROAD (W8-8 at 48" X 48") (for milling only), UNEVEN LANES (W8-11 at 48" X 48"), LOW SHOULDER (W8-9 at 48" X 48") and LOW / SOFT SHOULDER (W8-9B at 48" X 48") at 1 mile intervals starting at a minimum of 500 feet in advance of the condition for both directions of travel (undivided roadways only) and at any other points determined by the Engineer.

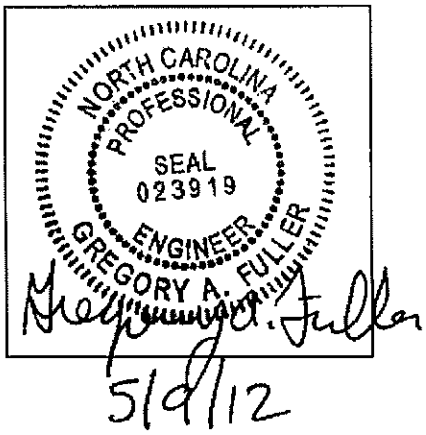
Install the LOW SHOULDER (W8-9 at 48" X 48") or LOW / SOFT SHOULDER (DOT No. 16-79860 at 48" X 48") signs prior to any resurfacing in an area where shoulder construction will be performed.

Install general work zone warning signs such as UNMARKED PAVEMENT AHEAD (DOT No. 116087130 at 48" X 48") and DO NOT PASS (R4-1 at 24" X 30") alternately at 1/2 mile intervals starting at a minimum of 500 feet in advance of the condition for both directions of travel (undivided roadways only) and at any other points determined by the Engineer. Install signs prior to the obliteration of any pavement markings.

Measurement and Payment

Payment will be made for the work zone signing items that have been included in the contract. No direct payment will be made for providing other work zone signing as required herein, as the cost of same will be considered incidental to the work being paid for under those various work zone signing items that have been included. Where the Contractor provides work zone signing as required herein but no specific pay items have been included in the contract, all associated costs will be considered incidental to the work being paid for under the various items in the contract.

CAPE FEAR MEMORIAL BRIDGE HIGHWAY ADVISORY RADIO SYSTEM FOR NEW HANOVER & BRUNSWICK COUNTIES



Project Special Provisions

Intelligent Transportation Systems

Prepared By: Neil Avery and Steve Wardle, EI
May, 2012

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1. GENERAL REQUIREMENTS

1.1 DESCRIPTION

A. Project Overview

This project consists of providing a Highway Advisory Radio System, herein after referred to as a "HAR system" that will be used to notify the traveling public about current road conditions around the City of Wilmington. The project will also involve notifying the traveling public about the current status of the Cape Fear Memorial Drawbridge with respect to being open or closed to traffic. This project consists of the following major tasks:

- Furnish, install, integrate and test a HAR System consisting of localized AM transmitter sites, software installation with **limited control** and operational capabilities at the Bridge Tender's Office and software installation with **full control** and operational capabilities at the Division 3 Office located at 5501 Barbados Boulevard, Castle Hayne, NC 28429.
- Furnish, install and test Flashing Beacons installed on Static Signs in advance of the HAR transmitters.
- Furnish, install and integrate the HAR system limited control software at the Bridge Tender's Office in one of the two following methods::

  - Install HAR's software on the existing computer hosting Daktronics' Vanguard v3 DMS control software. Modify existing or write a new API for the touchscreen command buttons to initiate a set of predefined actions. The Contractor must install any application specific hardware in the existing computer to support the additional functionalities.

    OR

  - Install all required software packages defined above on a new state furnished computer. Provide to the Engineer the minimum hardware requirements for the computer to be furnished in order to operate both systems (reference section 12.1 for state furnished computer information). Furnish and install any additional hardware required at no additional cost.

  The Bridge Tender's office will use the touchscreen to activate the HAR and DMS messages to inform the motoring public about the pending opening or closing of the bridge. Contact Mr. Trevor Carroll (910-341-2000), Division 3 Bridge Maintenance Engineer, for any inquiries concerning equipment in the Bridge Tender's office. Access to the Bridge Tender's Office during project construction will need to be coordinated with the Engineer.
- All communications between the Bridge Tender's Office, Division 3 Office, AM Transmitters, DMS, and the flashing beacons installed on static message signs will be over cellular modems installed at each location. Cellular modems will be provided by the Department.

- **For the purpose of aiding the Contractor in project design the cellular modems provided throughout the project will operate on 9 to 28V DC and be supplied with the following host interface options:**
    1. **Ethernet port (10/100 Mbps RJ 45)**
    2. **USB Type B**
    3. **RS 232: DB9 DCE**
    4. **I/O: 4 Digital, 4 Analog, 2 Relay**

B. General

Conform to these Project Special Provisions, Project Plans, and the *2012 Standard Specifications for Roads and Structures* (also referred to hereinafter as the "Standard Specifications"). The current edition of these specifications and publications in effect on the date of advertisement will apply.

In the event of a conflict between these Project Special Provisions and the Standard Specifications, these Project Special Provisions shall govern.

C. Real World Coordinates

Provide real world coordinates for all major field devices (HARs Units, Flashing Beacons, DMS, etc.) installed or worked on under this project. Provide the coordinates in feet units using the North Carolina State Plane coordinate system (1983 North American Datum also known as NAD '83). Furnish coordinates that do not deviate more than 1.7 feet (½ meter) in the horizontal plane and 3.3 feet (1 meter) in the vertical plane. Global positioning system (GPS) equipment able to obtain the coordinate data within these tolerances may be used. Submit cut sheets on the GPS unit proposed to collect the data for approval by the Engineer. For equipment cabinets, obtain and provide the location of the cabinet.

Provide both a digital copy and hard copy of all information regarding the location (including to but not limited to manufacturer, model number, and NCDOT inventory number) in the Microsoft spreadsheet provided by the Department, shown by example below.

NCDOT Inv #	Name	Location	Latitude	Longitude	Manufacturer	Model #	Comm Media	Destination
05-7009	Cam 1	I-540/I-40	35.8625	-78.8123	Pelco	Spectravision	60 SMFO	TRTMC
05-7010	Cam 2	NC 54/I-40	35.8523	-78.7631	Pelco	Spectravision	60 SMFO	TRTMC
05-7030	HAR 1 – Johnston Co.	I-40 at NC 42 (mp 312)	35.2456	-77.952			Dial-up	TRTMC
05-7001	DMS # 1	I-85 N/I-40 E, mp 159.1			Mark IV		Dial-Up	TRTMC
05-7003	DMS # 3	I-40 W, mp 307.7			Mark IV		Dial-Up	TRTMC
05-7004	DMS # 4	I-40 E, mp 286.0			Mark IV		60 SMFO	TRTMC

D. Qualified Products

Furnish new equipment, materials, and hardware unless otherwise required. Inscribe manufacturer's name, model number, serial number, and any additional information needed for proper identification on each piece of equipment housed in a case or housing.

Furnish factory assembled cables without adapters, unless otherwise approved by the Engineer, for all cables required to interconnect any field or central equipment including but not limited to fiber optic transceivers.

Certain equipment listed in these Project Special Provisions must be pre-approved on the Department's ITS & Signals Qualified Products List (QPL) by the date of installation. Equipment, material, and hardware not pre-approved when required will not be allowed for use on the project.

Furnish detailed electrical schematics showing detailed pin connections for approved equipment used to construct this project for review and approval by the Engineer. Include electronic components with proprietary part numbers. Upon approval by the Engineer furnish a final copy of the applicable electrical schematic at each equipment cabinet installation.

The QPL is available on the Department's website. The QPL website is:
http://www.ncdot.org/doh/preconstruct/traffic/ITSS/SMS/qpl/

2. MOBILIZATION

2.1 DESCRIPTION

This work consists of preparatory work and operations, including but not limited to the movement of personnel, equipment, supplies, and incidentals to the project site, for the establishment of offices, buildings, and other facilities necessary for work on the project; the removal and disbandment of those personnel, equipment, supplies, incidentals, or other facilities that were established for the prosecution of work on the project; and for all other work and operations which must be performed for costs incurred prior to beginning work on the various items on the project site.

2.2 MEASUREMENT AND PAYMENT

"Mobilization" will be measured and paid for at the contract lump sum price for Mobilization.

Partial payments for the item of "Mobilization" will be made with the first and second partial pay estimates paid on the contract, and will be made at the rate of 50% lump sum price for "Mobilization" on each of these partial pay estimates, less than the retainage provided for in Article 109-4 of the Standard Specifications, provided the amount bid for "Mobilization" does not exceed 5 percent of the total amount bid for the contract. Where the amount bid for the item of "Mobilization" exceeds 5 percent of the total amount bid for the contract, 2 ½ percent of the total amount bid will be paid on each of the first two partial pay estimates, and the portion exceeding 5 percent will be paid on the last partial pay estimate. All such payments will be made less the retainage provided for in Article 109-4 of the Standard Specifications.

Payment will be made under:

Pay Item
Mobilization ..... Lump Sum

3. WOOD POLES AND POSTS

3.1 DESCRIPTION

Furnish and install wood poles at locations shown in the plans and in accordance with the Standard Specifications and these Project Special Provisions.

Page 17-17, Section 1720, "Wood Poles".

Furnish and install 6" (wide) x 6" (wide) wood posts at locations shown in the plans. Furnish wood posts in accordance with the Standard Specifications and these Project Special Provisions.

Page 10-170, Section 1082, "Structural Timber and Lumber".

3.2 MATERIALS

Furnish 40-foot Class III wood poles. Comply with the Standard Specifications:

Page 17-17, Section 1720-2, "Materials".

Furnish wood posts that are 6" (wide) x 6" (wide) x 10' (long). Comply with the Standard Specifications:

Page 10-170, Section 1082-3(E), "Sign Posts and Battens".
Page 10-171, Section 1082-4, "Preservative Treatment"

3.3 CONSTRUCTION METHODS

Install wood poles as shown in the Plans. Comply with the Standard Specifications:

Page 17-18, Section 1720-3, "Construction Methods".

Install wood posts as shown in the Plans. Drill or auger a hole for placement of the post and to allow for compacting. Set the post a minimum of 5 feet deep. Ensure the pole is within 2° of vertical when fully loaded. Back fill around the post and tamp backfill at 6 inch lifts with a mechanical tamp until compacted density is at least 95% of original density.

3.4 MEASUREMENT AND PAYMENT

"Wood Pole (__)" will be measured and paid as the actual number of Class III wood poles furnished, installed and accepted.

"Wood Post" will be measured and paid as the actual number of 6" (wide) x 6" (wide) x 10' (long) wood posts furnished, installed and accepted.

No measurement will be made for installing grounding system, as it will be incidental to furnishing and installing wood poles.

Payment will be made under:

Pay Item

Wood Pole (40') ..... Each
Wood Post ..... Each

4. RISER ASSEMBLIES

4.1 DESCRIPTION

Furnish and install riser assemblies as shown in the Plans. Comply with Standard Specifications:

Page 17-19, Section 1722, "Riser Assemblies".

4.2 MATERIALS

Comply with Standard Specifications:

Page 17-19, Article 1722-2, "Materials".

4.3 CONSTRUCTION METHODS

Comply with Standard Specifications:

Page 17-19, Article 1722-3, "Construction Methods".

4.4 MEASUREMENT AND PAYMENT

""__" *Riser with* "__"" will be measured and paid as the actual number of risers of each type and size furnished, installed and accepted. No separate payment will be made for weatherheads or pole attachment fittings as these will be considered incidental to furnishing and installing risers.

Payment will be made under:

Pay Item

2" Riser with Weatherhead ..... Each
1" Riser with Weatherhead ..... Each

5. CABINET FOUNDATIONS

5.1 DESCRIPTION

Furnish and install cabinet foundations and all necessary hardware. Comply with Standard Specifications:

Page 17-36, Section 1750, "Signal Cabinet Foundations".

5.2 MATERIALS

Comply with Standard Specifications:

Page 17-36, Article 1750-2, "Materials".

5.3 CONSTRUCTION METHODS

Comply with Standard Specifications:

Page 17-36, Article 1750-3, "Construction Methods".

5.4 MEASUREMENT AND PAYMENT

Cabinet Foundations will be measured and paid as the actual number of cabinet foundations, furnished, installed and accepted.

Payment will be made under:

Pay Item
Cabinet Foundation ..... Each

6. CONDUIT AND JUNCTION BOXES

6.1 DESCRIPTION

Furnish and install high-density polyethylene conduit (HDPE) or PVC conduit at locations shown in the Plans and in accordance with these Project Special Provisions. Comply with Standard Specifications:

Page 17-10, Section 1715, "Underground Cable Installation".

Furnish and install standard sized junction boxes at locations shown in the Plans and in accordance with these Project Special Provisions. Comply with Standard Specifications:

Page 17-16, Section 1716, "Junction Boxes".

6.2 MATERIALS

For conduit comply with the Standard Specifications:

Page 17-11, Article 1715-2, "Materials".

For Junction Boxes comply with the Standard Specifications:

Page 17-16, Article 1716-2, "Materials".

6.3 CONSTRUCTION METHODS

Install HDPE or PVC conduit as noted in the Plans. Comply with the Standard Specifications:

Page 17-11, Section 1715-3, "Construction Methods".

Install standard sized junction boxes as noted in the Plans. Comply with the Standard Specifications:

Page 17-16, Section 1716-3, "Construction Methods".

6.4 MEASUREMENT AND PAYMENT

"Unpaved trenching (qty) (size)" will be measured horizontal linear feet of trenching for underground conduit installation furnished, installed, and accepted. Measurement will be along the approximate centerline of the conduit system. Payment will be in linear feet.

"Directional Drill (qty) (size)" will be measured horizontal linear feet of directional drill for underground conduit installation furnished, installed, and accepted. Measurement will be along the approximate centerline of the conduit system. Payment will be in linear feet.

*"Junction Box (*standard size*)"* will be measured and paid in actual number of junction boxes furnished, installed, and accepted.

No separate measurement will be made for seeding, mulching, excavation of rock, conduit duct plugs, mechanical sealing devices, graded stone, paving materials, nuts and bolts or any other hardware or materials required for installation of underground conduits and junction boxes as these will be considered incidental to the items listed above.

Payment will be made under:

Pay Item

Unpaved Trench (1) (1").....Linear Foot

Unpaved Trench (1) (2").....Linear Foot

Unpaved Trench (1) (1 1/4").....Linear Foot

Directional Drill (1) (2") ..... Linear Foot

Junction Box (standard size) ..... Each

7. FLASHING BEACONS

7.1 DESCRIPTION

Furnish and install two (2) 12", 1 section amber flashing beacons with 12V DC powered LED modules at each static sign location as identified in the plans. Ensure LED flashing beacons when activated; operate in a bouncing ball pattern at a specified flash rate. Comply with the provisions of Section 1700 of the Standard Specifications.

7.2 MATERIALS

A. General

Fabricate flashing beacon housings and end caps from die-cast aluminum. Provide visor mounting screws, door latches, and hinge pins fabricated from stainless steel. Provide interior screws, fasteners, and metal parts fabricated from stainless steel or corrosion resistant material.

Fabricate tunnel and traditional visors from sheet aluminum.

Paint all surfaces inside and outside of signal housings and doors. Paint outside surfaces of tunnel and traditional visors, pole mounting assemblies. Have electrostatically-applied, fused-polyester paint in highway yellow (Federal Standard 595C, Color Chip Number 13538) a minimum of 2.5 to 3.5 mils thick. Do not apply paint to the latching hardware or rigid flashing beacon mounting brackets.

Have the interior surfaces of tunnel and traditional visors painted an alkyd urea black synthetic baking enamel with a minimum gloss reflectance and meeting the requirements of MIL-E-10169, "Enamel Heat Resisting, Instrument Black".

Provide mounting assemblies and all other hardware necessary to make complete, watertight connections of the flashing beacons to the sign structure. Fabricate the mounting assemblies and frames from aluminum with all necessary hardware, screws, washers, etc. to be stainless steel. Provide mounting fittings that match the positive locking device on the flashing beacon with the serrations integrally cast into the brackets. Provide upper and lower pole plates that have 1 ¼-inch vertical conduit entrance hubs with the hubs capped on the lower plate and 1 ½-inch horizontal hubs. Ensure that the assemblies provide rigid attachments to allow no twisting or swaying of the flashing beacons. Ensure that all raceways are free of sharp edges and protrusions, and can accommodate a minimum of ten Number 14 AWG conductors.

B. Flashing Beacons

Comply with the ITE standard "Vehicle Traffic Control Signal Heads." Provide housings with provisions for attaching visors. Provide 10-inch visors for 12-inch flashing beacons.

Provide a termination block with one empty terminal for field wiring for the yellow indication plus one empty terminal for the neutral conductor. Wire the signal section to the termination block. Provide barriers between the terminals that have terminal screws with a minimum Number 8 thread size and that will accommodate and secure spade lugs sized for a Number 10 terminal screw.

Provide LED vehicular traffic signal modules (hereafter referred to as modules) that consist of an assembly that uses LEDs as the light source in lieu of an incandescent lamp for use in traffic signal sections. Use LEDs that are aluminum indium gallium phosphorus (AlInGaP) technology for yellow indications. Install the ultra-bright type LEDs that are rated for 100,000 hours of continuous operation from -40°F to +165°F. Design modules to have a minimum useful life of 60 months and to meet all parameters of this specification during this period of useful life.

For the modules, provide spade terminals crimped to the lead wires and sized for a #10 screw connection to the existing terminal block in a standard flashing beacon head. Do not provide other types of crimped terminals with a spade adapter.

On the back of the module, permanently mark the date of manufacture (month & year) or some other method of identifying date of manufacture.

Tint the yellow indication to correspond with the wavelength (chromaticity) of the LED. Transparent tinting films are unacceptable. Provide a lens that is integral to the unit with a smooth outer surface.

1. LED Amber Circular Signal Modules:

Provide modules in the following configuration: 12-inch amber circular section.

Provide manufacturer's certification in accordance with Article 106-3 of the *Standard Specifications,* that each module meets or exceeds the ITE "Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement" dated June 27, 2005 (hereafter referred to as VTCSH Circular Supplement) with the exception of paragraphs 5.2, 5.3, and 5.7 and other requirements stated in this specification.

For amber circular signal modules, provide modules tested under the procedures outlined in the VTCSH Circular Supplement to insure power required at 77° F is 22 Watts or less for the 12-inch amber circular module. Note: Use a wattmeter having an accuracy of ±1% to measure the nominal wattage and maximum wattage of a circular traffic signal module. Power may also be derived from voltage, current and power factor measurements.

C. Signal Cable

Furnish 16-4 signal cable that complies with IMSA specification 20-1 except provide the following conductor insulation colors:

- For 16-4 cable: white, yellow, red, and green

Provide a ripcord to allow the cable jacket to be opened without using a cutter. IMSA specification 19-1 will not be acceptable. Provide a cable jacket labeled with the IMSA specification number and provide conductors constructed of stranded copper.

7.3 CONSTRUCTION METHODS

Mount the flashing beacons to the sign structure at locations shown on the plans and integrate with the beacon controller assembly cabinet. Adjust each flashing beacon vertically and horizontally so that light output will be of maximum effectiveness for traffic. Do not tilt flashing beacons forward.

Make electrical connections inside each flashing beacons. Do not splice connections at any point between the flashing beacon and the equipment cabinet.

7.4 MEASUREMENT AND PAYMENT

"12-inch, 1 section amber flashing beacon" will be measured and paid as the actual number of 12-inch flashing beacon furnished, installed and accepted.

No separate payment will be made for mounting assembly, signal cable, wiring, wire entrance fittings, painting, integration of the wiring in the cabinet and all associated hardware as these will be considered incidental to furnishing and installing the 12-inch amber flashing beacon.

Conduit to connect from the Flasher Cabinet to the flashing beacons are covered elsewhere in these project special provisions.

Payment will be made under:

Pay Item

12-inch, 1 section amber flashing beacon..... Each

8. ELECTRICAL SERVICE

8.1 DESCRIPTION

Install new electrical service equipment as shown in the plans. The first item of work on this project is the installation of all electrical service poles; meter bases and service disconnect panels to expedite the power service connections. Comply with the National Electrical Code (NEC), the National Electrical Safety Code (NESC), the NCDOT 2012 Standard Specifications, the Project Special Provisions and all local ordinances. Coordinate all work involving electrical service with the appropriate utility company and the Division 3 – Division Traffic Engineer or their designated representative.

It is the Contractor's responsibility to apply and pay for all fees associated with any electrical permits and inspections required by the local utilities. The Department will apply for electrical service in the Department's name and be responsible for any monthly fees associated with the

electrical service. No contract time extensions will be granted for delays associated with installing new electrical service.

8.2 MATERIAL

A. Meter Base & Service Disconnect Panel

Furnish and install new Meter Bases and Service Disconnect Panels at locations shown in the Plans.

Furnish NEMA Type 3R meter base rated 100 ampere minimum that meets the requirements of the local utility. Provide meter base with socket's ampere rating based on sockets being wired with minimum of 167 degrees F insulated wire. Furnish 4 terminal, 600 volt, single phase, 3 wire meter base that complies with the following:

- Line, Load, and Neutral Terminals accept #8 to 2/0 AWG Copper/Aluminum wire
- With or without horn bypass
- Made of galvanized steel
- Listed as meeting UL Standard UL-414
- Overhead or underground service entrance as specified

Ensure meter bases have electrostatically applied dry powder paint finish, light gray in color, with minimum thickness of 2.4 mils.

Furnish new external electrical service disconnect panels with one single-pole 50 ampere circuit breaker with a minimum of 10,000 RMS symmetrical amperes short circuit current rating. Ensure service disconnects are listed as meeting UL Standard UL-489 and marked as being suitable for use as service equipment. Fabricate enclosure from galvanized steel and electrostatically apply dry powder paint finish, light gray in color, to yield a minimum thickness of 2.4 mils. Provide ground bus and neutral bus with a minimum of four (4) terminals with minimum wire capacity range of # 14 through # 4.

If meter base and electrical service disconnect are supplied in the same enclosure (i.e., combination panel), ensure assembly is marked as being suitable for use as service equipment. Ensure combination meter and disconnect mounted in a pedestal for underground service is listed as meeting UL Standard UL-231. For underground electrical service installations ensure the meter base/disconnect combination panel is designed such that the service entrance conductors and the load side of the panel are separated from each other via a continuous metal raceway. Otherwise, ensure combination meter and disconnect is listed as meeting UL Standard UL-67.

B. 2" Conduit Stub-Out for Underground Electrical Service

Furnish a 2-inch rigid galvanized steel conduit stub-out for the underground service entrance conductors as shown on the Plans. Secure the conduit stub-out to the wood pole or wood post using approved hardware in accordance with the NEC.

C. Feeder Conductors

Furnish 2 #8 AWG and 1 #4 AWG stranded copper feeder conductors with THWN rating for supplying power to the new cabinets. Provide #8 AWG conductors with black, white insulation.

Provide the #4 AWG conductor with green insulation. Provide conductors intended for power circuits at 600 Volts or less and comply with the following:

- Listed as meeting UL Standard UL-83
- Meets ASTM B-3 and B-8 or B-787 standards.

8.3 CONSTRUCTION METHODS

A. Meter Base & Service Disconnect Panel

At locations where new electrical service is required, furnish and install electrical service as called for in the Plans. Mount the meter base and disconnect panel to the woo pol e or wood post and ground the electrical service in accordance with the NEC and the 2012 Standard Specifications for Roads and Structures and Standard Drawings.

B. 2" Conduit Stub-Out for Underground Electrical Service

At locations with an underground electrical service entrance, furnish and install a 2-inch rigid galvanized steel conduit stub-out for the underground service entrance conductors. The 2-inch stub out will extend from the meter base to 18 inches below the ground surface. Provide a rigid metallic sweeping 90° elbow to transition from the vertical segment to a horizontal position. Cap the end of the sweeping 90° elbow with a plastic cap. Bond the conduit to the ground bus inside the meter base in accordance with the NEC.

C. Feeder Conduits

Install a new 1-inch steel conduit leaving the bottom of the service disconnect to 18" below grade. Install a 1-inch steel sweeping 90° elbow on the end to transition from rigid galvanized steel conduit to PVC conduit. Extend the 1- inch PVC conduit to the cabinet.

Vertical segments of conduit above ground must be rigid galvanized steel. Horizontal runs of conduit below ground may be PVC.

D. Feeder Conductors

Install the feeder conductors in the 1-inch conduit system and make terminations in the disconnect panel in accordance with the NEC. Ensure in the equipment cabinet that the neutral bus and ground bus are isolated.

Permanently label all cables at all access points. Stamp or engrave label identifications on metal tags, or neatly and legibly lettered with permanent ink on nylon tags. Provide a unique label identifier for each cable and label each cable immediately upon installation. Use component name and labeling scheme approved by the Engineer.

8.4 MEASUREMENT AND PAYMENT

New Electrical Service will be measured and paid as the actual number of complete and functional new electrical services furnished, installed and accepted. This item includes the appropriately sized/quantity service entrance conductors, meter base, service disconnect panel, circuit breakers, mounting hardware, exposed vertical conduit runs to the cabinet, ground rods, ground wire and any remaining hardware will be considered incidental.

Modifications of electrical installations that only require adding an appropriately sized circuit breaker to an existing disconnect panel are considered incidental. The conduit run and feeder circuitry from the service disconnect to the cabinet will be reimbursed accordingly.

2" Conduit Stub-Out for Underground Electrical Service will be measured and paid as the actual number of 2"conduit stub-out for electrical service entrances furnished, installed and accepted.

Feeder Conductor will be measured and paid as the actual linear feet of 2-wire #8 AWG and 1-wire #4 AWG copper feeder conductors furnished, installed and accepted. Payment is for all three conductors. Measurement will be for the actual linear footage of combined conductors after all terminations are complete. No separate payment will be made for each individual conductor. No payment will be made for excess wire in the cabinets.

Risers with weatherheads, conduit, wood poles and wood posts are covered elsewhere in these project special provisions.

Payment will be made under:

Pay Item	Pay Unit
New Electrical Service	**Each**
2" Conduit Stub-Out for Underground Electrical Service	**Each**
Feeder Conductor	**Linear Feet**

9. BEACON CONTROLLER ASSEMBLY – 120V AC

9.1 DESCRIPTION

For Beacon Controller Assemblies operating on 120V AC, furnish and install Beacon Controller Assemblies with all internal equipment to operate the flashing beacons located on the static message signs. Comply with the Standard Specifications:

Page 17-41, Section 1755, "Beacon Controller Assembly".

9.2 MATERIALS

A. General

Furnish beacon controller assemblies. Comply with the Standard Specifications:

Page 17-41, Section 1755-2, "Materials".

B. Standby Power System – For AC Power Systems

Furnish a standby power system capable of providing normal full power for the operation of the Beacon Controller Assembly for a minimum of 72 consecutive hours without normal 115 volt power. Provide the system's total load demand to the Engineer for verification of the proper sizing of the battery system.

1. Batteries

Provide maintenance free, deep cycle, gel-cell industrial batteries for the standby power system that is capable of total discharge and recharge without damage to the batteries. The Engineer will approve the proposed number and type of batteries.

2. Charging System

Provide a battery charging system that trickle charge the batteries from the normal 115 volt power. Provide the charging system with a load controller and a charge regulator to prevent over charging of the batteries. Provide integrated voltmeters and ammeters to indicate the current state and rate of charge of the batteries.

C. Equipment Cabinet

Provide NEMA 3R type Equipment Cabinets that are of a pole mount design, with compartments to house the battery (standby power system) and electronic components separately. Ensure the cabinet is of sufficient size to house the battery and equipment as required such that no more than 80% of the cabinet volume is occupied. Ensure the cabinet is designed for the battery compartment to be located below any electronic equipment.

Ensure that the battery compartment and the electronic equipment compartments are ventilated with a screen and louvered vents. Equip vents with standard-size, replaceable furnace type vent filters. Size the filter tray to adequately house and secure the filter in place. Ensure there are no obstructions on the interior face of the door to interfere with easy removal and replacement of the filter.

Provide an enclosure that is fabricated with unpainted, natural, aluminum that complies with Section 7 of NEMA TS-2-2003. Ensure the equipment cabinet enclosure shell is fitted with one (1) Corbin Number 2 Key, lifting handles, and exhaust ports. Provide stainless steel hardware to mount the enclosure securely to the pole.

Equipment in the equipment cabinet enclosure will be shelf mounted. Provide a minimum of one equipment shelf in the cabinet that extends the practical width of the cabinet. Ensure that the shelf can be moved up and down within the cabinet. Do not locate permanently mounted equipment in such a way that will restrict access to terminals. Ensure all components are arranged for easy access during

servicing. When modular in construction, provide guides and positive connection devices to ensure proper pin alignment and connection.

Provide surge suppression in the cabinet and ensure that all devices operate over the temperature range of -40 to 185 degrees F.

9.3 CONSTRUCTION METHODS

A. General

Install beacon controller assembly as shown in the Plans. Comply with the Standard Specifications:

Page 17-41, Section 1755-3, "Construction Methods".

Integrate the beacon controller assembly with the 12V DC LED vehicular flashing beacons.

B. Equipment Cabinet

Mount Equipment Cabinet onto wood pole or wood post so that height to the middle of the cabinet is 4 feet above grade.

Provide and leave all data interface cables, installation manuals, and specifications and materials used to program any equipment in the cabinet. Neatly secure all wiring and harness inside the cabinet in a method approved by the Engineer.

C. Standby Power System

Install and integrate the standby power system consisting of batteries and battery charging system (load controller and a charge regulator) into the cabinet and make all connections. Test the voltmeters and ammeters to ensure the batteries are charging and operational as the system is designed.

9.4 MEASUREMENT AND PAYMENT

"Beacon Controller Assembly - 120V AC" will be measured and paid as the actual number of Beacon Controller Assemblies furnished, installed and accepted. No measurement will be made for the cabinet, solid state flashers, power line surge protection, standby power system, batteries, terminal blocks, wiring, wiring harnesses, 2-stage surge protectors, internal circuit breakers, fan, lighting, receptacles as these will be considered incidental.

Electrical service, risers with weatherheads, conduit, flashing beacons, wood poles and wood posts are covered elsewhere in these project special provisions.

Payment will be made under:

Pay Item
Beacon Controller Assembly – 120V AC..... Each

10. BEACON CONTROLLER ASSEMBLY - SOLAR POWERED

10.1 DESCRIPTION

A. General

For Beacon Controller Assemblies operating on solar power, furnish and install Flasher Equipment/Circuitry consisting of solid state 12V DC flasher and solid state 12V DC relays to operate the flashing beacons located on the static message signs.

B. Solar Power System

Furnish and install a Solar Power Assembly with all necessary hardware in accordance with these Project Special Provisions and the Plans.

Provide to the Engineer for approval, a submittal package with Engineering Calculations consisting of, as a minimum, schematic drawings, technical data sheets, and supporting documentation that demonstrates, in theory, that the solar power assembly for each equipment cabinet will provide adequate sustainable power without recharging the battery (ies) or additional power being provided from the solar array or solar charge controller under the following conditions:

- Fully powering the Flashing Beacon Sign including the wireless modem, operating continuously for 72 hours with the two (2) 12" Flashing LED Beacons (22 watts each) operating in a bouncing ball pattern at the specified flash rate.

Provide drawings showing dimension, location of required equipment and mechanisms, cabinet electrical diagrams, part numbers and descriptions of required equipment and accessories to the Engineer.

10.2 MATERIALS FOR FLASHING OPERATIONS

A. Solid State Flasher

Furnish a 12V DC, 2-Circuit, Solid State Flasher. Provide a compact flasher unit with an 8-pin octal base designed for use with the solar power assembly. Ensure that flasher output has two (2) outputs each rated at a minimum of 6 amps to operate the LED flashing beacons. Provide a flasher that is designed such that circuit #1 will be ON when circuit #2 is OFF, and vice versa. The maximum OFF period when both circuit #1 and circuit #2 are OFF, or the maximum ON period when both circuit #1 and circuit #2 are ON, shall not exceed 17 milliseconds during the transition from OFF to ON and ON to OFF.

Provide a Flasher that operates at a temperature range between 0 through 185 degrees Fahrenheit. Provide flasher with a nominal control current of 0 Amps for normal operation and

.005A for active operation. Provide a Flasher with a minimum flash rate of once per second and once every 2 seconds.

Provide a flasher unit that has a front panel with two LED indicators to indicate the state of the output circuits of the flasher. Ensure each output circuit is protected from over-current and short-circuit faults and that output circuits are protected from transient over-voltage by a clamp circuit.

B. Relay Unit

Furnish a solid state 12V DC relay to serve as the connection circuitry between the cellular modem I/O ports and the 12V DC, 2-Circuit, Solid State Flasher. Provide relay with a maximum output voltage between 3 and 75V DC and an output current of 40 Amps. Provide relay with MOSFET DC switching technology.

C. Equipment Cabinet

Provide NEMA 3R type Equipment Cabinet that is of a pole mount design, with compartments to house the battery and electronic components separately. Ensure the cabinet is of sufficient size to house the battery and equipment as required such that no more than 80% of the cabinet volume is occupied. Ensure the cabinet is designed for the battery compartment to be located below any electronic equipment.

Ensure that the battery compartment and the electronic equipment compartments are ventilated with a screen and louvered vents. Equip vents with standard-size, replaceable furnace type vent filters. Size the filter tray to adequately house and secure the filter in place. Ensure there are no obstructions on the interior face of the door to interfere with easy removal and replacement of the filter.

Provide an enclosure that is fabricated with unpainted, natural, aluminum that complies with Section 7 of NEMA TS-2-1998. Ensure the equipment cabinet enclosure shell is fitted with one (1) Corbin Number 2 Key, lifting handles, and exhaust ports. Provide stainless steel hardware to mount the enclosure securely to the pole.

Equipment in the equipment cabinet enclosure will be shelf mounted. Provide a minimum of one equipment shelf in the cabinet that extends the practical width of the cabinet. Ensure that the shelf can be moved up and down within the cabinet. Do not locate permanently mounted equipment in such a way that will restrict access to terminals. Ensure all components are arranged for easy access during servicing. When modular in construction, provide guides and positive connection devices to ensure proper pin alignment and connection.

Provide surge suppression in the cabinet and ensure that all devices operate over the temperature range of -40 to 185 degrees F.

10.3 MATERIALS FOR SOLAR POWER SYSTEM

A. General

Furnish and install a Solar Power Assembly consisting of the following:

- Solar Array(s) with mounting hardware;
- Solar Charge Controller;
- Batteries
- DC Disconnects.

B. Solar Array

Furnish solar modules made in North America and have a minimum 20 year factory warranty. Ensure the solar array(s) are sized to provide peak output wattage as required to operate the system as described above. Solar modules must be UL listed, FM Class I, Div. II, Group C&D approved. Provide solar array, with a minimum of 10-2, stranded copper, double insulated, sunlight resistant, 600V 90C rated cable for power wiring.

Furnish documentation showing that the solar array mounting hardware is manufactured from an anodized aluminum alloy and/or stainless steel and is capable of withstanding 130 MPH winds when installed on a pole.

C. Solar Charge Controller

Furnish a Pulse Width Modulation (PWM) solar charge controller that is UL listed, with a minimum 45A with solid state, low voltage disconnect. The solar charge regulator must be sealed with internal temperature compensation, lightning protection, reverse polarity protection, and LED indicators. The LED indicators on the unit must identify battery status and fault. The LED indicator must also identify when the batteries are charging.

Furnish charge controllers with the capability of three functions: battery charging, load control, or diversion regulation. Controllers must be furnished with fully adjustable DIP switches and RS-232 communications port to adjust the unit's operational modes. The solar charge regulator should be FM Class I, Div. II, Groups ABCD and have the CE mark.

D. Batteries

Provide 12V gel cell, non-spillable, maintenance free batteries. Batteries should be able to store and provide the calculated power to operate associated site equipment for 72 consecutive hours without being recharged by the Solar Array and Solar Charge Controller. Ensure that the solar array and solar charge controller furnished will properly charge and recharge the gel cell battery without causing damage to the battery. Furnish batteries with a minimum operating temperature of -76° F to 140°F.

E. Warranty

Provide a minimum two-year warranty with the Solar Power Assembly to ensure that the battery (ies), and the Solar Charge Controller are free of manufacturing defects in material and workmanship. The warranty period commences upon final acceptance of the project by the Engineer. During the warranty period, the manufacturer must provide replacement batteries within 45 days of receiving a battery that has failed at no cost to the Department.

Provide Solar Array(s) that have a minimum 10-year factory warranty stating that the unit will provide 80% power output and a minimum 5-year factory warranty stating that the unit will provide

90% power output. The warranty period commences upon final acceptance of the project by the Engineer.

10.4 CONSTRUCTION METHOD

A. Beacon Controller Assembly Cabinet

Mount Beacon Controller Assembly Cabinet onto wood poles so that height to the middle of the cabinet is 4 feet above grade. Mount the equipment cabinet using stainless steel hardware and fasteners.

For solar powered Controller Assembly Cabinets, furnish and install one grounding electrode at the cabinet to protect against high voltage power surges.

B. Flasher Equipment

Install and integrate Flasher Equipment in the Beacon Controller Assembly Cabinet. Integrate the outputs of the 12V DC, 2-Circuit, Solid State Flasher with the 12V DC LED vehicular flashing beacons. Label all terminal blocks and terminals for easy identification. Label all wires and harnesses for easy identification.

C. Solar Power Assembly

Furnish and install new Solar Power Assemblies consisting of Solar Array(s), Solar Charger Controller, Battery (ies), and wiring.

Mount solar array(s) a minimum of 25 feet above grade. Ensure that the attached equipment along with solar array(s) mounting hardware are capable of surviving sustains winds of 130 MPH. Ensure the solar array(s) does not obstruct the view of traffic or signs and that the array(s) are arranged for optimal sunlight exposure for charging of the battery (ies).

Run field wiring from the solar power array(s) to the equipment cabinet through minimum 1" risers and make connections inside the equipment cabinets as required. Install a DC disconnect between the solar array and the solar charger controller and between the solar charger controller and the battery (ies) and other attached equipment. Ensure the DC disconnect allows personnel working on the system to safely isolate critical items from each other while performing maintenance and trouble shooting.

Ensure that all wiring including grounding of the solar photovoltaic system meets the requirements of Article 690 of the National Electric Code (NEC) and these project special provisions.

In order to ensure that no damage will occur to battery or solar array due to incorrectly switching cables, place a warning sticker with the following warning in a highly visible location inside the Equipment Cabinet:

INCORRECT WIRING OF BATTERY AND SOLAR ARRAY WILL CAUSE DAMAGE. USE CAUTION WHEN CONNECTING RED AND BLACK FLASHER WIRES.

Comply with manufacturer instructions to operate the 2 flashing beacons in a bouncing ball pattern. Use wire gauged as per manufacturer's recommendation to connect Flasher Equipment with solar power assembly.

Terminate all wires using spade connectors under binding screws on terminal blocks. Label all terminal blocks and terminals for easy identification. Label all wires and harnesses for easy identification. Neatly secure all wiring and harness inside the cabinet in a method approved by the Engineer.

Provide and leave all wiring schematics, data interface cables, installation manuals, and specifications and materials used to program any equipment in the Beacon Controller Assembly Cabinet.

10.5 MEASUREMENT AND PAYMENT

"Beacon Controller Assembly - Solar Powered" will be measured and paid as the actual number of Beacon Controller Assemblies – Solar Powered, furnished, installed and accepted.

No additional measurements will be made for solar arrays, solar charging controller, batteries, DC Disconnects, wiring, harnesses, cables, securing or wiring and harnesses, terminal blocks, warning sticker, labeling, installation manuals or integration of Flasher Equipment as these items will be considered incidental to furnishing "Beacon Controller Assembly – Solar Powered."

Risers with weatherheads, conduit, wood poles and flashing beacons are covered elsewhere in these project special provisions.

Payment will be made under:

Pay Item
Beacon Controller Assembly – Solar Powered.....Each

11. AM TRANSMITTER STATION

11.1 DESCRIPTION

The Highway Advisory Radio System includes a field transmitter station that includes the following components: Type 332 cabinet, AM transmitter, power/voltage standing wave ratio meter, message management and storage equipment (Solid-State Digital Recorder/Player), audio processor, telephone line interface, antenna, grounding system, transient lightning suppression, battery back-up/charging system, external digital recorder/player microphone (or broadcast quality headset with noise canceling microphone), and control speaker phone.

The purpose of these specifications is to describe minimum acceptable design and operating requirements for the highway advisory radio (HAR) system. The Contractor will be responsible for

conducting all the necessary frequency research and engineering, signal strength contours, and FCC license preparation which are necessary to place the station on the air.

Ensure all materials meet the standards of the National Electrical Manufacturers Association, UL, The National Electrical Code, and the American Society for Testing and Materials.

11.2 AM TRANSMITTER SITE

A. AM Transmitter

Furnish AM Transmitters that are FCC certified for Travelers Information Stations (TIS) service, and operate in a range of 530 kHz to 1700 kHz. Ensure the transmitters are capable of remote and local control and can broadcast messages from the transmitter site and have the ability to record and broadcast messages received from the Division 3 Control Center. Ensure the transmitters allow for automatic station identification every 15, 30 or 60 minutes while the unit is transmitting. Store the station identification information on a digitized audio file.

Ensure the transmitters allow for adjustable RF output power levels using built-in, switchable meters that indicate relative percentage of modulation and forward/reflected RF output power levels. Ensure the transmitter will withstand an overload mismatched output (including an open or short circuit) for a period of 5 minutes at 10 watts output without overheating or component failure. The transmitter shall automatically resume normal operation when the mismatched output load is removed. Ensure the RF power output level is rated for a maximum of 30 watts. The transmitter output level shall be adjustable from a minimum of 2 watts to no more than 10 watts. Ensure the system will deliver a 0.6 millivolt/foot signal, minimum, at a distance of 0.93 miles from the transmitter site with a maximum transmitter output of 10 watts.

Ensure the transmitter meets the following minimum requirements:

- RF Power Output – Adjustable from 2 to 10 watts
- Type of Emission – Amplitude modulation
- Frequency Range – from 500 kHz to 1.7 MHz
- Frequency Stability - ±0.004 percent (from 0 to 95° Fahrenheit)
- Carrier Shift – 2 percent max
- Harmonic Attenuation – 45 dB or better
- Noise - 60 dB below 95 % modulation (from 100 Hz to 3 kHz)
- Audio Input – 600 Ω balanced
- Frequency Response – From 20 Hz to 15 kHz ± 1.0dB Max
- Audio Distortion – Less than 1.2 percent at 99 percent modulation (from 100 Hz to 3 kHz)
- Modulation Monitoring – 100 percent peak flasher, Built-in envelope detector
- Modulation Limiting – Built-in 100 peak modulation limiter, 20 dB gain reduction: defeatable
- Power Consumption – 1.5 A at 12 V(dc)
- Operating Temperature - -30 to 140° Fahrenheit
- Humidity – 20% relative @ 30° Fahrenheit to 95% relative @ 122° Fahrenheit

B. Power/Voltage Standing Wave Ratio (VWSR) Meter

Ensure the transmitter is supplied with VWSR meter to measure output power between the antenna and the RF output of the transmitter. Ensure the meter displays the forward RF power, reflected RF power and SWR using built in scales ranging from 30 W, 300 W and 3 kW. Ensure the meter includes a Function Switch to transition between RF power to SWR reading and includes a power direction switch to select either RF power measurement between forward RF power and reflected RF power. Ensure the meter has a zero meter adjustment screw and has two (2) connectors for a transceiver RF power input from the radio equipment over a 50Ω coaxial cable with UHF connector and a RF antenna output connector for an antenna or dummy load connected by a 50Ω coaxial cable with a UHF connector.

11.3 HAR OPERATION CONTROL EQUIPMENT

A. General

Furnish equipment necessary for local and remote control of the transmitter site as part of the system. Ensure local operator and control of all essential functions of the HAR system is accomplished by the use of standard dual tone multi-frequency (DTMF) telephone or by front panel controls. For remote operator control ensure a telephone line interface is provided so that the transmitter site may be connected through a voice-grade dial-up telephone, leased line, or cellular telephone line with appropriate interfaces. This project will utilize cellular modems provided by others as described elsewhere in these Project Special Provisions. Ensure the telephone line utilizes a standard RJ-11 connector. Ensure the monitor functions can be obtained by demodulating the transmitter audio.

Furnish equipment necessary for storage and management of messages as part of the system.

B. Message Management

Furnish equipment that allows the HAR to receive live or recorded message from a remote location via telephone line and/or cellular modem or from an operator at the AM Transmitter site. Ensure all messages are stored in a solid-state recorder/player, with the ability for selecting and checking the message prior to transmission.

C. Solid-State Recorder/Player

Furnish the player/recorder with Non-Volatile solid-state memory to store all messages. Furnish a DTMF decoder for programming and control of the recorder using a standard DTMF telephone. DTMF frequency responses shall be from 200 to 10,000 Hz. Ensure that the storage of messages can be accomplished either remotely, via the telephone line interface, and at the AM transmitter Site. Ensure the DTMF tones are not recorded as part of the stored message. Ensure the recorder/player is capable of handling a minimum of 250 different messages, with a minimum of 860 seconds total available recording time. The length of each message shall be variable up to the total recording time available.

Ensure the recorder/player has the provisions to allow messages to be organized into a minimum of 20 various playlists and that the number of messages associated with the play list can be varied dependent upon need. Provide an internal clock that is used to select and control message

play-back by day, hour and minutes. Ensure the clock is self-adjusting for daylight saving time. Ensure the recorder/player allows for recording of messages while an existing stored message is being played. The recording of a new message shall not halt or interfere with the playing of a current message.

Ensure the recorder/play has the following minimum features:

- Recording message
- Playback of recorded message
- Erasing of a message
- Set time space between messages
- Set playlist sequence
- Hear playlist sequence
- Set recording source input (dynamic microphone, cassette player (auxiliary audio input) and control telephone
- Set recording speed
- Set background source materials message
- Set alternate audio source
- Set clock time by day of week
- Set message schedules
- Hear message schedules
- Cancel message schedule
- Set playlist number
- Hear playlist number
- Cancel playlist number
- Stop record
- Set remote record security code

Ensure the DTMF functions used for recording and editing messages are accessible remotely or locally. Ensure the recorder is capable of configuring, in the message repeater mode while using DTMF tones.

Ensure the Digital recorder/player retains messages during a power failure for a minimum of 2 weeks.

D. Simulcast Synchronization

The HAR synchronization subsystem shall meet the following minimum requirements:

1) The system shall be prepared to be part of a wide area broadcasting system with other HAR transmitters as shown in the Plans of the same type for simultaneous broadcast of messages in a synchronized system.
2) This feature shall avoid interference or audio distortion within possible overlapped areas.
3) Each synchronized HAR system shall be equipped with a GPS synchronizer, which shall provide the capability to phase-lock the transmitters to a common reference carrier to minimize heterodyne.

4) The GPS Synchronizer subsystem shall have been successfully tested in conjunction with the transmitter and certified by the FCC in accordance with the provisions of FCC Section No. 90.242.

5) In addition to synchronizing the frequency, the system shall synchronize the audio without the use of one single audio source. Each HAR unit will maintain its own message library and the Audio will be synchronized using a highly accurate GPS synchronizer. No RT Circuits or substitute audio source will be allowed.

E. Weather Receiver

Provide the digital recorder/player with a separate receiver for the National Weather Service that will be played at specific times or between recorded message sequences as programmed by the internal clock.

F. Local Microphone

Provide the digital recorder/announcer with a dynamic type microphone for field recording of messages. Ensure the microphone has a minimum frequency response of 80 to 10 kilohertz and on/off switch and all cables.

G. Incidental Equipment

The on-site digital recorder/announcer will include all the necessary cables, connectors and wiring to provide a fully operational Highway Advisory Radio System.

11.4 TYPE 332 EQUIPMENT CABINET

A. General

Furnish Type 332 base mounted equipment cabinets complete with all internal components and all mounting hardware necessary to provide for the installation of the field equipment specified in these Specifications. The Cabinet shall meet all CALTRANS and FHWA requirements for Base-Mounted Equipment Cabinets Type 332.

Provide one size of cabinet for all AM Transmitter Stations. Ensure that the cabinet is of sufficient size to accommodate the extra equipment associated with the standby power system (batteries). Ensure the cabinet is designed to house the batteries and AM Transmitter electronic components separately. Ensure the cabinet is of sufficient size to house the batteries and AM Transmitter equipment such that no more than 80% of the cabinet volume is occupied. Ensure the cabinet is designed for the battery compartment to be located below any electronic equipment.

Furnish Type 332 cabinets with a standard EIA 19 inch rack cage for mounting of the various rack mounted components. The rack cage shall be designed to support the equipment complement designated in these Specifications.

Furnish the Type 332 cabinet with shelves for mounting approved non-rack mount equipment. The shelves shall meet the following requirements:

1. Full width of the rack and a minimum of 12 inches deep.

2. Constructed of 1/8 inch aluminum (minimum) with a 1-inch lip turned up along the back of the shelves.
3. Attach to the rack
4. Support a minimum of 55 pounds
5. Shelf mounted equipment shall be mounted flat on the shelf. Stacking of equipment is not permitted.

Furnish one (1) pull out drawer with hinged lid for storage that expands the practical length of the 19" rack cage assembly.

Furnish each cabinet with two (2) fluorescent lamp lighting fixtures mounted inside over the tops of each door inside the cabinet. A door actuated switch shall be installed to turn the cabinet lights on when either of the doors are opened. The door switch shall be on a separate circuit by itself and used only to turn on the cabinet light. Provide a thermostatically controlled exhaust fan with each cabinet that can be field adjusted with regards to temperature settings.

Furnish the cabinet with one single full size door in the front and one in back. Both doors are to be hinged on the right side and manufactured from a single sheet of aluminum. The lock for the doors shall be keyed to a Corbin #2 standard. The doors shall be furnished with a three-point positive latching mechanism connected to an external handle. Ensure that the handle and lock are positioned so that the lock does not lie in the path of the rotating handle, as the door is unlatched and that the handle points down in the latched position. Ensure that the battery compartment and the electronic equipment compartments are ventilated through the doors with a screen and louvered vents. Equip vents with standard-size, replaceable furnace type vent filters. Size the filter tray to adequately house and secure the filter in place. Ensure there are no obstructions on the interior face of the door to interfere with easy removal and replacement of filters

11.5 POWER DISTRIBUTION SYSTEM

A. General

The AC power distribution system includes the main circuit breaker and distribution breakers for equipment and convenience outlets, cabinet lighting, fan and standby power systems. Additionally the AC power distribution system includes the radio interference device, main surge protection devices and secondary protection devices.

Furnish surge protection for all external cables entering the cabinet. The surge protection shall be mounted as close to the cable entry as possible. The surge protectors shall be grounded in accordance with the manufacturer's recommendation. Where equipment/devices that are manufactured with its own built-in surge protection these devices will not require any extra secondary protection

B. Circuit Breakers

The main circuit breaker shall protect the cabinet. Five secondary breakers shall be provided to protect the convenience outlet and other equipment located inside the cabinet. Furnish circuit breakers that are approved and listed by the Underwriters Laboratories. Properly rated equipment

circuit breaker(s) shall be provided for the equipment complement shown on the plans. Ensure circuit breakers are unaffected by ambient temperature range, relative humidity, applied power, shock and vibration. Breakers shall have a minimum interrupt capacity of 5000A.

C. Radio Interference Suppressor

Furnish a radio interference suppressor to be installed at the main circuit breaker. The suppressor shall provide a minimum attenuation of 50dB over a frequency range of 200kHz to 75MHz. The suppressor shall be hermetically sealed in a metal case. The suppressor terminals shall be nickel plated brass studs of sufficient length to provide space for connection of two appropriately sized AWG conductors and shall be so mounted that the terminals cannot be turned in its case. The suppressors shall be rated for operation at the current determined by the Contractor for the equipment complement indicated in these Specifications.

D. Power Line Surge Protection

Furnish and install a 120 volt AC single phase surge protector as a precautionary measure against possible damage resulting from voltage surges on all incoming power lines. Install the surge protector between the load side of the input power circuit breaker and ground. The surge protector will remove high energy surges and block high speed transients. Provide the surge protector with the following specifications:

- Peak Current: 20,000 amps (8x20 µs waveshape)
- Occurrences: 20 times at peak current
- Clamp Voltage: 340 Volts, Max.
- Response Time: 5 Nanoseconds or less
- Minimum Series Inductance: 200 microhenries
- Continuous Series Current: 10 amps
- Temperature Range: to -40 °F to +185 °F

E. Secondary Surge Protection

Furnish primary and secondary surge protectors between the cabinet entry point and the individual equipment for all low voltage power and control conductors and communication conductors entering or leaving the cabinet. This shall include, but not be limited to, DC power supply conductors and 120 VAC control signal conductors. The protectors may use a combination of separate MOV and Gas discharge protestors. These protectors may be packaged in the same housing provided that sufficient impedance is provided between the protector segments to allow proper operation.

The protectors firing voltage and normal operating current shall be such that the equipment is adequately protected while still allowing for proper equipment operation.

F. Surge Protection Telephone Line

Furnish each cabinet with equipment necessary to accommodate a wireless cellular transceiver connected via cellular telephone interface circuitry which permits normal usage of the attached telephone equipment. The cellular telephone interface will consist of a cellular transceiver, universal DC Power supply, self-contained battery back-up, wireless interface board, and fixed mounted

cellular antenna with attached cable and connector. In the event of a power failure, ensure that the cellular modem equipment will automatically transfer to the Standby Power System to maintain operation.

Furnish and install a surge protector as a precautionary measure against possible damage resulting from voltage surges on the telephone line circuitry that connects to the digital recorder/player. In addition, the surge protector will remove high energy surges and block high speed transients. Provide the surge protector with the following specifications:

- Clamping Voltage: 200 V ±10%
- Energy rating (Minimum): 400 J
- Series Resistance: 30 Ω
- Response Time (maximum): 5 ns

G. Wiring and Terminations

Arrange equipment and terminals within the cabinet so that they will not interfere with the entrance, tracing and connection of conductors or other cables. Ensure all incoming and outgoing conductors are connected to terminal blocks. Ensure all field terminals are readily accessible without having to remove equipment to gain access. Ensure terminals are not located on the underside of shelf or at any other place where they are not readily visible or where they may present a hazard to personnel who might inadvertently touch them.

Provide terminal blocks that are made of electrical grade thermoplastic or thermosetting plastic. Ensure each terminal block is of closed back design and has recessed-screw terminals with molded barriers between terminals. Ensure each terminal consists of two terminal screws with removable shorting bar between them. Ensure all terminal blocks and terminals are labeled with their intended functions. Provide labels that are visible and easy to read when the terminal blocks are wired.

11.6 STANDYBY POWER SYSTEM – FOR AC POWER SYSTEM

A. General - Standby Power System – For AC Power Systems

Furnish and install a standby power system capable of providing normal full power for the operation of the transmitter station for a minimum of 72 hours **without** normal 115 volt power. Provide the system's total load demand to the Engineer for verification of the proper sizing of the battery system.

1. Batteries

Provide maintenance free, deep cycle, gel-cell industrial batteries for the standby power system that is capable of total discharge and recharge without damage to the batteries. The Engineer will approve the proposed number and type of batteries.

2. Charging System

Provide a battery charging system that trickle charge the batteries from the normal 115 volt power. Provide the charging system with a load controller and a charge regulator to prevent over

charging of the batteries. Provide integrated voltmeters and ammeters to indicate the current state and rate of charge of the batteries.

11.7 ANTENNA ASSEMBLY

A. General

The antenna assembly consists of an antenna, antenna support, coaxial cable, and antenna tuning unit.

B. Antenna Type

Provide whip-type antenna that is vertically polarized, center loaded, of a monopole design and tuned for operation at the frequency required by the contract documents to which these specifications apply. Furnish an antenna that is less than 25 feet in length. Construct the antenna from anodized aluminum with an adjustable stainless steel tuning tip. The antenna must be able to sustain winds of 130 miles per hour with 1/2 inch radial ice and operate within a temperature range of -40° F to 185°F.

Furnish an antenna with a lower base manufactured from aluminum with gold anodized finish. Ensure the loading coil is a continuous filament glass fabric and the coil is enameled close wound copper wire.

C. Antenna Mounting Hardware

Furnish antenna mounting hardware designed to support the supplied antenna. Ensure the mounting hardware is capable of supporting the antenna at sustain winds of 130 miles per hour with 1/2 inch radial ice. Use all stainless steel or cadmium plated hardware in the antenna mounting assembly. Furnish "high impact thermoplastic split" type antenna mounts providing 360 degree support to the antenna.

D. Coaxial Cable and Lightning Surge Arrestor

Furnish an RG-8U single foil braid flexible coaxial cable with a solid bare copper center conductor, cellular polyethylene dielectric, 97% tinned copper braid, 100% shield coverage and conforms to the following:

Electrical Characteristics

- Capacitance: 26pF/ft (nominal)
- Impedance: 50 Ω (nominal)
- Velocity of Propagation: 78% (nominal)
- DC Loop Resistance: 1.2Ω per 100 ft @ 68°F

Attenuation

Frequency (MHz)	Nominal dB/100ft
10.0	0.50
50.0	1.20
100.0	1.60
200.0	2.40

Physical Dimensions

	Nominal O.D. (inches)
Center Conductor:	0.106
Dielectric:	0.283
Outer jacket:	0.406

E. Coaxial Cable Connectors

Provide UG standard connectors and reducers adapters that meet the following:

Electrical Characteristics

- Impedance: 50 Ω (nominal)
- Frequency Range: 0 – 300 MHz
- Voltage Rating: 500 volts peak

Mechanical

- Mating: Standard size: 5/8" – 24 threaded coupling push on mates with a standard size threaded receptacle.
- Attachment Method: Spring Loaded, Clamp on. (No crimping or soldering allowed)

Composition

- Bodies: Brass or die cast zinc
- Contacts: Brass, silver plated
- Insulators: TFC, copolymer of styrene, polystyrene, mica filled phenolic and/or PBT, polyester or equal
- Plating: ASTRO plate and silver
- Other metal Parts: Brass

Environmental

- Temperature: -30°F to +165°F
- Moisture: Weather resistant design

F. Arrestor Enclosure

Furnish an arrestor enclosure in the form of a NEMA Type 3R Cabinet with a hinged gasket door cover, with dimensions of 12" x 10" X 6". Provide a key lockable enclosure utilizing Corbin #2 locking device. Furnish a 4" x 4" x 0.1" aluminum plate to be installed vertically inside the arrestor enclosure, facing the door opening. Provide taped screw holes in the aluminum plate to secure ground conductors using an aluminum-copper NEMA three bolt hold tongue clamp. Size the individual holes on the 3 bolt hold tongue clamp to accommodate a #4 AWG bare copper wire. Additionally, provide tapped screw holes to accommodate the lightning arrestor and to secure the back plate to the NEMA enclosure.

G. Lightning Arrestor

Furnish a transient lightning protector to be installed inside the arrestor enclosure for the antenna system meeting the following:

- Clamping Voltage: 90 volts ±10%
- RF Power: 35 watts (minimum)
- Frequency Range: 500 kHz to 2 MHz
- VSWR: 1.2 to 1 (maximum)
- Insertion Loss: 0.2 dB (maximum)
- IEEE 8/20 waveform
- Response Time: 5 nanoseconds (maximum)
-

11.8 Triad GROUNDING SYSTEM

Furnish and install a grounding system that consists of a minimum of 3 ground rods placed 10 ft away from the wood pole approximately 120° apart. Furnish one 5/8" x 10' copper clad ground rod that is UL listed and manufactured for this purpose. Furnish for the triad ground rod system, ground rods that are 2.125 inches (Outside Diameter) hollow tube of Type K copper, with a 0.083 inch wall thickness and is 20 ft long. The top end of each ground rod shall have a shop welded ground connection with a # 4 AWG, minimum, copper pigtail. Furnish end caps on the top and bottom of each ground rod. Furnish the top and end section of the ground rods with breather holes and weep holes, covered with tape to be removed prior to installation of the ground rods in the presence of the Engineer.

11.9 CONSTRUCTION METHOD

A. HAR AM Transmitter Station

Install the HAR AM Transmitter Station at locations as shown in the plans. Make all connections with regards to power and internal wiring including interfacing the cabinet components with the external lightning arrestor equipment, grounding system and antenna assemble. Ensure the installation is under the immediate supervision of an individual holding an FCC general class radio telephone operators license.

B. Triad Grounding System

Install the 5/8" ground rod next to the service pole to serve as the central ground rod.

For the 3 supplemental ground rods making up the triad grounding system, auger/drill 6" diameter holes approximately 20' deep to accommodate each of the 3 supplemental ground rods. Ensure that from the breather holes on the top of each ground rod to the final fill of the bentonite slurry a minimum of 4" to 6" of space is left exposed inside the standard size junction box that is to be placed over the drilled hole. Reference Details for further information.

Remove the tape covering the bottom weep holes prior to installing the ground rods. Backfill around the ground rod with a bentonite clay slurry and consolidate around the ground rod. Ensure the bentonite slurry is of a natural volcanic, non-corrosive form of bentonite clay. Ensure the bentonite slurry is capable of absorbing 14 gallons of water per 50 pounds to obtain an optimal 30% solids density. The pH value shall be 8 - 10 with maximum resistivity of 1Ω/ft at 30 percent solids density.

Fill the inside portion of each ground rod with non-hazardous Calsolyte metallic minerals to enhance grounding performance. The Calsolyte filler shall hygroscopically extract moisture from the

air to activate the electrolytic process, improving ground performance. The ground rod system shall be 100% self-activating and maintenance free. No additions of chemical or water solutions shall be required.

Exothermically weld, using a UL listed exothermically weld connection, the #4 AWG pigtail of ground rod to a #4 AWG, bare copper ground wire that is terminated in the arrestor enclosure on the aluminum-copper NEMA three bolt hold tongue clamp. Soldering, brazing or field welding (other than exothermic welding) of the #4 AWG bare copper conductors will not be allowed.

Ensure that the ground system when tested, allows for a maximum FCC field strength to be achieved on any frequency ranging from 530 kHz to 1700 kHz with 10 watts or less of output power.

C. Lightning Arrestor and Antenna

Install the lightning arrestor enclosure on the wood pole and make all connections to the grounding system, antenna and AM transmitter. Install antenna to the pole such that the top of the antenna does not exceed 49 feet as required by the FCC. Make all coaxial connections between the AM Transmitter, the lightning arrestor and the antenna. Install all cabling in conduits and risers with appropriate fitting and bushing. Terminate all cables using the appropriate size UHF bushings.

11.10 TESTING

An HAR factory authorized and trained technician will adjust each transmitter and test the system to insure compliance with FCC Part 90.242. It is the responsibility of the factory technician to test all functions of the system to verify their proper operation.

Submit to the Engineer for review a test plan for the system testing. The Engineer will either approve or indicate changes that are required for approval within forty (40) calendar days of receipt of the test plan. Submit a revised test plan to the Engineer for review within forty (40) calendar days following receipt of the review of the initial plan. The review and re-submittal process described above will continue until the Engineer approves a final test plan. Multiple submittals of the test plan, if required, will be supplied at no additional cost. Testing will commence at a time mutually agreed by the Contractor and the Engineer. Upon receiving an approved test plan submit 6 copies of the approved test plans along with all manuals and approved documentation materials to the Engineer.

Upon completion of all system installations, test the HAR to ensure the system is function as designed. Minimum test equipment required for testing the HAR shall consist of the following:

- Dummy Load, 50Ω
- Power Meter
- Communications Monitor
- Field Strength Meter

Tune the HAR by adjusting the stainless steel tip of the antenna. The HAR is considered tuned when the system's standing-wave ratio (VSWR) is at the lowest possible value (1.2:1).

Upon completion of the tuning, record and transmit a test message with the power level of the transmitter set at approximately 10 watts or lower. Modulation shall be adjusted between 85% to 95% as specified by the FCC for the standard AM broadcast band. The Contractor shall make actual on-the-air field strength measurements at points mutually agreed upon by the Contractor and the Department. These on-the-air field strength measurements will be used to determine the distance at which the attenuated field of 0.6mV/ft exists, as measured with a calibrated standard field strength meter. This shall be accomplished by taking readings in 5 to 8 radial directions facilitating a plot of a 0.6mV/ft as a distance of 0.93 miles from the HAR antenna. If the measured field strength exceeds 0.6mV/ft at a distance of 0.93 miles, the transmitter output shall be decreased accordingly and if the measured field is less than 0.6mV/ft then the power may be increased, up to a maximum of 10 watts, as directed by the Engineer.

If the measured field strength is less than 0.6mV/ft with the transmitters output set to a maximum of 10 watts then the Contractor will be required to make adjustments to the grounding system accordingly to accomplish this task. This may include adding additional ground rods to the electrical service to provide a better grounding system or even installing additional grounding system components as recommended by the manufacturer and Approved by the Engineer. The costs associated with installing or improving the grounding system will be the responsibility of the Contractor and will be considered incidental to the project.

Test command and control functions locally and remotely via telecommunications interface.

Test the systems power back-up operations to ensure they are functionally properly.

At the completion of all HAR testing submit a written report of all measurements to the Engineer for approval. Include a map, with scale showing a 0.6mV/ft contour based on actual on-the-air field strength measurements and tabulate the VSWR, percent modulation and transmitter output power measurements.

11.11 TRAINING

Submit a training plan (AM Transmission Station) to the engineer for review and approval. Upon receiving an approved training plan, submit 12 copies of the approved training plans along with all approved training materials to the Engineer.

Provide a manufacturer's representative to conduct training classes for Department personnel, including necessary manuals, displays, notes, visual aids, etc... Ensure the training address operations and maintenance of the HAR and control equipment and local software.

Provide 12 sets of complete schematics and operation and maintenance manuals of all equipment. The manuals as a minimum shall contain the following:

- Operation Instructions
- Theory of Operation, Circuit Description
- Preventative Maintenance Procedures
- Trouble Shooting Flow Chart or Guide
- Wiring Diagrams
- Parts List (which will identify each part by the industry standard nomenclature and include at

least one manufacturer's name and address)

As a minimum provide training for the following:

- Theory of operations – minimum of 4 hours
- Setup and operation - minimum of 8 hours
- Troubleshooting and diagnostics- minimum of 4 hours
- Preventive maintenance – minimum of 4 hours

11.12 BASIS OF PAYMENT

Actual number of AM Transmitter Station as described above, furnished, installed and accepted. AM Transmitter Station includes the AM transmitter, on-site digital recorder/announcer, NEMA 3R Type equipment cabinet, power system components, standby power system, antenna assembly, grounding system, and grounding system enhancements if necessary, and all other incidentals. This item also covers all fees and work associated with obtaining an approved license from the FCC

No separate measurement will be made for testing and training or cabling, connectors, surge protectors, or any other equipment or labor required for installing the AM Transmission Station as described above.

The "Antenna Supporting Structure (Class III, Wood Pole)" is covered elsewhere in these Project Special Provisions.

Junction boxes installed over the ground rods for the triad grounding system are covered elsewhere in these Project Special Provisions.

Payment will be made under:

AM Transmitter Station.....Each

12. HAR OPERATIONS SOFTWARE

12.1 DESCRIPTION

The HAR system operation software (full control) will be located in the Division 3 Office and a scaled down version (limited control) of the operation software will be integrated into the Bridge Tender's Office. The Bridge Tender's software will **not** have the ability to create, manage or store any audio files. The scaled down version of the software will only be used to place in operation the HAR AM Transmitters, flashing beacons at static message signs, and interface with existing Dynamic Message Signs (DMS).

Work involving the Bridge Tender's Office will require integration with the bridge operators touch panel system. The system will initiate the process of activating or deactivating the HAR system, including flashing beacons at static message signs and localized AM transmitters. The localized transmitters will play a pre-recorded message.

Additionally, the system will interface with an existing system installed by Daktronics that activates messages stored in existing DMS locations nearby. The Contractor, upon approval by the Engineer, can remove the existing Daktronics software if the HAR system can operate with the existing DMS installations to accomplish the desired tasks. Any equipment removed from service shall be returned to the Engineer. The link between the Bridge Tender's office and field equipment will be over cellular modems using an Ethernet interface.

The Contractor will need to work with the Engineer's representative to coordinate the integration of the new software with the existing software at the Bridge Tender's Office to activate/operate all system components including the DMS. Contact Mr. Trevor Carroll (910-341-2000), Division 3 Bridge Maintenance Engineer, for any inquiries concerning equipment in the Bridge Tender's office. Access to the Bridge Tender's Office during project construction will need to be coordinated with the Engineer.

A State furnished computer can be supplied upon request for software integration and control of the Bridge Tenders System. The Contractor shall notify the Engineer, a minimum of 90 days in advance if a State furnished computer is required. The Contractor shall also make known to the Engineer the minimum operating requirements and features necessary for installation. The State will provide a computer based on these minimum requirements from its inventory that best meets the minimum requirements that are requested. If additional features or hardware are necessary then the Contractor will be responsible for making modifications to the State supplied computer to meet these needs. Modifications to the State furnished computer will be the sole responsibility of the Contractor and he will bore all costs associated with this task.

Work involving the Division 3 Office will require integration of the HAR Central Software on an existing computer to serve as the Operator's console and file server for message storage. If additional features or hardware are necessary then the Contractor will be responsible for making modifications to the existing computer to meet these needs. Modifications to the existing computer will be the sole responsibility of the Contractor and he will bore all costs associated with this task.

The Division Office will also require communications interface equipment for the recording and playback of messages. The Software shall be installed to allow control from multiple workstations. The Division Office will have complete remote control of the HAR Transmitters and Static Message Signs as well as capabilities of downloading digitized audio files into the field digital recorder/announcers. The communications link between the Division 3 Office and field equipment will be over cellular modems using an Ethernet interface.

12.2 SOFTWARE REQUIREMENTS

A. General

Furnish software that functions as an audio source and allows on screen control of high quality broadcast messages. Ensure the software allows for the user to conduct natural audio recordings, and has the ability to produce text-to-speech generation of messages. Additionally ensure the software has broadcast audio processing, visual audio editing, and allows the user to establish scheduled playlists and provides event logging. Ensure the software allows for grouping of messages for immediate playing for events associated with emergency messages (Hurricane

Evacuations, tornados, etc.) and prescheduled messages scheduled by date and time associated with time-based events.

Ensure the software can connect to remote field AM Transmitter Sites over cellular modems, fiber, or leased phone lines or through internet service connections.

B. Software Integration at the Bridge Tender's Office

This contract requires that from the Bridge Tender's Office, the HAR system operate in parallel with the existing DMS system. It is the Contractor's responsibility to provide a common user interface for the operator to initiate message activation on both the HAR and DMS systems simultaneously by pressing a single button on the touchscreen. The Contractor may modify existing or write a new API to facilitate parallel operation of the different application software packages from the singular common touchscreen user interface.

12.3 GRAPHICAL USER INTERFACE

Provide a map-based Graphical Unser Interface (GUI) that will allow an operator to monitor and control all characteristics of the AM transmitter site equipment and the central message library and the scheduling of the messages. The GUI will provide the following minimum functionality:

- Select messages for downloading to an AM transmitter
- Select locally stored messages for broadcast by AM transmitter
- Select messages from the central library to be sent to one or multiple AM transmitters for simultaneous synchronized broadcast.

12.4 MESSAGE RECORDING AND STORAGE

The central HAR equipment shall provide a means of recoding and monitoring new messages as well as to re-record and delete old messages. Messages shall be digitized at an audio bandwidth of at least 5 kHz. The software shall allow for a minimum of 128 minutes of audio. All message recordings shall be performed at the HAR Operator's console.

12.5 CONSTRUCTION

Install and integrate all software, including cabling, to make a complete and operational system at the Division 3 Central Office and Bridge Tender's Office.

Software installation and integration at the Bridge Tender's Office shall be a two-step process. In step one the Contractor will install HAR system software and the modified or new API on a test computer. Operate the system with the test computer for a week or as directed by the Engineer. During this time, the system will be thoroughly tested and debugged to ensure that the system operates without failure and as intended. In step two, the tested software will be installed on the existing computer and the system retested to ensure that it operates without failure and as intended. If a new state-furnished computer is provided, it will replace the existing computer.

12.6 TESTING

Submit a test procedure for approval by the Engineer that demonstrates operation of the software at the Bridge Tender's Office and Division 3 Office.

The Contractor is responsible for documenting the results of all tests and for furnishing the documented testing results to the Engineer. The Contractor is responsible for correcting all deficiencies in performance discovered during system testing.

Submit to the Engineer for review a test plan for the system testing. The Engineer will either approve or indicate changes that are required for approval within forty (40) calendar days of receipt of the test plan. Submit a revised test plan to the Engineer for review within forty (40) calendar days following receipt of the review of the initial plan. The review and re-submittal process described above will continue until the Engineer approves a final test plan. Multiple submittals of the test plan, if required, will be supplied at no additional cost. Testing will commence at a time mutually agreed by the Contractor and the Engineer.

Ensure the test plan address' all requirements of these specifications. Demonstrate the remote loading of messages to verify the quality of the data recording process. Load 24 minutes of messages and demonstrate different sequences of playback. Demonstrate message loading at the transmitter cabinet via the local RS232 data recorder interface, and remotely from the central message center. Demonstrate the system's ability to switch to the on-site data recorder upon loss of audio from the central site. In addition, verify the switch back to the audio obtained from the central.

12.7 TRAINING

Submit a training plan (Central Software) to the engineer for review and approval. Upon receiving an approved training plan, submit 6 copies of the approved training plans along with all approved training materials to the Engineer.

Provide training materials for a maximum of 6 individuals. Provide a manufacturer's representative to conduct training classes for Department personnel, including necessary manuals, displays, notes, visual aids, etc... Ensure the training address operational functions and capabilities of the Central Software.

As a minimum provide training for the following:

- Operational Functions and Capabilities – minimum of 6 hours

12.8 MEASUREMENT AND PAYMENT

The "HAR Operation Software" will be paid for on a lump sum basis for "HAR Operation Software". This item of work will include furnishing, installing, testing, and training for the software at the Division 3 Office and Bridge Tender's Office. This will also include all work associated with integrating the system with the touch control panel at the Bridge Tender's Office.

This item of work also includes making any necessary modifications to the software set-up features and messages for the existing DMS. This will include all aspects of integration to allow the

Daktronics software to interact with the HAR Operation Software to form a complete and operational system as described in these Project Special Provisions.

No separate measurement will be made for cabling, connectors, surge protectors, microphone, or any other equipment required to furnish and install the central message center as described.

Payment will be made under:

HAR Operation Software.....LUMP SUM

13. SYSTEM SUPPORT EQUIPMENT

13.1 DESCRIPTION

Furnish System Support Equipment with all necessary hardware in accordance with the Plans and these Project Special Provisions. Comply with the provisions of Section 1700 of the NCDOT Standard Specifications.

13.2 MATERIAL

Prior to the 30-day Observation Period, furnish all system support equipment.

Furnish new, unused equipment with test probes/leads, batteries (for battery-operated units). Furnish all cords and carrying cases. Furnish the following System Support Equipment in the quantities shown below:

- One (1) fully functioning AM Transmitter Station including cabinet and standby power system components, batteries, antenna turning unit
- One (1) Antenna Assembly including the whip style antenna, antenna mounting hardware, and lightning arrestor
- One (1) Beacon Controller Assembly – Solar Powered

13.3 MEASURMENT AND PAYMENT

Actual number of AM Transmitter Stations furnished and accepted.

Actual number of Antenna Assemblies furnished and accepted.

Actual number of Beacon Controller Assembly- Solar Powered furnished and accepted.

Payment will be made under:

Pay Items

Furnished AM Transmitter Station.....Each

Furnished Antenna Assemblies..... .....Each

Furnished Beacon Controller Assembly – Solar Powered..... .....Each

14. 30-DAY OBSERVATION PERIOD

14.1 DESCRIPTION

Upon completion of all project work, the successful completion of the component tests, and the correction of all deficiencies, including minor construction items, a 30-day observation period will commence. This observation period consists of 30 days of continuous operation of the new field equipment and central equipment without any failure. The 30-Day Observation Period will be warranted by the payment and performance bond. The purpose of this observation period is to ensure that all components of the system function in accordance with the Project Special Project Provisions over an extended length of time.

Complete all documentation prior to the end of the 30-Day Observation Period. The 30-Day Observation Period will not be considered part of the contract time.

Respond to failures that occur during the30-Day Observation Period within twenty-four (24) hours. Correct said failures within forty-eight (48) hours. Failures that affect any of the major system components defined below for more than forty-eight (48) hours will suspend the timing of the 30-Day Observation Period beginning at the time when the failure occurred. After the cause of such failures has been corrected, timing of the 30-Day Observation Period will resume. System or components failures that necessitate a redesign of any component and failures in any of the major system components exceeding a total of three (3) occurrences, will terminate the 30-Day Observation Period and cause the 30-Day Observation Period to be restarted from zero when the redesigned components have been installed and/or the failures corrected. The major system components are:

- AM transmitter
- On-site digital recorder/announcer
- Central message center
- Antenna tuning unit
- Solar Power Systems
- Central Equipment and Software located at the Division 3 Office and Bridge Tender's Office
- Flashing Beacons

14.2 MEASUREMENT AND PAYMENT

There will be no direct payment for the work covered by this section.

Payment for this work will be covered in the applicable sections of these Project Special Provisions at the contract unit price, and will be full compensation for all work listed above.

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

CORPORATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

_____
Full name of Corporation

_____
Address as Prequalified

Attest _____ By _____
Secretary/Assistant Secretary
Select appropriate title

President/Vice President/Assistant Vice President
Select appropriate title

_____
Print or type Signer's name

_____
Print or type Signer's name

CORPORATE SEAL

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

_____ day of _____ 20__.

NOTARY SEAL

_____
Signature of Notary Public

of _____County

State of _____

My Commission Expires:_____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

PARTNERSHIP

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

_____
Full Name of Partnership

_____
Address as Prequalified

_____ By _____
Signature of Witness — Signature of Partner

_____ _____
Print or type Signer's name — Print or type Signer's name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

_____ day of _____ 20__.

NOTARY SEAL

_____
Signature of Notary Public

of _____County

State of _____

My Commission Expires:_____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

LIMITED LIABILITY COMPANY

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

_____
Full Name of Firm

_____
Address as Prequalified

_____ _____
Signature of Witness Signature of Member/Manager/Authorized Agent
Select appropriate title

_____ _____
Print or type Signer's name Print or type Signer's Name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the **NOTARY SEAL**

_____ day of _____ 20__.

_____
Signature of Notary Public

of _____County

State of _____

My Commission Expires:_____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION
JOINT VENTURE (2) or (3)

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

Instructions: **2 Joint Venturers** Fill in lines (1), (2) and (3) and execute. **3 Joint Venturers** Fill in lines (1), (2), (3) and (4) and execute. On Line (1), fill in the name of the Joint Venture Company. On Line (2), fill in the name of one of the joint venturers and execute below in the appropriate manner. On Line (3), print or type the name of the other joint venturer and execute below in the appropriate manner. On Line (4), fill in the name of the third joint venturer, if applicable and execute below in the appropriate manner.

(1) _____
Name of Joint Venture

(2) _____
Name of Contractor

_____
Address as Prequalified

_____ By _____
Signature of Witness or Attest — Signature of Contractor

_____ _____
Print or type Signer's name — Print or type Signer's name

If Corporation, affix Corporate Seal and

(3) _____
Name of Contractor

_____
Address as Prequalified

_____ By _____
Signature of Witness or Attest — Signature of Contractor

_____ _____
Print or type Signer's name — Print or type Signer's name

If Corporation, affix Corporate Seal and

(4) _____
Name of Contractor *(for 3 Joint Venture only)*

_____
Address as Prequalified

_____ By _____
Signature of Witness or Attest — Signature of Contractor

_____ _____
Print or type Signer's name — Print or type Signer's name

If Corporation, affix Corporate Seal

NOTARY SEAL
Affidavit must be notarized for Line (2)
Subscribed and sworn to before me this
_____day of_____ 20___
_____
Signature of Notary Public
of _____County
State of _____
My Commission Expires:_____

NOTARY SEAL
Affidavit must be notarized for Line (3)
Subscribed and sworn to before me this
_____day of _____ 20___
_____
Signature of Notary Public
of _____County
State of _____
My Commission Expires:_____

NOTARY SEAL
Affidavit must be notarized for Line (4)
Subscribed and sworn to before me this
_____day of _____ 20_____
_____
Signature of Notary Public
of _____County
State of _____
My Commission Expires:_____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

INDIVIDUAL DOING BUSINESS UNDER A FIRM NAME

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

Name of Contractor _____
Individual name

Trading and doing business as _____
Full name of Firm

_____
Address as Prequalified

_____ _____
Signature of Witness Signature of Contractor, Individually

_____ _____
Print or type Signer's name Print or type Signer's name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

NOTARY SEAL

_____ day of _____ 20__.

_____
Signature of Notary Public

of _____County

State of _____

My Commission Expires:_____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

INDIVIDUAL DOING BUSINESS IN HIS OWN NAME

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

Name of Contractor _____
Print or type Individual name

_____
Address as Prequalified

_____
Signature of Contractor, Individually

_____
Print or type Signer's Name

_____
Signature of Witness

_____
Print or type Signer's name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

NOTARY SEAL

_____ day of _____ 20__.

_____
Signature of Notary Public

of _____County

State of _____

My Commission Expires:_____

DEBARMENT CERTIFICATION

Conditions for certification:

1. The prequalified bidder shall provide immediate written notice to the Department if at any time the bidder learns that his certification was erroneous when he submitted his debarment certification or explanation filed with the Department, or has become erroneous because of changed circumstances.

2. The terms *covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal,* and *voluntarily excluded,* as used in this provision, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. A copy of the Federal Rules requiring this certification and detailing the definitions and coverages may be obtained from the Contract Officer of the Department.

3. The prequalified bidder agrees by submitting this form, that he will not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in NCDOT contracts, unless authorized by the Department.

4. For Federal Aid projects, the prequalified bidder further agrees that by submitting this form he will include the Federal-Aid Provision titled *Required Contract Provisions Federal-Aid Construction Contract (Form FHWA PR* 1273) provided by the Department, without subsequent modification, in all lower tier covered transactions.

5. The prequalified bidder may rely upon a certification of a participant in a lower tier covered transaction that he is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless he knows that the certification is erroneous. The bidder may decide the method and frequency by which he will determine the eligibility of his subcontractors.

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

7. Except as authorized in paragraph 6 herein, the Department may terminate any contract if the bidder knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available by the Federal Government.

DEBARMENT CERTIFICATION

The prequalified bidder certifies to the best of his knowledge and belief, that he and his principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and

d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

e. Will submit a revised Debarment Certification immediately if his status changes and will show in his bid proposal an explanation for the change in status.

If the prequalified bidder cannot certify that he is not debarred, he shall provide an explanation with this submittal. An explanation will not necessarily result in denial of participation in a contract.

Failure to submit a non-collusion affidavit and debarment certification will result in the prequalified bidder's bid being considered non-responsive.

☐ Check here if an explanation is attached to this certification.

LISTING OF DBE SUBCONTRACTORS			Sheet _____ of _____	
Firm Name and Address	Item No.	Item Description	* Agreed upon Unit Price	** Dollar Volume of Item
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				

This form must be completed in order for the Bid to be considered responsive and be publicly read. Bidders with no DBE participation must so indicate this on the form by entering the word or number *zero*.

LISTING OF DBE SUBCONTRACTORS			Sheet _____ of _____	
Firm Name and Address	Item No.	Item Description	* Agreed upon Unit Price	** Dollar Volume of Item
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				

* The Dollar Volume shown in this column shall be the Actual Price Agreed Upon by the Prime Contractor and the DBE subcontractor, and these prices will be used to determine the percentage of the DBE participation in the contract.

** Dollar Volume of DBE Subcontractor _____

Percentage of Total Contract Bid Price _____

** - Must have entry even if figure to be entered is zero.

** - *If firm is a Material Supplier Only, show Dollar Volume as 60% of Agreed Upon Amount from Letter of Intent.*

If firm is a Manufacturer, show Dollar Volume as 100% of Agreed Upon Amount from Letter of Intent.

This form must be completed in order for the Bid to be considered responsive and be publicly read. Bidders with no DBE participation must so indicate this on the form by entering the word or number *zero*.

North Carolina Department of Transportation
BID FORM

WBS Element: 34601.3.1 TIP Number: R-4049

Project Description: CAPE FEAR MEMORIAL BRIDGE HIGHWAY ADVISORY RADIO SYSTEM (HAR) FOR NEW HANOVER & BRUNSWICK COUNTIES

ITEM	DESC NO.	SECT	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT BID
1	0000100000-N	800	MOBILIZATION	1	LS		
2	7360000000-N	1720	WOOD POLE (40')	3	EA		
3		SP	WOOD POST	3	EA		
4	7420000000-E	1722	2"RISER WITH WEATHERHEAD	2	EA		
5	7408000000-E	1722	1" RISER WITH WEATHERHEAD	1	EA		
6	7684000000-N	1750	CABINET FOUNDATION	2	EA		
7	7300000000-E	1715	UNPAVED TRENCH (1) (1")	150	LF		
8	7300000000-E	1715	UNPAVED TRENCH (1) (1 1/4")	120	LF		
9	7300000000-E	1715	UNPAVED TRENCH (1) (2")	210	LF		
10	7301000000-E	1715	DIRECTIONAL DRILL (1) (2")	600	LF		
11	7324000000-N	1716	JUNCTION BOX (STANDARD SIZE)	12	EA		
12	7108000000-E	1705	12 INCH, I SECTION AMBER FLASHING BEACON	8	EA		
13	7575142200-N	SP	NEW ELECTRICAL SERVICE	3	EA		
14		SP	2" CONDUIT STUB-OUT FOR UNDERGROUND ELECTRICAL SERVICE	6	EA		
15		SP	FEEDER CONDUCTOR	1000	LF		
16		SP	BEACON CONTROLLER ASSEMBLY 102 VAC	3	EA		
17		SP	BEACON CONTROLLER ASSEMBLY SOLAR POWERED	1	EA		
18		SP	AM TRANSMITTER STATION	2	EA		
19		SP	HAR OPERATION SOFTWARE	1	LS		
20		SP	FURNISHED AM TRANSMITTER STATION	1	EA		
21		SP	FURNISHED ANTENNA ASSEMBLY	1	EA		
22		SP	FURNISHED BEACON CONTROLLER ASSEMBLY SOLAR POWERED	1	EA		
23	4026000000-E	901	DEPARTMENT FURNISHED, TYPE "A" SIGN	312	SF		
24	4048000000-E	902	REINFORCED CONCRETE SIGN FOUNDATIONS	4	CY		
25	4060000000-E	903	SUPPORTS, BREAKAWAY STEEL BEAM	2408	LB		
26	4066000000-E	903	SUPPORTS, SIMPLE STEEL BEAM	649	LB		
27	4110000000-N	904	SIGN ERECTION, TYPE "A" (GROUND MOUNTED)	4	EA		

TOTAL BID FOR PROJECT: _____

CONTRACTOR_____

ADDRESS_____

Federal Identification Number_____

Contractors License Number_____

Authorized Agent_____ Title_____

Signature_____ Date_____

Witness_____ Title_____

Signature_____ Date_____

CORPORATE SEAL

CORPORATE SEAL

THIS SECTION TO BE COMPLETED BY NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

This bid has been reviewed in accordance with Article 103-1 of the Standard Specifications for Roads and Structures 2006.

Reviewed by_____ ***Date***_____

Accepted by NCDOT_____ ***Date***_____