STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 7

PROPOSAL

DATE AND TIME OF BID OPENING: MAY 21, 2015 AT 11:00 A.M.

CONTRACT ID: **DG00243**

WBS ELEMENT NO.: **3707.3.23**

FEDERAL AID NO.: **000S-425**

COUNTY: **ALAMANCE COUNTY**

TIP NO.: **ER-2973**

LOCATION: **I-85/40 NORTH BOUND AND SOUTH BOUND REST AREAS**

TYPE OF WORK: **BUILDING CONSTRUCTION, SITE WORK AND LANDSCAPE PLANTINGS**

MANDATORY PRE-BID: 10:00 A.M. MAY 5, 2015

NOTICE:

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS $30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

THIS IS A MIXED CONSTRUCTION PROJECT. **BID BOND ARE REQUIRED.**

_____

NAME OF BIDDER

_____

ADDRESS OF BIDDER

PROPOSAL FOR THE CONSTRUCTION OF

CONTRACT No. DG00243 IN ALAMANCE COUNTY, NORTH CAROLINA

Date_____ 20_____

DEPARTMENT OF TRANSPORTATION,

RALEIGH, NORTH CAROLINA

The Bidder has carefully examined the location of the proposed work to be known as Contract No. **DG00243**; has carefully examined the plans and specifications, which are acknowledged to be part of the proposal, the special provisions, the proposal, the form of contract, and the forms of contract payment bond and contract performance bond; and thoroughly understands the stipulations, requirements and provisions. The undersigned bidder agrees to bound upon his execution of the bid and subsequent award to him by the Department of Transportation in accordance with this proposal to provide the necessary contract payment bond and contract performance bond within fourteen days after the written notice of award is received by him. The undersigned Bidder further agrees to provide all necessary machinery, tools, labor, and other means of construction; and to do all the work and to furnish all materials, except as otherwise noted, necessary to perform and complete the said contract in accordance with *the 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. **DG00243** in **Alamance 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 or Division Engineer.

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

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

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

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MANDATORY PREBID

In order to have an extensive knowledge of the project, all prospective bidders shall attend a mandatory pre-bid conference at:

NCDOT Division 7 Office
1584 Yanceyville Street
Greensboro, NC 27405

The Mandatory Pre-Bid Conference will be held at 10:00 a.m.. May 5, 2015

The pre-bid conference will include a thorough discussion of the contract pay items & special provisions, etc. The meeting will begin promptly at 10:00 a.m.; bid proposals received from Contractors who arrive after 10:00a.m. will not be considered.

The pre-bid will move from the Division Office to the sites for a discussion of the plans. Contractors who plan to bid are required to attend the entire Mandatory Pre-Bid, including the site visits.

Only bids from those who attend and properly register (sign in, sign out and provide all requested information) at this pre-bid conference will be considered. A bid received from a bidder who did not attend and properly register at this pre-bid conference will not be considered for award.

Requirements for proper registration are as follows:

1. The individual must be an officer or permanent employee of the company represented.

2. The individual attending must sign their name and list the name and address of their company on the official roster within thirty (30) minutes after the conference begins. **Information provided shall be legible.**

3. The individual may represent only one company.

4. **Pre-bid participants SHALL bring a copy of the PLANS AND PROPOSAL with them to the meeting and be familiar with its contents.**

No questions concerning the project will be answered by any Department personnel at any time except at the Pre-Bid Conference. The Contractor SHALL download and print the entire bid package and review the document thoroughly prior to the pre-bid.

BID PACKAGES WILL NOT BE AVAILABLE AT THE PRE-BID MEETING.

INSTRUCTIONS TO BIDDERS

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

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

1. Download the entire proposal from the Connect NCDOT website, bind and return the entire proposal with your bid.

2. The Bidder should use "Expedite Bid" to complete prepare bids.

3. The Bidder shall submit a unit price for every item. *****Unit Prices shall be rounded off by the bidder to contain no more than FOUR decimal places.*** The computer generated itemized proposal sheets shall be printed and signed by a duly authorized representative in accordance with Subarticle 102-8(A)(8)..**

4. An amount bid shall be entered for every item.

5. Changes to any entry shall be made by marking through the entry in ink and making the correct entry adjacent thereto in ink. A representative of the Bidder shall initial the change in ink. **Do not use correction fluid, correction tape or similar product to make corrections.**

6. The bid shall be properly executed on the included **Execution of Bid – Non-collusion Affidavit, Debarment Certification and Gift Ban Certification** form. All bids shall show the following information:
   a. Name of corporation, partnership, limited liability company, joint venture, individual or firm, submitting bid.
   b. Corporations that have a corporate seal should include it on the bid.
   c. Name of individual or representative submitting bid and position or title held on behalf of the bidder.
   d. Name, signature, and position or title of witness.
   e. Completed attestation by Notary Public

7. Note: Signer, Witness and Notary Public must be different individuals.

8. The bid shall not contain any unauthorized additions, deletions, or conditional bids.

9. The Bidder shall not add any provision reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.

10. Contractors who download bid packages **SHALL EMAIL** cthuskins@ncdot.gov a minimum of five (5) days prior to the bid opening to inform NCDOT of your possession of a bid package. BIDS RECEIVED FROM CONTRACTORS WHO HAVE NOT PROVIDED NOTICE OF POSSESSION OF A BID PACKAGE MAY BE REJECTED.

11. THE PROPOSAL WITH THE ITEMIZED PROPOSAL SHEET ATTACHED SHALL BE PLACED IN A SEALED ENVELOPE AND SHALL BE DELIVERED TO AND RECEIVED IN THE NCDOT DIVISION 7 OFFICE, LOCATED AT 1584 YANCEYVILLE STREET, GREENSBORO, NC 27405 BY 11:00 A.M. ON, THURSDAY, May 21 2015.

12. The sealed bid must display the following statement on the front of the sealed envelope:

QUOTATION FOR DG00243
TO BE OPENED AT 11:00 A.M. ON, THURSDAY MAY 21 2015.
CONTRACTOR'S NAME

13. **.**If delivered by mail, the sealed envelope shall be placed in another sealed envelope and the outer envelope shall be addressed as follows:

N. C. Department Of Transportation
Attn: Carolyn T. Huskins
1584 Yanceyville Street
Greensboro, NC 27405

PROJECT SPECIAL PROVISIONS - GENERAL

COMPUTER BID PREPARATION REQUIRED:

(7-18-11) 102 SPD 01-050A

The Contractor shall prepare his bid and MBE/WBE or DBE participation electronically by means of a personal computer. The Contractor shall download the Expedite program from the NCDOT "Project Letting" website. Then download the appropriate .ebs electronic file of line items and quantities unique to each project from the Division Office's website.

The only entries into the program which will be permitted by the Bidder are the appropriate unit or lump sum prices for those items which must be bid in order to provide a complete bid for the project, and any MBE/WBE or DBE participation in the appropriate section of the Expedite program. When these entries have been made, the program will automatically prepare a complete set of itemized proposal sheets which will include the amount bid for the various items and the total amount bid for the project in addition to the unit or lump sum prices bid. **The computer generated itemized proposal sheets shall be printed and signed by a duly authorized representative in accordance with Subarticle 102-8(A)(8).** This set of itemized proposal sheets, when submitted together with the appropriate proposal, will constitute the bid and shall be delivered to the appropriate Division Office or location specified in the INSTRUCTIONS TO BIDDERS. Bid prices shall not be written on the itemized proposal sheets bound in the proposal. **The computer generated itemized proposal sheets (.ebs bid file) shall also be copied to a compact disk (CD) furnished by the Contractor and shall be submitted to the Department with the bid.**

The requirements of the INSTRUCTIONS TO BIDDERS will apply to the preparation of bids. Changes to any entry on the computer generated itemized proposal sheets shall be made in accordance with requirement Number five (5) of the INSTRUCTIONS TO BIDDERS.

Expedite software necessary for electronic bid preparation may be downloaded from the Connect NCDOT website at: https://connect.ncdot.gov/letting/Pages/EBS-Information.aspx

CONTRACT TIME AND LIQUIDATED DAMAGES:

(4-17-12) Revised Div. 7 108 SP1 G07 C

The date of availability for this contract is **June 15, 2015**.

The completion date for this contract is **December 15, 2016**.

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

INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES:

(7-1-95) (Rev. 2-21-12) Revised Div. 7 108 SP1 G13 A

Except for that work considered "establishment" all work shall be completed and all construction debris and equipment shall be removed from the Rest Areas.

The date of availability for this intermediate contract time is **June 15, 2015**.

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

The liquidated damages for this intermediate contract time are **Six Hundred Dollars ($ 600.00)** per calendar day.

Upon apparent completion of all the work required to be completed by this intermediate date, a final inspection will be held in accordance with Article 105-17 and upon acceptance, the Department will assume responsibility for the maintenance of all work except *Establishment*. The Contractor will be responsible for and shall make corrections of all damages to the completed hardscape, pavement, and concrete caused by his planting operations.

INTERMEDIATE CONTRACT TIME NUMBER 2 AND LIQUIDATED DAMAGES:
(2-20-07) 108 SP1 G14 A

The Contractor shall complete not close Rest Areas or Rest Area facilities at any time.

In addition, the Contractor shall not perform any work that hinders the public's use of rest areas on or during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy, including the following schedules:

HOLIDAY AND HOLIDAY WEEKEND LANE CLOSURE RESTRICTIONS

1. For **unexpected occurrence** that creates unusually high traffic volumes, as directed by the Engineer.

2. **New Year's Day**, between December 31st and January 2nd. If New Year's Day is on a Friday, Saturday, Sunday or Monday, then until the following Tuesday.

3. For **Easter**, between Thursday and Monday.

4. For **Memorial Day**, between Friday and Tuesday.

5. For **Independence Day**, between the day before Independence Day and the day after Independence Day.

   If **Independence Day** is on a Friday, Saturday, Sunday or Monday, then between the the Thursday before Independence Day and the Tuesday after Independence Day.

6. For **Labor Day**, between Friday and Tuesday.

7. For **Thanksgiving Day**, between Tuesday and Monday.

8. For **Christmas**, between the Friday before the week of Christmas Day and the following Tuesday after the week of Christmas Day.

Holidays and holiday weekends shall include New Year's, Easter, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas. The Contractor shall schedule

his work so that lane closures will not be required during these periods, unless otherwise directed by the Engineer.

The time of availability for this intermediate contract work shall be the time the Contractor begins work.

The completion time for this intermediate contract work shall be the time the Contractor is required to complete work.

The liquidated damages are **Six Hundred Dollars ($ 600.00**) 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.

NO SPECIALTY ITEMS:

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

None of the items included in this contract will be specialty items (see Article 108-6 of the *2012 Standard Specifications*).

SCHEDULE OF ESTIMATED COMPLETION PROGRESS:

(7-15-08) (Rev. 5-19-15) 108-2 SP1 G58

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

2016	(7/01/15 - 6/30/16)	**100** % of Total Amount Bid

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

DISADVANTAGED BUSINESS ENTERPRISE (DIVISIONS):

(10-16-07)(Rev.12-17-13) 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.
http://connect.ncdot.gov/projects/construction/Construction%20Forms/DBE%20MBE%20WBE%20Replacement%20Request%20Form.pdf

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

JC-1 *Joint Check Notification Form* - Form and procedures for joint check notification. The form acts as a written joint check agreement among the parties providing full and prompt disclosure of the expected use of joint checks.
http://connect.ncdot.gov/projects/construction/Construction%20Forms/Joint%20Check%20Notification%20Form.pdf

Letter of Intent - Form signed by the Contractor and the DBE subcontractor, manufacturer or regular dealer that affirms that a portion of said contract is going to be performed by the signed DBE for the amount listed at the time of bid.
http://connect.ncdot.gov/letting/LetCentral/Letter%20of%20Intent%20to%20Perform%20as%20a%20Subcontractor.pdf

Listing of DBE Subcontractors Form - Form for entering DBE subcontractors on a project that will meet this DBE goal. This form is for paper bids only.
http://connect.ncdot.gov/municipalities/Bid%20Proposals%20for%20LGA%20Content/08%20DBE%20Subcontractors%20(Federal).docx

Subcontractor Quote Comparison Sheet - Spreadsheet for showing all subcontractor quotes in the work areas where DBEs quoted on the project. This sheet is submitted with good faith effort packages.
http://connect.ncdot.gov/business/SmallBusiness/Documents/DBE%20Subcontractor%20Quote%20Comparison%20Example.xls

DBE Goal

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

Disadvantaged Business Enterprises **6.0 %**

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

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

Directory of Transportation Firms (Directory)

Real-time information is available about firms doing business with the Department and firms that are certified through NCUCP in the Directory of Transportation Firms. Only firms identified in the Directory as DBE certified shall be used to meet the DBE goal. The Directory can be found at the following link. https://partner.ncdot.gov/VendorDirectory/default.html
The listing of an individual firm in the directory shall not be construed as an endorsement of the firm's capability to perform certain work.

Listing of DBE Subcontractors

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

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

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

DBE Prime Contractor

When a certified DBE firm bids on a contract that contains a DBE goal, the DBE firm is responsible for meeting the goal or making good faith efforts to meet the goal, just like any other bidder. In most cases, a DBE bidder on a contract will meet the DBE goal by virtue of the work it performs on the contract with its own forces. However, all the work that is performed by the DBE bidder and any other DBE subcontractors will count toward the DBE goal. The DBE bidder shall list itself along with any DBE subcontractors, if any, in order to receive credit toward the DBE goal.
For example, if the DBE goal is 45% and the DBE bidder will only perform 40% of the contract work, the prime will list itself at 40%, and the additional 5% shall be obtained through additional DBE participation with DBE subcontractors or documented through a good faith effort.

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

Written Documentation – Letter of Intent

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

The documentation shall be received in the office of the Engineer no later than 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 **6** 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, written notices, use of verifiable electronic means through the use of the NCDOT Directory of Transportation Firms) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within at least 10 days prior to bid opening to allow the DBEs to respond to the solicitation. Solicitation shall provide the opportunity to DBEs within the Division and surrounding Divisions where the project is located. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

(B) Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved.

(1) Where appropriate, break out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.

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

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

(D) (1) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the

available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.

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

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

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

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

(H) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; Federal, State, and local minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs. Contact within 7 days from the bid opening the Business 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 <u>not</u> 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) SP1 G85

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

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

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

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

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

U.S. DEPARTMENT OF TRANSPORTATION HOTLINE:
(11-22-94) 108-5 SP1 G100

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

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

The hotline is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse is operated under the direction of the DOT Inspector

General. All information will be treated confidentially and caller anonymity will be respected.

LOCATING EXISTING UNDERGROUND UTILITIES:
(3-20-12) 105 SP1 G115

Revise the *2012 Standard Specifications* as follows:

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

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

RESOURCE CONSERVATION AND ENV. SUSTAINABLE PRACTICES:
(5-21-13) (Rev. 5-19-15) 104-13 SP1 G118

In accordance with North Carolina Executive Order 156, NCGS 130A-309.14(3), and NCGS 136-28.8, it is the objective of the Department to aid in the reduction of materials that become a part of our solid waste stream, to divert materials from landfills, to find ways to recycle and reuse materials, to consider and minimize, where economically feasible, the environmental impacts associated with agency land use and acquisition, construction, maintenance and facility management for the benefit of the Citizens of North Carolina.
To achieve the mission of reducing environmental impacts across the state, the Department is committed to supporting the efforts to initiate, develop and use products and construction methods that incorporate the use of recycled, solid waste products and environmentally sustainable practices in accordance with Article 104-13 of the *Standard Specifications*.

Report the quantities of reused or recycled materials either incorporated in the project or diverted from landfills and any practice that minimizes the environmental impact on the project annually on the Project Construction Reuse and Recycling Reporting Form. The Project Construction Reuse and Recycling Reporting Form and a location tool for local recycling facilities are available at:
http://connect.ncdot.gov/resources/Environmental/Pages/North-Carolina-Recycling-Locations.aspx.

Submit the Project Construction Reuse and Recycling Reporting Form by August 1 annually to valuemanagementunit@ncdot.gov. For questions regarding the form or reporting, please contact the State Value Management Engineer at 919-707-4810.

DOMESTIC STEEL:
(4-16-13) 106 SP1 G120

Revise the *2012 Standard Specifications* as follows:

P**age 1-49, Subarticle 106-1(B) Domestic Steel, lines 2-7,** replace the first paragraph with the following:

All steel and iron products that are permanently incorporated into this project shall be produced in the United States except minimal amounts of foreign steel and iron products may be used provided the combined material cost of the items involved does not exceed 0.1% of

the total amount bid for the entire project or $2,500, whichever is greater. If invoices showing the cost of the material are not provided, the amount of the bid item involving the foreign material will be used for calculations. This minimal amount of foreign produced steel and iron products permitted for use is not applicable to high strength fasteners. Domestically produced high strength fasteners are required.

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.

LIABILITY INSURANCE:

(5-20-14) SP1 G160

Revise the *2012 Standard Specifications* as follows:

Page 1-60, Article 107-15 LIABILITY INSURANCE, line 16, add the following as the second sentence of the third paragraph:

Prior to beginning services, all contractors shall provide proof of coverage issued by a workers' compensation insurance carrier, or a certificate of compliance issued by the Department of Insurance for self-insured subcontractors, irrespective of whether having regularly in service fewer than three employees.

EROSION AND SEDIMENT CONTROL/STORMWATER CERTIFICATION:

(1-16-07) (Rev 9-18-12) 105-16, 225-2, 16 SP1 G180

General

Schedule and conduct construction activities in a manner that will minimize soil erosion and the resulting sedimentation and turbidity of surface waters. Comply with the requirements

herein regardless of whether or not a National Pollution discharge Elimination System (NPDES) permit for the work is required.

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

(A) *Certified Supervisor* - Provide a certified Erosion and Sediment Control/Stormwater Supervisor to manage the Contractor and subcontractor operations, insure compliance with Federal, State and Local ordinances and regulations, and manage the Quality Control Program.

(B) *Certified Foreman* - Provide a certified, trained foreman for each construction operation that increases the potential for soil erosion or the possible sedimentation and turbidity of surface waters.

(C) *Certified Installer* - Provide a certified installer to install or direct the installation for erosion or sediment/stormwater control practices.

(D) *Certified Designer* - Provide a certified designer for the design of the erosion and sediment control/stormwater component of reclamation plans and, if applicable, for the design of the project erosion and sediment control/stormwater plan.

Roles and Responsibilities

(A) *Certified Erosion and Sediment Control/Stormwater Supervisor* - The Certified Supervisor shall be Level II and responsible for ensuring the erosion and sediment control/stormwater plan is adequately implemented and maintained on the project and for conducting the quality control program. The Certified Supervisor shall be on the project within 24 hours notice from initial exposure of an erodible surface to the project's final acceptance. Perform the following duties:

(1) Manage Operations - Coordinate and schedule the work of subcontractors so that erosion and sediment control/stormwater measures are fully executed for each operation and in a timely manner over the duration of the contract.

(a) Oversee the work of subcontractors so that appropriate erosion and sediment control/stormwater preventive measures are conformed to at each stage of the work.
(b) Prepare the required National Pollutant Discharge Elimination System (NPDES) Inspection Record and submit to the Engineer.
(c) Attend all weekly or monthly construction meetings to discuss the findings of the NPDES inspection and other related issues.
(d) Implement the erosion and sediment control/stormwater site plans requested.
(e) Provide any needed erosion and sediment control/stormwater practices for the Contractor's temporary work not shown on the plans, such as, but not limited to work platforms, temporary construction, pumping operations, plant and storage yards, and cofferdams.

(f) Acquire applicable permits and comply with requirements for borrow pits, dewatering, and any temporary work conducted by the Contractor in jurisdictional areas.

(g) Conduct all erosion and sediment control/stormwater work in a timely and workmanlike manner.

(h) Fully perform and install erosion and sediment control/stormwater work prior to any suspension of the work.

(i) Coordinate with Department, Federal, State and Local Regulatory agencies on resolution of erosion and sediment control/stormwater issues due to the Contractor's operations.

(j) Ensure that proper cleanup occurs from vehicle tracking on paved surfaces or any location where sediment leaves the Right-of-Way.

(k) Have available a set of erosion and sediment control/stormwater plans that are initialed and include the installation date of Best Management Practices. These practices shall include temporary and permanent groundcover and be properly updated to reflect necessary plan and field changes for use and review by Department personnel as well as regulatory agencies.

(2) Requirements set forth under the NPDES Permit - The Department's NPDES Stormwater permit (NCS000250) outlines certain objectives and management measures pertaining to construction activities. The permit references *NCG010000, General Permit to Discharge Stormwater* under the NPDES, and states that the Department shall incorporate the applicable requirements into its delegated Erosion and Sediment Control Program for construction activities disturbing one or more acres of land. The Department further incorporates these requirements on all contracted bridge and culvert work at jurisdictional waters, regardless of size. Some of the requirements are, but are not limited to:

(a) Control project site waste to prevent contamination of surface or ground waters of the state, i.e. from equipment operation/maintenance, construction materials, concrete washout, chemicals, litter, fuels, lubricants, coolants, hydraulic fluids, any other petroleum products, and sanitary waste.

(b) Inspect erosion and sediment control/stormwater devices and stormwater discharge outfalls at least once every 7 calendar days, twice weekly for construction related *Federal Clean Water Act, Section 303(d)* impaired streams with turbidity violations, and within 24 hours after a significant rainfall event of 0.5 inch that occurs within a 24 hour period.

(c) Maintain an onsite rain gauge or use the Department's Multi-Sensor Precipitation Estimate website to maintain a daily record of rainfall amounts and dates.

(d) Maintain erosion and sediment control/stormwater inspection records for review by Department and Regulatory personnel upon request.

(e) Implement approved reclamation plans on all borrow pits, waste sites and staging areas.

(f) Maintain a log of turbidity test results as outlined in the Department's Procedure for Monitoring Borrow Pit Discharge.
(g) Provide secondary containment for bulk storage of liquid materials.
(h) Provide training for employees concerning general erosion and sediment control/stormwater awareness, the Department's NPDES Stormwater Permit NCS000250 requirements, and the applicable requirements of the *General Permit, NCG010000*.
(i) Report violations of the NPDES permit to the Engineer immediately who will notify the Division of Water Quality Regional Office within 24 hours of becoming aware of the violation.

(3) Quality Control Program - Maintain a quality control program to control erosion, prevent sedimentation and follow provisions/conditions of permits. The quality control program shall:

(a) Follow permit requirements related to the Contractor and subcontractors' construction activities.
(b) Ensure that all operators and subcontractors on site have the proper erosion and sediment control/stormwater certification.
(c) Notify the Engineer when the required certified erosion and sediment control/stormwater personnel are not available on the job site when needed.
(d) Conduct the inspections required by the NPDES permit.
(e) Take corrective actions in the proper timeframe as required by the NPDES permit for problem areas identified during the NPDES inspections.
(f) Incorporate erosion control into the work in a timely manner and stabilize disturbed areas with mulch/seed or vegetative cover on a section-by-section basis.
(g) Use flocculants approved by state regulatory authorities where appropriate and where required for turbidity and sedimentation reduction.
(h) Ensure proper installation and maintenance of temporary erosion and sediment control devices.
(i) Remove temporary erosion or sediment control devices when they are no longer necessary as agreed upon by the Engineer.
(j) The Contractor's quality control and inspection procedures shall be subject to review by the Engineer. Maintain NPDES inspection records and make records available at all times for verification by the Engineer.

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

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

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

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

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

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

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

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

Preconstruction Meeting

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

Ethical Responsibility

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

Revocation or Suspension of Certification

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

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

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

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

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

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

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

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

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

Measurement and Payment

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

PROCEDURE FOR MONITORING BORROW PIT DISCHARGE:

(2-20-07) (Rev. 3-19-13) 105-16, 230, 801 SP1 G181

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

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

(A) Either cease discharge or modify the discharge volume or turbidity levels to bring the downstream turbidity levels into compliance, or

(B) Evaluate the upstream conditions to determine if the exceedance of the standard is due to natural background conditions. If the background turbidity measurements exceed the standard, operation of the pit and discharge can continue as long as the stream turbidity levels are not increased due to the discharge.

(C) Measure and record the turbidity test results (time, date and sampler) at all defined sampling locations 30 minutes after startup and at a minimum, one additional sampling of all sampling locations during that 24-hour period in which the borrow pit is discharging.

(D) Notify DWQ within 24 hours of any stream turbidity standard exceedances that are not brought into compliance.

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

shall be located at the point where complete mixing of the discharge and receiving water has occurred.

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

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

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

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

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

EMPLOYMENT:

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

Revise the *2012 Standard Specifications* as follows:

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

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

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

STATE HIGHWAY ADMINISTRATOR TITLE CHANGE:
(9-18-12) SP1 G185

Revise the *2012 Standard Specifications* as follows:

Replace all references to "State Highway Administrator" with "Chief Engineer".

SUBLETTING OF CONTRACT:
(11-18-2014) 108-6 SP1 G186

Revise the *2012 Standard Specifications* as follows:

Page 1-66, Article 108-6 Subletting of Contract, line 37, add the following as the second sentence of the first paragraph:

All requests to sublet work shall be submitted within 30 days of the date of availability or prior to expiration of 20% of the contract time, whichever date is later, unless otherwise approved by the Engineer.

Page 1-67, Article 108-6 Subletting of Contract, line 7, add the following as the second sentence of the fourth paragraph:

Purchasing materials for subcontractors is not included in the percentage of work required to be performed by the Contractor. If the Contractor sublets items of work but elects to purchase material for the subcontractor, the value of the material purchased will be included in the total dollar amount considered to have been sublet.

PROJECT SPECIAL PROVISIONS - ROADWAY

IRRIGATION

Irrigation is noted later in this document as an "ADD ALTERNATE". The item "Irrigation" will not be an add alternate, it is a required bid item.

BURNING RESTRICTIONS:
(7-1-95) 200, 210, 215 SP2 R05

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

BORROW EXCAVATION (TRUCK MEASUREMENT):
(7-1-95) 230 SP2 R57

The borrow material used on this project will be measured for payment by truck measurement as provided in Article 230-5 of the *2012 Standard Specifications*.

PIPE INSTALLATION:
(11-20-12) 300 SP3 R01

Revise the *2012 Standard Specifications* as follows:

Page 3-1, Article 300-2, Materials, line 23-24, replace sentence with:

Provide foundation conditioning geotextile in accordance with Section 1056 for Type 4 geotextile.

MATERIALS:
(2-21-12) (Rev. 5-19-15) 1000, 1002, 1005, 1018, 1024, 1050, 1056, 1074, 1078, 1080, 1081, 1086, 1084, 1087, 1092 SP10 R01

Revise the *2012 Standard Specifications* as follows:

Page 10-1, Article 1000-1, DESCRIPTION, lines 9-10, replace the last sentence of the first paragraph with the following:

Type IL, IP, IS or IT blended cement may be used instead of Portland cement.

Page 10-1, Article 1000-1, DESCRIPTION, line 14, add the following:

If any change is made to the mix design, submit a new mix design (with the exception of an approved pozzolan source change).

If any major change is made to the mix design, also submit new test results showing the mix design conforms to the criteria. Define a major change to the mix design as:

(1) A source change in coarse aggregate, fine aggregate or cement.

(2) A pozzolan class or type change (e.g. Class F fly ash to Class C fly ash).

(3) A quantitative change in coarse aggregate (applies to an increase or decrease greater than 5%), fine aggregate (applies to an increase or decrease greater than 5%), water (applies to an increase only), cement (applies to a decrease only), or pozzolan (applies to an increase or decrease greater than 5%).

Use materials which do not produce a mottled appearance through rusting or other staining of the finished concrete surface.

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

TABLE 1000-1
REQUIREMENTS FOR CONCRETE

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

Page 10-1, Article 1000-2, MATERIALS, line 16; Page 10-8, Subarticle 1000-7(A), Materials, line 8; and Page 10-18, Article 1002-2, MATERIALS, line 9, add the following to the table of item references:

Item	**Section**
Type IL Blended Cement	1024-1

Page 10-19, Article 1002-3, SHOTCRETE FOR TEMPORARY SUPPORT OF EXCAVATIONS, line 30, add the following at the end of Section 1002:

(H) Handling and Storing Test Panels

Notify the Area Materials Engineer when preconstruction or production test panels are made within 24 hours of shooting the panels. Field cure and protect test panels from damage in accordance with ASTM C1140 until the Department transports panels to the Materials and Tests Regional Laboratory for coring.

Page 10-1, Subarticle 1000-3(A), Composition and Design, lines 25-27, replace the second paragraph with the following:

Fly ash may be substituted for cement in the mix design up to 30% at a rate of 1.0 lb of fly ash to each pound of cement replaced.

Page 10-2, Subarticle 1000-3(A), Composition and Design, lines 12-21, delete the third paragraph through the sixth paragraph beginning with "If any change is made to the mix design, submit…" through "…(applies to a decrease only)."

Page 10-6, Subarticle 1000-4(I), Use of Fly Ash, lines 36-2, replace the first paragraph with the following:

Fly ash may be substituted for cement in the mix design up to 30% at a rate of 1.0 lb of fly ash to each pound of cement replaced. Use Table 1000-1 to determine the maximum allowable water-cementitious material (cement + fly ash) ratio for the classes of concrete listed.

Page 10-7, Table 1000-3, MAXIMUM WATER-CEMENTITIOUS MATERIAL RATIO, delete the table.

Page 10-7, Article 1000-5, HIGH EARLY STRENGTH PORTLAND CEMENT CONCRETE, lines 30-31, delete the second sentence of the third paragraph.

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

TABLE 1005-1
AGGREGATE GRADATION - COARSE AGGREGATE

Std. Size #	2"	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#10	#16	#40	#200	Remarks
	Percentage of Total by Weight Passing												
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 10-40, Tables 1018-1 and 1018-2, PIEDMONT, WESTERN AND COASTAL AREA CRITERIA FOR ACCEPTANCE OF BORROW MATERIAL, under second column in both tables, replace second row with the following:

Acceptable, but not to be used in the top 3 ft of embankment or backfill

Page 10-46, Article 1024-1, PORTLAND CEMENT, line 33, add the following as the ninth paragraph:

Use Type IL blended cement that meets AASHTO M 240, except that the limestone content is limited to between 5 and 12% by weight and the constituents shall be interground. Class F fly ash can replace a portion of Type IL blended cement and shall be replaced as outlined in Subarticle 1000-4(I) for Portland cement. For mixes that contain cement with alkali content between 0.6% and 1.0% and for mixes that contain a reactive aggregate documented by the Department, use a pozzolan in the amount shown in Table 1024-1.

Page 10-46, Table 1024-1, POZZOLANS FOR USE IN PORTLAND CEMENT CONCRETE, replace with the following:

TABLE 1024-1 POZZOLANS FOR USE IN PORTLAND CEMENT CONCRETE	
Pozzolan	**Rate**
Class F Fly Ash	20% - 30% by weight of required cement content with 1.0 lb Class F fly ash per lb of cement replaced
Ground Granulated Blast Furnace Slag	35%-50% by weight of required cement content with 1.0 lb slag per lb of cement replaced
Microsilica	4%-8% by weight of required cement content with 1.0 lb microsilica per lb of cement replaced

Page 10-47, Subarticle 1024-3(B), Approved Sources, lines 16-18, replace the second sentence of the second paragraph with the following:

Tests shall be performed by AASHTO's designated National Transportation Product Evaluation Program (NTPEP) laboratory for concrete admixture testing.

Page 10-65, Article 1050-1, GENERAL, line 41, replace the first sentence with the following:

All fencing material and accessories shall meet Section 106.

Page 10-73, Article 1056-1, DESCRIPTION, lines 7-8, delete the first sentence of the second paragraph and replace with the following:

Use geotextile fabrics that are on the NCDOT Approved Products List.

Page 10-73, Article 1056-2, HANDLING AND STORING, line 17, replace "mechanically stabilized earth (MSE) wall faces" with "temporary wall faces".

Page 10-73, Article 1056-4, GEOTEXTILES, line 33, add the following after the first sentence in the second paragraph:

Geotextiles will be identified by the product name printed directly on the geotextile. When geotextiles are not marked with a product name or marked with only a manufacturing plant identification code, geotextiles will be identified by product labels attached to the geotextile wrapping. When identification is based on labels instead of markings, unwrap geotextiles just before use in the presence of the Engineer to confirm that the product labels on both ends of the outside of the geotextile outer wrapping match the labels affixed to both ends of the inside of the geotextile roll core. Partial geotextile roles without the product name printed on the geotextile or product labels affixed to the geotextile roll core may not be used.

Page 10-74, Table 1056-1, GEOTEXTILE REQUIREMENTS, replace with the following:

TABLE 1056-1
GEOTEXTILE REQUIREMENTS

Property	**Requirement**					**Test Method**
	Type 1	**Type 2**	**Type 3[A]**	**Type 4**	**Type 5[B]**	
Typical Application	*Shoulder Drains*	*Under Rip Rap*	*Temporary Silt Fence*	*Soil Stabilization*	*Temporary Walls*	
Elongation (MD & CD)	≥ 50%	≥ 50%	≤ 25%	< 50%	< 50%	ASTM D4632
Grab Strength (MD & CD)	Table 1[D], Class 3	Table 1[D], Class 1	100 lb[C]	Table 1[D], Class 3	-	ASTM D4632
Tear Strength (MD & CD)			-			ASTM D4533
Puncture Strength			-			ASTM D6241
Ultimate Tensile Strength (MD & CD)	-	-	-	-	2,400 lb/ft[C] (unless required otherwise in the contract)	ASTM D4595
Permittivity	Table 2[D], 15% to 50% *in Situ* Soil Passing No. 200[E]		Table 7[D]	Table 5[D]	0.20 sec^{-1},[C]	ASTM D4491
Apparent Opening Size					0.60 mm[F]	ASTM D4751
UV Stability (Retained Strength)					70%[C, G]	ASTM D4355

A. Minimum roll width of 36" required.
B. Minimum roll width of 13 ft required.
C. MARV per Article 1056-3.
D. AASHTO M 288.
E. US Sieve No. per AASHTO M 92.
F. Maximum average roll value.
G. After 500 hours of exposure.

Page 10-74, Article 1056-5, GEOCOMPOSITES, lines 7-8, replace the first sentence with the following:

Provide geocomposite drain strips with a width of at least 12" and Type 1 geotextiles attached to drainage cores that meet Table 1056-2.

Page 10-115, Subarticle 1074-7(B), Gray Iron Castings, lines 10-11, replace the first two sentences with the following:

Supply gray iron castings meeting all facets of AASHTO M 306 excluding proof load. Proof load testing will only be required for new casting designs during the design process, and conformance to M306 loading (40,000 lbs.) will be required only when noted on the design documents.

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

TABLE 1078-1 REQUIREMENTS FOR CONCRETE		
Property	**28 Day Design Compressive Strength 6,000 psi or less**	**28 Day Design Compressive Strength greater than 6,000 psi**
Maximum Water/Cementitious Material Ratio	0.45	0.40
Maximum Slump without HRWR	3.5"	3.5"
Maximum Slump with HRWR	8"	8"
Air Content (upon discharge into forms)	5 + 2%	5 + 2%

Page 10-151, Article 1080-4, INSPECTION AND SAMPLING, lines 18-22, replace (B), (C) and (D) with the following:

(B) At least 3 panels prepared as specified in 5.5.10 of AASHTO M 300, Bullet Hole Immersion Test.

(C) At least 3 panels of 4"x6"x1/4" for the Elcometer Adhesion Pull Off Test, ASTM D4541.

(D) A certified test report from an approved independent testing laboratory for the Salt Fog Resistance Test, Cyclic Weathering Resistance Test, and Bullet Hole Immersion Test as specified in AASHTO M 300.

(E) A certified test report from an approved independent testing laboratory that the product has been tested for slip coefficient and meets AASHTO M253, Class B.

Page 10-161, Subarticle 1081-1(A), Classifications, lines 29-33, delete first 3 sentences of the description for Type 2 and replace with the following:

Type 2 - A low-modulus, general-purpose adhesive used in epoxy mortar repairs. It may be used to patch spalled, cracked or broken concrete where vibration, shock or expansion and contraction are expected.

Page 10-162, Subarticle 1081-1(A), Classifications, lines 4-7, delete the second and third sentences of the description for Type 3A. **Lines 16-22,** delete Types 6A, 6B and 6C.

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 10-163, Table 1081-1, PROPERTIES OF MIXED EPOXY RESIN SYSTEMS, replace with the following:

TABLE 1081-1
PROPERTIES OF MIXED EPOXY RESIN SYSTEMS

Property	Type 1	Type 2	Type 3	Type 3A	Type 4A	Type 4B	Type 5
Viscosity-Poises at 77°F ± 2°F	Gel	10-30	25-75	Gel	40-150	40-150	1-6
Spindle No.	-	3	4	--	4	4	2
Speed (RPM)	-	20	20	--	10	10	50
Pot Life (Minutes)	20-50	30-60	20-50	5-50	40-80	40-80	20-60
Minimum Tensile Strength at 7 days (psi)	1,500	2,000	4,000	4,000	1,500	1,500	4,000
Tensile Elongation at 7 days (%)	30 min.	30 min.	2-5	2-5	5-15	5-15	2-5
Min. Compressive Strength of 2". mortar cubes at 24 hours	3,000 (Neat)	4,000-	6,000-	6,000 (Neat)	3,000	3,000	6,000
Min. Compressive Strength of 2" mortar cubes at 7 days	5,000 (Neat)	-	-	-	-	5,000	-
Maximum Water Absorption (%)	1.5	1.0	1.0	1.5	1.0	1.0	1.0
Min. Bond Strength Slant Shear Test at 14 days (psi)	1,500	1,500	2,000	2,000	1,500	1,500	1,500

Page 10-164, Subarticle 1081-1(E), Prequalification, lines 31-33, replace the second sentence of the first paragraph with the following:

Manufacturers choosing to supply material for Department jobs must submit an application through the Value Management Unit with the following information for each type and brand name:

Page 10-164, Subarticle 1081-1(E)(3), line 37, replace with the following:

(3) Type of the material in accordance with Articles 1081-1 and 1081-4,

Page 10-165, Subarticle 1081-1(E)(6), line 1, in the first sentence of the first paragraph replace "AASHTO M 237" with "the specifications".

Page 10-165, Subarticle 1081-1(E), Prequalification, line 9-10, delete the second sentence of the last paragraph.

Page 10-165, Subarticle 1081-1(F), Acceptance, line 14, in the first sentence of the first paragraph replace "Type 1" with "Type 3".

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

Page 10-170, Article 1081-3, HOT BITUMEN, line 9, add the following at the end of Section 1081:

1081-4 EPOXY RESIN ADHESIVE FOR BONDING TRAFFIC MARKINGS

(A) General

This section covers epoxy resin adhesive for bonding traffic markers to pavement surfaces.

(B) Classification

The types of epoxies and their uses are as shown below:

Type I – Rapid Setting, High Viscosity, Epoxy Adhesive. This type of adhesive provides rapid adherence to traffic markers to the surface of pavement.

Type II – Standard Setting, High Viscosity, Epoxy Adhesive. This type of adhesive is recommended for adherence of traffic markers to pavement surfaces when rapid set is not required.

Type III – Rapid Setting, Low Viscosity, Water Resistant, Epoxy Adhesive. This type of rapid setting adhesive, due to its low viscosity, is appropriate only for use with embedded traffic markers.

Type IV – Standard Set Epoxy for Blade Deflecting-Type Plowable Markers.

(C) Requirements

Epoxies shall conform to the requirements set forth in AASHTO M 237.

(D) Prequalification

Refer to Subarticle 1081-1(E).

(E) Acceptance

Refer to Subarticle 1081-1(F).

Page 10-173, Article 1084-2, STEEL SHEET PILES, lines 37-38, replace first paragraph with the following:

Steel sheet piles detailed for permanent applications shall be hot rolled and meet ASTM A572 or ASTM A690 unless otherwise required by the plans. Steel sheet piles shall be coated as required by the plans. Galvanized sheet piles shall be coated in accordance with Section 1076. Metallized sheet piles shall be metallized in accordance to the Project Special Provision "Thermal Sprayed Coatings (Metallization)" with an 8 mil, 99.9% aluminum alloy coating and a 0.5 mil seal coating. Any portion of the metallized sheet piling encased in

concrete shall receive a barrier coat. The barrier coat shall be an approved waterborne coating with a low-viscosity which readily absorbs into the pores of the aluminum thermal sprayed coating. The waterborne coating shall be applied at a spreading rate that results in a theoretical 1.5 mil dry film thickness. The manufacturer shall issue a letter of certification that the resin chemistry of the waterborne coating is compatible with the 99.9% aluminum thermal sprayed alloy and suitable for tidal water applications.

Page 10-174, Subarticle 1086-1(B)(1), Epoxy, lines 18-24, replace with the following:

The epoxy shall meet Article 1081-4.

The 2 types of epoxy adhesive which may be used are Type I, Rapid Setting, and Type II, Standard Setting. Use Type II when the pavement temperature is above 60°F or per the manufacturer's recommendations whichever is more stringent. Use Type I when the pavement temperature is between 50°F and 60°F or per the manufacturer's recommendations whichever is more stringent. Epoxy adhesive Type I, Cold Set, may be used to attach temporary pavement markers to the pavement surface when the pavement temperature is between 32°F and 50°F or per the manufacturer's recommendations whichever is more stringent.

Page 10-175, Subarticle 1086-2(E), Epoxy Adhesives, line 27, replace "Section 1081" with "Article 1081-4".

Page 10-177, Subarticle 1086-3(E), Epoxy Adhesives, line 22, replace "Section 1081" with "Article 1081-4".

Page 10-179, Subarticle 1087-4(A), Composition, lines 39-41, replace the third paragraph with the following:

All intermixed and drop-on glass beads shall not contain more than 75 ppm arsenic or 200 ppm lead.

Page 10-180, Subarticle 1087-4(B), Physical Characteristics, line 8, replace the second paragraph with the following:

All intermixed and drop-on glass beads shall comply with NCGS § 136-30.2 and 23 USC § 109(r).

Page 10-181, Subarticle 1087-7(A), Intermixed and Drop-on Glass Beads, line 24, add the following after the first paragraph:

Use X-ray Fluorescence for the normal sampling procedure for intermixed and drop-on beads, without crushing, to check for any levels of arsenic and lead. If any arsenic or lead is detected, the sample shall be crushed and repeat the test using X-ray Fluorescence. If the X-ray Fluorescence test shows more than a LOD of 5 ppm, test the beads using United States Environmental Protection Agency Method 6010B, 6010C or 3052 for no more than 75 ppm arsenic or 200 ppm lead.

Page 10-204, Table 1092-3 MINIMUM COEFFICIENT OF RETROREFLECTION fOR NC GRADE A, replace 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

STANDARD SPECIAL PROVISIONS

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*.

NCDOT GENERAL SEED SPECIFICATION FOR SEED QUALITY
(5-17-11) Z-3

Seed shall be sampled and tested by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory. When said samples are collected, the vendor shall supply an independent laboratory report for each lot to be tested. Results from seed so sampled shall be final. Seed not meeting the specifications shall be rejected by the Department of Transportation and shall not be delivered to North Carolina Department of Transportation warehouses. If seed has been delivered it shall be available for pickup and replacement at the supplier's expense.

Any re-labeling required by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory, that would cause the label to reflect as otherwise specified herein shall be rejected by the North Carolina Department of Transportation.

Seed shall be free from seeds of the noxious weeds Johnsongrass, Balloonvine, Jimsonweed, Witchweed, Itchgrass, Serrated Tussock, Showy Crotalaria, Smooth Crotalaria, Sicklepod, Sandbur, Wild Onion, and Wild Garlic. Seed shall not be labeled with the above weed species on the seed analysis label. Tolerances as applied by the Association of Official Seed Analysts will NOT be allowed for the above noxious weeds except for Wild Onion and Wild Garlic.

Tolerances established by the Association of Official Seed Analysts will generally be recognized. However, for the purpose of figuring pure live seed, the found pure seed and found germination percentages as reported by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory will be used. Allowances, as established by the NCDOT, will be recognized for minimum pure live seed as listed on the following pages.

The specifications for restricted noxious weed seed refers to the number per pound as follows:

Restricted Noxious Weed	Limitations per Lb. Of Seed	Restricted Noxious Weed	Limitations per Lb. of Seed
Blessed Thistle	4 seeds	Cornflower (Ragged Robin)	27 seeds
Cocklebur	4 seeds	Texas Panicum	27 seeds
Spurred Anoda	4 seeds	Bracted Plantain	54 seeds
Velvetleaf	4 seeds	Buckhorn Plantain	54 seeds
Morning-glory	8 seeds	Broadleaf Dock	54 seeds
Corn Cockle	10 seeds	Curly Dock	54 seeds
Wild Radish	12 seeds	Dodder	54 seeds
Purple Nutsedge	27 seeds	Giant Foxtail	54 seeds
Yellow Nutsedge	27 seeds	Horsenettle	54 seeds
Canada Thistle	27 seeds	Quackgrass	54 seeds
Field Bindweed	27 seeds	Wild Mustard	54 seeds
Hedge Bindweed	27 seeds		

Seed of Pensacola Bahiagrass shall not contain more than 7% inert matter, Kentucky Bluegrass, Centipede and Fine or Hard Fescue shall not contain more than 5% inert matter whereas a maximum of 2% inert matter will be allowed on all other kinds of seed. In addition, all seed shall not contain more than 2% other crop seed nor more than 1% total weed seed. The germination rate as tested by the North Carolina Department of Agriculture shall not fall below 70%, which includes both dormant and hard seed. Seed shall be labeled with not more than 7%, 5% or 2% inert matter (according to above specifications), 2% other crop seed and 1% total weed seed.

Exceptions may be made for minimum pure live seed allowances when cases of seed variety shortages are verified. Pure live seed percentages will be applied in a verified shortage situation. Those purchase orders of deficient seed lots will be credited with the percentage that the seed is deficient.

FURTHER SPECIFICATIONS FOR EACH SEED GROUP ARE GIVEN BELOW:

Minimum 85% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 83% pure live seed will not be approved.

Sericea Lespedeza
Oats (seeds)

Minimum 80% pure live seed; maximum 1% total weed seed; maximum 2% total other crop; maximum 144 restricted noxious weed seed per pound. Seed less than 78% pure live seed will not be approved.

Tall Fescue (all approved varieties)
Kobe Lespedeza
Korean Lespedeza
Weeping Lovegrass
Carpetgrass
Bermudagrass
Browntop Millet
German Millet – Strain R
Clover – Red/White/Crimson

Minimum 78% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 76% pure live seed will not be approved.

Common or Sweet Sundangrass

Minimum 76% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 74% pure live seed will not be approved.

Rye (grain; all varieties)
Kentucky Bluegrass (all approved varieties)
Hard Fescue (all approved varieties)
Shrub (bicolor) Lespedeza

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 noxious weed seed per pound. Seed less than 70% pure live seed will not be approved.

Centipedegrass
Japanese Millet

Crownvetch	Reed Canary Grass
Pensacola Bahiagrass	Zoysia
Creeping Red Fescue	

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 5% inert matter; maximum 144 restricted noxious weed seed per pound.

Barnyard Grass	Indiangrass
Big Bluestem	Orchardgrass
Little Bluestem	Switchgrass
Bristly Locust	Yellow Blossom Sweet Clover
Birdsfoot Trefoil	

ERRATA

(1-17-12) (Rev. 04-21-15) 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 3

Page 3-1, after line 15, Article 300-2 Materials, replace "1032-9(F)" with "1032-6(F)".

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 7

Page 7-1, Article 700-3, CONCRETE HAULING EQUIPMENT, line 33, replace "competion" with "completion".

Division 8

Page 8-23, line 10, Article 838-2 Materials, replace "Portland Cement Concrete, Class B" with "Portland Cement Concrete, Class A".

Division 10

Page 10-166, Article 1081-3 Hot Bitumen, replace "Table 1081-16" with "Table 1081-2", replace "Table 1081-17" with "Table 1081-3", and replace "Table 1081-18" with "Table 1081-4".

Division 12

Page 12-7, Table 1205-3, add "FOR THERMOPLASTIC" to the end of the title.
Page 12-8, Subarticle 1205-5(B), line 13, replace "Table 1205-2" with "Table 1205-4".
Page 12-8, Table 1205-4 and 1205-5, replace "THERMOPLASTIC" in the title of these tables with "POLYUREA".
Page 12-9, Subarticle 1205-6(B), line 21, replace "Table 1205-4" with "Table 1205-6".
Page 12-11, Subarticle 1205-8(C), line 25, replace "Table 1205-5" with "Table 1205-7".

Division 15

Page 15-4, Subarticle 1505-3(F) Backfilling, line 26, replace "Subarticle 235-4(C)" with "Subarticle 235-3(C)".
Page 15-6, Subarticle 1510-3(B), after line 21, replace the allowable leakage formula with the following: $\boldsymbol{W = LD\sqrt{P} \div 148{,}000}$
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) (Rev. 10-15-13) 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.gov/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

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

Pender 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 - May 1, 2012 Z-8

I. General
II. Nondiscrimination
III. Nonsegregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Compliance with Governmentwide Suspension and Debarment Requirements
XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

   The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

   Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

   Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.
4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:
   a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.
   b. The contractor will accept as its operating policy the following statement:
      "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."
2. **EEO Officer:** The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.
3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
   a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
   b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
   c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.
   d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
   e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.
   a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.
   b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:
   a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
   b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
   c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
   d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.
6. **Training and Promotion:**
   a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.
   b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).
   c The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
   d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.
7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:
   a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.
   b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
   c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.
   d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.
8. **Reasonable Accommodation for Applicants / Employees with Disabilities:** The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.
9. **Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.
   a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.
   b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.
10. **Assurance Required by 49 CFR 26.13(b):**
   a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.
   b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.
11. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.
   a. The records kept by the contractor shall document the following:
      (1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;
      (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and
      (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. **Minimum wages**

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program,

Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. **Withholding.** The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.
3. **Payrolls and basic records**
   a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

   b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency.

   (2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

   (i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

   (ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

   (iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

   (3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

   (4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

   c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.
4. **Apprentices and trainees**
   a. Apprentices (programs of the USDOL). Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

   The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is

registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL). Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

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

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT). Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. **Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.
6. **Subcontracts.** The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.
7. **Contract termination:** debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.
8. **Compliance with Davis-Bacon and Related Act requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.
9. **Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.
10. **Certification of eligibility.**
    a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
    b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
    c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. **Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
2. **Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10

for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. **Withholding for unpaid wages and liquidated damages.** The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.
4. **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).
   a. The term “perform work with its own organization” refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:
      (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
      (2) the prime contractor remains responsible for the quality of the work of the leased employees;
      (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
      (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.
   b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.
2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.
4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.
5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards
   (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).
3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the

seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

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

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

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

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

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

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. **Instructions for Certification – First Tier Participants:**
   a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.
   b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
   c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.
   d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
   e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).
   f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
   g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.
   h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.
   i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
   j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. **Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:**
   a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:
      (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;
      (2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
      (3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and
      (4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
   b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.
2. **Instructions for Certification - Lower Tier Participants:**
   (Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)
   a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
   b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
   c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
   d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).
   e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
   f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.
   g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.
   h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
   i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
   a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an

employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

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

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.
3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

ON-THE-JOB TRAINING

(10-16-07) (Rev. 4-21-15) Z-10

Description

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

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

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

Minorities and Women

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

Assigning Training Goals

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

Training Classifications

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

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

Concrete Finishers Mechanics

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 NC150101 01/23/2015 NC101

Z-101

Date: January 23, 2015
General Decision Number: NC150101 01/23/2015 NC101
Superseded General Decision Numbers: NC20140101
State: North Carolina
Construction Type: HIGHWAY

COUNTIES:

Alamance	Forsyth	Randolph
Anson	Gaston	Rockingham
Cabarrus	Guilford	Stokes
Chatham	Mecklenburg	Union
Davie	Orange	Yadkin
Durham	Person	

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).
Note: Executive Order (EO) 13658 establishes an hourly minimum wage of $10.10 for 2015 that applies to all contracts subject to the Davis-Bacon Act for which the solicitation is issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.10 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/02/2015
1	01/23/2015

SUNC2014-003 11/14/2014

	Rates	Fringes
BLASTER	18.64	
CARPENTER	13.68	.05
CEMENT MASON/CONCRETE FINISHER	13.93	
ELECTRICIAN		
Electrician	18.79	2.72
Telecommunications Technician	15.19	1.25
IRONWORKER	13.30	
LABORER		
Asphalt Raker and Spreader	12.78	
Asphalt Screed/Jackman	14.50	
Carpenter Tender	12.51	.27
Cement Mason/Concrete Finisher Tender	11.04	
Common or General	10.40	.01
Guardrail/Fence Installer	13.22	
Pipelayer	12.43	
Traffic Signal/Lighting Installer	15.65	.24
PAINTER		
Bridge	23.77	
POWER EQUIPMENT OPERATORS		
Asphalt Broom Tractor	10.00	
Bulldozer Fine	16.13	
Bulldozer Rough	14.36	
Concrete Grinder/Groover	17.92	
Crane Boom Trucks	18.19	
Crane Other	19.83	
Crane Rough/All-Terrain	19.10	
Drill Operator Rock	14.28	
Drill Operator Structure	20.89	
Excavator Fine	16.95	
Excavator Rough	13.63	
Grader/Blade Fine	19.84	
Grader/Blade Rough	15.47	
Loader 2 Cubic Yards or Less	13.31	
Loader Greater Than 2 Cubic Yards	16.19	

	Rates	Fringes
Material Transfer Vehicle (Shuttle Buggy)	15.44	
Mechanic	17.51	
Milling Machine	15.22	
Off-Road Hauler/Water Tanker	11.83	
Oiler/Greaser	14.16	
Pavement Marking Equipment	12.05	
Paver Asphalt	15.97	
Paver Concrete	18.20	
Roller Asphalt Breakdown	12.79	
Roller Asphalt Finish	13.76	
Roller Other	12.08	
Scraper Finish	12.65	
Scraper Rough	11.50	
Slip Form Machine	19.60	
Tack Truck/Distributor Operator	14.82	
TRUCK DRIVER		
GVWR of 26,000 Lbs or Greater	11.45	
GVWR of 26,000 Lbs or Less	13.57	.03

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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

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

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this

weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana.
2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

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

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

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

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

END OF GENERAL DECISION

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For Segmental Retaining Walls
And MSE Retaining Walls:

LANDSCAPE PLANTING

Furnish, deliver, plant bed preparation and the planting of trees, shrubs, ground covers, bedding plants and seedlings at locations shown on the plans or as directed, in accordance to NCDOT Standard Specification 1670.

Basis of Payment:
Landscape Planting will be paid for at the contract "lump sum' unit price.

SBL Landscape Planting…….....Lump Sum
NBL Landscape Planting…….....Lump Sum

SEASONAL LIMITATIONS:

The initial planting and replacement of plants shall be done from October 15 thru March 31. See Standard Specifications Sections 1060 - Landscape Development Materials and 1670 - Planting.

ESTABLISHMENT PERIOD FOR PLANTING:

Establishment Period for Planting: An establishment period will begin after satisfactory installation and acceptance of all of the planting and *will apply only to the woody plant materials: trees, shrubs and ground covers*. All plants must be in an upright healthy condition, planted at the proper depth, mulched areas will be weed free and tidy and any staking or guying that is utilized must be in proper condition prior to beginning the establishment period. During the establishment period the contractor will be responsible for proper care of the plantings in accordance with Section 1670-14 Establishment.

All plants that do not continue to conform to the specifications and quality as approved when they were installed will be unacceptable. The contractor will remove all plants that are determined to be unacceptable from the site within five days of request by the Engineer. Replacements will be installed within the Seasonal Limitations.

Each month during the establishment period a meeting will be held between the Engineer and the Contractor to discuss establishment work required during that period. Additional meetings may be scheduled if deemed necessary by the Engineer. All the required work will be performed in a timely manner and with utmost regard to the safety and convenience of the rest area users. Failure on the part of the contractor to complete the required work in a satisfactory manner will result in the Department having the work performed by others and paid for by the Performance Bond.

All requirements of Section 1670-14 Establishment will also be applicable during the Establishment Period for Planting. The Establishment Period for Planting will last a minimum of

twelve months and extend into the seasonal limitations for planting in order to allow replacement plantings to be installed. See contract times for exact time period and dates.

HERBICIDES

Post-emergence herbicidal treatment and Pre-emergent herbicidal treatment will consist of the following products and rates unless otherwise approved by the Engineer. Follow guidelines noted in the Standard Specification Section 1670.

Herbicide Chart

Herbicide Brand Name	Common Name	Formulation	Oral LD/50 (MG/KG)	Amount of Formulation per Acre	Lbs. of Active Ingredient per Acre	Adjuvants	Remarks
Stump Control							
Garlon	Triclopyr	3 S	2,574	1 gal./1 gal. of water	3 #	1 - 2 qts. Surfactant /acre	Paint or spray, add bullseye dye.
Pre-emergent							
Pennant + *Endurance* + *Gallery*	Metolachlor + Prodiamine + Isoxaben	Liquid (5G) + 65 WDG + 75 DF	3750 + >5,000 + 5,000	2 - 3 pts. (40#) + 2# + 1#	1.95 - 2.93# (2#) + 20 lbs. + 1#	NA	Spring application ; use tank agitation when mixing.
Post-emergent							
Roundup	Glyphosate	4 S	>5,000	2 - 4 qts.	2 - 4 #	2 - 4 qts. Surfactant / 100 gals.	NA

Basis of Payment:
Pre-emergent herbicidal treatment and Post-emergent herbicidal treatment will be measured and paid for in square yards of plant bed measured along the surface of the ground.

Pre-Emergent Herbicidal Treatment for Plant Beds.....Square Yard
Post-Emergent Herbicidal Treatment for Plant Beds..... Square Yard

LANDSCAPE METAL EDGING

General:
The work covered by this item will consist of furnishing and installing the metal landscape edging in locations as directed by the engineer.

Landscape Metal edging construction will conform to Commercial Grade Metal Edging or equivalent. Metal Edging will be 3/16" (4.8mm) hot rolled low carbon steel (ASTM–A-36, ASTM-A-283, ASTM-A-569) with a 6" width. Edging will include a minimum of 4 stakes per 10' length, and prefabricated corners and ends. Stakes will be 16" long. Color will be a black electrostatic powder coated finish resistant to cracking, chipping, corrosion and UVA damage.

Compensation:
The work of installing landscape metal edging as approved by the Engineer, when completed and accepted, will be paid for at the unit price per linear foot for "Landscape Metal Edging". Such price and payment will be full compensation for all work covered by this special provision; including but not limited to furnishing all labor, materials, and equipment and any other incidentals necessary or required to complete the work.

Payment will be made under:
Landscape Metal Edging . . . . . LF

MULCH FOR PLANTING

Mulch for planting shall consist of pine bark mini-nuggets. All mulch and the work associated in placing the mulch during planting shall conform to article 1060-11 of the Standard Specifications.

Mulch for Planting:
Mulch will be pine bark, sized 1" -4", from a single source unless otherwise approved by the Engineer. **Submit sample for approval prior to placement.**
Install mulch to a finished depth of 4 inches, rake and compact to create a uniform finish.

Payment will be made under:

Mulch for planting . . . . . .CY

WATER FOR PLANTING

Water for Planting**:**
Water for Planting will be applied in accordance with the standard specifications. Water for Planting will be furnished as described herein. It is anticipated that installation of the landscape planting and sod, and therefore watering of plant materials and sod, will occur after the site water system has been installed, connected and is functional. Consequently the water for this project will be provided to the contractor through the on site water system. Should a problem occur with the on site water system the contractor will be required to furnish water from an alternative source with no additional compensation to the contractor. All applicable sections of Section 1060, 'Landscape Development Materials' and Section 1670, 'Planting' of the Standard Specifications will apply.

Payment will be made under:

Water for Planting . . . . . .M / G

TREE PROTECTION FENCE

General Requirements and Restrictions
The aesthetics and comfort of the rest area is greatly enhanced by the maturing trees on the site. The Department has dedicated much effort to preserve all trees possible during this project. This will require the utmost care during the construction process since the construction. The contractor will assist the department by educating its employees, subcontractors and any utility companies conducting work in the vicinity, of the efforts and the preservation measures required herein.

Tree Preservation/Protection Fence consist of furnishing, installing, maintaining, and removing wood slat, polyethylene, or polypropylene fence as specified or as directed by the Engineer and in accordance with the special provisions included herein.

Install tree protection fence prior to any demolition. All construction unless approved by the Engineer will occur within the construction fence. *Do not trespass* with vehicles or machinery in the areas indicated for tree preservation. Do not park, refuel, repair or maintain vehicles or

equipment in the tree preservation areas. Do not stockpile materials or store equipment in the tree preservation areas.

Do not release petroleum products, fuels, paints, or lubricants anywhere within this project in the vicinity of the tree preservation areas or in areas that drain into this vicinity. Do not apply or release herbicides, fertilizers or chemicals of any kind that may be toxic to plant life and do not ‘clean out’ concrete trucks in the vicinity of the tree preservation areas, or into areas that drain into this vicinity. Do not burn trash, debris or vegetation in the vicinity of tree preservation areas.

Demolition, ground disturbing activities and construction that occurs within the drip line of the tree(s) or within a radius three times the drip line of the tree(s) will be done with utmost care. Accomplish all grading in such a manner as to avoid standing water or saturated soils around root systems of trees that are to remain. Install erosion control devices in a timely manner to prevent sedimentation of the tree root zone in the tree preservation areas. In areas to be 'cut' by grading or where utility trenches or building footings occur, prevent shredding, tearing or exposing roots by excavating a trench not less than 6” wide and to the maximum depth of the cut up to 24” deep. Hand saw any roots 2" or greater in diameter that are encountered to make a clean smooth cut. If necessary, dig out enough soil to reach an undamaged portion of the root to make the smooth cut. To prevent drying out of roots, immediately cover any exposed root surfaces with 6” of approved mulch or soil until 'finish' construction operations dictate removal. Supplemental irrigation may be necessary during periods of drought or stress. Irrigate as directed and approved by the Engineer.

Branches that protrude into the construction area that interfere with construction operations will be tied back if possible or pruned if not. Follow proper pruning techniques as established in American National Standards Institute ANSI Z133.1 and perform pruning by a professional arborist. Submit description of proposed work along with arborist credentials to the Engineer for approval prior to conducting work.

Violation of any of these tree preservation measures will result in suspension of all work until the violation is resolved or repaired to the satisfaction of the Engineer. Such suspension of work will not be considered justification for additional compensation in accordance with Section 104 of the Standard Specifications or extension of the contract time.

Materials:

Posts will be nominal 2" x 4" or 4" x 4", lengths as required, structural light framing, grade no. 2, southern yellow pine or steel posts will be a minimum of 1 3/8" wide measured parallel to the fence, with a weight of 1.25 lbs/ft of length. Wood posts will be treated with a preservative in accordance with Section 1082-3 of the Standard Specifications.

Fence fabric will be a barricade or safety barrier type highly visible orange polyethylene or polypropylene mesh that is approved by the Engineer. Fabric will be UV stabilized, flexible and inert to most chemicals and acid.

Signs will be fabricated of a durable, weatherproof lightweight material. Signs will have a white background with red lettering. They will be a minimum of 4.5 square feet and clearly display the following message in both English and Spanish:

TREE PROTECTION ZONE

DO NOT ENTER

Submit sample for approval prior to placing.

Installation:
Erect fence to conform to the general contour of the ground. Do not remove existing plant material in order to install fence unless directed by the Engineer.

Set post and maintain in a vertical position. Post may be hand set or set with a post driver. If hand set, thoroughly tamp all backfill material, if power driven, wood posts may be sharpened to a dull point. Remove and replace any post damaged by power driving prior to final acceptance. Cut the tops of all posts at a 30-degree angle. The posts may, at the option of the Contractor, be cut at this angle either before or after the posts are erected. Contractor is responsible for locating all utilities prior to installation of fence posts.

Stretch fence fabric taut and attach to post with appropriate means according to post type utilized. In sections where signs will be located, reinforce top of fabric by weaving a 12 gauge galvanized wire in the fabric and firmly attach to the post at each end of section. Place signs every 100 linear feet with a minimum of one sign for each segment facing in a different direction. Secure sign to fence fabric at all four corners placing near the top of the fence fabric where clearly visible.

Tree Protection Fence Maintenance:
At any time during the duration of the project if the tree protection fence is not in an upright secure position with no gaps and properly signed, work on the project will be suspended wholly until the fence is properly repaired and determined to be in satisfactory condition by the Engineer. Remove tree protection fence, fill post holes, weed/mow and dispose of debris off site as a last item of work on the project.

Compensation:
Tree Protection Fence will be paid for as ‘Tree Protection Fence’ in linear feet as measured along the surface of the installed and accepted work.

Such payment will be full compensation for the work described above including furnishing, installing, and removing; fence post, fence bracing, fence fabric, staples, tie wires; all tools, equipment and any other incidentals necessary to complete the work. Mulch and/or watering required herein will be incidental to the completion of the work.

Payment will be made under.

Tree Protection Fence . . . . . LF

SODDING

Sodding (Tall Fescue/Bluegrass Mixture)

General:
The sodding shall be prepared in accordance with all applicable requirements of Section 1663 of the Standard Specifications and the following provisions:

The Contractor shall obtain a certificate or limited permit issued by The N.C. Department of Agriculture (1-800-206-9333) or (919-733-6932) stating that the sod has been found to be free of injurious plant pests.

Materials:
Only "approved sod" (trade designation) consisting of tall fescue/bluegrass shall be used. The sod, machine cut to the supplier's standard width and length, shall be 5/8 inch (16 mm) minimum thickness, excluding top growth and thatch, at the time of cutting. Before cutting, the sod shall be uniformly mowed at a height of 2 to 3 inches (52-78 mm). Standard sod sections shall be sufficiently strong to support their own weight and retain their size and shape when suspended vertically from a firm grasp on the upper 10% of the section.

APPROVED TALL FESCUE CULTIVARS:			
ADVENTURE	ADVENTURE II	AMIGO	ANTHEM
APACHE	APACHE II	ARID	BROOKSTONE
BONANZA	BONANZA	CHESAPEAKE	CHIEFTAIN
CORONADO	CROSSFIRE II	DEBUTANTE	DUSTER
FALCON	FALCON II	FINELAWN PETITE	FINELAWN
FINELAWN I	GENESIS	GRANDE	GUARDIAN
HOUNDOG	JAGUAR	JAGUAR III	KENTUCKY 31
KITTY HAWK	MONARCH	MONTAUK	MUSTANG
OLYMPIC	PACER	PIXIE	PYRAMID

REBEL	REBEL JR.	REBELL II	RENEGADE
SAFARI	SHENANDOAH	TITAL	TOMAHAWK
TRAILBLAZER	TRIBUTE	WRANGLER	
APPROVED KENTUCKY BLUEGRASS CULTIVARS:			
KENBLUE	GLADE	ADELPHI	BARON
BRISTOL	CHALLENGER	COLUMBIA	FYLKING
MERIT	PLUSH	RAM I	RUGBY
SYDSPORT	TOUCHDOWN	VANTAGE	

Sod shall be delivered on site within 24 hours of being cut and be covered by acceptable means during delivery. A certificate from the sod producer stating the date and time of sod cutting shall accompany the sod when it arrives at the project site.

Soil Preparation:
Remove litter and other debris. Satisfactorily dispose of weeds or other unacceptable growth on the areas to be sodded.

Prior to beginning preparation of the soil to receive sod, all eroded, uneven and rough areas shall be contour graded and/or filled with soil as directed by the Engineer. The soil shall be scarified or otherwise loosened to a depth of not less than 5 inches (130 mm) with a maximum width of 48 inches (1145 mm). Clods shall be broken and the top 2 to 3 inches (52 to 78 mm) of soil shall be worked into an acceptable soil bed by the use of soil pulverizer, drag, or harrow.

The Contractor shall be responsible for taking sufficient soil samples (at least one sample per planting area for testing by The Department of Agriculture, Soil Testing Division, to determine the soil pH. Samples shall be taken in the presence of the Engineer. Results shall be received by the Engineer directly from the North Carolina Department of Agriculture and Consumer Services.

Limestone: Based on these results the Contractor shall add limestone, if required, to bring the soil pH to 5.5 to 6.5 (opt. 6.0). The amount of limestone to be applied will be approved by the Engineer prior to application. Application of limestone will be considered incidental to the work of "Sodding" and no direct payment will be made for such.

Sulfur: Based on these results the Contractor shall add sulfur if the pH is greater than 7.0, to bring the soil pH to 5.5 to 6.5 (opt. 6.0). The amount of sulfur to be applied will be approved by the Engineer prior to application. Application of sulfur will be considered incidental to the work of "Sodding" and no direct payment will be made for such.

After soil preparation, lime or sulfur (if necessary), shall be uniformly distributed by mechanical means using a drop type spreader and thoroughly mixed with the top five inches (130 mm) of the soil by discing, harrowing, or other approved methods.

The area shall then be harrowed, dragged, raked, or prepared by other approved methods which will give a lawn type finish. All trash, debris and stones larger than 1-1/2 inch (38 mm) in diameter or other obstructions that could interfere with the placing of the sod shall also be removed. The finished surface shall be moistened with water prior to placing the sod as directed by the Engineer.

Placement:
Sod handling and placement shall be a continuous process of cutting, transporting and installing including repairing seams and voids. Sod shall always be installed within 48 hours after being cut. Sod shall be watered within 2 hours of installation.

Any sod or portions of sod rejected by the Engineer during the initial placement shall be removed from the project and replaced with acceptable sod immediately. The Contractor shall cease any and all other placement of sod on the project until rejected sod has been replaced.

After sod has been placed, and staked where necessary, according to Section 1663, it shall then be rolled or tamped carefully and firmly by means acceptable to the Engineer to ensure proper soil contact. If rolled, roller shall weigh 150#/ft (224kg/m) of roller width. Use of rubber tired equipment to roll shall not be allowed. Metal staples, 12 inches (305 mm) long unless otherwise approved, shall be made of 11 gauge (3.0 mm diameter) new steel wire so as not to bend when pinned or driven through the sod. Extreme care shall be taken to prevent the installed sod from being torn or displaced. After rolling or tamping the sod, it shall be watered uniformly and thoroughly with a minimum of 1 inch of water (5.6 gallons per square yard (25 liters per square meter) applied immediately after installation of sod. In no case shall the time interval between sod placement and initial watering exceed 2 hours. Water shall be placed to the required quantity through sequential passes to insure proper coverage and to prevent runoff. A minimum of ¼ inch (6.4 mm) should be placed on each pass.

Maintenance:
The Contractor shall be responsible for all watering and other maintenance required to maintain the livability and health of the sod from installation until completion of the 60 day observation period. Additional water shall be applied as needed and as directed by the Engineer to maintain the livability of the sod. Each additional watering event shall be a minimum of 0.5 inch of water (2.8 gallons per square yard (13 liters per square meter)) uniformly applied over the sodded area and may be placed in a series of passes to prevent runoff, with a minimum of ¼ inch (6.4 mm) on each pass.

Any sod or portions of sod rejected by the Engineer after placement but prior to the beginning of the observation period, shall be removed from the project and replaced with acceptable sod. Satisfactory replacement of sod shall begin within 10 days of notification. Failure to replace and repair damaged or dead sod as directed by the Engineer may result in sanctions under Article 108-7 or Article 108-8.

Observation Period:
The Contractor shall maintain responsibility for the sod for a 60 day observation period beginning upon the satisfactory completion and acceptance of all work required in the plans or as directed by the Engineer. The Contractor shall guarantee the sod under the payment and performance bond, refer to Article 109-10 in the standard specifications.

Upon satisfactory completion of work and acceptance by the Engineer, the 60 day observation period shall begin.

The Contractor shall be responsible for all watering and other maintenance required to maintain the livability of the sod from installation until final acceptance including monitoring the sod to ensure all watering and other maintenance is performed as required.

After the first 30 days of the 60 day observation period, the Contractor and Engineer shall meet to review the project and identify dead or damaged sod to be replaced. The Contractor, at no additional expense to the Department, shall satisfactorily replace any sod that is not in a living and healthy condition as determined by the Engineer. Replacement sod shall be furnished and installed in accordance with the same requirements as for initial sodding operation, except that the amounts of limestone, sulfur, and water may be readjusted as directed by the Engineer. Satisfactory replacement of sod shall begin within 10 days of notification. Failure to replace and repair damaged or dead sod as directed by the Engineer may result in sanctions under Article 108-7 or Article 108-8. Upon completion and acceptance of the sod repairs, the remaining 30 days of the observation period shall begin.

Acceptance:
At the end of the 60 day observation period, the sod furnished and installed under this contract must be in a living and healthy condition, as determined by the Engineer.

Acceptance of sod will be at the end of the 60 day observation period.

Sodding shall be inspected by the Area Roadside Environmental Engineer to begin and end the 60 day observation period. The sod shall be weed free at time of final acceptance.

Payment:

Payment and measurement to be in accordance with Section 1663 of the Standard Specifications. Payment will be made under:

Sodding . . . . . Square Yards

STABILIZATION REQUIREMENTS:

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

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

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

SEEDING AND MULCHING:

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

BLUE GRASS AND FESCUE MIX SHALL REPLICATE WHAT IS USED IN THE SOD OR AS APPROVED BY THE ENGINEER.

Shoulder and Median Areas

August 1 - June 1		**May 1 - September 1**	
20#	Kentucky Bluegrass	20#	Kentucky Bluegrass
75#	Hard Fescue	75#	Hard Fescue
25#	Rye Grain	10#	German or Browntop Millet
500#	Fertilizer	500#	Fertilizer
4000#	Limestone	4000#	Limestone

Areas Beyond the Mowing Pattern, Waste and Borrow Areas:

August 1 - June 1		**May 1 - September 1**	
100#	Tall Fescue	100#	Tall Fescue
15#	Kentucky Bluegrass	15#	Kentucky Bluegrass
30#	Hard Fescue	30#	Hard Fescue
25#	Rye Grain	10#	German or Browntop Millet
500#	Fertilizer	500#	Fertilizer
4000#	Limestone	4000#	Limestone

Approved Tall Fescue Cultivars

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

Corona	Hemi	Regiment II	Tuxedo RZ
Coyote	Honky Tonk	Regenerate	Ultimate
Darlington	Hot Rod	Rendition	Venture
Davinci	Hunter	Rhambler 2 SRP	Umbrella
Desire	Inferno	Rembrandt	Van Gogh
Dominion	Innovator	Reunion	Watchdog
Dynamic	Integrity	Riverside	Wolfpack II
Dynasty	Jaguar 3	RNP	Xtremegreen
Endeavor	Jamboree	Rocket	

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

Approved Kentucky Bluegrass Cultivars:

4-Season	Blue Velvet	Gladstone	Quantum Leap
Alexa II	Blueberry	Granite	Rambo
America	Boomerang	Hampton	Rhapsody
Apollo	Brilliant	Harmonie	Rhythm
Arcadia	Cabernet	Impact	Rita
Aries	Champagne	Jefferson	Royce
Armada	Champlain	Juliet	Rubicon
Arrow	Chicago II	Jump Start	Rugby II
Arrowhead	Corsair	Keeneland	Shiraz
Aura	Courtyard	Langara	Showcase
Avid	Delight	Liberator	Skye
Award	Diva	Madison	Solar Eclipse
Awesome	Dynamo	Mercury	Sonoma
Bandera	Eagleton	Midnight	Sorbonne
Barduke	Emblem	Midnight II	Starburst
Barnique	Empire	Moon Shadow	Sudden Impact
Baroness	Envicta	Moonlight SLT	Total Eclipse
Barrister	Everest	Mystere	Touche
Barvette HGT	Everglade	Nu Destiny	Tsunami
Bedazzled	Excursion	NuChicago	Unique
Belissimo	Freedom II	NuGlade	Valor
Bewitched	Freedom III	Odyssey	Voyager II
Beyond	Front Page	Perfection	Washington
Blacksburg II	Futurity	Pinot	Zinfandel
Blackstone	Gaelic	Princeton 105	
Blue Note	Ginney II	Prosperity	

Approved Hard Fescue Cultivars:

Aurora II	Eureka II	Oxford	Scaldis II
Aurora Gold	Firefly	Reliant II	Spartan II
Berkshire	Granite	Reliant IV	Stonehenge
Bighorn GT	Heron	Rescue 911	
Chariot	Nordic	Rhino	

On cut and fill slopes 2:1 or steeper add 20# Sericea Lespedeza January 1 - December 31.

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

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

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

SUPPLEMENTAL SEEDING:
The kinds of seed and proportions shall be the same as specified for *Seeding and Mulching*, and the rate of application may vary from 25# to 75# per acre. The actual rate per acre will be determined prior to the time of topdressing and the Contractor will be notified in writing of the rate per acre, total quantity needed, and areas on which to apply the supplemental seed. Minimum tillage equipment, consisting of a sod seeder shall be used for incorporating seed into the soil as to prevent disturbance of existing vegetation. A clodbuster (ball and chain) may be used where degree of slope prevents the use of a sod seeder.

Payment:
Payment and measurement for 'Seeding and Mulching' will be by the acre in accordance with Section 1660 of the Standard Specifications.

Payment will be made under:

Seeding and Mulching . . . . . Acre

IRRIGATION (ADD ALTERNATE)

General**:**
The Contractor shall provide all materials and labor to install an Irrigation system utilizing spray heads and drip emitters. The extent of the proposed irrigation is limited to the disturbed and re-landscaped areas as proposed in the plans. The Department requests designated turf areas to receive spray head irrigation and planted / mulched areas that are to receive drip emitter irrigation. The contractor shall provide a Design Plan showing piping, spray head and emitter locations, selecting a back flow preventer, controls, valves and components to operate the system by connecting to an onsite water supply line water supply, as well as shop drawings and specifications for the pipe, valves, heads/emitters, controller(s), and all irrigation components including appropriate housing for all the components he proposes to furnish, for approval by the Engineer.

The Contractor shall provide all labor, equipment, and materials for the installation of the irrigation system including but not limited to layout, trenching, backfilling, providing and installing pipe, valves, actuators, filters, pressure regulators, pump (coordinate with cistern contractor), drip tubing, drains, controller, wiring, boring sleeves.

The Contractor shall be familiar with all state and local regulations and ordinances concerning irrigation systems and obtain permits that are necessary for the installation of the irrigation system.

The Contractor shall lay out work as accurately as possible in accordance with the irrigation Design plan that is to be designed by the contractor and approved by the engineer.

The Contractor shall furnish a transferable certificate of warranty registration and a guarantee of work and materials for a one-year period from date of final acceptance of the system. Final payment for the system shall not be made unless this certification is presented to the Engineer.

The Contractor shall conduct his operations in such a manner to prevent injury to trees, shrubs, and turf or other types of vegetation that are to remain growing. When any such injuries to existing trees or shrubs occur, broken branches shall be removed and rough edges of scarred areas shaped and made smooth in accordance with generally accepted horticultural practice. All scarred areas and cut surfaces more than one (1) inch in diameter shall then be thoroughly covered with tree paint. Any new plants that are damaged to such an extent as to destroy their value for landscape purposes shall be removed and replaced in kind by the Contractor at no cost to the Department when so directed by the Engineer.

The Contractor shall be responsible for full and complete coverage of irrigated area and shall

make any necessary minor adjustments or as directed by the Engineer at no additional costs. The Contractor shall prepare a full size "as-built" drawings which shall include locations of all parts of the irrigation system installed by the Contractor. This may include, but is not limited to all system controllers, valves (automatic and manual), pipe, bores, drip tube, wires, wire splices, and any deviation from the contract bid documents. Two (2) copies of the "as-built" drawing shall be supplied to the Department of Transportation.

The Contractor shall be responsible for training personnel in the operation and maintenance of the irrigation system.

The Contractor shall balance and adjust the various components of the irrigation system as the overall operation of the system is most efficient. This includes synchronization of the controllers, adjustments to pressure valves, and individual station adjustments on the controllers.

Upon completion of the irrigation system installation, the Contractor shall schedule a final inspection with the Engineer. Final acceptance of the irrigation system shall take place upon approval of the Engineer that satisfactory installation is complete.

System Piping:
The installation of the system piping shall be in accordance with the manufacturer's instructions and shall proceed from the point of connection of supply for the system.

All irrigation pipes shall be installed in accordance with manufacturer's recommendations. Pipe and fittings shall be thoroughly cleaned of dirt, dust, and moisture before application of required solvent or lubricant. All connections between plastic pipe and metal valves or steel pipe shall be made using plastic male adapters. All threads shall be sealed with teflon thread sealing tape.

All automatic remote control valves with PVC ball valves; installed on the inlet side, shall be installed in 12 inch meter boxes to provide for accessibility for maintenance operations. Meter boxes shall be submitted and approved by the engineer. Valve boxes shall be mounted with lids at the finish grade level. The Contractor shall install all valves in locations that will not conflict with plant locations in the plant beds.

If necessary, any PVC water pipe shall be installed in accordance with the applicable irrigation provisions herein, as shown on the irrigation plans, and/or as directed by the Engineer.

During the progress of the work and until the completion and final acceptance, the pipelines and their appurtenances shall be kept clean throughout. Any obstructions or deposits shall be removed. When work is not in progress, open ends of pipe, fittings, and valves shall be securely closed so that water, earth, or other foreign substances cannot enter.
If, at any time before completion of the contract, any broken pipe or any defects are found in the lines or in any of their fittings or appurtenances, they shall be replaced. All pipe, fittings, and appurtenances shall be carefully examined for defects before placing, and any found defective

shall not be used.

The Contractor is herein forewarned as to the possibility of having to vary the depth of pipeline installation to achieve minimum cover specified (whether existing pipelines, conduits, cables, mains, etc. are shown on the plans or not). Pipe and accessories shall be carefully lowered into the trench with suitable equipment. Under no circumstances shall any of the water main materials be dropped or dumped into the trench. All irrigation system main lines shall be installed at a minimum of 18 inches and a maximum of 24 inches below the soil grade. All irrigation system zone lines shall be installed at a minimum of 12 inches and a maximum of 18 inches below the soil grade.

All backfill material shall be free of rock, stones, lumps, or debris. Backfilled trenches shall be compacted to a degree comparable to the adjacent undisturbed material. Trenches shall be tamped mechanically. All disturbed areas shall be dressed off to finish grade. The Contractor shall be responsible for settling of the irrigation trenches for a period of one (1) year from date of final acceptance and refill trenches as needed.

PVC pipe shall be the sized according to industry standards and approved by the Engineer.

All solvent weld fittings shall have a minimum Schedule 40 PVC rating.

All main line pipe and system zone line pipe shall be PR 200 PVC pipe.

Wiring:
Automatic control wiring shall be installed in a common trench with the system piping where feasible. All wiring shall be installed at least 12 inches below finished grade and to the side and below the irrigation piping. The Contractor shall provide looped slack at the valve locations and snake wires in the trench to allow for linear contraction of the wires. Wiring shall be bundled and tied or taped at 10 ft. intervals. The following shall also apply:

> All 26.5 VAC control wiring shall be #14 AG, single strand, copper wire with polyethylene UF installation rated for 300 VAC minimum unless otherwise noted. Common wires from controllers shall be white in color while hot wires shall be red in color.
>
> Control wire splices shall be allowed only in runs of 500 feet or more. Splices shall be kept to a minimum and shall be made with approved materials. Concentrations of splices, where necessary, shall be installed in Ametek valve boxes or approved equal.
> All 26.5 VAC control wire shall be installed within conduit whenever the wire is passing through sleeves.

Drip Irrigation Emitters:
All drip irrigation emitters shall be of the size, type, and model numbers as indicated by the irrigation drawings and notes. Spacing of the emitters on this project shall not exceed the manufacturer's maximum recommended spacing. The location of all emitters shall be as shown on the irrigation plans.

½" & ¼" Tubing:
All drip irrigation ½" and ¼" tubing shall be the size and type as indicated on the irrigation plans and shall be located as shown in the details. The ½" tubing shall be Rainbird/Hunter/Toro Xeri-Tube or approved equal and the ¼" tubing shall be Rainbird/Hunter/Toro ¼" Vinyl Distribution Tubing or an approved equal. All drip irrigation tubing shall meet the manufacturers recommended specifications.

Ball and Remote Control Valves, Filters, and Pressure Regulators:
The ball and remote control valves, filters, and pressure regulators shall be a part of the Control Zone Kit ¾". The kit contains a ball valve, a remote control valve, a in-line filter, a PSI-M30X pressure regulator, and two ¾" schedule 80 nipples. The Control Zone Kit ¾" shall be installed to manufacturers specifications. The location of all valves, filters, and pressure regulators shall be as shown on the irrigation plans.

Dual Program Hybrid Controller:
The irrigation system controller shall be a Dual Program Controller with a built in surge protector capable of fully automatic or manual operation of the system. It shall be housed in a weatherproof, key-lock cabinet for outdoor installation.

Backflow Preventer:
The backflow preventer shall be installed on the irrigation system main line pipe within 10 (TEN) feet of the well head or service line connection. It shall 1 inch meeting all NCDOT standards and submitted for Engineer approval.

Testing:
Upon completion of the irrigation system, the entire system shall be tested for proper operation. All air will be flushed from the system and the Contractor will check all components for proper operation.

The Contractor shall perform pressure and leakage testing of irrigation lines. The Contractor shall notify the Engineer two (2) days in advance of testing. Testing shall be performed in the presence of the Engineer or his representative. All main line piping shall be flushed of air and placed under the available static pressure or the design pressure, whichever is greater, for a period of six (6) hours. The system piping shall be isolated from the source of supply pressure for the duration of the test. The pressure in the system piping shall be noted every hour and if an excessive pressure drop is noted, the reason(s) shall be determined and repairs effected.

Zone lateral lines shall be inspected while a particular irrigation zone is operating. Each emitter shall be inspected for leaks as will the route of the installed lateral piping.

Basis of Payment:
Basis of payment for this contract will be the lump sum price for the installation of the irrigation system. The above prices and payments will be full compensation for all work covered by this section.

Payment will be made under:

Irrigation . . . .Lump Sum

3" PVC SLEEVE

General:
The work covered by the provision shall consist of furnishing and installing duct pipe as shown on the plans (or as directed by the Engineer) under sidewalks and patio pavement before they are poured (open cut). Place sleeve at a depth of 2' below finished grade to extend 18" beyond pavement on each side. Mark the location of the sleeve by driving a rebar stake in line at each end (1" exposed above finished grade).

Material**:**
The duct shall be rigid (Polyvinyl Chloride) heavy wall, UL approved for underground use without concrete encasement per UL 651"Rigid Non-Metallic Conduit or Encasement".

Installation**:**
Excavate, place encasement pipe and backfill so that encasement is in line with piping. Backfill shall be compacted to 95% where beneath walks, drives or other concrete pads.

Method of Measurement and Basis of Payment:
Measurement and payment for PVC Duct shall be at the contract unit price per linear foot for "3"

PVC Sleeve" as installed, and will be full compensation for all work covered by this section.

P***ayment will be made under:***

3" PVC Sleeve…….…….……LF

PICNIC TABLE

General:
The work covered by this section consists of furnishing and constructing as shown on the drawings and herein specified, picnic tables on concrete slabs including all labor, materials, services and incidentals required to complete the work.

Picnic Table (Terrazzo and Steel):

General:
Picnic tables shall consist of furnishing and installing tables on concrete slabs, in accordance with the sizes, dimensions and details shown on the plans and as described herein.

A picnic table shall include table site preparation, grading, a welded tubular steel frame with a terrazzo table top and aluminum seats for benches, all hardware required for assembly and other incidentals as necessary for a complete installation in accordance with detail drawings. The concrete footing and concrete floor slab shall be part of the vending building construction.

The Engineer reserves the right to inspect the frames and tops at the place of manufacture in accordance with Article 106-6 of the Standard Specifications.

The locations of all tables are tentatively shown on the site plan; however, exact locations, elevation, orientation, etc., will be determined on the site by the Engineer.

Submittal:
Submit color chart (four copies) on epoxy glaze coatings for color selection by the Engineer for table bench seats and steel frames.

Materials and Construction

Table Site Preparation:
After table sites are located and staked by the Engineer, the Contractor shall perform grading necessary for construction; maintain positive drainage away from the slab and concrete base of the picnic table.

Grading:
See grading plans or refer to vending building construction plans.

Concrete and Steel:
Class "B" concrete shall be used in all table footings and floor slabs. All concrete and all structural and reinforcing steel shall comply with applicable portions of Section 825 and 1000 "Incidental Concrete Construction - General"; Section 1070 "Reinforcing Steel"; and Section

1072 "Structural Steel"; of the Standard Specifications.

Benches:
Aluminum seats for picnic tables shall be nominal size 2" x 10", aluminum.

Terrazzo Tops:
Terrazzo tabletops shall conform to the following specifications:

1. Scope. Provide pre-cast terrazzo tops for picnic tables. Include inserts and bolts as indicated on drawings.

2. Materials.

   A. Portland Cement. Portland Cement shall comply with all applicable requirements of Section 1024, "Materials for Portland Cement Concrete," of the Standard Specifications.

   B. Sand. Sand shall be clean and free from organic matter and shall meet the requirements of 4S mortar sand, from Table 1005-1, "Aggregate Gradation," of the Standard Specifications.

   C. Marble Chips. Of size, colors and kinds required by the color plate as specified herein; chips to have abrasive hardness not less than 13 as determined by method described in National Bureau of Standard BMS Report No. 98.

   D. Terrazzo Sealing Solution. Shall produce a waterproof film on surface; seal moisture in terrazzo and shall not be damaged by cleaning solution; shall not yellow terrazzo or leave tacky finish on surface after buffing.

   E. Terrazzo Cleaning Solution. A neutral chemical cleaner that will not change color of terrazzo or damage it in any way.

3. Terrazzo Composition and Colors.

   A. Terrazzo tops shall be of colors and composition as shown in Terrazzo Plant Catalog of the National Terrazzo and Mosaic Association, Inc. Mix terrazzo in accordance with formulas and specifications for Plate 129.

4. Production of Tops.

   A. Mix chips so that the finish surface has 80 percent aggregate showing.

   B. Perform initial and final grinding with abrasive grit stone of proper size to

obtain the finish specified. After curing terrazzo topping, by keeping damp for 6 days (or less if it has set enough to grind without loosening of chips), grind surfaces with electric machine. After initial grinding or rubbing, grout surfaces with neat Portland cement paste of creamy consistency, filling all voids; use Portland Cement and coloring corresponding to existing topping for grouting. Let grout remain on surfaces until final grinding, but not less than 2 days.

C. Final grinding shall produce surface of same color and texture as Plate 129 as specified in Item 3 above. Surfaces shall be smooth and free from imperfections. In no case shall terrazzo show a wave exceeding 1/16" when tested with straight edge.

5. Cleaning and Sealing Terrazzo.

A. After final grinding, apply cleaning solution to terrazzo in accordance with the manufacturer's directions. After surfaces are dry, wash and rinse terrazzo and apply a coat of sealing solution. Buff terrazzo with electric machine and leave in clean finished condition.

6. Installation of Table Tops.

A. Bolt in place, without binding.

B. Clean tops of grease, dirt, etc., and apply two (2) additional coats of sealing solution, buff with electric machine and leave in clean finished condition.

C. Leave top in good condition. No chipped tops or edges and cracked slabs will be accepted.

7. Painting of Table, Steel Frame.
Exterior Steel.

1 coat factory priming exterior rust resistant metal primer.
2 coats of epoxy glaze coating, gloss finish.

NOTE: Painter shall spot check a small area with a second coat to determine if primer "lifts off". If it does, obtain from the paint factory a second coater that will not lift from the priming coat actually used by the factory.

Compensation:
The work of furnishing and installing picnic tables, when completed and accepted, will be paid for at the contract unit price for each "Picnic Table, Terrazzo and Steel", such unit price to be considered full payment for each table, including but not limited to, all labor, materials, and any other incidentals necessary or required to complete the work.

Payment will be made under:

Picnic Table. . . . . EA

PARK BENCH

General:
This special provision consists of furnishing and installing a 5' ribbed metal bench as noted on the plans and as described herein. The acceptable model is the Lamplighter Flat Bench, Strapped Metal Bench, or Slatted Metal Bench distributed by (but not limited to) Keystone Ridge, Belson, Huntco, and Park. The color shall be matte black or bronze. Submit color chart for selection.

Provide 'cut sheet' for approval.

Materials:
The fabricated slatted park bench shall be fully-welded commercial grade steel and cast aluminum legs. The design bench has steel slat/ribbon seat, comes backless, and has durable polyester powder coated finish. Concrete base pad is quantified as 4" Concrete sidewalk (see 4" Concrete Sidewalk spec).

Installation:
The bench shall be set upon 4" concrete pad adjoin the sidewalk at the locations noted on the plans. The park bench to anchored to the concrete pad with galvanized expansion hardware or as instructed by manufacturer.

Drop-in Anchor Installation: Drill ¼ inch hole into pre-marked holes on the concrete surface with a carbide tipped masonry drill bit conforming to ANSI B94, 12-77, matching the bit size with the outside diameter of the drop-in anchor being used. Make sure hole depth exceeds minimum embedment. Set and attached anchor to bench foot. Confirm final installation with NCDOT Engineer.

Compensation:
Park bench will be paid for as 5' 'Park Bench' per each installed, completed and accepted. Such price and payment will be full compensation for all work covered by this special provision; including but not limited to furnishing all labor, materials, equipment and any other incidentals necessary or required to complete the work.

Payment will be made under:

PARK BENCH. . . . . EA

FLAG POLE

General:
The work covered by this section consists of furnishing and installing 40' tapered aluminum flagpole, with dual flag set, at location as shown on the drawings.

Materials:
The flagpoles shall be 40' exposed height (44' overall length) standard cone tapered aluminum flagpoles as manufactured by American Flagpole or equal. Provide a ball bearing revolving truck assembly with a 8" gold anodized ball finial. Provide an aluminum flash collar, dual flag set, and all components recommended by the manufacturer for a ground-set installation.

Installation:
Follow the manufacturer's recommendations concerning ground set mounting for a 80 M.P.H. design a wind load.

Compensation:
The Tapered Aluminum Flagpoles will be paid for at the contract unit price for each. Such payment will be full compensation for all work covered by this section including, but not limited to, furnishing and installing the flagpole, flash collar, halyard, cleats, flag snaps, and all parts recommended by the manufacturer for a ground-set installation; and all labor, materials and equipment necessary to complete the work.

Payment will be made under:

Flag Pole . . . . . Each

9" CONCRETE BORDER - CLASS B CONCRETE

General:
The work covered by this item shall consist of furnishing and constructing 9" wide concrete border in coordination with the installation of the permeable pavers and accordance with the dimensions as shown in the drawings and as described herein.

The 9” concrete border construction shall conform to all applicable requirements of Section 848 (Sidewalks and Driveways) of the Standard Specifications.

Method of Measurement:
The quantity of 9” concrete border to be paid for shall be the actual number of square yards of 9” concrete border, measured complete in place and accepted.

Basis of Payment:
The quantity measures as provided above, shall be paid for at the contract unit price per square yard for "9” Concrete Border " complete in place and accepted, which price and payment shall be full compensation for furnishing and installing, and for all labor, equipment, tools and incidentals necessary to complete the work.

Payment will be made under:

9" Concrete Border . . . . . SY

4” CONCRETE SIDEWALKS

General:
The sidewalks indicated on the plans shall be 4" concrete. The sidewalks and patio shall be as specified in Section 848 and as shown on the plans.

Where it is noted on the plans where 4” concrete sidewalk is to meet and/or match existing concrete sidewalk. Install sidewalk according plans, details and specifications. The existing sidewalk shall have a clean **saw cut** edge provided, at the match locations and/or where concrete paving is removed.

Scoring patterns and joints shall be as shown on plans or as directed by the Engineer in field, and as specified in Section 825-10. Control joints indicated on plans shall be as specified for

Grooved Contraction Joints.

Method of Measurement and Basis of Payment:
The quantities of sidewalk to be paid for will be the actual number of square yards measured along the surface which have been completed and accepted. This quantity of concrete includes all noted 4” sidewalk and the concrete banding associated with installation of decorative concrete pavers. The quantity of sidewalk measured as indicated above, will be paid for at the contract unit price per square yard for "4" Concrete Sidewalk". There will be no additional compensation for control and expansion joints.

Payment will be made under:

4" Concrete Sidewalk . . . . . SY

PERMEABLE PAVERS

General:
The work covered by this section shall consist of furnishing and installing the Permeable Concrete Pavers, and all associated items, in accordance with dimensions and finishes as shown on the plans, the details, and as described herein.

The placement of the permeable pavers shall include, but is not limited to, the excavation and final level and grading of the earth base, the placement leveling and compaction of all stone sub-base material, the installation of geotextile fabric where deemed necessary, the placement leveling and compaction of the concrete pavers and joint aggregate, and the completion, cleaning and protection of the permeable paver system until the completion of all construction activities.

All completed sections of permeable pavers shall be covered or protected from any construction debris, soil, or degradation of the permeability of the surface until site construction is completed or final acceptance of the staged construction is approved by the Engineer.

Materials and Construction:
Paver shall be Pavestone “Eco-Venetian Stone”, Belgard “Subterra”, Unilock “Eco Priora” or approved equal – 3 1/8” Thick , with varying width and lengths layed in defined patterns as delineated on the plans. Specified Color:

There are three types of of pavers used within this project:
The primary permeable paver is a 12” x 12” fieldstone blend of gray and earthtones. A second paver, located in the SBL facility, closely matches the first paver, but is set in a radial pattern and shall be darker blend of gray and earthtones (than the primary paver). The third type of paver,

used within the NBL facility, is a 4” x 8” brick (concrete) paver in a color that closely matches the brick used on the building(s).The concrete edging and storm water drainage system (separate pay items) are instrumental in the placement of the permeable pavers and shall be installed in coordination with the pavers and as noted on the plans and details. Edging shall be placed in line and plumb with proposed grades and sidewalks.

See further ‘material’ notes below defining aggregate for sub(base) and filler.

Submittals:A. Manufacturer’s drawing and details: Indicate perimeter conditions, junction with other materials, expansion and control joints, paver installation, and details. Indicate layout, pattern, and relationship of paving joints to fixtures and project formed details.

B. Minimum 3 lb (2 kg) samples of sub-base, base and bedding aggregate materials.

C. Sieve analysis of aggregates for sub-base, base and bedding materials per ASTM C 136.

D. Soils report indicating density test reports, classification, and infiltration rate measured on-site under compacted conditions, and suitability for the intended project.

E. Permeable concrete pavers:

1. Manufacturer’s product catalog sheets with specifications.

2. Four representative full-size samples of each paver type, thickness, color, and finish. Submit samples indicating the range of color expected in the finished installation.

3. Accepted samples become the standard of acceptance for the work of this Section.

4. Manufacturer’s written product specifications.

Paver Installation Subcontractor:

1. A copy of Subcontractor’s current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

2. Job references from projects of a similar size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.

3. Written Method Statement and Quality Control Plan that describes material staging and flow, paving direction and installation procedures, including representative reporting forms that ensure conformance to the project specifications.

Quality Assurance:A. Paver Installation Subcontractor Qualifications:

1. Utilize an installer having successfully completed concrete paver installation similar in design, material and extent indicated on this project.

2. Utilize an installer holding a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

B. Regulatory Requirements and Approvals: Specify applicable licensing, bonding or other requirements of regulatory agencies.

C. Review the manufacturers’ quality control plan, paver installation subcontractor’s Method

Statement and Quality Control Plan with pre-construction meeting of representatives from the manufacturer, paver installation subcontractor, general contractor, engineer and/or owner's representative.

Mock-Ups:

1. Install a 10 ft x 10 ft (3 x 3 m) paver area, at each location, with a good representation of the variation of pavers.

2. Use this area to determine surcharge of the bedding layer, joint sizes, lines, pattern(s), color(s) comparable texture, edge treatment, and border of the job.

3. This area will be used as the standard by which the work will be judged.

4. Subject to acceptance by owner, mock-up may be retained as part of finished work.

5. If mock-up is not retained, remove and properly dispose of mock-up.

Delivery, Storage, and Handling:

A. General: Comply with all product requirement sections.

B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged container packaging with identification tags intact on each paver bundle.

1. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.

2. Deliver concrete pavers to the site in steel banded, plastic banded, or plastic wrapped cubes capable of transfer by forklift or clamp lift.

3. Unload pavers at job site in such a manner that no damage occurs to the product or existing construction

D Storage and Protection: Store materials in protected area such that they are kept free from mud, dirt, and other foreign materials.

Environmental Requirements:

A. Do not install in rain or snow.

B. Do not install frozen bedding materials.

Maintenance:

A. Extra materials: Provide 100 sq feet of extra material (representative sample of pavers) for use by owner for maintenance and repair.

B. Pavers shall be from the same production run as installed materials.

Crushed Stone Filler, Bedding, Base and Sub-base:

A. Crushed stone with 90% fractured faces, LA Abrasion < 40 per ASTM C 131, minimum CBR of 80% per ASTM D 1883.

B. Do not use rounded river gravel.

C. All stone materials shall be washed with less than 1% passing the No. 200 sieve.

D. Joint/opening filler, bedding, base and sub-base: conforming to ASTM D 448 gradation as shown in Tables 1, 2 and 3 below:

Note: No. 89 or finer gradation may be used to fill permeable pavers with narrow joints.

Table 1

ASTM No. 8 Grading Requirements

Bedding and Joint/Opening Filler

Sieve Size Percent Passing

12.5 mm (1/2 in.) 100

9.5 mm (3/8 in.) 85 to 100

4.75 mm (No. 4) 10 to 30

2.36 mm (No. 8) 0 to 10

1.16 mm (No. 16) 0 to 5

Table 2

ASTM No. 57 Base

Grading Requirements

Sieve Size Percent Passing

37.5 mm (1 1/2 in.) 100

25 mm (1 in.) 95 to 100

12.5 mm (1/2 in.) 25 to 60

4.75 mm (No. 4) 0 to 10

2.36 mm (No. 8) 0 to 5

Table 3

Grading Requirement for ASTM No. 2 Sub-base

Sieve Size Percent Passing

75 mm (3 in.) 100

63 mm (2 1/2 in.) 90 to 100

50 mm (2 in.) 35 to 70

37.5 mm (1 1/2 in.) 0 to 15

19 mm (3/4 in.) 0 to 5

E. Gradation criteria for the bedding and base:

Note: D_x is the particle size at which x percent of the particles are finer. For example, D15 is the particle size of the aggregate for which 15% of the particles are smaller and 85% are larger.

1. D_{15} base stone /D_{50} bedding stone < 5.

2. D_{50} base stone/D_{50} bedding stone > 2.

Accessories:

A. Provide accessory materials as follows:

Note: Curbs will typically be cast-in-place concrete or precast set in concrete haunches. Concrete curbs may be specified in another Section. Do not use plastic edging with steel spikes to restrain the paving units.

Edge Restraints

9" Concrete Border or Metal landscape Edging (as defined in the plans, details or specifications).

2. Geotextile Fabric:

Note: See ICPI publication, Permeable Interlocking Concrete Pavements for guidance on geotextile selection. Geotextile use may be necessary if found to be instrumental in the construction of the permeable paver systems due to manufacturer specification or soil and aggregate tests.

Execution:

Examination:

The elevations and surface tolerance of the soil subgrade determine the final surface elevations of concrete pavers. The paver installation contractor cannot correct deficiencies excavation and grading of the soil subgrade with additional bedding materials. Therefore, the surface elevations of the soil subgrade should be checked and accepted by the General Contractor or designated party, with written certification presented to the paver installation subcontractor prior to starting work.

A. Acceptance of Site Verification of Conditions:

1. General Contractor shall inspect, accept and certify in writing to the paver installation subcontractor that site conditions meet specifications for the following items prior to installation of interlocking concrete pavers.

Compaction of the soil subgrade should be determined by the project engineer. If the soil subgrade requires compaction, compact to a minimum of 95% standard Proctor density per ASTM C 698. Compacted soil density and moisture should be checked in the field with a nuclear density gauge or other test methods for compliance to specifications. Stabilization of the soil and/or base material may be necessary with weak or continually saturated soils, or when subject to high wheel loads. Compaction will reduce the permeability of soils. If soil compaction is necessary, reduced infiltration may require drain pipes within the open-graded sub base to

conform to local storm drainage requirements.

a. Verify that subgrade preparation, compacted density and elevations conform to specified requirements.

b. Provide written density test results for soil subgrade to the Owner, General Contractor and paver installation subcontractor.

c. Verify location, type, and elevations of edge restraints, [concrete collars around] utility structures, and drainage pipes and inlets.

2. Do not proceed with installation of bedding and interlocking concrete pavers until subgrade soil conditions are corrected by the General Contractor or designated subcontractor.

Preparation:

A. Verify that the soil subgrade is free from standing water.

B. Stockpile joint/opening filler, base and sub-base materials such that they are free from standing water, uniformly graded, free of any organic material or sediment, debris, and ready for placement.

C. Edge Restraint Preparation:

Install edge restraints per the drawings [at the indicated elevations].

Installation:

The minimum slope of the soil subgrade should be 0.5%. Actual slope of soil subgrade will depend on the drainage design and exfiltration type. All drainpipes, observation wells, overflow pipes, geotextile (if applicable) and impermeable liner (if applicable) should be in place per the drawings prior to or during placement of the sub-base and base, depending on their location. Care must be taken not to damage drainpipes during compaction and paving. No mud or sediment can be left on the base or bedding aggregates. If they are contaminated, they must be removed and replaced with clean materials.

A. General

1. Any excess thickness of soil applied over the excavated soil subgrade to trap sediment from adjacent construction activities shall be removed before application of the [geotextile] and sub-base materials.

2. Keep area where pavement is to be constructed free from sediment during entire job. [Geotextiles] Base and bedding materials contaminated with sediment shall be removed and replaced with clean materials.

3. Do not damage drainpipes, overflow pipes, observation wells, or any inlets and other drainage appurtenances during installation. Report any damage immediately to the project engineer.

B. Geotextiles

1. Place on [bottom and] sides of soil subgrade. Secure in place to prevent wrinkling from vehicle tires and tracks.

2. Overlap a minimum of [0.3 in (12 in.)] [0.6 m (24 in.)] in the direction of drainage.

C. Open-graded sub-base and base

1. Moisten, spread and compact the No. 2 sub-base in 4 to 6 in. (100 to 150 mm) lifts [without wrinkling or folding the geotextile. Place sub-base to protect geotextile from wrinkling under equipment tires and tracks.]

2. For each lift, make at least two passes in the vibratory mode then at least two in the static mode with a minimum 10 t (10 T) vibratory roller until there is no visible movement of the No. 2 stone. Do not crush aggregate with the roller.

3. The surface tolerance of the compacted No. 2 sub-base shall be ±2 1/2 in. (± 65mm) over a 10 ft (3 mm) straightedge.

4. Moisten, spread and compact No. 57 base in 100 mm (4 in.) lift over the compacted No. 2 subbase with a minimum 10 t (10 T) vibratory roller until there is no visible movement of the No. 57 stone. Do not crush aggregate with the roller.

5. The surface tolerance the compacted No. 57 base should not deviate more than. ±1 in. (25 mm) over a 10 ft (3 m) straightedge.

In-place density of the base and sub-base may be checked per ASTM D 4254. Compacted density should be 95% of the laboratory index density established for the sub-base and base stone.

D. Bedding layer

1. Moisten, spread and screed the No. 8 stone bedding material.

2. Fill voids left by removed screed rails with No. 8 stone.

3. The surface tolerance of the screeded No. 8 bedding layer shall be ±3/8 in (10 mm) over a 10 ft (3 m) straightedge.

4. Do not subject screeded bedding material to any pedestrian or vehicular traffic before paving unit installation begins.

E. Permeable interlocking concrete pavers and joint/opening fill material

1. Lay the pavers [paving slabs] in the pattern(s) and joint widths shown on the drawings. Maintain straight pattern lines.

2. Fill gaps at the edges of the paved area with cut units. Cut pavers subject to tire traffic shall be no smaller than 1/3 of a whole unit.

3. Cut pavers and place along the edges with a [double-bladed splitter or] masonry saw.

4. Fill the openings and joints with [No. 8] stone.

Note: Some paver joint widths may be narrow and not accept most of the No. 8 stone. Use joint material that will fill joints such as washed ASTM No. 9 or No. 10 stone. These <u>smaller stone sizes are recommended for filling joints in pedestrian applications</u> that use 2 3/8 in. (60 mm) thick pavers.

5. Remove excess aggregate on the surface by sweeping pavers clean.

6 Compact and seat the pavers into the bedding material using a low-amplitude, 75-90 Hz plate

compactor capable of at least 4,000 lbs (18 kN) centrifugal compaction force. This will require at least two passes with the plate compactor.

7. Do not compact within 6 ft (2 m) of the unrestrained edges of the paving units.

8. Apply additional aggregate to the openings and joints, filling them completely. Remove excess aggregate by sweeping then compact the pavers. This will require at least two passes with the plate compactor.

9. All pavers within 6 ft (2 m) of the lying face must be left fully compacted at the completion of each day.

10. The final surface tolerance of compacted pavers shall not deviate more than ±3/8 (10 mm) under a 10 ft (3 m) long straightedge.

11. The surface elevation of pavers shall be 1/8 to 1/4 in. (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.

Field Quality Control:

A. After sweeping the surface clean, check final elevations for conformance to the drawings.

B. Lippage: No greater than 1/8 in. (3 mm) difference in height between adjacent pavers.

The minimum slope of the finished pavement surface should be 1%. The surface of the pavers may be 1/8 to 1/4 in. (3 to 6 mm.) above the final elevations after compaction. This helps compensate for possible minor settling normal to pavements.

C. The surface elevation of pavers shall be 1/8 to 1/4 in. (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.

Protection:

A. After work in this section is complete, the General Contractor shall be responsible for protecting work from sediment deposition and damage due to subsequent construction activity on the site.

References:

A. American Society for Testing and Materials (ASTM)

1. C 67, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.

2. C 131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

3. C 136, Method for Sieve Analysis for Fine and Coarse Aggregate.

4. C 140, Test Methods for Sampling and Testing Brick and Structural Clay Tile, Section 8 – Freezing and Thawing.

5. D 448, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

6. C 936, Standard Specification for Solid Interlocking Concrete Pavers.

7. C 979, Specification for Pigments for Integrally Colored Concrete.

8. D 698, Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 5.5-lb (2.49 kg) Rammer and 12 in. (305 mm) drop.

9. D 1557, Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 10-lb (4.54 kg) Rammer and 18 in. (457 mm) drop.

10. D 1883, Test Method for California Bearing Ratio of Laboratory-Compacted Soils.

11. D 4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

C. Interlocking Concrete Pavement Institute (ICPI)

1. Permeable Interlocking Concrete Pavement manual.

Method of Measurement and Basis of Payment:
The work of furnishing and installing Permeable Pavers as shown on the plans or as approved by the Engineer, when completed and accepted, will be paid for at the unit price per square feet for "Permeable Pavers". Such price and payment will be full compensation for all work covered by this special provision; including but not limited to furnishing transport, all labor, materials, equipment, excavation and grading, preparation and construction of the sub-base, the installation of pavers and any other incidentals necessary to complete the work.

Payment will be made under:

Permeable Pavers ……...**SF**

RIVER STONE

General**:**
The work covered by this item consist of furnishing and installing 'River Stone' as shown on the plans, the details, and as described herein.

Materials:
River Stone will consist of washed river jacks, Tennessee river gravel, or approved equal available from local North Carolina sources in a size range of approximately 2 to 4 inches. The River Stone will be applied at locations shown on the plans and as directed by the engineer in the field. The River Stone mulched areas will be underplayed with landscape fabric (sample to be approved by the engineer). The cost of the landscape fabric will be incidental to the cost of the River Stone.

A representative sample and the source of the River Stone will be submitted for the Engineer's approval prior to delivery and placement.

Method of Measurement and Basis of Payment:
The work of furnishing and installing the River Stone mulch as shown on the plans and as approved by the Engineer, when completed and accepted, will be paid for at the unit price per ton for "River Stone". Such price and payment will be full compensation for all work covered by this special provision; including but not limited to furnishing all labor, materials, equipment for installation, coordination with engineers and any other incidentals necessary or required to complete the work.

Payment will be made under:
River Stone . . . . . Ton

STORMWWATER DRAINAGE SYSTEM

Applicable parts of the supplementary General Conditions and the Standard Specifications govern work under this division which includes all labor, materials, equipment and services necessary for the proper completion of storm water drainage and related work indicated on the drawings or in the specifications in general as follows:
This provision only covers those items as indicated on the landscape grading, drainage, and site plans.

Scope:
Applicable parts of the supplementary General Conditions and the Standard Specifications govern work under this division, which includes all labor, materials, equipment and services necessary for the proper completion of storm drainage, and related work indicated on the landscape site drawings or in the specifications in general as follows:

- Storm drainage system including building downspout collection, paver subsurface drainage, adapters, and outlets as shown on the plans.
- Cleanouts in drain lines.
- Landscape drainage junction boxes, drop inlets, yard inlets, and sidewalk trench drains.

Materials:

a. Masonry and concrete material and application - See Divisions "Concrete" and "Masonry".

b. Pipe: For storm drainage pipe from building downspout adapters to catch basin, use PVC/ABS-DWV meeting requirements of ASTM D-2661, Schedule 40 with solvent cement for fittings complying ASTM D-2235, ASTM D-2665-87.

c. Building downspout to drain pipe adapter: Use downspout conversion unit to adapt from rectangular downspout to drain as shown on drawings. (Note: Adapters to be incidental to drainpipe installation).

d. Cleanouts: Cleanouts shall be of the proper shape, length and degree of bend to fit the conditions. Cleanouts shall be set at locations as indicated on the plans but not more than 50 feet apart. Cleanout plugs shall be minimum of 4", with finish elevation at proposed finish grades for lawns, cleanouts in sidewalks shall be brass stem and cap mounted flush with sidewalk.

e. Drop inlets, yard inlets, and trench drains as noted on plans and details.

Storm Drainage Pipe

Storm drainage pipe will be polyvinyl chloride (PVC) meeting requirements of ASTM, NCDOT, and manufacturers specifications. To be installed as noted below and on the plans. All fittings, adapters, and connection shall be installed according to applicable specifications.

For Drainage from Drop Inlet or Catch basins	For Permeable Paver Subsurface Drainage	Outlet Pipe
Smooth Core (3”-6”) PVC (DWV) SCH 40 (12”-60”) CPP ASTM-F-2306-“S”	Single Wall (perforated) (3”-10”) PVC SCH 40 ASTM D 1784, ASTM D 2729 (12”-60”) CPP AASHTO-M-294-“C”	(3”-6”) PVC (DWV) SCH 40

Installation:

a) Excavate trench to a sufficient width to receive pipe and allow for tamping equipment and to the depth established by the Engineer. Follow precautions under 'Tree Preservation' if working in the vicinity of trees to be preserved.

b) Join pipe sections and fittings together in accordance with manufacturer's recommendations.

c) Where the pipe foundation material is found to be of poor supporting value or of rock the foundation will be conditioned by removing the existing foundation material. Remove existing foundation material by undercutting one foot or to a depth as directed by the Engineer, and backfill with either a suitable local material or a foundation condition material. Foundation condition material consists of crushed stone or gravel or a combination of sand and crushed stone and will be approved by the Engineer as being suitable for the purpose intended. The selection of the type of backfill to be used for foundation conditioning will be made by the Engineer.

d) Connect to existing or proposed drainage structures as indicated on the plans and as directed by the Engineer.

e) Backfill material will be carefully placed so that the pipe will not be disturbed after it has been laid. Firmly tamp the Engineer approved earth backfill material in 6 inch layers to a density equal to that of the surrounding undisturbed soil.

f) Maintain all drainage installations in a continuously functioning condition from the time the pipe is installed until the project is accepted.

Compensation:
Stormwater Drainage System shall include all labor, equipment and all incidental services and materials necessary for the proper completion of storm drainage as indicated on the drawings and/or specifications.

Payment will be made under:
SBL Stormwater Drainage System . . . . . Lump Sum
NBL Stormwater Drainage System . . . . . Lump Sum

ORNAMENTAL TREE LIGHTS

The Contractor shall provide all materials and labor to install the commercial grade tree ornamental lights.

120 Volt Electric Service:
Connection to 120 V circuit, for the tree lights will be provided at the base of the tree via ‘plug-in’ pre-installed GFC exterior outlet.

General:

Contractor is responsible for supplying and installing decorative L.E.D. holiday type lights within the specified trees (6) in the rest area courtyard(s). All work shall be checked and certified by a licensed electrical contractor.

Material:

Cool clear white M5 commercial grade outdoor L.E.D lights (min. 50,000 hour rating; 3W/ string of 25), UL outdoor approved, parallel wiring, faceted lens, 20 AWG green stringer wire, and 6" string spacing. UL listed/approved coaxial extension cable (green) connected to power source (each tree location). Provide moisture proof connections between all strings, cables, and power source. Cables/stringers shall be attached to branches and trunks by wrapping or with adjustable pre-approved cable ties (be careful to prevent girdling).

All lights, strings, cables, shall be pre-tested (for Engineer approval) before being installed. Spacing of lights shall be 6 lights per square foot.

For every tree decorated, the contractor shall provide 20 replacement bulbs and 2 additional strings (min. 25 count) of specified lights.

Method of Measurement and Basis of Payment
(Landscape Lighting System)

The work of furnishing and installing landscape lighting system when completed and accepted, will be paid for at the contract Lump Sum price "Landscape Lighting". Such price to be considered as full payment for this work, including, but not limited to, furnishing all labor, materials, and any other incidentals necessary or required to complete the work.

Payment will be made under:

- **Ornamental Tree Lights . . . . . Lump Sum (LS)**

TEMPORARY CONSTRUCTION FENCE

General:
The work covered by this provision consist of furnishing, erecting, maintaining, relocating and removing (72") temporary chain link fence and gates at locations shown on the plans and/or as directed by the Engineer.

Unless at the direction of the Engineer, the entire staged area is enclosed. A minimum of one rest area handicap ramp, and coordinated path to the rest room building, are to be accessible at all times. The placement of gate locations shall be approved prior to installation. The construction fence shall be installed prior to beginning construction and as indicated on the Construction Limits and Staging Plan.

Accessible paths to the rest area building and vending facilities shall be coordinated and remain

open during all periods of construction.

The estimated quantity of chain link construction fence may be increased, decreased, or eliminated entirely by the Engineer based upon the contractor's approved work schedule and status of rest area - open or closed to the public at the time of construction. Such variations in quantity will not be considered an alteration in the plans or detail of construction that materially change the character of the work and the cost of performing the work. Standard Specifications Section 104-5 pertaining to overruns and underruns of contract quantities will not be applicable to the item of construction fence.

Construction fence and gate will conform to all applicable sections of the Standard Specifications and Standard Drawings Section 866.

Materials:
Construction fence will be chain link 72 inch. Gates will be chain link, 72 inches high and 8 feet wide with a 8’ or 16’ opening.

Installation:
Erect fence to conform to the general contour of the ground. When determined necessary by the Engineer, perform minor grading along the fence line to provide for installation and proper drainage. Set all posts in a true vertical position and thoroughly tamp to secure position.

No fence fabric is needed, unless at the discretion of the contractor, and as approved by the Engineer.

Maintain the construction fence in a satisfactory condition until directed by the Engineer to remove. Upon removal all fence materials will become the property of the Contractor and will be removed from the project promptly.

Compensation:
Construction Fence (Temporary) will be paid for as ‘Temporary Construction Fence’ measured in linear feet satisfactorily installed and accepted. No direct payment will be made for gates, terminal posts, post bracing and other miscellaneous materials necessary to construct the fence as these will be considered incidental to the fence installation. There will be no additional compensation for construction fence and gates relocated to another area on site during different phases of the project. Should relocation to accommodate a subsequent phase require additional length, thus additional materials, payment will be made for the additional length measured in linear feet and/or actual number each of gates at the contract prices as provided herein.

Such payment will be full compensation for the work as described above, including but not limited to clearing and grading; furnishing, installing, relocating and removing gates, fence fabric with necessary posts, bracing, staples, tie wires, fittings, tools, equipment and all incidentals necessary to complete the work.

Payment will be made under:

Temporary Construction Fence . . . . . LF

SITE DEMOLITION

General:
Site demolition consists of the removal and disposal of all paving, structures, site amenities and vegetative material designated to be removed as indicated on the plans and as directed by the Engineer. Vegetative material includes trees and shrubs with stumps, and plant beds as designated on the plans and as directed by the Engineer on site. Others will remove selected structures, site amenities and any trees or shrubs to be salvaged prior to the construction. Recycle bins and trash receptacles are to be relocated by NCDOT staff in order to provide use and convenience to the traveling public during construction. Picnic shelters and tabletops, split rail fence, benches, receptacles, and site equipment noted on plans or as directed by the engineer, are to be removed by contractor, salvaged and stockpiled (on site) for reuse by NCDOT**. Other elements for the demolition, for the purpose of the vending building construction, may be covered elsewhere in the Special Provisions.**

All methods and operations used for removal of paving, structures, site amenities and vegetative material will meet prior approval of the Engineer. Make a **saw cut** providing a clean edge at locations where concrete paving is removed.

Satisfactorily complete vegetative removal operations prior to building and landscape grading operations. Vegetation removal consists of below ground removal of root masses as well as above ground growth. Perform all work so as to cause minimum soil erosion and comply with the requirements of Section 107-13. Conduct vegetation removal operations in a manner to prevent limb, bark or root injuries to trees, shrubs, or other types of vegetation that are to remain. Should damage occur to adjacent trees or shrubs to remain take all steps necessary as directed by the Engineer to repair or minimize the effects of the damage to the tree or shrub. Remove any tree or shrub that is to remain that is damaged to the extent that its value as a desirable landscape tree is compromised in the opinion of the engineer. There will be no further compensation for removal of a tree or shrub damaged by the contractor. Furthermore, the contractor will reimburse the owner for the aesthetic value of the tree or shrub, as determined by a certified arborist using the current International Society of Arboriculture plant appraisal standards.

All materials removed that are not noted for recycling or reinstallation on the project will become the property of the Contractor and will be properly disposed of by the Contractor off site.

Prevent damage to adjacent property and structures during the removal and demolition operations. The contractor is responsible for repairing any and all damaged areas to its original

condition and/or to the satisfaction of the Engineer.

Compensation:
Payment for the work of removing and disposing of all paving, structures, site amenities and vegetation as described above, indicated on plans and directed by the Engineer, will be paid for at the contract unit price for 'Site Demolition'.

Such price and payment will be full compensation for all work covered by this provision; including but not limited to furnishing all labor, tools and equipment and any other incidentals necessary or required to complete the work.

Payment will be made under:
SBL Site Demolition . . . . . Lump Sum
NBL Site Demolition . . . . Lump Sum

LANDSCAPE AND SITE GRADING

General:
Landscape and Site grading consists of placement of topsoil for cutting and backfilling around buildings, sidewalks, etc., and to provide proper drainage and elevations as indicated on the grading plans, cross-sections, and as directed by the Engineer. The work includes, but is not limited to, contour and fine grading of all excavation areas and or borrow material. Removal, disposal, or reuse of ‘Unclassified Excavation’ shall be qualified according to NCDOT Standard Specification Section 225. The excavated material can be used as fill material if it meets specified structural criteria. In the case that the excavated material is not structural acceptable, acceptable fill material, herein defined as ‘Borrow Excavation’ is defined within the building specifications and should be qualified according to NCDOT Standard Specification Section 230.

Material:
Topsoil will be as specified herein and will be utilized for all fill/backfill operations as directed by the Engineer.

Topsoil will be a sandy loam, silt loam or clay loam that contains a reasonable amount of humus material. Topsoil will be of good texture, loose and friable and will be representative of topsoil in the general vicinity. It will be reasonably free from sod, hard lumps, subsoil, large roots, rocks and gravel, noxious weed seeds and/or toxic substances or other material, which would be harmful to plant growth. Topsoil when delivered to the job site will be approved by the Engineer prior to placement, whether or not the source of topsoil has been previously approved.

Fill material to bring building site to finished grade will be as specified in the building specifications under earthwork.

Installation:
Place building fill and compact as described in the building specifications. Place topsoil and spread evenly to a depth as defined on the plans or described herein, or as directed by the Engineer, which after settlement, constitutes finish grade. Do not place topsoil when the ground is frozen, is excessively wet, or is in a condition that the soil cannot be worked easily and dressed smoothly. Compact fill material under elevated sidewalks/concrete paving to a density equal to or greater than undisturbed soil in the area.

Where fill material is needed within wooded areas, precautionary measures will be taken to prevent damage to trees and the roots of trees to be retained for landscape purposes. When placing or compacting fill material in or adjacent to wooded areas heavy machinery will not be allowed. Equipment for placing fill material will be approved by the Engineer prior to any grading work.

Compensation:
'Landscape and Site Grading' will be paid for at the contract lump sum price for the work detailed in this section that has been successfully accomplished and accepted.
All excavated material, used as qualified fill or , will be included as part of this section's lump sum payment. 'Topsoil' and 'Fill Material' will be paid for in the actual number of cubic yards of topsoil placed and accepted. Topsoil will be measured by truck measurement. Each truck will be measured and will have a legible identification mark indicating its capacity. Load each truck to at least its measured capacity at the time it arrives at the point of delivery. The recorded capacity will be adjusted by making a 25 percent deduction to allow for shrinkage, and the adjusted capacity will be the quantity to be paid for.

Such price and payment will be full compensation for furnishing, all labor, equipment and all incidentals necessary to complete the work satisfactorily.

Payment will be made under:
SBL Landscape and Site Grading . . . . . LS
NBL Landscape and Site Grading . . . . LS

Topsoil . . . . CY

WATER FEATURE

General:
The work required under this section consists of construction of the water feature that is noted in the plans, details and as specified herein.

The scope of work included in this section includes the furnishing of all materials, equipment

and services necessary for the completion of the described water feature.

The furnishing and installation of materials shall include but not be limited to the following items:

a. Water supply plumbing, valves, valve boxes, pipes accessories and equipment.
b. Basin overflow drain lines, equipment, and all associated materials.
c. Mill stone and all basin stone, river rock and associated masonry work.
d. Submersible pump, pumping equipment, pump vault, and pump riser.
e. Liners, underlayment, bulkhead fittings, waterproofing materials and equipment.
f. All supplemental river rock (match river rock used on site).
g. System Controls, timers, and utility access box(es).
h. Risers, fittings, nozzles and associated equipment.
i. Utility Service connection and coordination to noted for power, fill water, and sewer.
j. Special Tools.

Coordination:
The installing Contractor(s) shall coordinate and schedule the waterfall contract work with all other associated project work.

QUALITY ASSURANCE:

Approved Water Feature Contractor:

1. The contractor responsible for the construction and completion of the SBL waterfall and NBL bubbler fountain shall have extensive experience with the installation, construction and maintenance of waterfalls, water features and/or ponds. They shall have completed a minimum of 5 project installation *similar* in nature and scope as defined in this project. They shall offer proof of workmanship, accreditation, and photographic samples of their work.

2. Plans, details and pictures of the contractor's previous work will assist in the process and discussion of how the proposed water feature will be constructed.

Approved Equipment Supplier:

1. The design shown on the drawings and the specifications listed herein are based on the design data, services, and materials readily available through national suppliers of pond, waterfall, fountain, and plumbing materials
2. The contractor shall use only use reputable equipment suppliers approved by the Engineer.

Water Feature Materials and Equipment:

A pre-construction meeting shall be arranged with the general contractor for the coordination of the contractor responsible for the water feature construction. This allows for a detailed explanation of the suggested installation techniques and the sequence of the installation.

PUMP:

1. Pump capacity: 2500 GPH (SBL) and 1000 GPH (NBL); plumbed with a manual ball valve (in feeder line at spillway; placed in valve box) to restrict flow if necessary.

2 Acceptable manufacturers: Cal, Tsurumi, Aquascape or approved equal.

3. Two year manufacturer warranty (minimum).

4. Low water cutoff switch.

5. Plumbed within a pump riser to allow for removal without entering basin.

6. Connected to power supply by power cable within valve box.

7. Contractor supplies plug in exterior grade timer (pump plugged in to timer within valve box).

ROCK, STONE, BASIN MODULES, AND STONE BOWL:

1. It is the responsibility of the water feature contractor to supply all river rock and stone for the completion of the water feature and adjoining areas.

2. Multiple sizes and grades of river stone shall be integrated within the design in order to give the feature and the immediate surrounding area natural character. WITH THE EXCEPTION, **ALL BOULDERS TO BE SUPPLIED (ON SITE) BY NCDOT**. The water feature contractor will have the opportunity to pick the boulders among a supply located at a state maintenance facility within a short distance from the project. Coordination for the site visit will administered by the NCDOT Engineer.

3. Fill stone will be washed #57 or approved equal.

4. The river stone supplied shall range in size from large (4”-8”), medium (2”-4”) and small (1/2”-2”).

5. Rainwater tank modules will be used subsurface within the basin to maximize basin capacity. Construction and bearing capacity shall be approved upon submittal.

6. The mill stone, as supplied by a reputable supplier of mill stones, will be pre-approved prior to arrival on site. Photo samples of the 'stone' will be provided to NCDOT for approval. In no way will NCDOT accept a mill stone damaged, cracked, or in degenerative condition.

7. The basin area will be filled with river stone and washed graveled as defined on the plans and as approved by the Landscape Architect.

CONSTRUCTION:

All work shall be completed in coordination with site and building construction. The water feature contractor will be responsible for their damage to any adjacent site items, landscaping, grading, and drainage.

Final start-up and adjustment meeting shall be provided for the proper adjustments to be made to the water feature to meet the performance levels established. It is also the time to familiarize the maintenance staff of the correct procedures to operate the water feature equipment. Before final inspection of the water feature all the following items need to be complete:

a. Electrical connections made and tested.

b. Hydraulic piping and fittings complete and tested for leaks, repaired if necessary, and flushed clean.

c. The water basin cleaned and filled to the correct operating depth.

Job site visits by NCDOT project engineers and designers can be made during certain construction phases of the project.

INDUSTRY STANDARDS AND APPLICABLE CODES:

A. The materials shall be installed in accordance with all applicable provisions of the most recent edition of the following:
   ANSI
   ASTM
   ASSE
   ASME
   AWWA
   CS
   NEMA
   NSF
   UL

NEC
OSHA
NFPA
American National Standards Institute
American Society for Testing and Materials
American Society of Sanitary Engineering
American Society of Mechanical Engineers
American Water Works Association
Commercial Standards
National Electrical Manufactures Association
National Sanitation Foundation
Underwriters Laboratory
National Electric Code
Occupational Safety and Health Act
National Fire Protection Agency

Other state or local code(s) which are applicable.

B. The above referenced guidelines shall be considered minimum standards for the materials or the installation practices applicable for the water features/waterfall system.

SHOP DRAWINGS AND SUBMITTALS:

The plumbing and water supply systems noted on the plans shall be considered schematic in design. Final design specifications shall be defined and supplied by the contractor, in keeping with the contact work, noted minimum specifications, and in coordination with all other applicable site work.

A. The contractor shall submit drawings in accordance with the conditions of the Contract Specification section describing the size(s), location(s), and installation details of the interconnecting piping, waterfall management equipment and electrical systems.

B. The Landscape Architect may add other drawings during the period of construction as required for clarification.

C. This specification shall be considered an integral part of the accompanying drawings. Anything omitted from one and embodied in the other is considered essential to the contract and must be furnished by the Contractor.

D. All pertinent data on any substitute system(s), including engineering performance calculations on the pumping system(s), drainage, equipment, and electrical system diagrams and schematics shall be provided to Engineer for review and evaluation.

E. Submittals for the bowl, pump, liner, underlayment, bulkheads, sealants, pump vault, rock/stone, tank modules, spray nozzle, and riser shall be provided to the Engineer/Landscape Architect for review and approval.

F. Material submittals for the rock and river stone shall be from a single supplier. The landscape architect can approve the material on site, or if feasible, visit the supplier for approval at the source.

G. Submittals shall be rejected if they are difficult to read due to poor image, drafting quality, insufficient scale, or missing data.

Submittals shall include the following:

- shop drawings and product information for all equipment and materials furnished.
- complete material list.
- equipment space layout showing all electrical and mechanical equipment in addition to all piping and conduit.
- installation details for each piece of equipment being provided.

SUBSTITUTIONS:

A. Submittals for equal items shall include the following information where applicable:

1. Operation Design Description.

2. Component materials and finishes.

3. Pump curve(s).

4. Certification of conformance with specified codes and standards.

B. Proposed substitutions for equipment or material must be submitted within (30) working days prior to construction for consideration as approved equals. Proposals for substitutions shall be made only by the prime bidders in writing to Engineer and sub-contractors shall not make any proposals to the Landscape Architect for substitution.

1. All equipment supplied to the Contractor shall be supplied by reputable water feature, pond, or plumbing equipment suppliers unless otherwise approved.

C. Submittals of equal systems or components may be rejected by the Engineer or Landscape Architect if it found not to meet the minimal criteria set forth in the plans, contract or specifications.

GENERAL INSTALLATION:

A. Protect all pipes, conduits, equipment and other parts of the work against injury by exposure to the weather while stored, during construction, or after installation.

B. Install and connect all equipment in accordance with manufacturer's instruction and recommendations unless otherwise noted. If specified installation is contrary to the manufacturer’s instruction, cease installation of affected components or systems and notify the Engineer.

PIPE INSTALLATION:

A. General installation:

1. Make all pipe runs as direct as possible using a minimum number of fittings.

2. Flexible PVC pipe, sized and approved for the specified flow and pressure, shall be used for the feeder pipe. It shall be buried at an approved depth and/or protected from puncture ordamage.

3. Cut all pipe and tubing ends square. Remove rough edges and burrs to create a smooth unobstructed flow.

4. Protect all openings in piping during construction to prevent entrance of foreign matter.

5. All connections shall be made with manufacturer approved adhesives, joint compounds or fittings.

GUARANTEE:

A. The water feature Contractor(s) shall issue a guarantee that any equipment found defective within one (1) year of the final acceptance shall be replaced at no cost to the Department.

B. The guarantee does not extend to damage incurred through operation and maintenance by the Owner. The Owner will assume full responsibility for the proper operation and maintenance of the waterfeature(s) upon final acceptance. All mechanical water feature systems shall be furnished by the Contractor unless otherwise specified.

<u>Basis of Payment:</u>

Basis of payment for this item of work will be the lump sum price for the installation of the "Water Feature" The above prices and payments will be full compensation for all work covered by this section.

Payment will be made under:

SBL Water Feature. . . . . ……..Lump Sum
NBL Water Feature. . . . . ……..Lump Sum

SPLIT RAIL FENCE

General*:*
The work covered by this special provision consist of split rail wood fence at locations shown on the plans or as directed by the Engineer.

Materials:
Fence posts and rails shall be locust- wood post and cedar- wood rails. They shall be free of major defects or chips or splinter pieces that may cause injury to pedestrians. Post and rails shall be straight and true to line and grade.

Installation:
Fence shall be erected as shown on the plans and according to manufacture's recommended installation. Post installation, behind the retaining walls, shall be set in a subsurface sleeve, concrete fill to stabilize the post with an aggregate base set plum. Rails shall be straight and true to line and grade. Installer shall be an experienced fence builder.

Method of Measurement and Basis of Payment:
The quantity of split rail fencing will be the actual number of linear feet measured along the top rails between post (Approximately 8') which has been satisfactorily installed and accepted.

The quantity of split rail fencing erected, measured as specified above, will be paid for at the contract unit price per linear foot for "Split Rail Fence". There will be no separate pay item for post, sleeves, or concrete footings. Such prices and payments will be full compensation for furnishing and installing the split rail fencing; including and not limited to all materials, labor, and equipment necessary to satisfactorily complete the work

Payment will be made under:
Split Rail Fence . . . . . ……Linear Feet (LF)

PLACEMENT OF BOULDER

General:
This special provision consists of installing the boulders as shown on the plans and details and as described herein.

ALL BOULDERS WILL BE PROVIDED BY NCDOT AND DELIVERED TO THE SITE.

This pay item is separate and independent of the stone and/or boulders used for the waterfall.

Materials:
The boulders provided will be of natural stone. Size, color and shape will be the selection of the Engineer at a source to be approved by the Engineer. A common size, approximately 2-4 ton. Boulder shape may vary. Backfill will be as specified for landscape grading.

Installation:
Placement of boulders will be at the direction of the Engineer and will require the cooperative effort of the contractor to maneuver into the desired position. Several boulders will be placed on top of pavement/pavers. Extreme care shall be used in their placement so as to not damage pavers, concrete, or other site items. Boulders shall be placed on flat even surface and shall be set in place so as not to move, rock, tip, or roll. Where boulders are noted to be placed in plant beds, excavate and place boulder so that it sits embedded in the plant bed and not on top. Backfill around boulder with plant bed media.

Compensation:
'Placement of Boulder' will be paid for each satisfactorily installed and accepted.

The work of furnishing and installing boulders, when completed and accepted, will be paid for at the contract unit price per each 'Boulder'.
Such price and payment will be full compensation for all work covered by this special provision; including but not limited to furnishing all labor, materials, equipment and any other incidentals necessary or required to complete the work.

Payment will be made under:
Placement of Boulder . . . . . .EA

Relocate Newspaper Box

General:
The work covered by the provision shall consist of furnishing a concrete pad and installing the newspaper rack relocated from the existing site. The concrete pad shall be 6” thick and 4’ x 7’.

Material:
Concrete, as quantified as the 4” concrete sidewalk, and approved anchor bolts. The newspaper box is supplied.

Installation:
Excavate area adjoining walk/patio, set forms and concrete, pre-drill for placement of concrete anchors, and attach/anchor the newspaper box. The process, placement, and material shall be pre-approved by the Engineer.

Method of Measurement:
The work of furnishing and installing the newspaper box, when completed and accepted, will be paid for at the contract unit price per each ‘Relocate Newspaper Box'.

Such price and payment will be full compensation for all work covered by this special provision; including but not limited to furnishing all labor, materials, equipment and any other incidentals necessary or required to complete the work.

Payment will be made under:

Relocate Newspaper Box…….……EA

SEGEMNTAL GRAVITY RETAINING WALLS (3-17-15)

1.0 General

Construct segmental gravity retaining walls consisting of segmental retaining wall (SRW) units supported by aggregate footings. Construct segmental gravity retaining walls based on actual elevations, wall dimensions and batter in accordance with the contract.

Define “block wall” as a segmental gravity retaining wall. Define “blocks” as SRW units, “cap blocks” as SRW cap units and “Block Vendor” as the vendor licensing the block producer.

2.0 Materials

Refer to the *Standard Specifications*.

Item	**Section**
Anchor Pins	1056-2
Curing Agents	1026
Geotextiles, Type 2	1056
Joint Filler	1028-1

Segmental Retaining Wall Units	1040-4
Select Material, Class VI	1016
Subsurface Drainage Materials	815-2
Wire Staples	1060-8(D)

Provide Type 2 geotextile for separation geotextiles. Use Class VI select material for No. 57 stone. Provide PVC pipes, fittings, outlet pipes and concrete pads for subsurface drainage materials. For PVC pipes behind block walls, use pipes with perforations that meet AASHTO M 278.

Provide cap blocks that meet the material requirements for blocks. Use blocks from producers approved by the Department and licensed by the Block Vendor. Notify the Engineer of the name and NCDOT ID number of the SRW unit production facility before beginning block production. Unless required otherwise in the plans, provide blocks with a depth (front to back) of at least 18" and cap blocks with a depth of at least 8".

Use approved SRW units for 4 ft maximum design heights with the design height. The list of approved SRW units with maximum design heights is available from: connect.ncdot.gov/resources/Geological/Pages/Products.aspx

Do not mix blocks from different Block Vendors on the same block wall. Damaged blocks with excessive discoloration, chips or cracks as determined by the Engineer will be rejected.

Provide adhesives recommended by the Block Vendor. Store adhesives in accordance with the manufacturer's instructions. Load, transport, unload and store block wall materials so materials are kept clean and free of damage.

3.0 Preconstruction Requirements

Block Wall Surveys

The plans typically show a plan view, typical sections, details, notes and an elevation or profile view (wall envelope) for each block wall. Before beginning block wall construction, survey existing ground elevations along wall face locations and other elevations in the vicinity of block wall locations as needed. For proposed slopes above or below block walls, survey existing ground elevations to at least 10 ft beyond slope stake points. Based on these elevations, finished grades and actual block wall dimensions, details and batter, submit wall envelopes for acceptance. Use accepted wall envelopes for construction.

4.0 Construction Methods

Control drainage during construction in the vicinity of block walls. Direct run off away from block walls, No. 57 stone and backfill. Contain and maintain stone and backfill and protect material from erosion.

Excavate as necessary for block walls in accordance with the plans and accepted submittals. Notify the Engineer when foundation excavation is complete. Do not place No. 57 stone for footings until excavation dimensions and foundation material are

approved.

Construct aggregate footings at elevations and with dimensions shown in the plans and accepted submittals. Install wall drainage systems consisting of drains and outlet components as shown in the plans and accepted submittals and in accordance with Section 815 of the *Standard Specifications*. Compact No. 57 stone for footings with a vibratory compactor to the satisfaction of the Engineer.

Stack blocks with no negative wall batter (wall face leaning forward) so the final wall position is as shown in the plans and accepted submittals. Place blocks with a maximum vertical joint width of 3/8". Stagger blocks to create a running bond by centering blocks over joints in the row below as shown in the plans and accepted submittals. Construct block walls with the following tolerances:

A. Blocks are level from front to back and between blocks when checked with a 4 ft long level,

B. Final wall face is within 2" of horizontal and vertical alignment shown in the plans and accepted submittals, and

C. Wall batter is within 2° of batter required by the Block Vendor.

Overlap adjacent separation geotextiles at least 18" at seams and hold geotextiles in place with wire staples or anchor pins as needed. Place No. 57 stone between and behind blocks in 8" to 10" thick lifts. Compact stone with hand operated compaction equipment to the satisfaction of the Engineer. Backfill for block walls behind No. 57 stone in accordance with Article 410-8 of the *Standard Specifications*.

Set cap blocks with a 1/2" to 1-1/2" overhang as shown in the plans and accepted submittals. Place cap blocks using adhesive in accordance with the manufacturer's instructions. Do not place cap blocks if surfaces caps will be attached to are wet or frozen or the air temperature measured at the wall location in the shade away from artificial heat is below 40°F. Before applying adhesive, clean surfaces cap blocks will adhere to and ensure surfaces are dry and free of oil, grease, dust and debris.

5.0 Measurement and Payment

Segmental Gravity Retaining Walls will be measured and paid in square feet. Block walls will be measured as the square feet of wall face area with the pay height equal to the difference between top of wall and top of footing elevations. Define "top of wall" as top of cap blocks.

The contract unit price for *Segmental Gravity Retaining Walls* will be full compensation for providing designs, if required, submittals, labor, tools, equipment and block wall materials, footing excavation, backfilling, and supplying footings, blocks, No. 57 stone, wall drainage systems, geotextiles, cap blocks, and any incidentals necessary to construct block walls.

The contract unit price for *Segmental Gravity Retaining Walls* does not include the cost for ditches, fences, handrails, barrier or guardrail associated with block walls as these

items will be paid for elsewhere in the contract.

Payment will be made under:

Pay Item	**Pay Unit**
Segmental Gravity Retaining Walls	Square Foot

MECHANICALLY STABILIZED EARTH RETAINING WALLS (3-17-15)

1.0 General

Construct mechanically stabilized earth (MSE) retaining walls consisting of steel or geosynthetic reinforcement in the reinforced zone connected to vertical facing elements. Use precast concrete panels for vertical facing elements and coarse aggregate in the reinforced zone unless noted otherwise in the plans. Provide reinforced concrete coping as required. Design and construct MSE retaining walls based on actual elevations and wall dimensions in accordance with the contract and accepted submittals. Use a prequalified MSE Wall Installer to construct MSE retaining walls.

Define "reinforcement" as steel or geosynthetic reinforcement and "geosynthetics" as geosynthetic grids (geogrids) or strips (geostrips). Define "aggregate" as coarse or fine aggregate. Define "panel" as a precast concrete panel and "coping" as precast or cast-in-place concrete coping.

Define "MSE wall" as a mechanically stabilized earth retaining wall and "MSE Wall Vendor" as the vendor supplying the chosen MSE wall system. Define "MSE panel wall" as an MSE wall with panels and "MSE segmental wall" as an MSE wall with segmental retaining wall (SRW) units. Define "abutment wall" as an MSE wall with bridge foundations in any portion of the reinforced zone or an MSE wall connected to an abutment wall. Even if bridge foundations only penetrate a small part of the reinforced zone, the entire MSE wall is considered an abutment wall.

Use an approved MSE wall system in accordance with the plans and any NCDOT restrictions or exceptions for the chosen system. Value engineering proposals for other MSE wall systems will not be considered. Do not use MSE wall systems with an "approved for provisional use" status for abutment walls or MSE walls subject to scour, walls with design heights greater than 35 ft or walls supporting or adjacent to railroads or interstate highways. The list of approved MSE wall systems with approval status is available from:

connect.ncdot.gov/resources/Geological/Pages/Products.aspx

2.0 Materials

Refer to the *Standard Specifications*.

Item	**Section**
Aggregate	1014

Anchor Pins	1056-2
Curing Agents	1026
Epoxy, Type 3A	1081
Geotextiles, Type 2	1056
Grout, Type 3	1003
Joint Materials	1028
Portland Cement Concrete, Class A	1000
Precast Retaining Wall Coping	1077
Reinforcing Steel	1070
Retaining Wall Panels	1077
Segmental Retaining Wall Units	1040-4
Shoulder Drain Materials	816-2
Wire Staples	1060-8(D)

Provide Type 2 geotextile for filtration and separation geotextiles. Use Class A concrete for cast-in-place coping, leveling concrete and pads.

Use panels and SRW units from producers approved by the Department and licensed by the MSE Wall Vendor. Unless required otherwise in the contract, produce panels with a smooth flat final finish that meets Article 1077-11 of the *Standard Specifications*. Accurately locate and secure reinforcement connectors in panels and maintain required concrete cover. Produce panels within 1/4" of the panel dimensions shown in the accepted submittals.

Damaged panels or SRW units with excessive discoloration, chips or cracks as determined by the Engineer will be rejected. Do not damage reinforcement connection devices or mechanisms in handling or storing panels and SRW units.

Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Handle and store geosynthetics in accordance with Article 1056-2 of the *Standard Specifications*. Load, transport, unload and store MSE wall materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.

A. Aggregate

Use standard size No. 57, 57M, 67 or 78M that meets Table 1005-1 of the *Standard Specifications* for coarse aggregate except do not use No. 57 or 57M stone in the reinforced zone of MSE walls with geosynthetic reinforcement or connectors. Use the following for fine aggregate:

1. Standard size No. 1S, 2S, 2MS or 4S that meets Table 1005-2 of the *Standard Specifications* or
2. Gradation that meets Class III, Type 3 select material in accordance with Article 1016-3 of the *Standard Specifications*.

Fine aggregate is exempt from mortar strength in Subarticle 1014-1(E) of the *Standard Specifications*. Use fine aggregate with a maximum organic content of 1.0%. Provide

aggregate with electrochemical properties that meet the following requirements:

AGGREGATE ELECTROCHEMICAL REQUIREMENTS					
Aggregate Type	**Reinforcement or Connector Material**	**pH**	**Resistivity**	**Chlorides**	**Sulfates**
Coarse	Steel	Not Required			
Fine	Steel	5 – 10	≥ 3,000 Ω · cm	≤ 100 ppm	≤ 200 ppm
Coarse or Fine	Polyester Type (PET) Geogrid	5 – 8	N/A*	N/A*	N/A*
Coarse or Fine	Geostrip or Polyolefin Geogrid	4.5 – 9	N/A*	N/A*	N/A*

* Resistivity, chlorides and sulfates are not applicable to geosynthetics.

Use aggregate from a source that meets the *Mechanically Stabilized Earth Wall Aggregate Sampling and Testing Procedures*. Perform pH tests for coarse aggregate in accordance with Materials and Tests (M&T) Unit Chemical Procedure C-Elec. Perform organic content tests for fine aggregate in accordance with AASHTO T 267 instead of Subarticle 1014-1(D) of the *Standard Specifications*. Perform electrochemical tests for fine aggregate in accordance with the following test procedures:

Property	**Test Method**
pH	AASHTO T 289
Resistivity	AASHTO T 288
Chlorides	AASHTO T 291
Sulfates	AASHTO T 290

B. Reinforcement

Provide steel or geosynthetic reinforcement supplied by the MSE Wall Vendor or a manufacturer approved or licensed by the vendor. Use reinforcement approved for the chosen MSE wall system. The list of approved reinforcement for each MSE wall system is available from the website shown elsewhere in this provision.

1. Steel Reinforcement

Provide Type 1 material certifications in accordance with Article 106-3 of the *Standard Specifications* for steel reinforcement. Use welded wire grid reinforcement (“mesh”, “mats” and “ladders”) that meet Article 1070-3 of the *Standard Specifications* and metallic strip reinforcement (“straps”) that meet ASTM A572 or A1011. Galvanize steel reinforcement in accordance with Section 1076 of the *Standard Specifications*.

2. Geosynthetic Reinforcement

Define “machine direction” (MD) for geosynthetics in accordance with ASTM D4439.

Provide Type 1 material certifications for geosynthetic strengths in the MD in accordance with Article 1056-3 of the *Standard Specifications*. Test geosynthetics in accordance with ASTM D6637.

C. Bearing Pads

For MSE panel walls, use bearing pads that meet Section 3.6.1.a of the *FHWA Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes – Volume I* (Publication No. FHWA-NHI-10-024). Provide bearing pads with thicknesses that meet the following:

BEARING PAD THICKNESS	
Facing Area per Panel (A)	**Minimum Pad Thickness After Compression (based on 2 times panel weight above pads)**
A ≤ 30 sf	1/2"
30 sf < A ≤ 75 sf	3/4"

D. Miscellaneous Components

Miscellaneous components may include connectors (e.g., anchors, bars, clamps, pins, plates, ties, etc.), fasteners (e.g., bolts, nuts, washers, etc.) and any other MSE wall components not included above. Galvanize steel components in accordance with Section 1076 of the *Standard Specifications*. Provide miscellaneous components approved for the chosen MSE wall system. The list of approved miscellaneous components for each MSE wall system is available from the website shown elsewhere in this provision.

3.0 Preconstruction Requirements

A. MSE Wall Surveys

The Retaining Wall Plans show a plan view, typical sections, details, notes and an elevation or profile view (wall envelope) for each MSE wall. Before beginning MSE wall design, survey existing ground elevations shown in the plans and other elevations in the vicinity of MSE wall locations as needed. For proposed slopes above or below MSE walls, survey existing ground elevations to at least 10 ft beyond slope stake points. Based on these elevations, finished grades and actual MSE wall dimensions and details, submit revised wall envelopes for acceptance. Use accepted wall envelopes for design.

B. MSE Wall Designs

For MSE wall designs, submit 11 copies of working drawings and 3 copies of design calculations and a PDF copy of each at least 30 days before the preconstruction meeting. Note name and NCDOT ID number of the panel or SRW unit production facility on the working drawings. Do not begin MSE wall construction until a design submittal is accepted.

Use a prequalified MSE Wall Design Consultant to design MSE walls. Provide designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the MSE

Wall Design Consultant.

Design MSE walls in accordance with the plans, *AASHTO LRFD Bridge Design Specifications* and any NCDOT restrictions for the chosen MSE wall system unless otherwise required. Design MSE walls for seismic if walls are located in seismic zone 2 based on Figure 2-1 of the *Structure Design Manual*. Use a uniform reinforcement length throughout the wall height of at least 0.7H with H as shown in the plans or 6 ft, whichever is longer, unless noted otherwise in the plans. Extend the reinforced zone at least 6" beyond end of reinforcement. Do not locate drains, the reinforced zone or leveling pads outside right-of-way or easement limits.

Use the simplified method for determining maximum reinforcement loads and design parameters approved for the chosen MSE wall system or default values in accordance with the AASHTO LRFD specifications. Design steel components including reinforcement and connectors for the design life noted in the plans and aggregate type in the reinforced zone. Use corrosion loss rates for galvanizing in accordance with the AASHTO LRFD specifications for nonaggressive backfill and carbon steel corrosion rates in accordance with the following:

CARBON STEEL CORROSION RATES	
Aggregate Type (in reinforced zone)	**Corrosion Loss Rate (after zinc depletion)**
Coarse	0.47 mil/year
Fine (except abutment walls)	0.58 mil/year
Fine (abutment walls)	0.70 mil/year

For geosynthetic reinforcement and connectors, use approved geosynthetic properties for the design life noted in the plans and aggregate type in the reinforced zone.

When noted in the plans, design MSE walls for a live load (traffic) surcharge of 250 lb/sf in accordance with Figure C11.5.6-3(b) of the AASHTO LRFD specifications. For steel beam guardrail with 8 ft posts or concrete barrier rail above MSE walls, analyze top 2 reinforcement layers for traffic impact loads in accordance with Section 7.2 of the FHWA MSE wall manual shown elsewhere in this provision except use the following for geosynthetic reinforcement rupture:

$$\phi\, T_{al}\, R_c \geq T_{max} + (T_I / RF_{CR})$$

Where,

ϕ = resistance factor for tensile resistance in accordance with Section 7.2.1 of the FHWA MSE wall manual,

T_{al} = long-term geosynthetic design strength approved for chosen MSE wall system,

R_c = reinforcement coverage ratio = 1 for continuous geosynthetic reinforcement,

T_{max} = factored static load in accordance with Section 7.2 of the FHWA MSE wall manual,

T_I = factored impact load in accordance with Section 7.2 of the FHWA MSE wall manual and

RF_{CR} = creep reduction factor approved for chosen MSE wall system.

If existing or future obstructions such as foundations, guardrail, fence or handrail posts, moment slabs, pavements, pipes, inlets or utilities will interfere with reinforcement, maintain a clearance of at least 3" between obstructions and reinforcement unless otherwise approved. Locate reinforcement layers so all of reinforcement length is within 3" of corresponding connection elevations.

Use 6" thick cast-in-place unreinforced concrete leveling pads beneath panels and SRW units that are continuous at steps and extend at least 6" in front of and behind bottom row of panels or SRW units. Unless required otherwise in the plans, embed top of leveling pads in accordance with the following requirements:

EMBEDMENT REQUIREMENTS		
Front Slope[1] (H:V)	**Minimum Embedment Depth[2] (whichever is greater)**	
6:1 or flatter (except abutment walls)	H/20	1 ft for H ≤ 10 ft 2 ft for H > 10 ft
6:1 or flatter (abutment walls)	H/10	2 ft
> 6:1 to < 3:1	H/10	2 ft
3:1 to 2:1	H/7	2 ft

1. Front slope is as shown in the plans.
2. Define “H” as the maximum design height plus embedment per wall with the design height and embedment as shown in the plans.

When noted in the plans, locate a continuous aggregate shoulder drain along the base of the reinforced zone behind the aggregate. Provide wall drainage systems consisting of drains and outlet components in accordance with Standard Drawing No. 816.02 of the *Roadway Standard Drawings*.

For MSE panel walls, cover joints at back of panels with filtration geotextiles at least 12" wide. If the approval of the chosen MSE wall system does not require a minimum number of bearing pads, provide the number of pads in accordance with the following:

NUMBER OF BEARING PADS		
Facing Area per Panel (A)	**Maximum Wall Height Above Horizontal Panel Joint**	**Minimum Number of Pads per Horizontal Panel Joint**
A ≤ 30 sf	25 ft	2

	35 ft[1]	3
30 sf < A ≤ 75 sf	25 ft	3
	35 ft[1]	4

1. Additional bearing pads per horizontal panel joint may be required for wall heights above joints greater than 35 ft.

For MSE segmental walls, coarse aggregate is required in any SRW unit core spaces and between and behind SRW units for a horizontal distance of at least 18". Separation geotextiles are required between the aggregate and overlying fill or pavement sections except when concrete pavement, full depth asphalt or cement treated base is placed directly on aggregate. When noted in the plans, separation geotextiles are also required at the back of the reinforced zone between the aggregate and backfill or natural ground. Unless required otherwise in the plans, use reinforced concrete coping at top of walls that meets the following requirements:

1. Coping dimensions as shown in the plans,
2. At the Contractor's option, coping that is precast or cast-in-place concrete for MSE panel walls unless cast-in-place coping is required as shown in the plans,
3. Cast-in-place concrete coping for MSE segmental walls and
4. At the Contractor's option and when shown in the plans, cast-in-place concrete coping that extends down back of panels or SRW units or connects to panels or SRW units with dowels.

For MSE segmental walls with dowels, attach dowels to top courses of SRW units in accordance with the following:

1. Set dowels in core spaces of SRW units filled with grout instead of coarse aggregate or
2. Embed adhesively anchored dowels in holes of solid SRW units with epoxy.

For MSE panel walls with coping, connect cast-in-place concrete coping or leveling concrete for precast concrete coping to top row of panels with dowels cast into panels. When concrete barrier rail is required above MSE walls, use concrete barrier rail with moment slab as shown in the plans.

Submit working drawings and design calculations for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing plan views, wall profiles with foundation pressures, typical sections with reinforcement and connection details, aggregate locations and types, geotextile locations and details of leveling pads, panels or SRW units, coping, bin walls, slip joints, etc. If necessary, include details on working drawings for concrete barrier rail with moment slab, reinforcement splices if allowed for the chosen MSE wall system, reinforcement connected to end bent caps and obstructions extending through walls or interfering with reinforcement, leveling pads, barriers or moment slabs. Submit design calculations for each wall section with different surcharge loads,

geometry or material parameters. At least one analysis is required for each wall section with different reinforcement lengths. When designing MSE walls with computer software other than MSEW, use MSEW, version 3.0 with update 14.93 or later, manufactured by ADAMA Engineering, Inc. to verify the design. At least one MSEW analysis is required per 100 ft of wall length with at least one analysis for the wall section with the longest reinforcement. Submit electronic MSEW input files and PDF output files with design calculations.

C. Preconstruction Meeting

Before starting MSE wall construction, hold a preconstruction meeting to discuss the construction and inspection of the MSE walls. If this meeting occurs before all MSE wall submittals have been accepted, additional preconstruction meetings may be required before beginning construction of MSE walls without accepted submittals. The Resident or Bridge Maintenance Engineer, Bridge Construction Engineer, Geotechnical Operations Engineer, Contractor and MSE Wall Installer Superintendent will attend preconstruction meetings.

4.0 Corrosion Monitoring

Corrosion monitoring is required for MSE walls with steel reinforcement. The Engineer will determine the number of monitoring locations and where to install the instrumentation. Contact M&T before beginning wall construction. M&T will provide the corrosion monitoring instrumentation kits and if necessary, assistance with installation.

5.0 Site Assistance

Unless otherwise approved, provide an MSE Wall Vendor representative to assist and guide the MSE Wall Installer on-site for at least 8 hours when the first panels or SRW units and reinforcement layer are placed. If problems are encountered during construction, the Engineer may require the vendor representative to return to the site for a time period determined by the Engineer.

6.0 Construction Methods

Control drainage during construction in the vicinity of MSE walls. Direct run off away from MSE walls, aggregate and backfill. Contain and maintain aggregate and backfill and protect material from erosion.

Excavate as necessary for MSE walls in accordance with the accepted submittals. If applicable and at the Contractor's option, use temporary shoring for wall construction instead of temporary slopes to construct MSE walls. Define "temporary shoring for wall construction" as temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience.

Unless required otherwise in the plans, install foundations located in the reinforced zone before placing aggregate or reinforcement. Brace piles in the reinforced zone to maintain alignment when placing and compacting aggregate. Secure piles together with steel members near top of piles. Clamp members to piles instead of welding if bracing is at or below pile cut-off elevations.

Notify the Engineer when foundation excavation is complete. Do not place leveling pad concrete, aggregate or reinforcement until excavation dimensions and foundation material are approved.

Construct cast-in-place concrete leveling pads at elevations and with dimensions shown in the accepted submittals and in accordance with Section 420 of the *Standard Specifications*. Cure leveling pads at least 24 hours before placing panels or SRW units.

Erect and support panels and stack SRW units so the final wall position is as shown in the accepted submittals. Stagger SRW units to create a running bond by centering SRW units over joints in the row below as shown in the accepted submittals. Space bearing pads in horizontal panel joints as shown in the accepted submittals and cover all panel joints with filtration geotextiles as shown in the accepted submittals. Attach filtration geotextiles to back of panels with adhesives, tapes or other approved methods.

Construct MSE walls with the following tolerances:

A. SRW units are level from front to back and between units when checked with a 4 ft long level,

B. Vertical joint widths are 1/4" maximum for SRW units and 3/4", ±1/4" for panels,

C. Final wall face is within 3/4" of horizontal and vertical alignment shown in the accepted submittals when measured along a 10 ft straightedge and

D. Final wall plumbness (batter) is not negative (wall face leaning forward) and within 0.5° of vertical unless otherwise approved.

Place reinforcement at locations and elevations shown in the accepted submittals and within 3" of corresponding connection elevations. Install reinforcement with the direction shown in the accepted submittals. Place reinforcement in slight tension free of kinks, folds, wrinkles or creases. Reinforcement may be spliced once per reinforcement length if shown in the accepted submittals. Use reinforcement pieces at least 6 ft long.

Contact the Engineer when unanticipated existing or future obstructions such as foundations, guardrail, fence or handrail posts, pavements, pipes, inlets or utilities will interfere with reinforcement. To avoid obstructions, deflect, skew or modify reinforcement as shown in the accepted submittals.

Place aggregate in the reinforced zone in 8" to 10" thick lifts. Compact fine aggregate in accordance with Subarticle 235-3(C) of the *Standard Specifications*. Use only hand operated compaction equipment to compact aggregate within 3 ft of panels or SRW units. At a distance greater than 3 ft, compact aggregate with at least 4 passes of an 8 ton to 10 ton vibratory roller in a direction parallel to the wall face. Smooth wheeled or rubber tired rollers are also acceptable for compacting aggregate. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet. Do not displace or damage reinforcement when placing and compacting aggregate. End dumping directly on geosynthetics is not permitted. Do not operate heavy equipment on reinforcement until it is covered with at least 8" of aggregate. Replace any damaged reinforcement to the satisfaction of the Engineer.

Backfill for MSE walls outside the reinforced zone in accordance with Article 410-8 of

the *Standard Specifications*. If a drain is required, install wall drainage systems as shown in the accepted submittals and in accordance with Section 816 of the *Standard Specifications*.

Install dowels as necessary for SRW units and place and construct coping and leveling concrete as shown in the accepted submittals. Construct leveling concrete in accordance with Section 420 of the *Standard Specifications*. Construct cast-in-place concrete coping in accordance with Subarticle 452-3(C) of the *Standard Specifications*. When single faced precast concrete barrier is required in front of and against MSE walls, stop coping just above barrier so coping does not interfere with placing barrier up against wall faces. When separation geotextiles are required, overlap adjacent geotextiles at least 18" and hold separation geotextiles in place with wire staples or anchor pins as needed. Seal joints above and behind MSE walls between coping and concrete slope protection with silicone sealant.

7.0 Measurement and Payment

MSE Retaining Walls will be measured and paid in square feet. MSE walls will be measured as the square feet of wall face area with the pay height equal to the difference between top of wall and top of footing elevations. Define “top of wall” as top of cap blocks.

The contract unit price for *MSE Retaining Walls* will be full compensation for providing designs, submittals, labor, tools, equipment and MSE wall materials, footing excavation, backfilling, and supplying site assistance, leveling pads, panels, SRW units, reinforcement, aggregate, wall drainage systems, geotextiles, bearing pads, coping, miscellaneous components and any incidentals necessary to construct MSE walls.

No separate payment will be made for temporary shoring for wall construction. Temporary shoring for wall construction will be incidental to the contract unit price for *MSE Retaining Walls*.

The contract unit price for *MSE Retaining Walls* does not include the cost for ditches, fences, handrails, barrier or guardrail associated with MSE walls as these items will be paid for elsewhere in the contract.

Payment will be made under:

Pay Item	**Pay Unit**
MSE Retaining Walls	Square Foot

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PROJECT MANUAL FOR:

ALAMANCE COUNTY REST AREA
VENDING BUILDINGS

I-40/I-85 ALAMANCE COUNTY, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

WBS NO. 3707.3.23
SCO ID: 14-xxxxx-01A- to be assigned

Architect / Engineer:

FACILITIES DESIGN
FACILITIES MAINTENANCE DIVISION, NCDOT
1 SOUTH WILMINGTON STREET
RALEIGH, NORTH CAROLINA 27601

April 1, 2015 SET NO.___

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PROJECT: **ALAMANCE COUNTY REST AREA VENDING BUILDINGS**
NC Department of Transportation
I-40/I-85 Alamance County, NC

OWNER: NC Department of Transportation

ARCHITECT: Facilities Design, NCDOT
Raleigh, NC (919) 707-4540
Lisa L. Keel, AIA

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LISA LARRAINE KEEL
REGISTERED ARCHITECT
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NORTH CAROLINA
RALEIGH, N.C.
3-13-15

SITE DEVELOPMENT: Roadside Environmental Unit, NCDOT
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Bob Kopetsky, RLA

NORTH CAROLINA
REGISTERED LANDSCAPE ARCHITECT
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ROBERT N. KOPETSKY
3.13.15

ENGINEERS:

STRUCTURAL: Facilities Design, NCDOT
Raleigh, NC (919) 707-4540
Michael D. Mountcastle, PE

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BUILDING ASBESTOS INSPECTION REPORT

F.A. # 01-13-22

BUILDING VENDING MACHINE BUILDING - SBL

ADDRESS I-85 BURLINGTON REST AREA

BURLINGTON, NC

July 30, 2007
DATE OF INSPECTION

This inspection was conducted by an inspector or inspectors accredited in the State of North Carolina

TERRY RUSSELL, SR.
printed name

signature

Accreditation # 11114

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North Carolina Department of Transportation

FACILITY ASBESTOS NOTIFICATION

Form 1001S
Effective 8-1-96
Revised 8-21-96

Part I. NOTIFICATION

The North Carolina Department of Transportation is hereby notifying you that the building listed below has been tested for the presence of asbestos-containing materials (ACM). A survey report is on file and may be requested by contacting the NC DOT Asbestos Program Manager at (919) 715-0400.

Part II. FACILITY INFORMATION *(Please Print Clearly or Type)*

1. Facility Name/Identification Number: SBL
VENDING MACHINE BUILDING #01-13-00

2. Facility Address: I-85 AT GUILFORD LINE
P.O. BOX-766 - GRAHAM, NC - 27253

Part III. ASBESTOS STATUS:

☒ **1. No asbestos containing building material (ACBM) was located by asbestos inspection dated** APRIL 15, 1997.

○ **2. This building contains asbestos as follows:** ***(Specify locations)***

Ceiling Tile/Panels/Areas Above Ceiling: _____

Floor Materials: _____

Wall Board or Panels: _____

Surfacing Material: _____

Thermal Insulation: _____

Other: *(Describe)* _____

Part IV. ASBESTOS MANAGEMENT CERTIFICATION

Asbestos Management Planner (Signature)	Accreditation Number:	Date:	Phone Number:
Terry L Russell Jr	20641	8-10-98	919-715-0400

Part V. ACKNOWLEDGEMENT OF NOTIFICATION

Name *(Please Print Clearly)*	Company	Company Phone Number

Signature	Date

NOTE:

DO NOT remove any tags or labels from items labeled as ACM. If you must post any warning labels in association with your work, please remove immediately upon completion of work. If your work requires lock-out/tagout of energy sources, please ensure the facility coordinator for this facility is fully aware of the extent of your activities. Your safety and health while visiting our facilities is our paramount concern.

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BUILDING ASBESTOS INSPECTION REPORT

F.A. # 01-13-00

BUILDING **Vending Machine Building**
SBL

ADDRESS **I-85 At Guilford Line**

Burlington, North Carolina

April 15, 1997
DATE OF INSPECTION

This inspection was conducted by an inspector or inspectors accredited in the State of North Carolina.

Kenneth R. Rangel
printed name

Kenneth R. Rangel
signature

N. C. Asbestos Inspector Accreditation # 11239

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

Building Summary

FA# 01-13-22
Building Name: VENDING MACHINE BLDG. SBL
Fac. Coordinator: KEN TAFFER
Phone#: 336-334-3192
Address: 1584 YANCEYVILLE STREET
GREENSBORO, NC

Date of Inspection April 15, 1997
Inspector Kenneth R. Rangel

Roof Construction
☐ Flat ☐ Pitched Roof ☐ Coated Metal
X Asphalt Shingles ☐ Corrugated Metal
☐ Other

Building Exterior
☐ Masonry Brick X Wood Siding ☐ Metal Siding
☐ Asbestos Siding ☐ Vinyl Siding
☐ Other

Interior Floors
X Concrete ☐ Wood ☐ No Floor
☐ Carpeting ☐ Floor Tile (9x9) ☐ Floor Tile (12 x 12)
☐ Sheet Floor Covering
☐ Other

Interior Walls
☐ Wallboard (sheetrock) ☐ Masonry Block ☐ Brick
☐ Paneling X Wood ☐ Plaster on Plank
☐ Other

Ceiling
☐ No Ceiling X Wood ☐ Wallboard (sheetrock)
☐ Ceiling Tile ☐ Suspended Ceiling(2x2 or 2x4)
☐ Other

HVAC System
☐ No HVAC ☐ Gas Fired Unit X Electric Unit
☐ Other

Attic ☐ N/A
Basement ☐ N/A
Crawlspace ☐ N/A

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NCDOT - Division 7 - Alamance County

F. A. # 01-13-17

Bldg. Name: Vending Machine Building

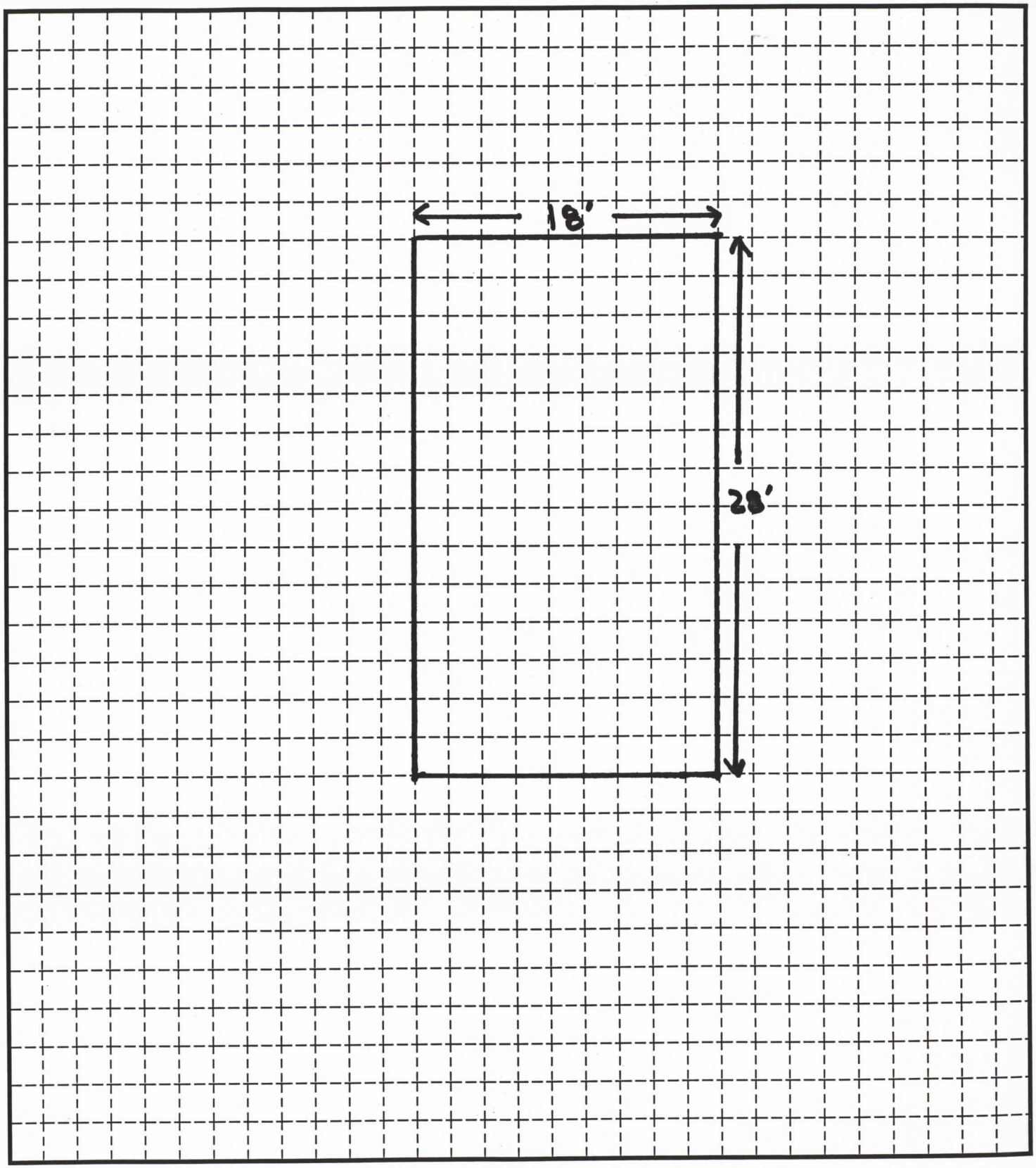
SBL

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

F.A. #

FACILITY: VENDING MACHINE BUILDING, ALAMANCE COUNTY

PREPARED BY: Law Engineering DATE: April 15, 1997



Asbestos Containing Building Materials Inspection And Lab Report Form

F.A. :
Building : **Vending Machine Building**
Location : **Alamance County**
Inspection Date : **April 15, 1997**

Note: Samples where analyzed by Law Engineering-Birmingham AL

Homogeneous Area	ACBM Type	Sample #'s	Friable	Est. Quantity	Quantity Unit	Disturbance/Damage Assessment	% Dmg.	Asbestos/Comments
Asphalt Shingle		011317-01,02		600	SF			Roofing Shingle: NAD

ACBM Type
S = Surfacing
T = Thermal Insulation
M1 = Category I Misc.
M2 = Category II Misc.

Friable
F = Friable
NF = Not Friable

Disturbance/Damage
PD = Potential for Damage
PSD = Potential for Significant Damage
D = Damage
SD = Significant Damage

Asbestos/Comments
NAD - No Asbestos Detected
Chrys. = Chrysotile
Amos. = Amosite
Trem. = Tremolite/Actinolite
Croc. = Crocidolite

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DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

LAB

REPORT

ATTACHED

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

PLM REPORT SUMMARY

Law Engineering and Environmental Services, Inc.
2100 Riverchase Center, Ste 450
Birmingham, AL 35244 (205)733-7600

NVLAP Lab No. 101066
TDH License No. 30-0162

Client : N.C. DOT
Law Job No. : 30731-7-2086-13.1-606
Project : Vending Machine Bldg.
Report Date : 4/30/97
Client Project No.: FA # 1-1-13-17
Sample Date : Not Provided
Identification : Asbestos, Bulk Sample Analysis
Test Method : Polarized Light Microscopy / Dispersion Staining (PLM/DS)
EPA Method 600/R-93/116

On 4/23/97, two (2) bulk material samples were submitted by Kenneth Rangel for asbestos analysis by PLM/DS.

Lab Sample No.	Sample Description / Location	Asbestos Content
100668	ASPHALT SHINGLE 011317-01	None Detected-Roofing Shingle
100669	ASPHALT SHINGLE 011317-02	None Detected-Roofing Shingle

These samples were analyzed by layers. The first percentage is the overall asbestos content for the sample. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also state that Regulated Asbestos Containing Materials (RACM) -- materials which are friable or may become friable -- be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE. Our laboratory utilizes CVAE on a routine basis and does not include point counting unless specifically requested. These reports may not be reproduced except in full. Any unauthorized use or distribution of these reports shall be at the client's and recipient's sole risk and without liability to Law Engineering.

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

PLM REPORT SUMMARY

Law Engineering and Environmental Services, Inc.
2100 Riverchase Center, Ste 450
Birmingham, AL 35244 (205)733-7600

NVLAP Lab No. 101066
TDH License No. 30-0162

Client :	N.C. DOT	Law Job No. :	30731-7-2086-13.1-606
Project :	Vending Machine Bldg.	Report Date :	4/30/97
Client Project No.:	FA # 1-1-13-17	Sample Date :	Not Provided
Identification :	Asbestos, Bulk Sample Analysis		
Test Method :	Polarized Light Microscopy / Dispersion Staining (PLM/DS) EPA Method 600/R-93/116		

STATEMENT OF LABORATORY ACCREDITATION

These samples were analyzed at the Birmingham Branch of Law Engineering in the Asbestos Laboratory at 2100 Riverchase Center, Suite 450, Birmingham, Alabama, 35244. The laboratory holds accreditation from the National Institute of Standards and Technology (formerly National Bureau of Standards) under the National Voluntary Laboratory Accreditation Program (NVLAP). This laboratory also is licensed and authorized to perform as an Asbestos Laboratory in the State of Texas within the purview of Texas Civil Statutes, Article 4477-3a, as amended, so long as this license is not suspended or revoked and is renewed according to the rules adopted by the Texas Board of Health.

The samples were analyzed by polarized light microscopy in general accordance with the procedures described in the Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116. The results of each bulk sample analysis relate only to the material tested. This report shall not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Specific questions concerning bulk sample results shall be directed to the PLM Laboratory Manager.

Analyst : John J. Kimbro

PLM Laboratory Manager : Jim Findlay

Approved Signatory : J. A. King

NVLAP

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

Birmingham, AL (205)733-7600

Asbestos Analysis Sheet

EPA Method 600/R-93/116

NVLAP Lab No. 101066
TDH License No. 30-0162

Client : **N.C. DOT**

Project : **Vending Machine Bldg.**

Law Job No. : **30731-7-2086-13.1-606** Lab No. : **100668** Field No.: **011317-01**

Sample Description : **ASPHALT SHINGLE**
011317-01

Layer 1 Roofing Shingle

Stereoscopic Exam

Color	Texture	Homogeneous?	% Fibrous	% Asbestos	% of Sample
Black	**Asphaltic**	**YES**	**25**	**ND**	**100**

PLM Examination

Components	%	+/-	Morphology	Color / Pleochroism	Parallel Ref. Index	Perpendicular Ref. Index	Biref	Extinction Angle	Sign of Elongation
Cellulose Fibers	**30**		**ribbons**				**high**		
Aggregate	**30**		**Non-fibrous**						
Tar Binders	**40**		**Non-fibrous**						

Prep/treatment : **heat / melt**

Asbestos Content : **None Detected**

Comments :

Analyst : **John J. Kimbro**
Date : **4/28/97**

Lab Set# : **000202** Lab Sample No. : **100668**

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

Birmingham, AL (205)733-7600

Asbestos Analysis Sheet

EPA Method 600/R-93/116

NVLAP Lab No. 101066
TDH License No. 30-0162

Client : **N.C. DOT**

Project : **Vending Machine Bldg.**

Law Job No. : **30731-7-2086-13.1-606** Lab No. : **100669** Field No.: **011317-02**

Sample Description : **ASPHALT SHINGLE**
011317-02

Layer 1 Roofing Shingle

Stereoscopic Exam

Color	Texture	Homogeneous?	% Fibrous	% Asbestos	% of Sample
Black	**Asphaltic**	**YES**	**25**	**ND**	**100**

PLM Examination

Components	%	+/-	Morphology	Color / Pleochroism	Parallel Ref. Index	Perpendicular Ref. Index	Biref	Extinction Angle	Sign of Elongation
Cellulose Fibers	**30**		**ribbons**				**high**		
Aggregate	**30**		**Non-fibrous**						
Tar Binders	**40**		**Non-fibrous**						

Prep/treatment : **heat / melt**

Asbestos Content : **None Detected**

Comments :

Analyst : **John J. Kimbro**
Date : **4/28/97**

Lab Set# : **000202** Lab Sample No. : **100669**

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

Qualifications of Report

This survey is limited to accessible areas only. No demolition was performed to access specific areas unless directed by the Asbestos Program Manager.

All hidden or concealed suspect building materials found during normal renovations or demolition activities should be assumed to be asbestos-containing until subsequent testing proves otherwise.

All solid fire rated doors and materials beneath rubber membrane roofing systems should be assumed to be asbestos-containing until testing proves otherwise.

All measurements included in this report are approximations to be used by NC DOT personnel during normal operations and maintenance activities. Outside contractors should use their own measurements for pricing and removal permitting.

Broad assumptions were made as to the homogeneous nature of materials. When major renovations or abatements are planned, additional sampling may be required and is recommended.

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September 23, 1998

MEMORANDUM

TO: K. A Taffer Courier No: 02/ 16/ 44
Facility Coordinator

FROM: Terry F. Russell, Sr.
Asbestos Program Manager
Facilities Design

SUBJECT: Facility Asbestos Notification Forms For Complex No:01- 13
Alamance County , Landscape Unit

Attached are the original signed Asbestos Notification Form(s) for you to review and administer the Form(s) with employees, contractors, or contract employees performing facility related activities at the above noted location. Also, attached is a cover sheet listing all buildings that you are the Facility Coordinator. For the cover sheet to be used as "Acknowledgment of Notification", all buildings listed must be reviewed with employee, contractor, or contract employee.

If you have anyone refusing to sign the 1001S Form or the 1001C Form please have witnessed by two people and so noted on the Form. Make as many copies as necessary to have signed for "Acknowledgment of Notification". Return the fully executed Forms to this office (Courier #51-31-00) and keep a copy for your file. If you need orientation on reviewing and administering the Form please contact me at (919) 715-0400 or the Division Safety Engineer.

It is required that employees watch the "Understanding Asbestos in the Workplace" Video as part of your Safety Program. The video may be scheduled and obtained through DOT Safety and Loss Control at (919) 250-4200.

TFRsr

Enclosure

cc: Paul Gundlach
A-File

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

North Carolina Department of Transportation

COMPLEX COVER SHEET
FACILITY ASBESTOS NOTIFICATION

Form 1001C
Effective 4-1-97

Part I. NOTIFICATION

The North Carolina Department of Transportation is hereby notifying you that the buildings listed below has been tested for the presence of asbestos-containing materials (ACM). A survey report and the 1001S forms for each building listed is to be reviewed with you by the designated Facility Coordinator. This will be on file and may be requested by contacting the NC DOT Asbestos Program Manager at (919) 715-0400.

Part II. FACILITY INFORMATION *(Please Print Clearly or Type)*

1. Facility Name: BURLINGTON REST AREA
2. Facility - F.A.#/County/Unit: 01-13 / ALAMANCE / LANDSCAPE
3. Facility Coordinator: K.A. TAFFER Phone No: (336) 334-3192

Part III. BUILDINGS COVERED BY THIS SHEET:

Building Name	F.A. #	Building Name	F.A. #
Public Serv. Bldg- SB	01-13-01	1-Table Picnic Shelter NB	01-13-11
Public Serv. Bldg.- NB	01-13-02	1-Table Picnic Shelter NB	01-13-12
Utility Storage Bldg. SB	01-13-03	1-Table Picnic Shelter NB	01-13-13
Utility Storage Bldg. NB	01-13-04	1-Table Picnic Shelter NB	01-13-14
1-Table Picnic Shelter SB	01-13-05	2-Table Picnic Shelter SB	01-13-15
1-Table Picnic Shelter SB	01-13-06	2-Table Picnic Shelter NB	01-13-16
1-Table Picnic Shelter SB	01-13-07	Invent. Storage Bldg. NB	01-13-19
1-Table Picnic Shelter SB	01-13-08	Vending Machine Bldg.	01-13-00
1-Table Picnic Shelter SB	01-13-09	Vending Machine Bldg.	01-13-00
1-Table Picnic Shelter NB	01-13-10		

Part IV. ASBESTOS MANAGEMENT CERTIFICATION

Asbestos Management Planner (Signature)	Accreditation Number:	Date:	Phone Number:
Terry F. Russell Sr.	20641	9-23-98	919-715-0400

Part V. ACKNOWLEDGEMENT OF NOTIFICATION

Name *(Please Print Clearly)*	Company	Company Phone Number

Signature	Date

NOTE:

DO NOT remove any tags or labels from items labeled as ACM. If you must post any warning labels in association with your work, please remove immediately upon completion of work. If your work requires lock-out/tagout of energy sources, please ensure the facility coordinator for this facility is fully aware of the extent of your activities. Your safety and health while visiting our facilities is our paramount concern.

ASBESTOS SIGNAGE WORKSHEET

COUNTY ALAMANCE No.(01) COMPLEX BURLINGTON REST AREA No.(13) PAGE 1 of 2

FACILITY COORDINATOR K.A. TAFFER TELEPHONE# 336-334-3192

ASSET #	BUILDING NAME	*ACM SIGNAGE F	C	T	M	O	# OF ENTRANCE SIGNAGE (Facility Coord. & Bldg. ID.)	DATE ACM SIGNAGE INSTALLED
01-13-01	PUBLIC SERVICE BLDG.-SBL						1	
01-13-02	PUBLIC SERVICE BLDG.- NBL						1	
01-13-03	UTILITY SERVICE BLDG.- SBL						1	
01-13-04	UTILITY STORAGE BLDG.- NBL						1	
01-13-05	PICNIC SHELTER- SBL						1	
01-13-06	PICNIC SHELTER- SBL						1	
01-13-07	PICNIC SHELTER- SBL						1	
01-13-08	PICNIC SHELTER- SBL						1	
01-13-09	PICNIC SHELTER- SBL						1	
01-13-10	PICNIC SHELTER- NBL						1	
01-13-11	PICNIC SHELTER- NBL						1	
01-13-12	PICNIC SHELTER- NBL						1	
01-13-13	PICNIC SHELTER- NBL						1	
01-13-14	PICNIC SHELTER- NBL						1	
01-13-15	PICNIC SHELTER- SBL						1	
TOTALS =							15	

* F= Flooring / C= Ceiling / T= Thermal System Insulation / M= Mechanical / O= Other

DIVISION SAFETY ENGINEER SIGNATURE_____

(To be signed upon completion)

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

ASBESTOS SIGNAGE WORKSHEET

COUNTY ALAMANCE No.(01) COMPLEX BURLINGTON REST AREA No.(13) PAGE 2 of 2

FACILITY COORDINATOR K.A. TAFFER TELEPHONE# 336-334-3192

ASSET #	BUILDING NAME	*ACM SIGNAGE F	C	T	M	O	# OF ENTRANCE SIGNAGE (Facility Coord. & Bldg. ID.)	DATE ACM SIGNAGE INSTALLED
01-13-16	PICNIC SHELTER-NBL						1	
01-13-19	INVENTORY STORAGE BLDG:NBL						1	
01-13-21	VENDING MACHINE BLDG.-NBL						1	
01-13-22	VENDING MACHINE BLDG.-SBL						1	
TOTALS =							4	

* F= Flooring / C= Ceiling / T= Thermal System Insulation / M= Mechanical / O= Other

DIVISION SAFETY ENGINEER SIGNATURE_____

(To be signed upon completion)

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BUILDING ASBESTOS INSPECTION REPORT

F.A. # 01-13-21

BUILDING VENDING MACHINE BUILDING - NBL

ADDRESS I-85 BURLINGTON REST AREA

BURLINGTON, NC

July 30, 2007
DATE OF INSPECTION

This inspection was conducted by an inspector or inspectors accredited in the State of North Carolina

TERRY RUSSELL, SR.
printed name

signature

Accreditation # 11114

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

North Carolina Department of Transportation

FACILITY ASBESTOS NOTIFICATION

Form 1001S
Effective 8-1-96
Revised 8-21-96

Part I. NOTIFICATION

The North Carolina Department of Transportation is hereby notifying you that the building listed below has been tested for the presence of asbestos-containing materials (ACM). A survey report is on file and may be requested by contacting the NC DOT Asbestos Program Manager at (919) 715-0400.

Part II. FACILITY INFORMATION *(Please Print Clearly or Type)*

1. Facility Name/Identification Number:
VENDING MACHINE BUILDING - NBL # 01-13-00

2. Facility Address: I-85 AT GUILFORD LINE
P.O. BOX-766 - GRAHAM, NC - 27253

Part III. ASBESTOS STATUS:

⊗ **1. No asbestos containing building material (ACBM) was located by asbestos inspection dated** APRIL 15, 1997.

○ **2. This building contains asbestos as follows:** ***(Specify locations)***

Ceiling Tile/Panels/Areas Above Ceiling: _____

Floor Materials: _____

Wall Board or Panels: _____

Surfacing Material: _____

Thermal Insulation: _____

Other: *(Describe)* _____

Part IV. ASBESTOS MANAGEMENT CERTIFICATION

Asbestos Management Planner (Signature)	Accreditation Number:	Date:	Phone Number:
Jerry Russell Jr.	20641	8-10-98	919-715-0400

Part V. ACKNOWLEDGEMENT OF NOTIFICATION

Name *(Please Print Clearly)*	Company	Company Phone Number

Signature	Date

NOTE:

DO NOT remove any tags or labels from items labeled as ACM. If you must post any warning labels in association with your work, please remove immediately upon completion of work. If your work requires lock-out/tagout of energy sources, please ensure the facility coordinator for this facility is fully aware of the extent of your activities. Your safety and health while visiting our facilities is our paramount concern.

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

BUILDING ASBESTOS INSPECTION REPORT

F.A. # 01-13-~~00~~ 21

BUILDING Vending Machine Building NBL

ADDRESS I-85 At Guilford Line

Burlington, North Carolina

April 15, 1997
DATE OF INSPECTION

This inspection was conducted by an inspector or inspectors accredited in the State of North Carolina.

Kenneth R. Rangel
printed name

Kenneth R. Rangel
signature

N. C. Asbestos Inspector Accreditation # 11239

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

Building Summary

FA# 01-13-21
Building Name: VENDING MACHINE BLDG. NBL
Fac. Coordinator: KEN TAFFER
Phone#: 336-334-3192
Address: 1584 YANCEYVILLE STREET
GREENSBORO, NC

Date of Inspection April 15, 1997
Inspector Kenneth R. Rangel

Roof Construction
☐ Flat ☐ Pitched Roof ☐ Coated Metal
X Asphalt Shingles ☐ Corrugated Metal
☐ Other

Building Exterior
☐ Masonry Brick X Wood Siding ☐ Metal Siding
☐ Asbestos Siding ☐ Vinyl Siding
☐ Other

Interior Floors
X Concrete ☐ Wood ☐ No Floor
☐ Carpeting ☐ Floor Tile (9x9) ☐ Floor Tile (12 x 12)
☐ Sheet Floor Covering
☐ Other

Interior Walls
☐ Wallboard (sheetrock) ☐ Masonry Block ☐ Brick
☐ Paneling X Wood ☐ Plaster on Plank
☐ Other

Ceiling
☐ No Ceiling X Wood ☐ Wallboard (sheetrock)
☐ Ceiling Tile ☐ Suspended Ceiling(2x2 or 2x4)
☐ Other

HVAC System
X No HVAC ☐ Gas Fired Unit ☐ Electric Unit
☐ Other

Attic ☐ N/A
Basement ☐ N/A
Crawlspace ☐ N/A

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

NCDOT - Division 7 - Alamance County

F. A. # 01-13-18

Bldg. Name: Vending Machine Building

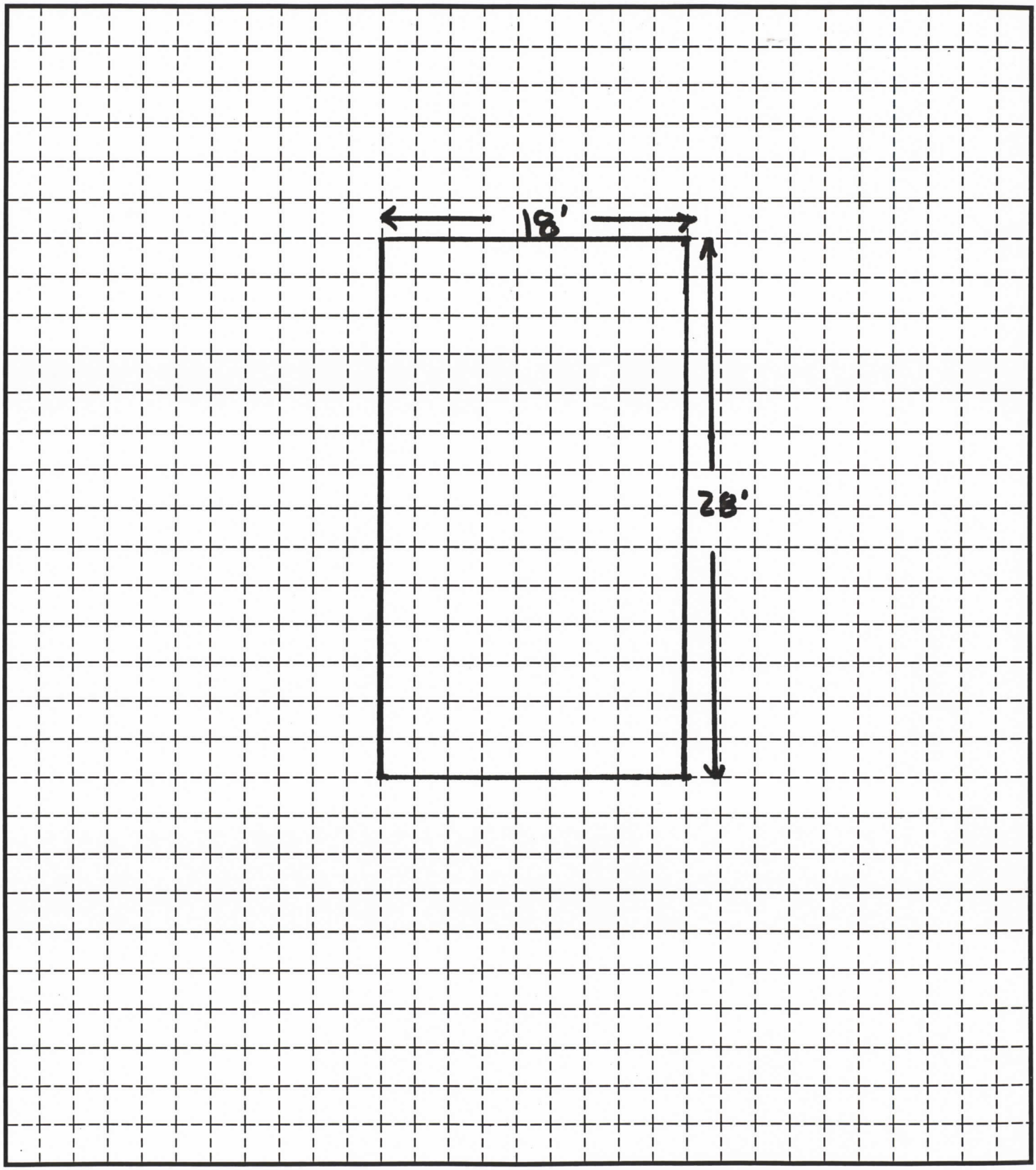
NBL

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

F.A. #

FACILITY: VENDING MACHINE BUILDING, ALAMANCE COUNTY

PREPARED BY: Law Engineering DATE: April 15, 1997



Asbestos Containing Building Materials Inspection And Lab Report Form

F.A. :
Building : **Vending Machine Building**
Location : **Alamance County**
Inspection Date : **April 15, 1997**

Note: Samples where analyzed by Law Engineering-Birmingham AL

Homogeneous Area	ACBM Type	Sample #'s	Friable	Est. Quantity	Quantity Unit	Disturbance/Damage Assessment	% Dmg.	Asbestos/Comments
Asphalt Shingle		011318-01,02		600	SF			Roofing Shingle: NAD

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PSD = Potential for Significant Damage
D = Damage
SD = Significant Damage

Asbestos/Comments
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Chrys. = Chrysotile
Amos. = Amosite
Trem. = Tremolite/Actinolite
Croc. = Crocidolite

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DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

LAB

REPORT

ATTACHED

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

PLM REPORT SUMMARY

Law Engineering and Environmental Services, Inc.
2100 Riverchase Center, Ste 450
Birmingham, AL 35244 (205)733-7600

NVLAP Lab No. 101066
TDH License No. 30-0162

Client : N.C. DOT
Law Job No. : 30731-7-2086-13.1-606
Project : Vending Machine Bldg.
Report Date : 4/30/97
Client Project No.: FA # 1-1-13-18
Sample Date : Not Provided
Identification : Asbestos, Bulk Sample Analysis
Test Method : Polarized Light Microscopy / Dispersion Staining (PLM/DS)
EPA Method 600/R-93/116

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DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

PLM REPORT SUMMARY

Law Engineering and Environmental Services, Inc.
2100 Riverchase Center, Ste 450
Birmingham, AL 35244 (205)733-7600

NVLAP Lab No. 101066
TDH License No. 30-0162

Client :	N.C. DOT	Law Job No. :	30731-7-2086-13.1-606
Project :	Vending Machine Bldg.	Report Date :	4/30/97
Client Project No.:	FA # 1-1-13-18	Sample Date :	Not Provided
Identification :	Asbestos, Bulk Sample Analysis		
Test Method :	Polarized Light Microscopy / Dispersion Staining (PLM/DS) EPA Method 600/R-93/116		

STATEMENT OF LABORATORY ACCREDITATION

These samples were analyzed at the Birmingham Branch of Law Engineering in the Asbestos Laboratory at 2100 Riverchase Center, Suite 450, Birmingham, Alabama, 35244. The laboratory holds accreditation from the National Institute of Standards and Technology (formerly National Bureau of Standards) under the National Voluntary Laboratory Accreditation Program (NVLAP). This laboratory also is licensed and authorized to perform as an Asbestos Laboratory in the State of Texas within the purview of Texas Civil Statutes, Article 4477-3a, as amended, so long as this license is not suspended or revoked and is renewed according to the rules adopted by the Texas Board of Health.

The samples were analyzed by polarized light microscopy in general accordance with the procedures described in the Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116. The results of each bulk sample analysis relate only to the material tested. This report shall not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Specific questions concerning bulk sample results shall be directed to the PLM Laboratory Manager.

Analyst : John J. Kimbro

PLM Laboratory Manager : Jim Findlay

Approved Signatory :

NVLAP

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Birmingham, AL (205)733-7600

Asbestos Analysis Sheet

EPA Method 600/R-93/116

NVLAP Lab No. 101066
TDH License No. 30-0162

Client : **N.C. DOT**

Project : **Vending Machine Bldg.**

Law Job No. : **30731-7-2086-13.1-606** Lab No. : **100670** Field No.: **011318-01**

Sample Description : **ASPHALT SHINGLE**
011318-01

Layer 1 **Roofing Shingle**

Stereoscopic Exam

Color	Texture	Homogeneous?	% Fibrous	% Asbestos	% of Sample
Black	**Asphaltic**	**YES**	**20**	**ND**	**100**

PLM Examination

Components	%	+/-	Morphology	Color / Pleochroism	Parallel Ref. Index	Perpendicular Ref. Index	Biref	Extinction Angle	Sign of Elongation
Glass Wool Fibers	**20**		**Rods**				**0**		
Aggregate	**35**		**Non-fibrous**						
Tar Binders	**45**		**Non-fibrous**						

Prep/treatment : **mechanical separation**

Asbestos Content : **None Detected**

Comments :

Analyst : **John J. Kimbro**
Date : **4/28/97**

Lab Set# : **000203** Lab Sample No. : **100670**

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Birmingham, AL (205)733-7600

Asbestos Analysis Sheet

EPA Method 600/R-93/116

NVLAP Lab No. 101066
TDH License No. 30-0162

Client : **N.C. DOT**

Project : **Vending Machine Bldg.**

Law Job No. : **30731-7-2086-13.1-606** Lab No. : **100671** Field No.: **011318-02**

Sample Description : **ASPHALT SHINGLE**
011318-02

Layer 1 **Roofing Shingle**

Stereoscopic Exam

Color	Texture	Homogeneous?	% Fibrous	% Asbestos	% of Sample
Black	**Asphaltic**	**YES**	**20**	**ND**	**100**

PLM Examination

Components	%	+/-	Morphology	Color / Pleochroism	Parallel Ref. Index	Perpendicular Ref. Index	Biref	Extinction Angle	Sign of Elongation
Glass Wool Fibers	**20**		**Rods**				**0**		
Aggregate	**35**		**Non-fibrous**						
Tar Binders	**45**		**Non-fibrous**						

Prep/treatment : **mechanical separation**

Asbestos Content : **None Detected**

Comments :

Analyst : **John J. Kimbro**
Date : **4/28/97**

Lab Set# : **000203**

Lab Sample No. : **100671**

DocuSign Envelope ID: 99E22379-B474-4FE4-A972-1B1F8BF2850C

Qualifications of Report

This survey is limited to accessible areas only. No demolition was performed to access specific areas unless directed by the Asbestos Program Manager.

All hidden or concealed suspect building materials found during normal renovations or demolition activities should be assumed to be asbestos-containing until subsequent testing proves otherwise.

All solid fire rated doors and materials beneath rubber membrane roofing systems should be assumed to be asbestos-containing until testing proves otherwise.

All measurements included in this report are approximations to be used by NC DOT personnel during normal operations and maintenance activities. Outside contractors should use their own measurements for pricing and removal permitting.

Broad assumptions were made as to the homogeneous nature of materials. When major renovations or abatements are planned, additional sampling may be required and is recommended.

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September 23, 1998

MEMORANDUM

TO: K. A Taffer Courier No: 02/ 16/ 44
Facility Coordinator

FROM: Terry F. Russell, Sr.
Asbestos Program Manager
Facilities Design

SUBJECT: Facility Asbestos Notification Forms For Complex No:01- 13
Alamance County , Landscape Unit

Attached are the original signed Asbestos Notification Form(s) for you to review and administer the Form(s) with employees, contractors, or contract employees performing facility related activities at the above noted location. Also, attached is a cover sheet listing all buildings that you are the Facility Coordinator. For the cover sheet to be used as "Acknowledgment of Notification", all buildings listed must be reviewed with employee, contractor, or contract employee.

If you have anyone refusing to sign the 1001S Form or the 1001C Form please have witnessed by two people and so noted on the Form. Make as many copies as necessary to have signed for "Acknowledgment of Notification". Return the fully executed Forms to this office (Courier #51-31-00) and keep a copy for your file. If you need orientation on reviewing and administering the Form please contact me at (919) 715-0400 or the Division Safety Engineer.

It is required that employees watch the "Understanding Asbestos in the Workplace" Video as part of your Safety Program. The video may be scheduled and obtained through DOT Safety and Loss Control at (919) 250-4200.

TFRsr

Enclosure

cc: Paul Gundlach
A-File

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North Carolina Department of Transportation

COMPLEX COVER SHEET
FACILITY ASBESTOS NOTIFICATION

Form 1001C
Effective 4-1-97

Part I. NOTIFICATION

The North Carolina Department of Transportation is hereby notifying you that the buildings listed below has been tested for the presence of asbestos-containing materials (ACM). A survey report and the 1001S forms for each building listed is to be reviewed with you by the designated Facility Coordinator. This will be on file and may be requested by contacting the NC DOT Asbestos Program Manager at (919) 715-0400.

Part II. FACILITY INFORMATION *(Please Print Clearly or Type)*

1. Facility Name: BURLINGTON REST AREA
2. Facility - F.A.#/County/Unit: 01-13 / ALAMANCE / LANDSCAPE
3. Facility Coordinator: K.A. TAFFER Phone No: (336) 334-3192

Part III. BUILDINGS COVERED BY THIS SHEET:

Building Name	F.A. #	Building Name	F.A. #
Public Serv. Bldg- SB	01-13-01	1-Table Picnic Shelter NB	01-13-11
Public Serv. Bldg.- NB	01-13-02	1-Table Picnic Shelter NB	01-13-12
Utility Storage Bldg. SB	01-13-03	1-Table Picnic Shelter NB	01-13-13
Utility Storage Bldg. NB	01-13-04	1-Table Picnic Shelter NB	01-13-14
1-Table Picnic Shelter SB	01-13-05	2-Table Picnic Shelter SB	01-13-15
1-Table Picnic Shelter SB	01-13-06	2 Table Picnic Shelter NB	01-13-16
1-Table Picnic Shelter SB	01-13-07	Invent. Storage Bldg. NB	01-13-19
1-Table Picnic Shelter SB	01-13-08	Vending Machine Bldg.	01-13-00
1-Table Picnic Shelter SB	01-13-09	Vending Machine Bldg.	01-13-00
1-Table Picnic Shelter NB	01-13-10		

Part IV. ASBESTOS MANAGEMENT CERTIFICATION

Asbestos Management Planner (Signature)	Accreditation Number:	Date:	Phone Number:
Terry F. Russell Sr.	20641	9-23-98	919-715-0400

Part V. ACKNOWLEDGEMENT OF NOTIFICATION

Name *(Please Print Clearly)*	Company	Company Phone Number

Signature	Date

NOTE:

DO NOT remove any tags or labels from items labeled as ACM. If you must post any warning labels in association with your work, please remove immediately upon completion of work. If your work requires lock-out/tagout of energy sources, please ensure the facility coordinator for this facility is fully aware of the extent of your activities. Your safety and health while visiting our facilities is our paramount concern.

ASBESTOS SIGNAGE WORKSHEET

COUNTY ALAMANCE No.(01) COMPLEX BURLINGTON REST AREA No.(13) PAGE 1 of 2

FACILITY COORDINATOR K.A. TAFFER TELEPHONE# 336-334-3192

ASSET #	BUILDING NAME	*ACM SIGNAGE F	C	T	M	O	# OF ENTRANCE SIGNAGE (Facility Coord. & Bldg. ID.)	DATE ACM SIGNAGE INSTALLED
01-13-01	PUBLIC SERVICE BLDG.-SBL						1	
01-13-02	PUBLIC SERVICE BLDG.- NBL						1	
01-13-03	UTILITY SERVICE BLDG.- SBL						1	
01-13-04	UTILITY STORAGE BLDG.- NBL						1	
01-13-05	PICNIC SHELTER- SBL						1	
01-13-06	PICNIC SHELTER- SBL						1	
01-13-07	PICNIC SHELTER- SBL						1	
01-13-08	PICNIC SHELTER- SBL						1	
01-13-09	PICNIC SHELTER- SBL						1	
01-13-10	PICNIC SHELTER- NBL						1	
01-13-11	PICNIC SHELTER- NBL						1	
01-13-12	PICNIC SHELTER- NBL						1	
01-13-13	PICNIC SHELTER- NBL						1	
01-13-14	PICNIC SHELTER- NBL						1	
01-13-15	PICNIC SHELTER- SBL						1	
TOTALS =							15	

* F= Flooring / C= Ceiling / T= Thermal System Insulation / M= Mechanical / O= Other

DIVISION SAFETY ENGINEER SIGNATURE_____

(To be signed upon completion)

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ASBESTOS SIGNAGE WORKSHEET

COUNTY ALAMANCE No.(01) COMPLEX BURLINGTON REST AREA No.(13) PAGE 2 of 2

FACILITY COORDINATOR K.A. TAFFER TELEPHONE# 336-334-3192

ASSET #	BUILDING NAME	*ACM SIGNAGE					# OF ENTRANCE SIGNAGE (Facility Coord. & Bldg. ID.)	DATE ACM SIGNAGE INSTALLED
		F	C	T	M	O		
01-13-16	PICNIC SHELTER-NBL						1	
01-13-19	INVENTORY STORAGE BLDG.-NBL						1	
01-13-21	VENDING MACHINE BLDG.-NBL						1	
01-13-22	VENDING MACHINE BLDG.-SBL						1	
TOTALS =							4	

* F= Flooring / C= Ceiling / T= Thermal System Insulation / M= Mechanical / O= Other

DIVISION SAFETY ENGINEER SIGNATURE_____

(To be signed upon completion)

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SECTION 01 1000

SUMMARY

PART 1 GENERAL

1.1 PROJECT

A. Project Name: I-40/I-85 Alamance County Rest Area Vending Buildings.

B. Owner's Name: State of North Carolina, through the North Carolina Department Of Transportation.

C. Architect's Name: Facilities Design Section, NCDOT (Lisa L Keel, AIA).

D. The Project consists of the following:
1. Demolition and construction/site development is at two (2) sites, the South Bound Lane and the North Bound Lane.
2. Demolition & removal of two existing vending buildings (slab on grade foundation, wood stud walls, one at each site), selected picnic shelters, selected existing trees and selected concrete sidewalks. Capping off utility lines at removed vending buildings.
3. The construction of two vending buildings (slab on grade foundation, wood stud wall with 1" continuous rigid insulation, air space & brick veneer, roof system consisting of pre-fabricated wood trusses with SIP panels & asphalt shingles), one at each site.
4. Site development of each site.

1.2 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in Notice to Bidders; one contract will encompass the building and all site work.

1.3 OWNER OCCUPANCY

A. NC DOT intends to continue to occupy adjacent portions of the DOT complex during the entire construction period.

B. NC DOT intends to occupy the Project upon Final Acceptance. Beneficial Occupancy can be obtained for each building as it is completed.

C. Cooperate with NC DOT to minimize conflict and to facilitate NC DOT's operations.

1.4 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings.
1. No work may take place outside of the fenced construction area (see sheets L-03 & L-04 for construction area limits) while boats are docked as the site is a restricted area during that time.

B. Utility Outages and Shutdown:
1. Prevent accidental disruption of utility services to other facilities.
2. Coordinate necessary shut-offs with Owner.

C. Contractor can connect to Owner's site utilities (setting up temporary service access, as needed).

END OF SECTION

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SECTION 01 1510

CONSTRUCTION AND DEMOLITION MATERIALS RECYCLING REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes: Requirements and procedures for ensuring optimal diversion of demolition and construction waste materials generated by the Work from landfill disposal within the limits of the Construction Schedule and Contract Sum.
   1. State of North Carolina Executive Order 156, Section 1.b, states that "…all state agencies are to maximize their efforts to…reduce and recycle material recoverable from solid waste originating…from the construction and renovation of new facilities…"
   2. The Waste Reduction Goal of this Contract is that a minimum of 50% by weight of the construction and demolition materials generated in the Work be diverted from landfill disposal through a combination of re-use and recycling activities.
   3. Requirements for submittal of Contractor's Construction Waste and Recycling Plan prior to the commencement of the Work.
   4. Contractor's quantitative reports for construction waste materials as a condition of approval of progress payments submitted to the Architect

1.2 DEFINITIONS

A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations.
B. Construction and Demolition Debris: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous. This term includes, but is not limited to, asphalt concrete, Portland cement concrete, brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, carpet pad, ceiling tile, plastic pipe, other plastic material, vinyl flooring, copper pipe, and steel. This will also include other jobsite materials such as cardboard packaging, sheet vinyl, plastic bottles, white paper, and aluminum cans.
C. C&D Recycling Center: A facility that receives C&D material that has been separated for reuse. Recycling facilities are often part of the overall County waste management facilities.
D. Disposal: Final deposition of construction and demolition material
E. Mixed Debris Recycling Facility: A processing facility that accepts loads of commingled construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing the non-recyclable residual materials.
F. Recycling: The process of sorting, cleansing, treating and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
G. Reuse. The use, in the same or similar form as it was produced, of a material which might otherwise be discarded.
H. Source-Separated: Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream at the point of generation, for the purpose of additional sorting or processing of those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw materials for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace.
I. Waste Hauler: A company that possesses a valid permit from the [local waste management authority to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal in [the locality].

1.3 SUBMITTALS

A. Contractor's Construction Waste and Recycling Plan

   1. Review Contract Documents and estimate the types and quantities of materials under the Work that are anticipated to be feasible for on-site processing, source separation for re-use or recycling. Indicate the procedures that will be implemented in this program to effect jobsite source

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separation, such as, identifying a convenient location where dumpsters would be located, putting signage to identify materials to be placed in dumpsters, etc.

2. Prior to commencing the Work, submit Contractor's Construction Waste and Recycling Plan. Submit in format provided (**Section 01 1510A**). The Plan must include, but is not limited to the following:
   a. Contractor's name and project identification information;
   b. Procedures to be used;
   c. Materials to be re-used and recycled;
   d. Estimated quantities of materials;
   e. Names and locations of re-use and recycling facilities/sites;
   f. Tonnage calculations that demonstrate that Contractor will re-use and recycle a minimum 50% by weight of the construction waste materials generated in the Work.
   g. Cost of local tip fees for non-recycled material/ton
   h. Cost or revenue generated from recycled material, per category, per ton (note: cost and revenue are to be managed by the General Contractor as part of the Work; tonnage, cost, and savings information are to be provided to the Architect for tracking purposes only)
2. Contractor's Construction Waste and Recycling Plan must be approved by the Architect prior to the start of Work.
3. Contractor's Construction Waste and Recycling Plan will not otherwise relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.

B. Contractor's Reuse, Recycling, and Disposal Report
1. Submit Contractor's Reuse, Recycling, and Disposal Report on the form provided (**Section 011510B**) with each application for progress payment. Failure to submit the form and its supporting documentation will render the application for progress payment incomplete and delay progress payments. If applicable, include manifests, weight tickets, receipts, and invoices specifically identifying the Project for re-used and recycled materials:
   a. Reuse of building materials or salvage items on site
   b. Salvaging building materials for reuse
   c. Recycling source separated materials on site, with approval
   d. Recycling source separated material at an off site recycling center
   e. Delivery of soils or mixed inerts to an inerts landfill for disposal (inert fill).
   f. Disposal at a landfill or transfer station (where no recycling takes place).
   g. Other (describe).

Contractor's Reuse, Recycling, and Disposal Report must quantify all materials generated in the Work, disposed in landfills, or diverted from disposal through recycling. Indicate zero (0) if there is no quantity to report for a type of material. As indicated on the form:

1. Report disposal or recycling either in tons or in cubic yards: if scales are available at disposal or recycling facility, report in tons; otherwise, report in cubic yards. Report in units for salvage items when no tonnage or cubic yard measurement is feasible.
2. Indicate locations to which materials are delivered for reuse, salvage, recycling, accepted as daily cover, inert backfill, or disposal in landfills or transfer stations.
3. Provide legible copies of weigh tickets, receipts, or invoices that specifically identify the project generating the material. Said documents must be from recyclers and/or disposal site operators that can legally accept the materials for the purpose of re-use, recycling, or disposal.

   a. Indicate project title, project number, progress payment number, name of the company completing the Contractor's Report and compiling backup documentation, the printed name, signature, and daytime phone number of the person completing the form, the beginning and ending dates of the period covered on the Contractor's Report, and the date that the Contractor's Report is completed.

4. NCDOT General Services Division will provide a list of waste recycling sites, sorted by County and by Highway Division. It is the responsibility of the General Contractor to confirm the locations and manage the waste material.

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PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.11 SALVAGE, RE-USE, RECYCLING AND PROCEDURES

A. Identify re-use, salvage, and recycling facilities.
B. Develop and implement procedures to re-use, salvage, and recycle new construction and excavation materials, based on the Contract Documents, the Contractor's Construction Waste and Recycling Plan, estimated quantities of available materials, and availability of recycling facilities. Procedures may include on-site recycling, source separated recycling, and/or mixed debris recycling efforts.
   1. Identify materials that are feasible for salvage, determine requirements for site storage, and transportation of materials to a salvage facility.
   2. Source separate new construction, excavation and demolition materials including, but not limited to the following types:
      a. Asphalt.
      b. Concrete, concrete block, slump stone (decorative concrete block), and rocks.
      c. Gypsum wallboard
      d. Green materials (i.e. tree trimmings and land clearing debris).
      e. Metal (ferrous and non-ferrous).
      f. Miscellaneous Construction Debris.
      g. Paper or cardboard.
      h. Red Clay Brick.
         Reuse or Salvage Materials
      i. Soils.
         Wire and Cable.
      j. Wood studs
      k. Plastic pipe
      l. Ceiling tile
      m. Ceramic tile
      n. Carpet
      o. Vinyl flooring
      p. Other
   3. Miscellaneous Construction Debris: Develop and implement a program to transport loads of mixed (commingled) new construction materials that cannot be feasibly source separated to a mixed materials recycling facility.

3.2 DISPOSAL OPERATIONS AND WASTE HAULING

A. Legally transport and dispose of materials that cannot be delivered to a source separated or mixed recycling facility to a transfer station or disposal facility that can legally accept the materials for the purpose of disposal.
B. Use a permitted waste hauler or Contractor's trucking services and personnel. To confirm valid permitted status of waste haulers, contact the local solid waste authority.
C. Become familiar with the conditions for acceptance of new construction, excavation and demolition materials at recycling facilities, prior to delivering materials. NCDOT General Services Division will work with the General Contractor on identifying sites that will accept recycled materials.
D. Deliver to facilities that can legally accept new construction, excavation and demolition materials for purpose of re-use, recycling, composting, or disposal.
E. Do not burn, bury or otherwise dispose of solid waste on the project job-site.

3.43 REVENUE

A. Revenues or other savings obtained from recycled, re-used, or salvaged materials shall accrue to the General Contractor. Accounting of revenues or savings is for the Owner's tracking purposes only.

END OF SECTION

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SECTION 01 1510A

CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

(Submit after award of Contract and prior to commencing work)

Project Title:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Project Period:	From:	To:

SECTION I - RE-USED/RECYCLED MATERIALS						
Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.						
Type of	Type	Facility to be	Total Truck	Total Quantities		
Material	of Activity	Used/Location	Loads	Tons	Cubic YD	Cost/Reven.
a. Total Diversion						

SECTION II - DISPOSED MATERIALS						
Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.						
Type of	Type	Facility to be	Total Truck	Total Quantities		
Material	of Activity	Used/Location	Loads	Tons	Cubic YD	Cost
b. Total Disposal						

SECTION III - TOTAL MATERIALS GENERATED						
This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation						
				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled						
b. Total Disposed						
c. Total Generated						

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SECTION 01 1510B
CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING REPORT
(Submit with each Pay Application)

Project Title:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Project Period:	From:	To:

SECTION I - RE-USED/RECYCLED MATERIALS						
Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.						
Type of	Type	Facility to be	Total Truck	Total Quantities		
Material	of Activity	Used/Location	Loads	Tons	Cubic YD	Cost/Reven.
a. Total Diversion						

SECTION II - DISPOSED MATERIALS						
Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.						
Type of	Type	Facility to be	Total Truck	Total Quantities		
Material	of Activity	Used/Location	Loads	Tons	Cubic YD	Cost
b. Total Disposal						

SECTION III - TOTAL MATERIALS GENERATED						
This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation						
				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled						
b. Total Disposed						
c. Total Generated						

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SECTION 01 2000

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

1.2 SCHEDULE OF VALUES

A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to NCDOT for approval.

B. Forms filled out by hand will not be accepted.

C. Contractor is to divide the schedule of values into four parts- site and vending building, for the South Bound Lane and the North Bound Lane (so the owner can assess the final value for insurance purposes). General condition can be kept together, owner will pro rate to establish value.

1.3 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to NCDOT for approval.

C. Forms filled out by hand will not be accepted.

D. Execute certification by signature of authorized officer.

E. Submit five originals of each Application for Payment.

END OF SECTION

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SECTION 01 2100

ALLOWANCES & UNIT PRICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Divisions 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

1. Quantity allowances.

C. Related Requirements:

1. Not used.

1.03 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.04 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

1.05 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

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C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.06 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.07 QUANTITY ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.08 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of

work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.

2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.

3. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

A. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.02 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.03 SCHEDULE OF ALLOWANCES

A. Allowance No. 1: Excavation of Material.

1. Coordinate quantity allowance adjustment with unit-price requirements in this section.

2. Provide an allowance of 55 c.y. for excavation of material, where authorized or directed, below or in addition to the levels required for the Work. Dispose of excavated material in an approved location on-site. Backfill with imported structural fill material compacted per specifications. Credit or additions to the Contract Price for actual quantities removed and replaced (based on volume of material cut) shall be made per the Unit Prices contained in the Bid Form. Include in the unit price the cost of quantity verification by a Surveyor licensed in the state of North Carolina.

3.04 UNIT PRICE LIST

A. **Unit Price No. 1**: Excavation of Material.
   1. Description: The excavation of material, where authorized or directed, below or in addition to the levels required for the Work. Dispose of excavated material in an approved location on-site. Backfill with imported structural fill material compacted per specifications. The unit of measurement shall be cubic yards.
   2. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in this section.

END OF SECTION

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SECTION 01 3000

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Preconstruction meeting.

B. Progress meetings.

C. Construction progress schedule.

D. Submittals for review, information, and project closeout.

E. Number of copies of submittals.

F. Submittal procedures.

G. Quality assurance.

1.2 RELATED REQUIREMENTS

A. Section 01 3216 - Construction Progress Schedule

B. General Conditions

C. Supplementary General Conditions

D. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.

E. Section 01 7800 - Closeout Submittals: Project record documents.

1.3 PROJECT COORDINATION

A. Project Coordinator: General Contractor.

B. Cooperate with the Owner's Representative in allocation of mobilization areas of site; for field offices and sheds, for vehicular access, traffic, and parking facilities.

C. Coordinate with Owner's procedures for submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts. Any discrepancies noted in the contract documents is to be reported to the architect.

D. Coordinate temporary utilities and construction facilities w/owner.

E. Make the following types of submittals directly to the NCDOT:
   1. Requests for interpretation.
   2. Requests for substitution.
   3. Shop drawings, product data, and samples.
   4. Test and inspection reports.
   5. Manufacturer's instructions and field reports.
   6. Applications for payment and change order requests.
   7. Progress schedules.
   8. Coordination drawings.
   9. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Attendance Required:
   1. NC DOT (Owner).
   2. Designer.
   3. .
   4. Major Subcontractors.
   5. State Construction Office-not required, as this is a Highways Right of Ways project subject to GS-136. As such, SCO monitors are not assigned to review it during construction, with the exception of the SCO electrical inspector.

B. Agenda:
   1. Distribution of Contract Documents.
   2. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
   3. Designation of personnel representing the parties to Contract, NCDOT.
   4. Designation of personnel & emergency personal representing the parties to Contract, State Construction Office, and NCDOT.
   5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.

C. Record minutes and distribute copies within two days after meeting to participants, with two copies to Designer, NC DOT, participants, and those affected by decisions made.

3.2 PROGRESS MEETINGS

A. The architect will administer meetings throughout progress of the Work at monthly intervals.

B. Attendance Required: Job superintendent, major Subcontractors and suppliers, NC DOT, Engineers of Record when appropriate to work underway.

C. Agenda:
   1. Review minutes of previous meeting.
   2. Review of Work progress- one month look-ahead.
   3. Field observations & issues.
   4. Review of submittals schedule and status of submittals.
   5. Progress schedule.
   6. Corrective measures to regain project schedule, if necessary.
   7. Planned progress during succeeding work period.
   8. Outstanding RFI's/RFP's.

D. Architect will record minutes and distribute copies after the meeting to participants.

E. Architect and/or engineer will also be on site weekly for an informal jobsite visit.

3.3 CONSTRUCTION PROGRESS SCHEDULE

A. If preliminary schedule requires revision after review, submit revised schedule within 7 days.

B. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
   1. Include written certification that major Subcontractors have reviewed and accepted proposed schedule.

C. Within 10 days after joint review, submit complete schedule.

D. Submit updated schedule at each monthly meeting if there is a change.

3.4 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.

3. Samples for selection.
4. Samples for verification.

B. Submit to NCDOT for review for the limited purpose of checking for conformance with the contract documents.

C. Samples will be reviewed for color and finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - CLOSEOUT SUBMITTALS.

3.5 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
1. Design data.
2. Certificates.
3. Test reports.
4. Inspection reports.
5. Manufacturer's instructions.
6. Manufacturer's field reports.
7. Other types indicated.

B. Submit for Designer's knowledge as contract administrator or for NC DOT. No action will be taken.

3.6 SUBMITTALS FOR PROJECT CLOSEOUT

A. When the following are specified in individual sections, submit them at project closeout:
1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated.

B. Submit for NC DOT's benefit during and after project completion.

3.7 NUMBER OF COPIES OF SUBMITTALS

A. Documents for Review:
1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches: Submit the number of copies that requires, plus two copies that will be retained by NCDOT.

B. Documents for Information: Submit two copies.

C. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.

D. Samples: Submit the number specified in individual specification sections; one of which will be retained by NCDOT.
1. After review, produce duplicates.
2. Retained samples will not be returned to unless specifically so stated.

3.8 SUBMITTAL PROCEDURES

A. Transmit each submittal with AIA Form G810.

B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

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C. Identify Project, SCO ID Number,, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

D. Apply's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. The submittal will be rejected by the Architect without this verification.

E. Schedule submittals to expedite the Project, and coordinate submission of priority and related items.

F. For each submittal for review, allow 15 days excluding delivery time.

G. Identify variations from Contract Documents and Product or system limitations.

H. Provide space for and NCDOT & Designer of Record review stamps.

I. When revised for resubmission, identify all changes made since previous submission.

J. Architect will distribute copies of reviewed submittals.

3.9 SOILS AND MATERIALS QUALITY ASSURANCE

A. Quality assurance will be provided by Owner's in-house staff.

B. General Contractor will notify the Architect 48 hours in advance to schedule the Owner's testing agent on site.

C. The NCDOT Structural Engineer will provide an outline of testing and testing intervals to the General Contractor & Owner's testing agent.

D. Testing will include soil and gravel compaction testing, and slump and strength testing for all concrete and structural grout (footing, slab, wall & sidewalk).

E. Visual inspection of all structural elements will be done by the NCDOT Structural Engineer.

F. For testing requires for plumbing, mechanical and electrical, see relevant specification sections.

END OF SECTION

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SECTION 01 3216

CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Preliminary schedule.

B. Construction progress schedule, bar chart type.

1.2 RELATED SECTIONS

A. Section 01 1000 - Summary: Work sequence.

1.3 REFERENCES

A. AGC (CPSM) - Construction Planning and Scheduling Manual; Associated General Contractors of America; 2004.

B. M-H (CPM) - CPM in Construction Management - Project Management with CPM, O'Brien, McGraw-Hill Book Company; 2006.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRELIMINARY SCHEDULE

A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.2 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

B. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

C. Provide legend for symbols and abbreviations used.

3.3 BAR CHARTS

A. Include a separate bar for each major portion of Work or operation.

B. Identify the first work day of each week.

3.4 REVIEW AND EVALUATION OF SCHEDULE

A. Project schedule will be reviewed at the monthly meeting.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 7 days.

3.5 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to's project site file, to Subcontractors, suppliers, NCDOT and NCDOT Designer of Record, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION

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SECTION 01 4000

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. References and standards.

B. Quality assurance submittals.

C. Control of installation.

D. Testing and inspection services.

E. Special inspections.

F. Manufacturers' field services.

1.2 RELATED REQUIREMENTS

A. Section 01 3000 - Administrative Requirements: Submittal procedures.

B. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.3 REFERENCE STANDARDS

A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008.

B. ASTM C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation; 2011.

C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2009.

D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2010.

E. ASTM E329 - Standard Specification for Agencies Engaged Construction Inspection and/or Testing; 2011.

F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2009.

1.4 SUBMITTALS

A. Contractor to submit concrete mix design and any additional information required elsewhere in the specifications.

B. See Plumbing, Mechanical, and Electrical specifications for required testing.

C. Testing Agency Qualifications:
   1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.

D. Test Reports: After each test/inspection, promptly submit two copies of report to NCDOT and NCDOT Designer of Record.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.

f. Location in the Project.
g. Type of test/inspection.
h. Date of test/inspection.
i. Results of test/inspection.
j. Conformance with Contract Documents.
k. When requested by NCDOT, provide interpretation of results.

E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and or installation/application subcontractor to NCDOT, in quantities specified for Product Data.
   1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

1.5 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Final Acceptance.

E. Should specified reference standards conflict with Contract Documents, request clarification from NCDOT before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of NCDOT shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

PART 2 EXECUTION

2.1 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturer's instructions, including each step in sequence.

C. Should manufacturer's instruction conflict with contract documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by person qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

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2.2 TESTING AND INSPECTION

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with NCDOT and in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify NCDOT and of observed irregularities or non-conformance of Work or products.
   5. Perform additional tests and inspections required by NCDOT.
   6. Submit reports of all tests/inspections specified.

B. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of.
   4. Agency has no authority to stop the Work.

C. Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   4. Notify NCDOT and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
   5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by beyond specified requirements.
   6. Arrange with NC DOT's agency and pay for additional samples, tests, and inspections required by beyond specified requirements.

D. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by NCDOT.

2.3 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

2.4 DEFECT ASSESSMENT

A. Replace work or portions of the work not conforming to specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

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SECTION 01 6000

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. General product requirements.

B. Transportation, handling, storage and protection.

C. Product option requirements.

D. Substitution limitations and procedures.

E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.2 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

D. Indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

PART 2 PRODUCTS

2.1 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. Do not use products having any of the following characteristics:

C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.

D. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

2.2 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.3 MAINTENANCE MATERIALS

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A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.1 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

C. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the substitution as for the specified product.
   3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to NC DOT.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.

D. Substitution Submittal Procedure:
   1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
   2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
   3. The NCDOT will notify in writing of decision to accept or reject request.

3.2 TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

B. Transport and handle products in accordance with manufacturer's instructions.

C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.3 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

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E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Prevent contact with material that may cause corrosion, discoloration, or staining.

H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

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SECTION 01 7000

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Cutting and patching.

C. Surveying for laying out the work.

D. Cleaning and protection.

E. Starting of systems and equipment.

F. Demonstration and instruction of NC DOT personnel.

G. Closeout procedures, except payment procedures.

1.2 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01 3000 - Administrative Requirements: Submittals procedures.

C. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

1.3 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Survey work: Staking and grading is to be done per contract document information, with General Contractor's Surveyor prior to starting work; Contractor is to alert Designer to any discrepancies.

1. Submit surveys and survey logs for the project record.

1.4 QUALIFICATIONS

A. For survey work, employ a land surveyor registered in North Carolina.

B. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in North Carolina.

1.5 PROJECT CONDITIONS

A. Grade site as shown on Contract document. Maintain excavations free of water. Provide, operate, and maintain pumping equipment if necessary.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

C. As work progresses, ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.6 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

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B. Notify affected utility companies and comply with their requirements.

C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. General contractor to coordinate completion and clean-up of work of subcontractors.

G. After NC DOT occupancy of premises, Owner's representative will coordinate access to site for correction of warranty work.

PART 2 PRODUCTS

2.1 PATCHING MATERIALS

A. New Materials: As specified in product sections.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 LAYING OUT THE WORK

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A. Verify locations of survey control points prior to starting work.

B. Promptly notify NCDOT & Designer of any discrepancies discovered.

C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

D. Promptly report to Designer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Designer.

F. Utilize recognized engineering survey practices.

G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations.

H. Periodically verify layouts by same means.

I. Maintain a complete and accurate log of control and survey work as it progresses.

3.4 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.5 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-conforming work.

C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

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E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.

I. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.6 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.7 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.8 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

C. Verify tests, meter readings, and specified electrical characteristics agree with those required by

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the equipment or system manufacturer.

D. Verify that wiring and support components for equipment are complete and tested.

E. Execute start-up under supervision of applicable personnel and manufacturer's representative in accordance with manufacturers' instructions.

F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.9 DEMONSTRATION AND INSTRUCTION

A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.

3.10 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.11 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

E. Clean filters of operating equipment.

F. Clean debris from roofs, gutters, downspouts, and drainage systems.

G. Clean site; sweep paved areas, rake clean landscaped surfaces.

H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.

B. Notify Designer when work is considered ready for Designer Pre-Final Inspection.

C. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Designer's review.

D. Correct items of work listed in Pre-Final Inspection punch list and comply with requirements for access to NC DOT-occupied areas.

E. Notify Designer when work is considered finally complete.

F. Complete items of work determined by Designer's Final Inspection.

END OF SECTION

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SECTION 01 7800

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

1.2 RELATED REQUIREMENTS

A. General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.

B. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

C. Section 01 7000 - Execution and Closeout Requirements: Contract closeout procedures.

D. Individual Product Sections: Specific requirements for operation and maintenance data.

E. Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS

A. Project Record Documents: ("As Built" mark-up set) Submit documents to Designer with claim for final Application for Payment.

B. Operation and Maintenance Manual:
1. For equipment, or component parts of equipment put into service during construction and operated by NC DOT, submit completed documents with acceptance of work.
2. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with NCDOT & Designer comments. Revise content of all document sets as required prior to final submission.
3. Submit three sets of final documents at the final inspection.
4. Operation and Maintenance manuals shall be loose leaf notebook with "tabs" to separate sections.

C. Warranties and Bonds:
1. For equipment or component parts of equipment put into service during construction with NC DOT's permission, submit documents with acceptance of work.
2. Make other submittals at the final Application for Payment.
3. For all the work, the date of warranty will be the date of the final inspection.

PART 3 EXECUTION

2.1 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
1. Drawings, Project manual.
2. Addenda, Bulletin drawings.
3. Change Orders and other modifications to the Contract.
4. Reviewed / approved shop drawing submittals, product data, and samples.

B. Ensure entries are complete and accurate, enabling future reference by NC DOT.

C. Store record documents separate from documents used for construction.

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D. Record the information as construction progresses.

E. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Field changes of dimension and detail.
   2. Details not on original Contract drawings.
   3. All subcontractors are to mark on the same record set.

2.2 OPERATION AND MAINTENANCE DATA

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

2.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. Provide for Each Product, applied material, and finish.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

2.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

C. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

D. Provide servicing and lubrication schedule, and list of lubricants required.

E. Include manufacturer'sprinted operation and maintenance instructions.

F. Include sequence of operation by controls manufacturer.

G. Provide original manufacturer'sparts list, illustrations, assembly drawings, and diagrams required for maintenance.

H. Additional Requirements: As specified in individual product specification sections.

2.5 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

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B. Prepare data in the form of an instructional manual.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.

F. Text: Manufacturer's printed data, or typewritten data.

G. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.

H. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of NCDOT & Designer, Subcontractors, and major equipment suppliers.
   2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
      f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
   3. Part 3: Project documents and certificates, including the following:
      a. Shop drawings and product data.

2.6 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with NC DOT's permission, leave date of beginning of time of warranty until the Date of Final Acceptance is determined. All warranties and bonds must be submitted at (or by) the final inspection.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION

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SECTION 02 4100

DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Demolition and removal of existing vending buildings and selected picnic shelters.
   2. Demolition and removal of selected existing trees and selected concrete sidewalks.

1.2 SUBMITTALS

A. Project Record Documents:
   1. Identify location of capped utilities.
   2. Submit forms titled “Section 01 1510A” and “Section 01 1510B” located following Section 01 1510 for the Construction and Demolition Materials Recycling Requirements.

1.3 PROJECT CONDITIONS

A. Existing Conditions:
   1. After the project is begun, the contractor is responsible for the condition of structures to be demolished. The owner does not warrant that the condition of structures to be demolished will not have changed since the time of inspection for bidding purposes.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and sealed.
B. Survey existing conditions and correlate with drawings and specifications to determine extent of demolition required; see Landscape, Mechanical and Electrical drawings. Salvage costs shall be reflected in the Contractor’s bid.
C. Insofar as is practicable, arrange operations to reveal unknown or concealed structural conditions for examination and verification before removal or demolition.

3.2 PREPARATION

A. Protection:
   1. Provide for the protection of persons passing around or through the area of demolition.
   2. Perform demolition so as to prevent damage to adjacent improvements and facilities to remain.

B. Construct and maintain shoring, bracing, and supports as necessary to ensure the stability of structures.

3.3 UTILITY SERVICES

A. Arrange with utility companies and shut off indicated utilities serving structures.
A. Disconnect and cap indicated utilities before starting demolition operations.
B. Identify location of capped utilities on project record documents.

3.4 POLLUTION CONTROLS

A. Observe environmental protection regulations.
B. Do not allow water usage that results in freezing or flooding.

3.5 DEMOLITION - GENERAL

A. Remove: Unless items are otherwise indicated to be reinstalled or salvaged, remove and scrap.

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B. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare for service; reinstall in the same location (or in the location indicated).
C. Remove and Install New: Remove and dispose of items indicated and install new items in the same location (or in the location indicated).
D. Remove and Salvage: Items indicated to be salvaged will remain the Owner's property. Carefully remove and clean items indicated to be salvaged; protect against damage; Owner may salvage some of the toilet fixtures, and toilet partitions.
E. Remove and Scrap: Remove and dispose of items indicated in Section 01 1510 for the Construction and Demolition Materials Recycling Requirements.
   1. Items of value to the contractor: Do not store removed items on site.
F. Existing to Remain: Construction or items indicated to remain shall be protected against damage during demolition operations. Where practicable, and with the architect's permission, the contractor may elect to remove items to a suitable storage location during demolition and then properly clean and reinstall the items.
G. Perform work in a systematic manner.
H. Perform selective demolition using methods which are least likely to damage work to remain and which will provide proper surfaces for patching.

3.6 DEMOLITION ON OR BELOW GRADE

A. Where portions of concrete slabs-on-grade are to be removed, first outline the portion with a concrete saw to a depth of at least 1 inch.

3.7 FILLING BELOW-GRADE AREAS AND VOIDS

A. Below-grade areas and voids resulting from demolition of structures shall be filled or excavated further, as appropriate, according to requirements specified elsewhere in Division 2.

3.8 DISPOSAL OF DEMOLISHED MATERIALS

A. Promptly dispose of materials resulting from demolition operations. Do not allow materials to accumulate on site. See Section 01 1510 for the Construction and Demolition Materials Recycling Requirements.
B. Transport concrete or masonry debris resulting from demolition operations and dispose off the Owner's property.
C. Transport all other materials resulting from demolition operations and legally dispose of off-site.
D. Do not burn removed materials on project site.
F. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

3.9 CLEANING

A. Clean soil, smudges, and dust from surfaces to remain.

END OF SECTION

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SECTION 03 1000

CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.

B. Openings for other work.

1.2 REFERENCE STANDARDS

A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute; 2010.

B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute; 2005.

PART 2 PRODUCTS

2.1 FORMWORK - GENERAL

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.

B. Design and construct to provide resultant concrete that conforms to design with respect to shape, lines, and dimensions.

C. Comply with applicable State Codes with respect to design, fabrication, erection, and removal of formwork.

2.2 WOOD FORM MATERIALS

A. Form Materials: At the discretion of the contractor.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.2 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

3.3 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items that will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.

3.4 FIELD QUALITY CONTROL

A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

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3.5 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

END OF SECTION

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SECTION 03 2000

CONCRETE REINFORCING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete.

B. Supports and accessories for steel reinforcement.

1.2 RELATED REQUIREMENTS

A. Section 03 1000 - Concrete Forming and Accessories.

B. Section 03 3000 - Cast-in-Place Concrete.

C. Section 04 2000 - Unit Masonry: Reinforcement for masonry.

1.3 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301.
   1. Maintain one copy of each document on project site.

PART 2 PRODUCTS

2.1 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M Grade 60 (420).
   1. Plain billet-steel bars.
   2. Unfinished.

B. Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain type.
   1. Flat Sheets.
   2. Mesh Size and Wire Gage: As indicated on drawings.

C. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
   3. Provide stainless steel components for placement within 1-1/2 inches of weathering surfaces.

2.2 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B. Locate reinforcing splices not indicated on drawings at point of minimum stress.

PART 3 EXECUTION

3.01 PLACEMENT

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A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Do not displace or damage vapor barrier.

C. Conform to applicable code for concrete cover over reinforcement.

3.2 SCHEDULES

A. Reinforcement For Foundation Wall Framing Members and Slab-on-Grade: Deformed bars and welded wire reinforcement.

END OF SECTION

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SECTION 03 3000

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Floors and slabs on grade.

B. Concrete reinforcement.

C. Joint devices associated with concrete work.

D. Miscellaneous concrete elements, including equipment pads.

E. Concrete curing.

F. Vapor Retarder at concrete slab on grade

1.2 REFERENCE STANDARDS

A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).

B. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2010.

C. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (Errata 2007).

D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.

E. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 2010.

F. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 2010.

G. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001 (Reapproved 2008).

H. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2008.

I. ASTM C33 - Standard Specification for Concrete Aggregates; 2011.

J. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2010.

K. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2011.

L. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-CementConcrete; 2010a.

M. ASTM C150 - Standard Specification for Portland Cement; 2011.

N. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2010b.

O. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.

P. ASTM C309 - Standard Specification for Liquid Membrane-FormingCompounds for Curing Concrete; 2007.

Q. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2010a.

R. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2008a.

S. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-CementGrout (Nonshrink); 2011.

T. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2008).

U. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2009.

V. COE CRD-C 513 - COE Specifications for Rubber Waterstops; Corps of Engineers; 1974.

1.3 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.

C. Samples: Submit samples of underslab vapor retarder to be used.

1.4 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.1 FORMWORK

A. Form Materials:'s choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.

2.2 REINFORCEMENT

A. Comply with requirements of Section 03 2000.

2.3 CONCRETE MATERIALS

A. Cement: ASTM C150, Type I - Normal Portland type.

B. Fine and Coarse Aggregates: ASTM C 33.

C. Fly Ash: ASTM C618, Class C or F.

D. Water: Clean and not detrimental to concrete.

2.4 CHEMICAL ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. Air Entrainment Admixture: ASTM C260.

2.5 ACCESSORY MATERIALS

A. Underslab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforcedpolyethylene or equivalent, complying with ASTM E 1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Minimum 10 mils thick. Single ply polyethylene is prohibited.
   1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.

B. Non-Shrink Cementitious Grout: ASTM C1107/C1107M; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
   1. Minimum Compressive Strength at 28 Days: 7000 psi.

C. Liquid Curing Compound: ASTM C 309, Type 1, clear or translucent. Provide Hardener type for exposed Warehouse floor and dissipating type for Office floor (to be compatible with finishes).

2.6 BONDING AND JOINTING PRODUCTS

A. Waterstops: Rubber, complying with COE CRD-C 513.

B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.

C. Joint Filler: Nonextruding, resilient asphalt impregnated fiberboard or felt, complying with ASTM D 1751, 1/4 inch thick and 4 inches deep; tongue and groove profile.

2.7 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Complywith ACI 211.1 recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
   1. For trial mixtures method, employ independent testing agency acceptable to NCDOT & Architect for preparing and reporting proposed mix designs.

C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.

D. Normal Weight Concrete:
   1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.
   2. Fly Ash is permitted.
   3. Water-Cement Ratio: Determined by mix design.
   4. Total Air Content: Determined by mix design
   5. Maximum Slump: 4 inches.
   6. Chlorides are not permitted in mix.

2.8 MIXING

A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.2 PREPARATION

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

B. Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches and seal watertight by taping edges and ends. Repair damaged vapor retarder before covering.

3.3 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

3.4 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Notify NCDOT and architect not less than 24 hours prior to commencement of placement operations.

D. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

E. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.5 SLAB JOINTING

A. Locate joints as indicated on the drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

D. Hot Weather Concreting shall meet the requirements of ACI 305R and Cold Weather Concreting shall meet the requirements of ACI 306R.

3.6 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.7 CONCRETE FINISHING

A. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
   1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 301.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, thin set quarry tile, and thin set ceramic tile.
   2. Other Surfaces to Be Left Exposed: "Steel trowel" as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

3.8 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
   1. Normal concrete: Not less than 7 days.

C. Surfaces Not in Contact with Forms:

1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
2. Final Curing: Begin after initial curing but before surface is dry.
   a. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.9 FIELD QUALITY CONTROL

A. NCDOT's testing agency will perform field quality control tests.

B. Provide free access to concrete operations at project site and cooperate with NCDOT personnel.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure five concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.

E. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

F. Perform one slump test for each truck on jobsite, following procedures of ASTM C 143/C 143M.

3.10 DEFECTIVE CONCRETE

A. Repair or replacement of defective concrete will be determined by the NCDOT & Architect. The cost of additional testing shall be borne by the General Contractor when defective concrete is identified.

END OF SECTION

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SECTION 04 0511

MASONRY MORTARING AND GROUTING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Mortar for masonry.

B. Grout for masonry.

1.2 RELATED REQUIREMENTS

A. Section 04 2000 - Unit Masonry: Installation of mortar and grout.

1.3 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used.

1.4 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

B. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.

C. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.1 MORTAR AND GROUT APPLICATIONS

A. Mortar Mix Designs: ASTM C270, Property Specification.

2.2 MATERIALS

A. Portland Cement: ASTM C150, Type I - Normal; standard gray color.

B. Hydrated Lime: ASTM C207, Type S.

C. Mortar Aggregate: ASTM C144.

D. Water: Clean and potable.

E. Grout: ASTM C476.

2.3 MORTAR MIXES

A. Mortar for Unit Masonry: ASTM C270, Proportion Specification.
   1. Engineered masonry: Type S.
   2. Limit cementitious materials to lime and portland cement.
   3. Masonry below grade and in contact with earth: Type S.
   4. Exterior, non-loadbearing masonry: Type S.
   5. Unpigmented.

B. Stain Resistant Pointing Mortar: One part Portland cement, 1/8 part hydrated lime, and two parts graded (80 mesh) aggregate, proportioned by volume. Add aluminum tristearate, calcium stearate, or ammonium stearate equal to 2 percent of Portland cement by weight.

2.4 GROUT MIXES

A. Engineered Masonry: 3,000 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install mortar and grout to requirements of section(s) in which masonry is specified.

3.2 GROUTING

A. Use low-lift grouting techniques,subject to other limitations of contract documents.

B. Perform all grouting by means of low-lift technique. Do not employ high-lift grouting.

C. Low-Lift Grouting:
   1. Limit height of pours to 48 inches.
   2. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
   3. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

END OF SECTION

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SECTION 04 2000

UNIT MASONRY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Clay Facing Brick.

C. Reinforcement and Anchorage.

D. Flashings.

E. Lintels.

F. Accessories.

1.2 RELATED REQUIREMENTS

A. Section 03 2000 - Concrete Reinforcing: Reinforcing steel for grouted masonry.

B. Section 04 0511 - Masonry Mortaring and Grouting.

1.3 REFERENCE STANDARDS

A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures; American Concrete Institute International; 2009.

B. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 2005.

C. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.

E. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2009b.

F. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a.

H. ASTM C91 - Standard Specification for Masonry Cement; 2005.

I. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2004.

J. ASTM C150 - Standard Specification for Portland Cement; 2011.

K. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006.

L. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2010.

M. ASTM C476 - Standard Specification for Grout for Masonry; 2010

N. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2009.

O. ASTM D4637 - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2010.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

1.5 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.1 BRICK UNITS

A. Manufacturers:
1. Triangle Brick Co.: www.trianglebrick.com.
2. Lee Brick & Tile Co.: www.leebrick.com.
3. Cunningham Brick Co.: http://www.cunninghambrick.com/
4. Palmetto Brick Co.: http://www.palmettobrick.com/
5. Pine Hall Brick Co., Inc.: http://www.pinehallbrick.com/
6. Statesville Brick Co.: http://www.statesvillebrick.com/
7. Taylor Clay Products Co.: http://www.taylorclay.com/
8. General Shale Brick: www.generalshale.com.
9. Substitutions: Use regional material for substitutions.

B. Facing Brick: ASTM C216, Type FBS, Grade SW.
1. Color and texture:
   a. Field: solid red wire cut (basis of design is Pine Hall Brick- Salem Blend Modular).
   b. Accent: Thru-body beige, wire cut
2. Nominal size: As indicated on drawings.

3. Special shapes: Molded units as required by conditions indicated, unless standard units can be sawn to produce equivalent effect.

2.3 REINFORCEMENT AND ANCHORAGE

A. Manufacturers of Joint Reinforcement and Anchors:
1. Dur-O-Wal: www.dur-o-wal.com.
2. Hohmann & Barnard, Inc (including Dur-O-Wal brand): www.h-b.com.
3. WIRE-BOND: www.wirebond.com.
4. Substitutions: See Section 01 6000 - Product Requirements.

B. Reinforcing Steel: Type specified in Section 03 2000; size as indicated on drawings; galvanized finish.

C. Single Wythe Joint Reinforcement: Truss type; ASTM A 82/A 82M steel wire, mill galvanized to ASTM A 641/A 641M, Class 3; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.

D. Strap Anchors: Bent steel shapes configured as required for specific situations, 1-1/4 in width, 0.105 in thick, lengths as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face, corrugated for embedment in masonry joint, hot dip galvanized to ASTM A 153/A 153M, Class B.

E. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face.

F. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
   1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
   2. Wire ties: Manufacturer's standard shape, 0.1875 inch thick.
   3. Vertical adjustment: Not less than 3-1/2 inches.

2.4 FLASHINGS

A. Copper/Kraft Paper Flashings: 3 oz/sq ft sheet copper bonded to fiber reinforced asphalt treated Kraft paper.

2.5 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.

B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; 2 inch wide x by maximum lengths available.

C. Weeps: Polyethylene tubing.

D. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.6 LINTELS

A. See structural drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.2 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.3 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

3.4 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Brick Units:
   1. Bond: Running (or as shown on drawings).
   2. Coursing: Three units and three mortar joints to equal 8 inches.
   3. Mortar Joints: Concave.

3.5 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

C. Remove excess mortar and mortar smears as work progresses.

D. Interlock intersections and external corners, except for units laid in stack bond.

E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

3.6 WEEPS/CAVITY VENTS

A. Install weeps in veneer and cavity walls at 24 inches on center horizontally as shown on drawings.

3.7 REINFORCEMENT AND ANCHORAGE - GENERAL

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches horizontally and 24 inches vertically.

3.8 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

A. Install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches on center vertically and 24 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

D. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

3.9 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

3.10 LINTELS- SEE STRUCTURAL DRAWINGS

3.11 GROUTED COMPONENTS

A. Lap splices minimum 48 bar diameters.

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

C. Place and consolidate grout fill without displacing reinforcing.

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3.12 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control and expansion joints.

3.13 FIELD QUALITY CONTROL

A. NCDOT will perform field quality control observations.

3.14 CLEANING

A. Remove excess mortar and mortar droppings.

B. Clean soiled surfaces with cleaning solution.

C. Use non-metallic tools in cleaning operations.

3.15 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

3.16 WASTE MANAGEMENT

A. Separate and recycle waste materials to the maximum extent economically feasible.

B. Fold up metal banding, flatten, and place in designated area for recycling.

C. Collect wood packing shims and pallets and place in designated area.

D. Place unused mixed mortar in designated locations where lower strength mortar meets the requirements for bulk fill, for example, use as retaining wall footing ballast, cavity fill at grade, or underground utility pipe kickers.

E. Separate masonry waste and place in designated area for use as structural fill or landscape uses.

END OF SECTION

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SECTION 05 1400
STRUCTURAL ALUMINUM FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Related Documents:
1. Drawings and the General Requirements of the Subcontract apply to this Section.
2. Review these documents for coordination with additional requirements and information that apply to work under this Section.

B. Section Includes:
1. Aluminum framing members, support members, bracing members and connections.
2. Base plates, leveling plates, leveling nuts and bolts.
3. Grouting under base plates.

C. Related Sections:
1. Section 01 3000 "General Requirements."
2. Section 01 4000 "Quality Requirements."
3. Section 03 3000 "Cast-in-Place Concrete"
4. Section 04 0511 Section "Grouting".

1.2 REFERENCES

A. General:
1. The following documents form part of the Specifications to the extent stated. Where differences exist between codes and standards, the one affording the greatest protection shall apply.
2. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.
3. Refer to Division 01 Section "General Requirements" for the list of applicable regulatory requirements.

B. Federal Specifications:
1. TT-P-645 – Paint, Aluminum, Heat Resisting

C. Aluminum Association:
1. Aluminum Design Manual

D. ASTM International:
1. ASTM B308 / B308M Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles
2. ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
3. ASTM B429 Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube

E. American Welding Society:
1. AWS D1.2 - Structural Welding Code, Aluminum.

1.3 SUBMITTALS

A. Submit under provisions of 01 3000 "Administrative Requirements."

B. Shop Drawings: For aluminum fabrications as follows:
1. Complete fabrication and erection plans and procedures giving full information on all aspects of the erection that will affect alignment, plumb and dimensional accuracy of the structure.
2. Connections, including size and spacing of bolts and welds.
3. Indicate profiles, sizes, spacing, and locations of structural members, openings, camber and attachments.

4. Indicate welded connections with AWS welding symbols. Indicate net weld lengths. Include details of welding materials, equipment, sequence and technique to be used.

C. Manufacturer's Certificate: Submit certification that manufactured products (including bolts, nuts and washers) meet or exceed specified requirements.
   1. Deliver manufactured products to the site in unopened containers. Certification numbers must appear on product containers for bolts, nuts and washers and the numbers shall correspond to the identification numbers on the Manufacturer's Certificate. The Manufacturer's symbol and grade markings must appear on bolts, nuts and washers.

D. Mill Test Reports: Submit mill test reports indicating structural strength, destructive and nondestructive test analysis and chemical analyses from the aluminum used in the Work.

E. Welders' Certificates: Documentation certifying welders employed by the Subcontractor meet AWS qualifications.

F. Submit the following as specified elsewhere in this Section:
   1. Written welding procedures in accordance with AWS D1.2 for each proposed joint.
   2. Procedure qualification records in accordance with AWS D.1.2 for procedures qualified by testing.
   3. Inspection reports of the Subcontractor's independent testing laboratory.

1.4 QUALITY ASSURANCE

A. Fabricate aluminum members in accordance with NCSBC and Aluminum Design Manual “Specification for Aluminum Structures - Building Load and Resistance Factor Design”.

B. Welders shall be qualified in accordance with AWS D1.2 for each process, position and joint configuration.

C. Maintain one copy of each referenced document on site.

D. Delegated Design Responsibilities: Design connections not detailed on the Drawings under the direct supervision of a Structural Engineer experienced in design of aluminum and licensed in the State of North Carolina.

1.5 PROJECT CONDITIONS

A. Verify dimensions on Shop Drawings in the field.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Rolled and Extruded Members: Alloy and temper 6016-T6, unless otherwise indicated on the Drawings.

B. Aluminum Tubing: Alloy and temper 6016-T6. Provide Anodized Aluminum, color **Dark Bronze.**

C. Bolts, Nuts, and Washers:
   1. Bolts and Nuts in Structural Connections: alloy 6061-T6, otherwise indicated on the Drawings.
   2. Flat Washers: Alclad 2024-T4.
   3. Spring Washers: alloy 7075-T6.

D. Rivets in Structural Connections: Alloy 6061-T6.

E. Welding Materials:
   1. Filler Metals: AWS D1.2.
   2. Electrodes and Equipment Settings: As recommended by the filler metal manufacturer for the position, thickness and conditions of use.
   3. Furnish written verification to Owner that filler metal is appropriate to the materials and welding process

2.2 CONNECTIONS

A. Unless otherwise indicated on the Drawings, weld or rivet shop and field connections, except moment connections that shall be bolted. Weld in accordance with approved welding procedures.

B. The Subcontractor is responsible for the design of the connections not detailed on the Drawings.

C. Design connection components to resist the loads and moments indicated on the Drawings; if the reaction or load is not indicated on the Drawings, design connections as follows:
   1. The minimum connection angle length will be half the depth of the beam depth.
   2. Horizontal and vertical bracing connections shall have a minimum of two bolts.

D. Connect gusset plates connecting horizontal and vertical bracing to beams and/or columns to both adjacent members; where this is not practical, make provisions for the moment induced by the eccentricity of the load to the work point of the connection.
   1. Locate gusset plates for horizontal bracing within the top two rows of bolts of beam connection angles, unless otherwise indicated on the Drawings.

2.3 FABRICATION

A. Fabricate aluminum members in accordance with the approved Shop Drawings. Where practical, fabricate and assemble in the shop.

B. Obtain field measurements necessary for fabrication.

C. Dimensional Tolerances:
   1. Overall length of members with both ends milled shall vary by not more than 1/32-inch.
   2. Overall length of members without milled ends shall vary by not more than 1/16-inch for lengths less than 30 feet and not more than 1/8-inch for lengths 30 feet and over.

D. Where structural joints are welded, the detail of the joints, welding technique, weld quality and appearance, and methods for correcting defective welds shall conform to the AWS D1.2.
   1. Welding Process: Inert shielded gas or resistance welding process.

E. Where milling is indicated on the Drawings, machine the contact surfaces true to obtain full and complete contact.

F. Structural members are selected from generally available rolled sections; however, if the specified sections are not available, provide sections with equivalent physical properties at no additional cost after approval by the Owner.

2.4 FINISHES

A. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces as follows:
   1. Where aluminum members are in contact with steel, prime both aluminum and steel members with one coat of paint meeting Federal Specification TT-P-645. Paint aluminum with an additional coat of varnish containing 2 pounds of aluminum pigment per gallon.
   2. Where aluminum members are in contact with porous materials, masonry or concrete, apply to the contact surfaces of the aluminum members a heavy coat of alkali resistant bituminous paint.
   3. Where aluminum members are embedded in concrete containing admixtures which are corrosive to aluminum, or in concrete subjected to highly corrosive environments, prime the aluminum with one coat of paint meeting Federal Specification TT-P-645. Otherwise aluminum members embedded in concrete need not be painted.

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide temporary supports and internal braces necessary to support structure during erection. Temporary supports and braces shall be adequate for anticipated wind, seismic, equipment and erection loads. Remove temporary shoring after the erection is complete.

B. Before erection, paint contact surfaces between dissimilar materials.

3.2 EXAMINATION

A. Verify that field conditions are acceptable and are ready for erection.

B. Beginning of installation means Subcontractor accepts that existing conditions meet the requirements for installation.

3.3 ERECTION

A. Where members cannot be properly assembled due to misfabrication or deformation due to handling or transportation, report the condition to the Owner with a proposed method of correction for approval. Erect structure to the lines and grades indicated on the Drawings and in accordance with the Shop Drawings.

B. Do not field cut or alter structural members without approval of the Owner.

C. Grout base plates with non-shrink grout. Clean concrete bearing surfaces from bond-reducing materials, and roughen if necessary to improve bond to surfaces. Paint the bottom surface of base plate. Set base plate on wedges or other adjustable devices. After the base plate has been positioned and plumbed, tighten the anchor bolts. Grout solidly between the bearing surfaces to ensure that no voids remain.

D. Where field welding to existing structural members is required, confirm the weldability of the existing aluminum by cutting or drilling samples and having them tested by the Subcontractor's Independent Testing Laboratory. The testing laboratory shall recommend the location for taking samples, provide a report on weldability, recommend the type of electrode, and weld and inspect the final welds.
   1. Be responsible for preparing the existing structure for welding and touch-up of the surfaces.

3.4 INSPECTION AND TESTING

A. Inspection and testing will be performed under provisions of Section 01 4000 "Quality Requirements". The Subcontractor shall be responsible for in-house visual inspection and implementing a quality control program.

B. Notify the Owner of the fabrication and erection schedules and permit the Owner's representative to observe shop assembly, make visual inspections, nondestructive tests of welds, observe erection and perform field testing. Correct defective work, rejected by the Owner at no additional cost to the Owner.

C. A certified welding inspector employed by the Owner's Independent Testing Laboratory will verify that welds are made in accordance with approved welding procedures and visually inspect shop and field welding operations as directed by the Owner.

D. Nondestructive testing of welding to the criteria in AWS chapter 5 by the Owner's Independent Testing Agency
   1. Perform visual testing of welds in the fabricator's shop.

END OF SECTION 05 1400

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SECTION 05 5000

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Shop fabricated steel items.

1.2 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.

B. Section 04 2000 - Unit Masonry: Placement of metal fabrications in masonry.

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 01 2100 – Allowances and Unit Prices, for additional requirements.

1.4 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2008.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2010.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.

D. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2003 (Reapproved 2007).

E. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2009a.

F. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric); 2009.

G. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2010a.

H. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2010.

I. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2004).

J. for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2010.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1.6 QUALITY ASSURANCE

A. Design under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in North Carolina.

PART 2 PRODUCTS

2.1 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A500, Grade B cold-formed structural tubing.

C. Plates: ASTM A283.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

E. Bolts, Nuts, and Washers: ASTM A325, Type 1, galvanized to ASTM A153 where connecting galvanized components.

F. Welding Materials: AWS D1.1; type required for materials being welded.

G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.2 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.2 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Obtain approval prior to site cutting or making adjustments not scheduled.

3.3 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

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SECTION 06 1000

ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Preservative treated wood materials.

B. Concealed wood blocking, nailers, and supports.

C. Miscellaneous wood nailers, furring, and grounds.

1.2 RELATED REQUIREMENTS

A. Section 09 2116 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.3 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2009.

B. AFPA (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; American Forest and Paper Association; 2001.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2010

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010b.

F. AWPA C2 - Lumber, Timber, Bridge Ties and Mine Ties -- Preservative Treatment by Pressure Processes; American Wood-Preservers' Association; 2003.

G. AWPA C9 - Plywood -- Preservative Treatment by Pressure Processes; American Wood-Preservers' Association; 2003.

H. AWPA U1 - Use Category System: User Specification for Treated Wood; American Wood Protection Association; 2010.

I. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce);2005.

J. SPIB (GR) - Grading Rules; Southern Pine Inspection Bureau, Inc.; 2002.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Dimension Lumber: Complywith PS 20 and requirements of specified grading agencies.

1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Lumber fabricated from old growth timber is not permitted.

2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc. (SPIB).

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: Kiln-dry or MC15.

D. Stud Framing (2 by 2 through 2 by 6):
1. Species: Any allowed under referenced grading rules.
2. Grade: No. 2.

E. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
1. Species: Any allowed under grading rules.
2. Grade: No. 1 & Btr.

F. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

2.3 CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.4 ACCESSORIES

A. Fasteners and Anchors:
1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

B. Water-Resistive Barrier: No. 15 asphalt felt.

2.5 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Preservative Treatment:
1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
   a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.

2. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
   a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.

PART 3 EXECUTION

3.1 PREPARATION

A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

B. Coordinate installation of rough carpentry members specified in other sections.

3.2 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.3 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

C. Specifically, provide the following non-structural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.
   7. Chalkboards and marker boards.
   8. Wall paneling and trim.
   9. Joints of rigid wall coverings that occur between studs.

3.4 INSTALLATION OF CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
   1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
   2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   3. Install adjacent boards without gaps.
   4. Size and Location: As indicated on drawings.

3.5 CLEANING

A. Waste Disposal: Comply with the requirements of Section 01 1510.
   1. Complywith applicable regulations.
   2. Do not burn scrap on project site.

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3. Do not burn scraps that have been pressure treated.
4. Do not send materials treated with pentachlorophenol,CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

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SECTION 06 1210

STRUCTURAL INSULATED PANELS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Bearing support, stud framing, field-fabricated panel connections, miscellaneous blocking and nailers.

1.2 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide structural insulated panel manufacturer's product literature including structural properties, design load capacities and installation instructions.

C. Shop Drawings: Fully dimensioned fabrication and installation details for structural insulated panels. Indicate dimensions, materials, connections and arrangement of joints. Include anchorage, size and type of fasteners, and accessories.

1. Include calculations that indicate compliance with the applicable building code and the structural insulated panel manufacturer's requirements.

2. Include seal of Professional Engineer registered in North Carolina on drawings and calculations.

D. Designer's Qualification Statement.

E. Manufacturer's Qualification Statement.

F. Warranty: Submit manufacturer warranty and ensure that forms have been completed in NCDOT's name and registered with manufacturer.

1.3 QUALITY ASSURANCE

A. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in North Carolina.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1. Member of Structural Insulated Panel Association (SIPA).

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver structural insulated panels in manufacturer's packaging, if any, and with manufacturer labels and markings intact.

B. Cover structural insulated panels with waterproof covering during transportation and storage. Keep dry.

C. Protect edges of wood construction panels and foam cores.

D. Fully support structural insulated panels off the ground.

E. Do not lift structural insulated panels by wood construction panel layer.

1.5 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Final Acceptance.

C. Provide twenty year manufacturer warranty on structural insulated panel material and workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Structural Insulated Panels(SIP): Manufacture shall be equal to **Eco-Panels, LLC***, www.eco-panels.com, Mocksville, NC, (336) 936-0148; or ACME Panel; or Ray-Core SIPS; or Hunter Roof Panel.

2.2 STRUCTURAL INSULATED PANELS

A. Structural Insulated Panels: Provide Factory marked T&G roof structural insulated panels capable of withstanding design loads including dead load, live load, wind load and seismic load.

B. Structural Insulated Wall Panel: Oriented strand board construction panel laminated to the top side of rigid extruded Polyurethane foam board and C-D plywood laminated to the bottom side.

1. Panel Size: 4 feet by 12 feet.
2. Overall Thickness: 6-1/2 inches.
3. Span Rating: 24/16, minimum (trusses at 24” o.c.).
4. Edge Treatment: Overlapping oriented strand board connectors.
5. Thermal Resistance: R-value of 38 (NCFI Polyurethanes, 35 psi compressive strength, 58 psi flexural strength).
6. Provide panels with fastening guide marked on exterior face.

2.3 MATERIALS

A. Oriented Strand Board: 7/16 inch thick, APA Exposure 1, DOC PS-2 span rating 24/16, minimum.

B. Plywood: 15/32 inch thick, APA Rated Sheathing, PS 1, Grade C-D, Exposure I.

C. Polyurethane Foam Insulation:

1. ASTM C1289, Type V; 2.5 pounds per cubic foot, minimum, when tested according to ASTM D1622.
2. Thermal Resistance (R-value): 7.25 (deg F hr sq ft)/Btu, minimum, when tested at 1 inch thickness in accordance with ASTM C518 or ASTM C177.

2.4 ACCESSORIES

A. Fasteners and Anchors:

1. Panel Screws: Pancake head; minimum thread diameter 0.255 inch, minimum shank diameter of 0.190 inch and minimum head diameter 0.625 inch x 9” long screws, SIP Thread Point Fasteners equal to The Cor-Tenn Co. (Part No. SIPTP-CN9000).

PART 3 EXECUTION

3.01 INSTALLATION

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A. Install structural insulated panels in accordance with manufacturer's instructions.

1. Comply with manufacturer's written recommendation for number, size and placement of fasteners.

2. Join structural insulated panel edges using manufacturer's recommended edge connectors.

B. Restrictions:

1. Do not over cut oriented strand board or plywood face when field-cutting openings.

2. Do not install electrical chases inside structural insulated panels.

3. Do not install plumbing inside structural insulated panels without consulting manufacturer and obtaining written recommendations.

4. Protect structural insulated panel core from solvents and solvent vapors.

C. Prevent damage to structural insulated panels.

D. Secure panels to double wood roof trusses with panel screws as indicated and recommended by the manufacturer.

E. Install structural insulated panels plumb, square and true to line.

F. Seal panel joints with manufacturer's recommended sealant.

G. Repair or replace damaged panels.

3.2 PROTECTION

A. Do not leave panels exposed to moisture. Remove wet panels or allow to dry completely before installation of sealants, tape, weather barrier and siding or other veneer.

B. Protect installed structural insulated panels from subsequent construction operations.

C. Cover top and edges of unfinished panel work. Protect from weather and prevent accumulation of water in cores.

END OF SECTION

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SECTION 06 1325

HEAVY TIMBER TRUSSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of contract, including general and supplementary conditions and Division 1 specification sections, apply to this section.

1.2 WORK INCLUDED

A. Work includes furnishing labor, materials, and equipment to design, furnish, and install structural and architectural timber framing as detailed in drawings or specified, including structural design of timber frame system, joinery, and connections not provided in drawings, and supplying associated fasteners to complete system and connect timber framing members to structural supports.

B. Types of timber construction specified in this section include the following:

1. Timber trusses.
2. Beams.

1.3 RELATED WORK

A. The following sections are related to work of this section:

1. Section 06 1000 Rough Carpentry.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Schedule timber delivery and installation to avoid extended on-site storage.

B. Keep timber members dry during delivery and storage. Cover timber with weathertight tarps. Do not store members in areas of high or low relative humidity.

C. Cut and stack timber so as not to encourage growth of sap-stain fungi, mold, carpenter ants, borers, etc.

D. Stack timbers with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

1.5 SUBMITTALS

A. Shop Drawings: Submit for review shop drawings signed and sealed by a Structural Engineer registered in state where project is located. Show design loads, material properties, full dimensions of each member, and layout of timber frame system. Show large-scale details of

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joints and connections. Provide hardware cut sheets and design values for fasteners.

B. Samples: Full width and depth, 24 inches long, showing range of variation expected in appearance, including surface texture and finish of wood products.

1.6 QUALITY ASSURANCE

A. Fabricator and Erector of timber framing shall not have less than **5** years experience in fabrication and erection of timber framing.

B. Timbers shall be graded by lumber grading agency certified by American Lumber Standards Committee.

C. Locate grade stamp on timber surfaces not exposed to view in completed work. Grade certification can be submitted in lieu of grade stamping material.

PART 2 - PRODUCTS

2.1 GENERAL

A. General: Comply with PS 20 and grading rules of lumber grading agencies certified by American Lumber Standards Committee Board of Review as applicable.

1. Factory mark each item of timber with grade stamp of grading agency.
2. For exposed timber indicated to receive stained or natural finish, apply grade stamps to surfaces not exposed to view, or omit grade stamps and provide certificates of grade compliance issued by grading agency.

B. Preservative Treatment:

1. For sawn products, pressure treat timbers as required in architectural and structural drawings and within this section with preservative treatment to comply with AWPA U1-04 Use Category System, Commodity Specification A, Sawn Products.

2.2 TIMBER

A. Timber Species and Grade: As noted on plans.

B. Grading Rules: SPIB (GR).

2.3 FASTENERS

A. General: Provide fasteners of size and type complying with requirements specified for material and manufacture.

1. Where fasteners are exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide hot-dip galvanized.

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B. Wood Screws: ASME B18.6.1.

C. Proprietary Fasteners:

1. RSS structural screws by GRK or accepted equivalent.
2. Timberlok fasteners by FastenMaster or accepted equivalent.
3. Strong Drive screws (SDS) by Simpson Strong-tie or accepted equivalent.
4. WFC/WFR/WFD fasteners by SFS intec or accepted equivalent.

D. Lag Bolts: ASME B18.2.1.

E. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

F. Threaded Rods: ASTM A 36.

G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing in accordance with ASTM E 488, performed by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.

H. Other proprietary connectors:

1. Timberlinx steel connectors by Timberlinx, Division of Michael Preston Distributors Limited or accepted equivalent.
2. Other.

2.4 STEEL CONNECTION MATERIALS

A. Unless otherwise indicated, fabricate steel connection materials and steel elements from the following materials:

1. Structural-steel shapes, plates, and flat bars complying with ASTM A 36.
2. Round steel bars complying with ASTM A 575, Grade M 1020.
3. Hot-rolled steel sheet complying with ASTM A 1011, Structural Steel, Type SS, Grade 33.
4. Stainless steel plate and flat bars complying with ASTM A 666, Type **304**.
5. Stainless steel bars and shapes complying with ASTM A 276, Type **304**.

B. Fabricate tie rods from round steel bars with upset threads connected with forged-steel turnbuckles complying with ASTM A 668/A 668M.

C. Use shear plates 4 inches in diameter, complying with ASTM D 5933.

D. Finish:

1. Where not exposed to weather, finish steel assemblies and fasteners with rust-inhibitive primer, 2-mil dry film thickness.
2. Where exposed to weather, hot-dip galvanize steel assemblies and fasteners after fabrication to comply with ASTM A 123/A 123M or ASTM A 153/A 153M.

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2.5 FABRICATION

A. Fabricate components in accordance with AITC 108, with joints neatly fitted, welded and ground smooth.

B. Perform welding in accordance with AWS D1.1

C. Seal Coat: After fabricating and surfacing each unit, apply saturation coat of penetrating sealer on surfaces of each unit except for treated wood where treatment included water repellent.

D. Layout marks and identification marks shall not be visible on complete frame.

PART 3 - EXECUTION

3.1 INSTALLATION,GENERAL

A. General: Erect heavy timber construction true and plumb. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.

B. Handle and temporarily support heavy timber construction to prevent surface damage, compression, and other effects that might interfere with indicated finish. Tools used to drive or pull joints together shall not mar finished surface of timber.

C. Framing adjacent to masonry: Provide 1/2-inch clearance at tops, sides, and ends of members adjacent to masonry unless otherwise indicated.

D. Cutting: Avoid extra cutting after fabrication. Where field fitting is unavoidable, comply with finish and preservative treatment requirements for shop fabrication.

E. Saw off pegs protruding on exterior of frame flush. Leave interior pegs protruding. Cut off pegs with mushroomed heads below damaged area.

3.2 STRUCTURAL TESTS AND INSPECTIONS

A. Notify Structural Engineer when structural framing is complete. Timber framing shall be inspected and approved prior to enclosing walls, floors, roofs, or ceilings.

3.3 ADJUSTING AND CLEANING

A. Repair damaged surfaces and finishes after completing erection. Replace damaged heavy timber construction if repairs are not approved by Architect.

END OF SECTION

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SECTION 06 1753

SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Pre-engineered shop fabricated wood trusses for roof framing.

B. Bridging, bracing, and anchorage.

1.2 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Installation requirements for miscellaneous framing.

B. Section 06 1000 - Rough Carpentry: Material requirements for blocking, bridging, plates, and miscellaneous framing.

1.3 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.

B. TPI 1 - National Design Standard for Metal Plate Connected Wood Truss Construction; Truss Plate Institute; 2007 and errata (ANSI/TPI 1).

C. TPI BCSI 1 - Building Component Safety Information Booklet: The Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses; joint publication of the Truss Plate Institute and the Wood Truss Council of America; 2008.

D. TPI DSB-89 - Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses; Truss Plate Institute; 1989.

E. Design Trusses and bracing to support dead loads and to withstand live loads as indicated on drawings.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Handle and erect trusses in accordance with BCSI 1. Comply with AITC recommendations and manufacturer's printed instructions.

B. Protect trusses from weather and condensation. Trusses showing discoloration, corrosion, or other evidence of deterioration must be inspected by the truss plate manufacturer or other acceptable inspection agency before concealment. Replace trusses which inspection determines to be damaged or defective.

C. Store trusses in vertical position resting on bearing ends.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Truss Plate Connectors:
1. Alpine Engineered Products, Inc: www.alpeng.com.
2. MiTek Industries, Inc: www.mii.com.
3. Truswal Systems: www.truswal.com.
4. Substitutions: See Section 01 6000 - Product Requirements.

2.2 TRUSSES

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A. Wood Trusses: Designed and fabricated in accordance with TPI 1 and TPI DSB-89 to achieve structural requirements indicated.
   1. Connectors: Steel plate.

2.3 MATERIALS

A. Lumber:
   1. Moisture Content: Between 7 and 9 percent.
   2. Lumber fabricated from old growth timber is not permitted.

B. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653/A653M Structural Steel (SS) Grade 33/230, with G90/Z275 coating; die stamped with integral teeth; thickness as indicated.

C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that supports and openings are ready to receive trusses.

3.2 ERECTION

A. Install trusses in accordance with manufacturer's instructions and TPI DSB-89 and TPI BCSI 1; maintain a copy of each TPI document on site until installation is complete.

B. Set members level and plumb, in correct position.

C. Do not field cut or alter structural members without approval of NCDOT.

D. Install permanent bridging and bracing.

E. Frame openings between trusses with lumber in accordance with Section 06 1000.

END OF SECTION

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SECTION 06 2000

FINISH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Finish carpentry items.
B. Tongue & Groove soffit

1.2 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.

1.3 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2009.

B. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.

C. BHMA A156.9 - American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association; 2010 (ANSI/BHMA A156.9).

D. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide instructions for attachment hardware and finish hardware.

C. Shop Drawings: Indicate materials, dimensions, component profiles, fastening methods, jointing details, accessories, to a minimum scale of 1" = 1'-0".

1.6 QUALITY ASSURANCE

A. Grade materials in accordance with the following:
   1. Softwood Lumber: In accordance with rules certified by ALSC; www.alsc.org.
   2. Plywood: Certified by the American Plywood Association.

C. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect work from moisture damage.

1.8 PROJECT CONDITIONS

A. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner

B. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.

PART 2 PRODUCTS

2.1 FINISH CARPENTRY ITEMS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI Architectural Woodwork Standards for Premium Grade.

B. Unless otherwise indicated provide products of quality specified by AWI Architectural Woodwork Quality Standards Illustrated for Premium grade.

2.2 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.3 LUMBER MATERIALS

A. Hardwood Lumber: poplar, maximum moisture content of 6 percent, finger jointed acceptable.
B. Tongue & Groove soffit- 1x6 Clear (no knots) nominal tongue & groove Douglas Fir. No glued pieces. Natural stain. Clear coat. Install as shown.
C. Softwood: Comply with NIST PS 20 and grade in accordance with the grading rules of the grading and inspection agency applicable to the species.
D. For transparent finish, use only solid pieces of lumber; WM 4 N-grade.
E. For opaque finish, pieces which are glued up may be used; WM 4 N- or P-grade.
F. Moisture content: Not greater than that required by applicable grading rules; provide kiln-dried lumber.
G. Provide lumber dressed on all exposed faces, unless otherwise indicated.
H. Do not use twisted, warped, bowed, or otherwise defective lumber.
I. Sizes indicated are nominal, unless otherwise indicated.
J. Do not mark or color lumber, except where such marking will be concealed in finish work.

2.4 SHEET MATERIALS

A. Hardwood Plywood: Face species as indicated, plain sawn, book matched, medium density fiberboard core; glue type as recommended for application.
B. Plywood in concealed locations: Comply with NBS PS 1, Grade C minimum.

2.5 PLASTIC LAMINATE MATERIALS-NOT USED

2.6 ADHESIVE

A. Adhesive: Type recommended by laminate manufacturer to suit application.

2.7 FASTENINGS

A. Concealed Joint Fasteners: Threaded steel.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

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C. Field verify all dimensions

3.2 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.3 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

3.4 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

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SECTION 07 2100

THERMAL INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Board insulation and integral vapor retarder at cavity wall construction.

B. Batt insulation and vapor retarder in exterior walls.

C. Acoustic batt insulation in interior walls.

1.2 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2010a.

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2006.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010b.

D. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2011.

E. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association; 2006.

1.3 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.4 COORDINATION

A. Coordinate the work with Section 07 2500 for installation of vapor retarder.

PART 2 PRODUCTS

2.1 APPLICATIONS

A. Acoustic Batt Insulation in all interior walls.

B. Insulation at Plumbing and Mechanical- see individual trades.

2.2 FOAM BOARD INSULATION MATERIALS

A. Polyisocyanurate Board Insulation: Rigid cellular foam, complying with ASTM C1289; Type I, aluminum foil both faces; Class 1, non-reinforced foam core.
   1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Board Size: 48 x 96 inch.
   4. Board Thickness: 1 inch.
   5. Board Edges: Shiplap on long edges.
   6. Manufacturers:
      a. Atlas Roofing Corporation; Energy Shield: www.atlasroofing.com.
      b. Dow Chemical Co: www.dow.com.
      c. GAF: www.gaf.com.
   7. Substitutions: See Section 01 6000 - Product Requirements..

2.3 BATT INSULATION MATERIALS

A. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
   1. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
   2. Facing: Kraft paper where covered/ foil facing where exposed.
   3. Thermal Resistance:.
      a. R-19 at exterior walls
      b. R-38 at trusses.
      c. Acoustic at interior walls (3-1/2", to achieve STC rating of 38)
   4. Manufacturers:
      a. CertainTeed Corporation: www.certainteed.com.
      b. Johns Manville Corporation: www.jm.com.
      c. Owens Corning Corp: www.owenscorning.com.
   5. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation and adhesive.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.2 BOARD INSTALLATION AT CAVITY WALLS

A. Install boards to fit snugly between wall ties.

B. Install boards horizontally on walls.

C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.3 BATT INSTALLATION

A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

B. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

C. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

3.4 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

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SECTION 07 3113

ASPHALT SHINGLES

PART 1- GENERAL

1.1 SECTION INCLUDES

A. Asphalt shingle roofing.
B. Flexible sheet membranes for eave protection, underlayment, and valley protection.
C. Associated metal flashings and accessories.

1.2 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Roof sheathing.
B. Section 07 7123 – Manufactured Gutters and Downspouts.

1.3 REFERENCE STANDARDS

A. ASTM D225 - Standard Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules; 2007.
B. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2006.
C. ASTM D 3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method); 2008b.
D. ASTM D 3462 - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules; 2007.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data indicating material characteristics.
C. Shop Drawings: For metal flashings, indicate specially configured metal flashings.
D. Samples: Submit two samples of each shingle color indicating color range and finish texture/pattern; for color selection.
E. Manufacturer's Instructions: Indicate installation criteria and procedures.
F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with the recommendations of NRCA Steep Roofing Manual.

1.6 WARRANTY

A. Submit manufacturer's standard 30 year warranty on shingles.
B. Submit General contractor's workmanship 2 year warranty.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not install shingles or eave protection membrane when surface temperatures are below 45 degrees F.

1.8 EXTRA MATERIALS

A. See Section 01 6000 - Product Requirements, for additional provisions

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PART 2- PRODUCTS

2.1 SHINGLES

A. Manufacturers:
   1. Georgia Pacific: www.gp.com.
   2. CertainTeed Roofing Products: www.certainteed.com
   3. GAF Materials Corporation: www.gaf.com.
   4. Substitutions: See Section 01600 - Product Requirements.

B. Asphalt Shingles: Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462; Class A fire resistance.
   1. Weight: 300 lb/100 sq ft.
   2. Style: Laminated overlay, shingle style to match existing.
   3. Color: To match existing, from the Manufacturer's current standard color selection palette by Architect.

2.2 SHINGLES

A. Ice Protection underlayment: Rubberized asphalt sheet membrane, self-adhering, minimum 40 mils thick, 36-inch wide rolls; minimum tensile strength 250 psi, in accordance with ASTM D
146.

B. Underlayment: Asphalt-saturated organic roofing felt, unperforated, complying with ASTM D 226, Type I ("No.15"), 36" wide rolls.

2.3 ACCESSORIES

A. Nails: Standard round wire shingle type, of hot-dipped zinc coated steel, 12 gage, 0.105 inch shank diameter, 3/8 inch head diameter, of sufficient length to penetrate through roof sheathing or 3/4 inch into roof sheathing or decking.

B. Lap Cement: Fibrated cutback asphalt type, recommended for use in application of underlayment, free of toxic solvents.

C. Ridge Vents: Plastic, extruded with vent openings that do not permit direct water or weather entry (rated for 8"/hour rainfall and 130 mph winds); flanged to receive shingles, color and design compatible with shingle system..

2.4 METAL FLASHINGS

A. Metal Flashings: Provide sheet metal eave edge, gable edge, ridge, ridge vents, open valley flashing, chimney flashing, dormer flashing, and other flashing indicated.
   1. Form flashings to profiles indicated on Drawings.
   2. Hem exposed edges of flashings minimum 1/4 inch on underside.
   3. Coat concealed surfaces of flashings with bituminous paint.

B. Sheet Metal: Prefinished aluminum, 0.016 inch thick; PVC coating, color compatible with shingles.

C. Bituminous Paint: Acid and alkali resistant type; black color.

PART 3- EXECUTION

2.4 EXAMINATION

A. Verify existing conditions prior to beginning work.
B. Verify that deck is of sufficient thickness to accept fasteners.
C. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.
D. Verify roof openings are correctly framed.
E. Verify deck surfaces are dry, free of ridges, warps, or voids.

2.5 PREPARATION

A. Seal roof deck joints wider than 1/16 inch with deck tape.
B. At areas where eave protection membrane is to be adhered to substrate, fill knot holes and surface cracks with latex filler.
C. Broom clean deck surfaces before installing underlayment or eave protection.
D. Install eave edge flashings tight with fascia boards. Weather lap joints 2 inches and seal with . .. plastic cement. Secure flange with nails spaced 6 inches on center.

2.6 INSTALLATION – ICE PROTECTION UNDERLAYMENT

A. Install ice protection underlayment (ice dam protection) from eave edge to minimum 2 feet up-slope beyond interior face of exterior wall.
B. Install ice protection underlayment under valley flashing, and under flashing at all roof penetrations.
C. Install per manufacturer's requirement.

2.7 INSTALLATION - UNDERLAYMENT

A. At Roof Slopes Greater Than 4:12: Install underlayment perpendicular to slope of roof, with ends and edges weather lapped minimum 4 inches. Stagger end laps of each consecutive layer. Nail in place. Weather lap minimum 4 inches over eave protection.
B. Items projecting through or mounted on roof: Weather lap and seal watertight with plastic cement.

2.8 INSTALLATION – VALLEY PROTECTION

A. Install one ply of smooth surfaced roll roofing, minimum 18 inches wide, centered over valleys.
B. Weather lap joints minimum 2 inches.
C. Nail in place minimum 18 inches on center, 1 inch from edges.

2.9 INSTALLATION – METAL FLASHING AND ACCESSORIES

A. Install flashings in accordance with NRCA requirements.
B. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.
C. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.

2.10 INSTALLATION – SHINGLES

A. Install shingles in accordance with manufacturer's instructions.
   1. Fasten individual shingles using 2 nails per shingle, or as required by code, whichever is greater.
   2. Fasten strip shingles using 4 nails per strip, or as required by code, whichever is greater.
B. Place shingles in straight coursing pattern with 5 inch weather exposure to produce double thickness over full roof area. Provide double course of shingles at eaves.
C. Project first course of shingles 3/4 inch beyond fascia boards.
D. Extend shingles 1/2 inch beyond face of gable edge fascia boards.
E. Complete installation to provide weather tight service.

END OF SECTION

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SECTION 07 4646

FIBER CEMENT SIDING AND TRIM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fiber-cement lap siding & trim.

1.2 RELATED REQUIREMENTS

A. Section 07 9005 - Joint Sealers.

1.3 REFERENCE STANDARDS

A. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets; 2008.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Manufacturer's requirements for related materials to be installed by others.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods, including nail patterns.

C. Test Report: Applicable model code authority evaluation report (e.g. ICC-ES).

D. Maintenance Instructions: Periodic inspection recommendations and maintenance procedures.

E. Warranty: Submit copy of manufacturer's warranty, made out in NC DOT's name, showing that it has been registered with manufacturer.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum 3 years of experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products under waterproof cover and elevated above grade, on a flat surface.

PART 2 PRODUCTS

2.1 SIDING

A. Lap Siding: Individual horizontal boards made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186 Type A Grade II; with machined edges, for nail attachment.
   1. Style: Standard lap style.
   2. Texture: Smooth.
   3. Length: 12 ft, nominal.
   4. Width (Height): 8-1/4 inches.
   5. Thickness: 5/16 inch, nominal.
   6. Finish: Factory primed.
   7. Color: As selected from manufacturer's standard range.
   8. Warranty: 50 year limited; transferable.
   9. Lap Siding Manufacturers:
      a. CertainTeed Corporation: www.certainteed.com.
      b. James Hardie Building Products, Inc: www.jameshardie.com.

c. Nichiha USA, Inc: www.nichiha.com.
d. Substitutions: See Section 01 6000 - Product Requirements.

B. Non-vented Soffit Panels: Panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186 Type A Grade II; with machined edges, for nail attachment.
1. Texture: Smooth.
2. Thickness: 1/4 inch, nominal.
3. Finish: Factory primed.
4. Color: As selected by NCDOT from manufacturers full range of available colors.
5. Manufacturers: .
a. CertainTeed Corporation: www.certainteed.com.
b. James Hardie Building Products, Inc: www.jameshardie.com.
c. Nichiha USA, Inc: www.nichiha.com.
d. Substitutions: See Section 01 6000 - Product Requirements

2.2 ACCESSORIES

A. Galvanized metal Z-furring channels.
1. Depth: 1-1/2 in
2. Steel Thickness: 20 gauge minimum.

B. Trim: Same material and texture as siding.
1. Thickness: As indicated on drawings.

C. Fasteners: Stainless steel or corrosion resistant; length as required to penetrate minimum 1-1/4 inch.

D. Joint Sealer: As specified in Section 07 9005.

PART 3 EXECUTION

3.1 PREPARATION

A. Examine substrate and clean and repair as required to eliminate conditions that would be detrimental to proper installation.

B. Do not begin until unacceptable conditions have been corrected.

3.2 PREPARATION

A. Install sheet metal flashing:
1. Above door and window trim and casings.
2. Above horizontal trim in field of siding.
3. Above continuous cast stone watertable.

B. Install continuous insect screen at base of siding.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions and recommendations.
1. Read warranty and comply with all terms necessary to maintain warranty coverage.
2. Install in accordance with conditions stated in model code evaluation report applicable to location of project.
3. Use trim details indicated on drawings.
4. Touch up all field cut edges before installing.
5. Pre-drill nail holes if necessary to prevent breakage.

B. Over Wood Studs and Wood-Composite Sheathing.
1. Attach vertical Z-furring channels to wood studs with #8 stainless steel ribbed wafer-head screws or ET&F fasteners, 16" O.C.

2. Provide bituminous coating on outside Z-furring flange to provide separation from fiber cement siding.
3. Place rigid board insulation between Z-furring channels (see section 072100 for material description).
4. Fasten lap siding to Z-furring channels with #8 ribbed wafer-head screws or ET&F fasteners.
   a. Allow space between both ends of siding panels that butt against trim for thermal movement; seal joint between panel and trim with exterior grade sealant.
   b. Joints in Horizontal Siding: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.
   c. Do not install siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.
   d. After installation, seal all joints except lap joints of lap siding. Seal around all penetrations. Paint all exposed cut edges.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Final Acceptance.

END OF SECTION

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SECTION 07 7123

MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Pre-finished aluminum gutters and downspouts.

1.2 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 1998.

B. ASTM B209 - Standard Specification for Aluminum and Aluminum-AlloySheet and Plate; 2007.

C. ASTM B209M - Standard Specification for Aluminum and Aluminum-AlloySheet and Plate [Metric]; 2007.

D. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.

1.3 DESIGN REQUIREMENTS

A. See drawings.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.

C. Product Data: Provide data on prefabricated components.

D. Samples: Submit two samples, illustrating component design, finish, color, and configuration.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.

B. Prevent contact with materials that could cause discoloration, staining, or damage.

1.6 PROJECT CONDITIONS

A. Coordinate the work with downspout discharge pipe inlet.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Gutters and Downspouts:
   1. Englert Leafguard; www.leafguard.com.
   2. Gutter Shutter Company: www.guttershutter.com.
   3. Leaf Filter Gutter Protection: www.leaffilter.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.2 MATERIALS

A. Pre-Finished Aluminum Sheet: ASTM B209 (ASTM B209M); 0.032 inch thick.
   1. Finish: Plain, shop pre-coated with modified silicone coating.
   2. Color: As selected from manufacturer's standard colors.

2.3 COMPONENTS

A. Gutters: rectangular profile; 3-3/4 inch by 5-1/4 inch minimum size.

B. Downspouts: CDA Rectangular profile; 3 inch by 4 inch size.

C. Anchors and Supports: Profiled to suit gutters and downspouts.
   1. Anchoring Devices: In accordance with CDA requirements.
   2. Gutter Supports: Brackets.
   3. Downspout Supports: Brackets.

D. Fasteners: Galvanized steel, with soft neoprene washers.
E. Leaf Filter:

2.4 ACCESSORIES

A. Downspout Boots: Plastic- See SECTION 33 4600 - SUBDRAINAGE SYSTEMS FOR STRUCTURES.

2.5 FABRICATION

A. Form gutters and downspouts of profiles and size indicated.

B. Fabricate with required connection pieces.

C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

D. Hem exposed edges of metal.

E. Fabricate gutter and downspout accessories; seal watertight.

2.6 FACTORY FINISHING

A. Modified silicone polyester coating: Baked enamel system conforming to AAMA 603.8.

B. Primer Coat: Finish concealed side of metal sheets with primer compatible with finish system, as recommended by finish system manufacturer.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.

END OF SECTION

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SECTION 07 9005

JOINT SEALERS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Sealants and joint backing.

B. Precompressed foam sealers.

1.2 RELATED REQUIREMENTS

A. Section 04 2000- Unit Masonry.

B. Section 09 2116 - Gypsum Board Assemblies.

1.3 REFERENCE STANDARDS

A. ASTM C834 - Standard Specification for Latex Sealants; 2010.

B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2008.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2011.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2009.

E. ASTM D2628 - Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for concrete Pavements; 1991 (Reapproved 2005).

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating sealant chemical characteristics.

C. Manufacturer's Installation Instructions: Indicate special procedures.

1.5 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

1.6 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.7 COORDINATION

A. Coordinate the work with all sections referencing this section.

1.8 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Final Acceptance.

C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Elastomeric Sealants:
   1. Bostik Inc: www.bostik-us.com.
   2. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
   3. Pecora Corporation: www.pecora.com.
   4. BASF Construction Chemicals-Building Systems: www.chemrex.com.
   5. Substitutions: See Section 01 6000 - Product Requirements.

2.2 SEALANTS

A. General Purpose Exterior Sealant: Acrylic, solvent release curing; ASTM C920, Grade NS, Class 12-1/2, Uses M, G, and A; single or multi- component.
   1. Color: Standard colors matching finished surfaces, or paintable.
   2. Applications: Use for:
      a. Control, expansion, and soft joints in masonry.
      b. Joints between concrete and other materials.
      c. Joints between metal frames and other materials.
      d. Other exterior joints for which no other sealant is indicated.

B. Exterior Expansion Joint Sealer: Precompressed foam sealer; urethane with water-repellent;
   1. Size as required to provide weathertight seal when installed.
   2. Provide product recommended by manufacturer for traffic-bearing use.

C. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
   1. Applications: Use for:
      a. Interior wall and ceiling control joints.
      b. Joints between door and window frames and wall surfaces.
      c. Other interior joints for which no other type of sealant is indicated.

D. Acoustical Sealant for Concealed Locations: Permanently tacky non-hardening butyl sealant.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

3.3 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Install bond breaker where joint backing is not used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

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F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

G. Tool joints concave.

H. Pre-compressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

3.4 CLEANING

A. Clean adjacent soiled surfaces.

3.5 PROTECTION

A. Protect sealants until cured.

END OF SECTION

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SECTION 08 1113

HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Non-fire-rated steel doors and frames.

B. Thermally insulated steel doors.

1.2 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware.

B. Section 08 8000 - Glazing: Glass for doors and borrowed lites.

C. Section 09 9000 - Painting and Coating: Field painting.

1.3 REFERENCE STANDARDS

A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2003.

B. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2003.

C. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 1998 (R2004).

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2010.

E. ASTM C1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus; 2005.

F. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2006.

G. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; The National Association of Architectural Metal Manufacturers; 2007.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Maintain at the project site a copy of all reference standards dealing with installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store in accordance with NAAMM HMMA 840.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Steel Doors and Frames:
   1. Assa Abloy, Ceco or Curries Doors: www.assaabloydss.com.
   2. Windsor Republic Doors: www.republicdoor.com.
   3. Steelcraft: www.steelcraft.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.2 DOORS AND FRAMES

A. Requirements for All Doors and Frames:
   1. Accessibility: Complywith ANSI/ICC A117.1-2009.
   2. Door Edge Profile: Beveled on both edges.
   3. Door Texture: Smooth faces.
   4. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
   5. Galvanizing for Units in Wet Areas: All components hot-dipped zinc-iron alloy-coated (galvannealed), manufacturer's standard coating thickness.
   6. Finish: Factory primed, for field finishing.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.3 STEEL DOORS

A. Exterior Doors:
   1. Grade: ANSI A250.8 Level 3, physical performance Level A, Model 2, seamless.
   2. Core: Polystyrene foam.
   3. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness.
   4. Insulating Value: U-value of 0.50, when tested in accordance with ASTM C1363.
   5. Weatherstripping: Separate, see Section 08 7100.
   6. Thickness: 1-3/4"

B. Interior Doors, Non-Fire-Rated:
   1. Grade: ANSI A250.8 Level 2, physical performance Level B, Model 1, full flush.
   2. Core: Cardboard honeycomb.
   3. Thickness: 1-3/4 inches.

2.4 STEEL FRAMES

A. General:
   1. Complywith the requirements of grade specified for corresponding door.
      a. ANSI A250.8 Level 1 Doors: 16 gage frames.
      b. ANSI A250.8 Level 3 Doors: 14 gage frames.
   2. Finish: Same as for door (paint).
   3. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

B. Exterior Door Frames: Face welded, seamless with joints filled.
   1. Weatherstripping: Separate, see Section 08 7100.

C. Interior Door Frames, Non-Fire-Rated: Face welded type.

2.5 ACCESSORY MATERIALS

A. Glazing: As specified in Section 08 8000, factory installed.

B. Astragals for Double Doors: Specified in Section 08 7100.

C. Grout for Frames: Portland cement grout of maximum 4-inch slump for hand troweling; thinner pumpable grout is prohibited.

D. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.

E. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

2.6 FINISH MATERIALS

A. Primer: Rust-inhibiting, complying with ANSI A250.10, door manufacturer's standard.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

3.2 INSTALLATION

A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.

B. Coordinate frame anchor placement with wall construction.

C. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

D. Coordinate installation of hardware.

E. Coordinate installation of glazing.

F. Coordinate installation of electrical connections to electrical hardware items (if applicable).

3.3 TOLERANCES

A. Clearances Between Door and Frame: As specified in ANSI A250.8.

B. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.4 ADJUSTING

A. Adjust for smooth and balanced door movement.

3.5 SCHEDULE

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

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SECTION 08 4313

ALUMINUM FRAMED STOREFRONTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Aluminum-framed storefront doors and door hardware.
B. Perimeter sealant.

1.2 REFERENCES

A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; American Architectural Manufacturers Association; 1997.
B. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels; 1998.
C. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; American Society of Civil Engineers; 2002.
D. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 1996.
E. ASTM B 221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 1996.
F. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 1991.
G. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference; 1997.
H. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference; 1996.

1.3 PERFORMANCE REQUIREMENTS

A. Design and size components to withstand the following load requirements without damage or permanent set, when tested in accordance with ASTM E 330, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
   1. Design Wind Loads: Comply with requirements of ASCE 7.
   2. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
B. Movement: Accommodate movement between storefront and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
C. Air Infiltration: Limit air infiltration through assembly to 0.06 cu ft/min/sq ft of wall area, measured at a reference differential pressure across assembly of 1.57 psf as measured in accordance with ASTM E 283.
D. Water Leakage: None, when measured in accordance with ASTM E 331 with a test pressure difference of 2.86 lbf/sq ft.
E. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
F. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide component dimensions, Describe components within assembly, anchorage and fasteners, glass and infill, door hardware, internal drainage details.
C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
D. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

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1.5 DELIVERY, STORAGE, AND PROTECTION

A. Handle products of this section in accordance with AAMA CW-10.

Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond to aluminum when exposed to sunlight or weather.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Kawneer Company; Product Tri-Fab 450; for use with 350 Door; www.kawneer.com.
B. Other Acceptable Manufacturers:
   1. United States Aluminum Corp.
   2. Vistawall Architectural Products: www.vistawall.com.

2.2 COMPONENTS

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Finish: anodized aluminum.
   2. Color: Dark Bronze.
B. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior at exterior doors only, drainage holes and internal weep drainage system.
   1. Framing members for interior applications need not be thermally broken.
   2. Glazing stops: Flush.
   3. Cross-Section: 1-3/4 x 4-1/2 inch nominal dimension.
C. Doors: Glazed aluminum.
   1. Thickness: 1-3/4 inches.
   2. Top Rail: 4 inches wide.
   3. Vertical Stiles: 3-1/2” inches wide.
   4. Bottom Rail: 10 inches wide.
   5. Glazing Stops: Beveled.
   6. Finish: Same as storefront.

2.3 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).
B. Fasteners: Stainless steel.
C. Perimeter Sealant: Type 1 specified in Section 079005.
D. Glass: As specified in Section 08 8000.
   1. Glass in Exterior Framing and Doors: Type 2, 1” insulated Low-E glass.
E. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.4 FINISHES

A. **Dark Bronze** anodized aluminum finish.

2.5 HARDWARE

A. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.
B. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.
C. Pivots: Center type; top and bottom; provide on all doors.
D. Push/Pull Set: 1" bar, Hager No.160; provide on all doors.
E. Threshold: Aluminum, ¼” high maximum; provide on all doors.
F. Closers: Surface mounted on interior.
   1. Provide on all doors, must open 180 degrees.
G. Locks: Dead latch with turn handle inside; keyed cylinder outside.
   1. Provide on all doors.

2.6 FABRICATION

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A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
C. Prepare components to receive anchor devices. Fabricate anchors.
D. Arrange fasteners and attachments to conceal from view.
E. Reinforce components internally for door hardware.
F. Reinforce framing members for imposed loads.
G. Finishing: Apply factory finish to all surfaces that will be exposed in completed assemblies.
   1. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.
B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.2 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.
B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
C. Provide alignment attachments and shims to permanently fasten system to building structure.
D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
E. Provide thermal isolation where components penetrate or disrupt building insulation.
F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
G. Coordinate attachment and seal of perimeter air and vapor barrier materials.
H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
I. Set thresholds in bed of mastic and secure.
J. Install hardware using templates provided.
K. Install glass in accordance with Section 088000, using glazing method required to achieve performance criteria.
L. Install perimeter sealant in accordance with Section 079005.

3.3 ERECTION TOLERANCES

A. Maximum Variation from Plumb: 0.06 inches every 3 ft non-cumulative or 1/16 inches per 10 ft, whichever is less.
B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.4 ADJUSTING

A. Adjust operating hardware for smooth operation.

3.5 CLEANING AND PROTECTION

A. Remove protective material from pre-finished aluminum surfaces.
B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
C. Remove excess sealant by method acceptable to sealant manufacturer.
D. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

END OF SECTION

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SECTION 08 7100

DOOR HARDWARE

PART 1 GENERAL

1.1 SUBMITTALS

A. Product Data.
B. Final Hardware Schedule.
C. Keying Schedule: Separate schedule showing how each lock is keyed.

PART 2 - PRODUCTS

A. Latching and Locking Devices: Mortise locks, unless otherwise indicated, with appropriate locking function; provide on every door.

2.1 MATERIALS - GENERAL

A. Manufacturers:
   1. Where a particular manufacturer's product is specified, products of other manufacturers will be considered for substitution.
B. Fasteners: Provide hardware prepared by the manufacturer with fastener holes for machine screws, unless otherwise indicated.
   1. Provide all fasteners required for secure installation.
   2. Select fasteners appropriate to substrate and material being fastened.
   3. Use wood screws for installation in wood.
   4. Use fasteners impervious to corrosion outdoors and on exterior doors.
   5. Exposed screws: Match hardware finish.
C. Finish on All Exposed Metal Items: Satin chrome plated (626).
   1. Exceptions:
      a. Plates and bars: Satin stainless steel (630).
      b. Hinges: Where steel hinges are acceptable, use matching plated finish.
      c. As indicated for specific items.

2.2 LOCKS, LATCHES, AND BOLTS

A. Mortise Locksets and Latchsets:
   1. Comply with requirements of BHMA A156.13, Operational Grade 2.
      a. Security Grade 1.
   2. Trim: Cast lever with escutcheon plate.
B. Strikes: Provide strike for each latch bolt and lock bolt.
   1. Finish to match other hardware on door.
   2. Use wrought box strikes with curved lips unless otherwise indicated.
   3. Open strike plates may be used on interior wood door frames.

2.3 LOCK CYLINDERS AND KEYING

A. Keying: Obtain the owner's keying instructions.
   1. Match existing master key system.
   2. Provide standard cylinders for locks on all doors, unless otherwise indicated.
B. Cylinders: Minimum 7-pin pin tumbler cylinders.
   1. Construction: All parts brass, bronze, nickel silver or stainless steel.
   2. Cylinders made by manufacturers other than the lockset manufacturer will not be acceptable.
C. Keys: Nickel silver.
   1. Stamp each key with manufacturer's change symbol.
   2. Provide individual change key for each lock which is not designated to be keyed alike with a group of related locks.
   3. Provide 3 of each change key. Master key system shall match existing: 5 master keys.

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2.4 DOOR CONTROL DEVICES

A. Closers - General:
   1. Use closers of sizes recommended by manufacturer, unless a larger size is specified.
   2. Size closer or adjust closer opening force to comply with applicable codes.
B. Surface-Mounted Closers:
   1. Comply with requirements of BHMA A156.4, Grade 2.
      a. Provide the following features:
         1. PT 4D: Adjustable hydraulic back check.
         2. PT 4F: Delayed action.
   2. Style: CO2021.
   3. Parallel arms: Provide for all closers; use larger size than normal.
      1. Finish: Metallic paint finish, color similar to metal hardware on same door.
B. Recessed-Mounted Closers: Replace existing closers at the 2-Welcome Center entry doors.
C. Wall/Floor-Mounted Stops/Holders: Comply with requirements of ANSI A156.16.
   1. Floor-mounted stops: Style: L12121.
   2. Resilient bumpers: Gray.

2.5 SEALS AND THRESHOLDS

A. Weatherstripping:
   1. At jambs and head: Replaceable bumper in surface-mounted extruded aluminum housing.
      a. Bumper: Solid neoprene, hollow bulb or loop.
   2. At bottom: Replaceable sweep in surface-mounted extruded aluminum housing.
      a. Sweep: Solid neoprene.
   3. Housing finish: Natural anodized.
B. Thresholds: Ribbed aluminum.
   1. Select style to suit changes in elevation and to fit door hardware and frames.
   2. Interlocking hook type threshold: Hook strip on bottom of door, interlocking with top lip of threshold.
      a. At doors that swing in, provide internal drain and drain pan.
C. Sealant for Setting Thresholds: Butyl-rubber or butyl-polyisobutylene sealant.

2.6 ARCHITECTURAL DOOR TRIM

A. Manufacturers:
   1. Architectural door trim: Products of the following manufacturers, or approved equal, provided they comply with requirements of the contract documents, will be among those considered acceptable:
      a. Yale Security, Inc.
      b. Hiawatha, Inc.
      c. H. B. Ives, a Harrow Company.
      d. Rockwood Manufacturing Company.
      e. Triangle Brass Manufacturing Company, Inc.
B. Push / pulls:
   1. Decorative pulls: 1 inch round bars, radius ends, vertical(pull side) and horizontal(push side), 12 & 32 inches long respectively.
   2. Pull handles which are not mounted on plates: Fasten with through-bolts concealed under plate on opposite side.
   3. Where matching handles or bars are installed on each side of door, mount back-to-back with concealed fasteners.

PART 3 - EXECUTION

3.1 PREPARATION

A. Factory- or shop-prepare all work for installation of hardware.

3.2 INSTALLATION

A. Follow hardware manufacturer's recommendations and instructions.
B. Mount at heights specified in the Door and Hardware Institute's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
   1. Exception(s): As required by applicable regulations.

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C. Install hardware in correct location, plumb and level.
D. Reinforce substrates as required for secure attachment and proper operation.
E. Thresholds: Apply continuous bead of sealant to all contact surfaces before installing.

3.3 ADJUSTMENT

A. Adjust each operable unit for correct function and smooth, free operation.
B. Adjust door closers to overcome air pressure produced by HVAC systems.
C. If hardware adjustment is completed more than one month before Final Acceptance, readjust hardware not more than one week before Final Acceptance.

3.4 CONTRACT CLOSEOUT

A. Deliver all keys to the owner.

3.5 DOOR HARDWARE SCHEDULE

A. SET # HW-1 (Vending)

1 Saddle Threshold			
1 Set Weatherstripping			
6 Hinges	MPB91 4-1/2” x 4-1/2”	US32D	
1 Mortise Lock	ML2057 LWA	630	
2 Surface Closers	DC6210 M71	689	180 degree arm reach
2 Door Stops	443	US26D	

A. SET # HW-2 (Storage Room)

1 Saddle Threshold		
1 Set Weatherstripping		
3 Hinges	MPB91 4-1/2” x 4-1/2”	US32D
1 Mortise Lock	ML2057 LWA	630
1 Surface Closer	DC6210 M71	689
1 Door Stop	443	US26D
3 Silencer	608	

END OF SECTION

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SECTION 08 8000

GLAZING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Glass.

B. Glazing compounds and accessories.

1.2 RELATED REQUIREMENTS

A. Section 07 9005 - Joint Sealers: Sealant and back-up material.

C. Section 08 4313 - Aluminum-Framed Storefronts: Glazing furnished by storefront manufacturer.

1.3 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2010.

C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2011).

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2011.

E. ASTM C1036 - Standard Specification for Flat Glass; 2011e1.

F. ASTM C1048 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass; 2012.

G. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2009e1.

H. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2011a.

I. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.

J. GANA (GM) - GANA Glazing Manual; Glass Association of North America; 2009.

K. GANA (SM) - GANA Sealant Manual; Glass Association of North America; 2008.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.

C. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.

D. Certificates: Certify that products meet or exceed specified requirements.

E. Manufacturer's Certificate: Certify that sealed insulated glass meets or exceeds specified requirements.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual and GANA Sealant Manual for glazing installation methods.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience.

1.7 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Sealed Insulating Glass Units: Provide a ten (10) year warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.

C. Laminated Glass: Provide a ten (10) year warranty to include coverage for delamination, including replacement of failed units.

PART 2 PRODUCTS

2.1 GLAZING TYPES

A. Type G1 - Sealed Insulating Glass Units: Vision glazing, low-E, laminated, impact resistant:
   1. Application(s): Exterior Doors.
   2. Substitutions: Refer to Section 01 6000 - Product Requirements.
   3. Between-lite space filled with air.
   4. Basis of Design: PPG Industries, Inc.: www.ppgideascapes.com
   5. Outboard Lite: Laminated glass, 6mm + 6mm:
      a. Azuria laminated to clear;
      b. Solarban 60 on surface 5;
   6. Air space: 3/16”.
   7. Inboard Lite: 6mm clear.
   8. Total thickness: 1”.
   9. Solar Heat Gain Coefficient: 0.40.
   10. Visible Light Transmittance: 50%.

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2.2 GLAZING COMPOUNDS

A. Manufacturers:
   1. Bostik Inc: www.bostik-us.com.
   2. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
   3. Pecora Corporation: www.pecora.com.
   4. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
   5. Substitutions: Refer to Section 01 6000 - Product Requirements.

B. Glazing Putty: Polymer modified latex recommended by manufacturer for outdoor use, knife grade consistency; grey color.

C. Butyl Sealant: Single component; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; Shore A hardness of 10 to 20; black color; non-skinning.

D. Acrylic Sealant: Single component, solvent curing, non-bleeding; ASTM C 920, Type S, Grade NS, Class 12-1/2, Uses M and A; cured Shore A hardness of 15 to 25; color as selected.

E. Polysulfide Sealant: Two component; chemical curing, non-sagging type; ASTM C 920, Type M, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; color as selected.

F. Polyurethane Sealant: Single component, chemical curing, non-staining, non-bleeding; ASTM C 920, Type S, Grade NS, Class 25, Uses M, A, and G; Shore A Hardness Range 20 to 35; color as selected.

G. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C 920, Type S, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; color as selected.

2.3 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, ASTM C864 Option I. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, ASTM C 864 Option I. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.

C. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; 1/16x3/8 inch and 1/8x3/8 inch size; black color.
   1. Manufacturers:
      a. Pecora Corporation: www.pecora.com.
      b. Tremco Global Sealants: www.tremcosealants.com.
      c. Saint-Gobain Performance Plastics: www.plastics.saint-gobain.com..
      d. Substitutions: Refer to Section 01 6000 - Product Requirements.

D. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option I; clear color.

E. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that openings for glazing are correctly sized and within tolerance.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

C. Glazier shall be required to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for presence and functioning of weep system; for existence of minimum required face or edge clearances; and for effective sealing of joinery. Obtain glazier's written report listing conditions detrimental to performance of glazing work. Do not allow glazing work to proceed until all unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

B. Prime surfaces scheduled to receive sealant in accordance with manufacturer's instructions.

C. Clean and dry glazing channels and other framing members to receive glass immediately before glazing. Remove coatings which are not firmly bonded to substrate. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

D. Install sealants in accordance with ASTM C 1193 and FGMA Sealant Manual.

E. Install sealant in accordance with manufacturer's instructions.

3.3 GLAZING- GENERAL

A. Comply with combined printed recommendations of glass manufacturers and of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.

B. Glazing channel dimensions as indicated in details are intended to provide for necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.

C. Protect glass from edge damage during handling and installation; use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening. Remove from project and dispose of glass units with edge damage or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

3.4 INSTALLATION - EXTERIOR WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

A. Cut glazing tape to length and set against permanent stops, 3/16 inch below sight line. Seal corners by butting tape and dabbing with polysulfide sealant.

B. Apply heel bead of polysulfide sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.

C. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.

D. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane or glass unit.

E. Install removable stops, with spacer strips inserted between glazing and applied stops, 3/8 inch below sight line. Place glazing tape on glazing pane or unit with tape flush with sight line.

F. Fill gap between glazing and stop with polysulfide type sealant to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.

G. Apply cap bead of polysulfide type sealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.5 INSTALLATION - INTERIOR WET/DRY METHOD (TAPE AND SEALANT)

A. Cut glazing tape to length and install against permanent stops, projecting 1/16 inch (1.6 mm) above sight line.

B. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.

C. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.

D. Install removable stops, spacer shims inserted between glazing and applied stops at 24 inch intervals, ¼ inch below sight line.

E. Fill gaps between pane and applied stop with acrylic emulsion latex type sealant to depth equal to bite on glazing, to uniform and level line.

F. Trim protruding tape edge.

3.6 INSTALLATION - INTERIOR WET METHOD (COMPOUND AND COMPOUND)

A. Install glazing resting on setting blocks. Install applied stop and center pane by use of spacer shims at 24 inch centers, kept 1/4 inch below sight line.

B. Locate and secure glazing pane using glazers' clips.

C. Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.7 PROTECTION AND CLEANING

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove non-permanent labels and clean surfaces.

C. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.

D. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by method recommended by glass manufacturer.

E. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

F. Remove labels after Work is complete.

G. Clean glass and adjacent surfaces.

3.8 PROTECTION

A. Wash glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of Final Acceptance in each area of project. Wash glass by method recommended by glass manufacturer.

3.9 WASTE MANAGEMENT

A. Separate float glass and place in designated area for reuse or recycling.

B. Separate tempered glass for use as aggregate or non-structural fill.

C. Separate plastic materials and place in designated area for reuse or recycling.

D. Separate corrugated cardboard in accordance with the Waste Management Plan and place in designated area for recycling.

3.10 GLAZING SCHEDULE

A. Tempered and laminated safety glass requirements for specific locations shall be as shown on the drawings or as required by code or code official. Adjust scheduled glass elements where required to meet safety requirements while maintaining conformance to performance specifications for each scheduled location as closely as possible.

END OF SECTION

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SECTION 09 2116

GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Gypsum wallboard and ceiling board.
   2. Drywall finishing.

1.2 QUALITY ASSURANCE

A. Regulatory Requirements: Where required, provide fire-rated assemblies as listed in the following:
   1. Underwriters Laboratories Inc.'s (UL) "Fire Resistance Directory."

PART 2 - PRODUCTS

2.1 GYPSUM BOARD

A. Gypsum Wallboard and Ceiling Board: ASTM C 36; maximum lengths available to minimize end-to-end butt joints in each area receiving finished gypsum board.
   1. Edges: Tapered.
   2. Thickness: 5/8 inch, except as otherwise shown (fire-resistant type).
B. Manufacturers: Products of the following manufacturers or approved equal, provided they comply with requirements of the contract documents, will be among those considered acceptable:
   1. Domtar Gypsum.
   2. Georgia-Pacific Corporation.
   3. Gold Bond Building Products, a National Gypsum Division.
   4. USG Corporation.

2.2 TRIM AND ACCESSORIES

A. General: Except as otherwise specifically indicated, provide trim and accessories by manufacturer of gypsum board materials, made of galvanized steel or zinc alloy and configured for concealment in joint compound.

2.3 JOINT TREATMENT

A. General: Provide products by manufacturer of gypsum boards. Comply with ASTM C 475 and with manufacturer's recommendations for specific project conditions.
B. Joint Tape: Manufacturer's standard paper reinforcing tape.
C. Setting Type Joint Compound: Chemical hardening type, for the following applications:
   1. Exterior use: Prefilling and topping.
D. Drying Type Joint Compound: Vinyl-based type for interior use, and as follows:
   1. All-purpose type, for both embedding tape and as topping.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide miscellaneous materials as produced or recommended by manufacturer of gypsum products.

PART 3 - EXECUTION

3.1 INSTALLATION OF GYPSUM BOARD

A. General: Comply with ASTM C 840 and GA-216 except where exceeded by other requirements.
   1. Wherever possible, install gypsum board to minimize butt end joints.
   2. Apply ceiling boards prior to installation of wallboards. Arrange to minimize butt end joints near center of ceiling area.
   3. Install wallboards in a manner which will minimize butt end joints in center of wall area. Stagger vertical joints on opposite sides of walls.
B. Installation on Wood Framing:
   1. Single-layer application: Install gypsum board by the following method:

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a. Screw attachment.

3.2 FINISHING

A. General: Comply with ASTM C 840 and GA-216 except where exceeded by other requirements.

B. Finish gypsum board in accordance with the following level of finish per GA-214, except where indicated otherwise on the drawings:

1. Level 3: Embed tape in joint compound at all joints and interior angles. Provide two separate coats of compound at all joints, angles, fastener heads, and accessories. Provide smooth surfaces free of tool marks and ridges.

END OF SECTION

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SECTION 09 9000

PAINTING AND COATING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints, stains, varnishes, and other coatings.

C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:

D. Do Not Paint or Finish the Following Items:
1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
2. Items indicated to receive other finishes.
3. Items indicated to remain unfinished.
4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
5. Floors, unless specifically so indicated.
6. Glass.
7. Concealed pipes, ducts, and conduits.

1.2 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on all finishing products, including VOC content.

1.3 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the work as described in this section, with minimum three years experience.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.5 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior coatings during rain or snow, when CMU is damp, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer'sinstructions.

F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. Paints:
1. Duron, Inc: www.duron.com.
2. Glidden Professional: www.gliddenprofessional.com.
3. Benjamin Moore & Co: www.benjaminmoore.com.

C. Transparent Finishes:
1. Base Manufacturer: ICI Paints.

D. Block Fillers:

E. Substitutions: See Section 01 6000 - Product Requirements.

2.2 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Supply each coating material in quantity required to complete entire project's work from a single production run.
3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Volatile Organic Compound (VOC) Content:
1. Provide coatings that comply with the most stringent requirements specified in the following:
   a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

2.3 PAINT SYSTEMS - EXTERIOR

A. Fiber cement trim (shop primed), Opaque, 2 Coat:
1. Two coats of 100 % acrylic paint flat finish.

B. Tongue & Groove Wood Board soffit, Stained, 2 Coats:
1. One coat of Natural Stain with clear coat top coat.

2.4 PAINT SYSTEMS - INTERIOR

A. Ferrous Metals, Primed, Alkyd, 2 Coat (HM doors and frames/ lintels):
1. Touch-up with alkyd primer.

2. Gloss: Two coats of alkyd enamel.

B. Gypsum Board, Latex-Acrylic, 2 Coat:
1. One coat of alkyd primer sealer.
2. Semi-gloss: One coat of latex-acrylic enamel; .
3. Eggshell: One coat of latex-acrylic enamel; .

PART 3 EXECUTION

3.1 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

3.2 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance.

D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

END OF SECTION

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SECTION 10 4250

SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Exterior aluminum letters.
B. Provide signage as indicated on the signage schedules.

1.2 SUBMITTALS

A. Product Data: Submit for each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.
B. Shop drawings:
   1. Show fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, layout, reinforcement, accessories, and installation details.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Metal Custom Room Signs: Products of the following manufacturers or approved equal, provided they comply with requirements of the contract documents, will be among those considered acceptable (colors shall match those specified):
   1. **Sign-A-Rama***; (919) 773-8014, jim@signaram-sraleigh.com
   2. AOA Signs, www.aoasigns.com
   3. Accusign, Inc.; (919) 872-2008 or approved equal.

2.2 RAISED LETTER SIGNS-NOT USED

2.3 INDIVIDUAL METAL LETTERS

A. Material: **Aluminum plate** with brushed mill finish, Dark Bronze color:
   1. Thickness: 1/4 inch.
   2. Height: 10 inches.
   3. Edges: Square.

B. Character Style:
   1. Character Font: Helvetica.
   2. Character Case: Upper case only.
   3. Surface mount to Brick Veneer.

2.4 ACCESSORIES

A. Mounting Hardware: Stainless steel or aluminum screws.
B. Provide surface mounting for individual exterior letters; 2-sets on Brick Veneer, each building.

2.5 SIGN SCHEDULE:

A. Exterior Aluminum Individual Letters, at 10” high (vertically on Brick Veneer) shall read:

Location/Room No.	Copy	Quantity
Exterior (see sheet A2.1)	VENDING	4

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PART 3 - EXECUTION

3.1 INSTALLATION

A. General:
   1. Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
   2. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
   3. Install project sign in locations indicated and using mounting methods indicated.

B. Individual Letters:
   1. Mount letters using the standard method recommended by the manufacturer for the type of wall surface indicated (stainless steel or aluminum screws).
   2. Concealed mounting: Mount with bottom of letters 7'-6" above the floor adjacent to doors starting 2" from the hinge side of the jamb, space individual letters as indicated. Letters must be clear and not obstructed by doors when opened 180 degrees.

3.2 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION

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SECTION 31 2000

UNCLASSIFIED EXCAVATION

1. DESCRIPTION:

1.1 This portion of the project includes the excavation, undercut excavating, grading, earthwork and compaction required as shown on the plans and all other associated miscellaneous items of earthwork construction, as shown on the plans. The Contractor shall furnish all materials, labor, equipment and incidental items necessary to complete this portion of the work as detailed on the plans and as called for in these Specifications.

1.2 All unclassified excavation shall be in accordance with the "Standard Specifications for Roads and Structures" of latest revision, published by the North Carolina Department of Transportation, unless otherwise directed herein.

2. MATERIALS:

2.1 Topsoil shall be considered to mean original surface soil, typical of the area, which is capable of supporting native plant growth, and shall be free of large stones, roots, brush, waste, construction debris and other undesirable material or contamination.

2.2 All fill used for site grading operations should consist of a clean (free of organics and debris) low plasticity soil (plasticity index less than 30).

3. INSTALLATION:

3.1 General Requirements:

3.1.1 Omitted

3.1.2 Construction stakeout will be by a licensed survey firm provided by the Contractor. Exact locations and grade points are to be staked or fixed by the surveying firm before construction. The Contractor shall not disturb any bench marks, reference stakes or property line monuments. In the event it becomes necessary to remove any bench mark, reference stake or property line monument in the performance of the work, the Contractor shall contact the Owner so he may have the referenced points replaced. If any such points are disturbed or damaged in excess of an agreed-to allowance, they shall be replaced by a North Carolina Registered Land Surveyor at the expense of the Contractor.

3.1.3 Existing utility lines (either overhead or underground), sidewalks, fencing, pavement or other structures shown on the drawings, shown to the Contractor or mentioned in the plans and specifications shall be kept free of damage by the Contractor's operations**. It shall be the responsibility of the Contractor to verify the existence and location of all underground utilities within the Project Site.** The omission from or the inclusion of utility locations on the plans is not to be considered as the non-existence of or a definite location of existing underground utilities. Any cost of moving the utility will be the responsibility of the Owner. This is not to be construed as work adjacent to an existing utility that may need to be uncovered during construction, the cost of which is solely the responsibility of the Contractor. Any existing construction damaged by the Contractor shall be restored to an equal condition as that existing at the time prior to damage, at the Contractor's expense. If any existing utility is inadvertently damaged during construction, the Contractor shall notify the utility, the Engineer and the Owner of said damaged utility at once so that emergency repairs may be made at the Contractor's expense and to the satisfaction of the party having jurisdiction of the utility.

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3.2 Unclassified Excavation:

3.2.1 Upon completion of the stripping operations, and after all excavation of the site has been completed to the lines and grades shown on the drawings, the exposed subgrade in cut areas should be proofrolled as specified herein for areas to receive fill. Any areas which deflect, rut or pump excessively during the proofrolling or fail to "tighten up" after successive passes should be undercut to suitable soils and replaced with compacted fill.

3.2.2 All site excavation shall be unclassified regardless of the nature of the materials encountered with the exception of rock excavation or unsuitable soil. Only that material which in the opinion of the Engineer cannot be removed with a caterpillar D-9 or equal, equipped with a properly fitted single tooth ripper, or removed by a caterpillar 225 backhoe or equal, equipped with rock teeth, will be regarded as rock. The Engineer should be notified immediately if rock is encountered. All excavation materials which are not required for fills shall be considered as waste and shall be wasted on site.

3.2.3 All site excavation of previously stockpiled or buried construction, clearing or demolition debris or any other refuge shall be properly disposed of offsite at the Contractor's expense. The Contractor shall obtain all necessary Federal, State or Local permits for transporting and disposing of such material, at his expense.

3.2.4 Rock in the bottom of roadway cuts shall be excavated to a depth of l foot below the roadbed and ditches. Rock in building pad areas shall be excavated to a depth of 1 foot below finished grade or as indicated on the grading plans. Rock in utility trenches shall be excavated six inches below the invert elevation of the pipe, and for a width of the pipe plus one foot on either side of the pipe, or three feet in width, whichever is more.

3.2.5 The Contractor shall provide all sheeting, shoring, underpinning and bracing required to hold the sides of the excavation and for the protection of all adjacent structures. The Contractor shall be held responsible for any damage to any part of the work by failure of excavated sides or bottoms.

3.3 Blasting:

3.3.1 Any and all blasting operations shall be conducted in strict accordance with existing ordinances and regulations relative to storage and use of explosives. Blasting shall be done only by experienced men and extreme caution and care shall be exercised to prevent injury to persons or damage to any pipe, mains, wires, drains, buildings, railroad tracks or other property above or below the surface of the ground. The Contractor shall use safety nets or other equivalent measures as approved by the Engineer to reduce the possibility of flying rock as a result of blasting operations. The Contractor shall be held strictly responsible for any injury to persons or damage to public or private property.

3.3.2 The Contractor shall submit blasting plans to the Engineer for review and shall not proceed with blasting operations until approval has been granted. As directed by the Engineer, blasting operations shall be monitored to insure that vibration levels produced by blasting are within tolerable limits.

3.3.3 The Contractor shall obtain at his expense, all Federal, State and Local permits required to perform blasting operations.

3.4 Dewatering:

3.4.1 The Contractor shall control the grading in all areas so that the surface of the ground will be properly sloped, diked or ditched to prevent water from entering into excavated areas. The Contractor shall maintain sufficient personnel and equipment to promptly and continuously remove all water, from any source, entering or accumulating in the excavation or other parts of the work. All water pumped or drained from these areas shall be disposed of in a suitable manner without damaging adjacent property or other work under construction.

3.5 Embankments, Fills and Backfills:

3.5.1 Upon completion of the stripping operations, the exposed subgrade in areas to receive fill should be proofrolled with a loaded dumptruck or similar pneumatic-tired vehicle with a minimum loaded weight of 20 tons, under the supervision of the geotechnical engineer. The proofrolling procedure should consist of four complete passes of the exposed areas with two of the passes being in a direction perpendicular to the preceding ones. Any areas which deflect, rut or pump excessively during the proofrolling or fail to "tighten up" after successive passes should be undercut to suitable soils and replaced with compacted fill.

3.5.2 Embankments and fills shall be constructed at the locations and to the lines and grades indicated on the drawings. Material shall be placed in horizontal layers not to exceed 8 inches in loose depth and thoroughly compacted prior to placing each following layer. All fill material shall be free from roots or other organic material, trash, and from all stones having any one dimension greater than 6 inches. Stones larger than 4 inches, maximum dimension, shall not be permitted in the upper 6 inches of fill or embankment. Fill areas shall be kept level with graders or other approved devices.

3.5.3 Embankment and fill compaction shall be accomplished by thoroughly compacting each layer with sheep foot rollers, pneumatic rollers, and mechanical tampers in places inaccessible to rollers, or other equipment. When material has too much moisture, grading operations shall be limited to drying soil by spreading and turning for drying by the sun and aeration. When material is dry, moisture shall be added by sprinkling by approved means.

3.5.4 All embankments and fills shall be compacted to the following percentages of the maximum dry density as determined by the Standard Proctor Density Test, ASTM D-698, Method C.

3.5.5 The following table shall be used unless otherwise specified:

TABLE OF COMPACTION

Type Fill or Embankment	Zone	Minimum Density %
Roadway or Parking	Top 12 inches	100
Building	Top 12 inches	100
Remainder		95

Embankment types are defined as follows:

Roadway and Parking - beneath all roads, streets, truck operations, and automobile parking lots.

3.5.6 Where backfilling is required after the completion of drainage structures, all forms, trash, and construction debris shall be removed from excavation before backfilling begins. Backfill shall be placed in horizontal layers of 6 inches in loose depth. Compaction shall conform to requirements in the above table. Heavy rollers, crawler equipment, trucks or other heavy equipment shall not be used for compacting backfill within 5 feet of structure walls or other facilities which may be damaged by their weight or operation. No backfilling shall begin until concrete and masonry walls are properly cured.

3.5.7 The Contractor shall carry the top of embankments, fills, or backfills to the surrounding grade so that upon compaction and subsequent settlement, the grade will be at proper elevation. Should settlement occur during the guarantee period of the contract, the Contractor shall provide sufficient fill to bring area up to finished grade and shall reseed as required.

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3.6 PROOFROLLING SCHEDULE:

3.6.1 Proofrolling under the observation of the Soils Engineer will be performed using a loaded dumptruck or similar pneumatic-tired vehicle with a minimum loaded weight of 25 tons as specified herein and as follows:

3.6.2 Immediately following stripping, all areas to receive fill shall be proofrolled as specified herein.

3.6.3 Immediately following the completion of excavation to proposed grades in cut areas, proofrolling shall be performed as specified herein.

3.6.4 Immediately prior to stone base course placement in pavement areas and following final floor slab preparation, all subgrade areas will be proofrolled. Any local areas which deflect, rut or pump under the roller shall be undercut and replaced with compacted fill material as specified herein.

3.7 SOIL INSPECTION AND TESTS:

3.7.1 All excavated and fill material shall be removed, selected, placed and compacted under supervision of a representative of a commercial soils testing laboratory which will be selected by the Owner. A commercial soils testing laboratory shall be any firm properly equipped to perform such compaction tests and who has in their employment a Professional Engineer experienced in testing and soil mechanics. The laboratory representative shall have the authority to approve or disapprove the condition of the subgrade on which fill is to be placed, filled material, placement methods, compaction methods, and shall make compaction density tests as necessary to determine that the specified density is obtained. The Contractor shall notify the laboratory at least three (3) days prior to starting fill operations in order that suitability of material for compaction may be checked and no material shall be used that has not been previously checked and approved by the laboratory. The laboratory shall be notified before any cut is made or fill is placed in order that the laboratory representative may be present during all grading operations. The Contractor shall remove, replace, recompact and retest all fills failing to meet the density requirements at his own expense.

3.7.2 A soils testing laboratory shall be retained by the Owner to supervise fill placement and compaction at no expense to the Contractor. However, extra time and trips caused by excessive delay, failure of the Contractor to properly coordinate with the laboratory, or failure of the Contractor to properly compact fill material shall be backcharged to the Contractor.

3.7.3 Field density tests shall be performed by the Owner's testing agency at the following rate:
Mass Grading: One test per two feet of fill placed over 25,000 square feet
Backfill: One test per two feet of fill placed over 5,000 square feet
or
Backfill: One test per two feet of vertical thickness per 1000 linear feet

3.7.4 A minimum of one field density test shall be made for each 10,000 square feet of fill placement in all other areas where pavement is to be placed.

3.7.5 Prior to final acceptance, the Soils Engineer shall submit certification specifying that the project compaction criteria and subgrading elevations have been satisfactorily obtained. This certification should be in the form of a letter. The Contractor is responsible for coordination of this certification.

3.8 Borrow and Waste Materials:

3.8.1 Borrow: In the event borrow material is required, the borrow material shall be checked for suitability for compaction and approved by the soils testing laboratory. The Contractor shall notify the laboratory at least three (3) days in advance of beginning borrow operations. Borrow excavation shall be performed in accordance with the NCDOT Standard Specifications for Roads and Structures of latest revision except where modified herein.

3.8.2 Waste: Excavated materials not suited for backfill and excavated material in excess of that needed to complete the work shall be wasted on the project site where directed by the Engineer. The waste area shall be prepared by topsoil stripping and prepared to receive the waste. All materials placed in the waste areas shall be compacted to 95 percentage of the maximum dry density as determined by the Standard Proctor Density Test, ASTM D-698, Method C. Waste areas shall be left in a graded and sloped condition to allow natural drainage of surrounding area.

3.9 Residual Soil Areas:

3.9.1 If proofrolling indicates that on-site virgin soils supporting any roadway, parking, building or other structural areas are not adequate as determined by the Soils Engineer, then these unsuitable areas shall be repaired by the Contractor. The necessary repair procedure shall be determined by the Soils Engineer and may include scarifying, drying and recompaction procedures or undercutting and replacement procedures.

3.10 Final Grading:

3.10.1 On completion of all grading, all graded areas (except building pads and pavement areas in rough grading contracts and all cut slopes steeper than 4:l slope) shall be provided with 4 inches of topsoil and brought to the finished grades shown on the drawings. Areas disturbed by operations of the Contractor shall be properly returned to their original condition with a topsoil covering of 4 inches.

3.10.2 After the entire graded area has been brought to the finished grades shown on drawings, all areas shall be left smooth and free from erosion, ridges, ditches and evidence of ponding. Final grades shall be free from all roots, debris, rock and soil lumps and left in readiness for seeding.

3.10.3 Prior to acceptance of the entire project, the Contractor shall correct all embankments and graded areas of all damages due to washes, settlement, erosion, equipment ruts or any other cause at his expense.

3.10.4 Prior to final acceptance, the Contractor shall provide certification as specified in paragraph 3.7.6 that all grades are $\pm$ 0.l foot of the finished grades shown on project drawings for the pavement areas. In other areas, the Contractor shall certify that all areas are $\pm$ 0.2 foot and that the areas drain properly so that no ponding occurs. The certification is not meant to require an as-built survey of the areas; rather, it is meant to require the Contractor to give assurance that the grades are within tolerances required. If, in subsequent work, it is apparent that the subgrade is not as certified, the Owner may require the Contractor to provide all remedial work to ensure the subgrade is within tolerances, including any costs of improvements that may need to be redone.

3.10.5 The Contractor shall stabilize all disturbed areas, unless otherwise directed, by seeding and mulching per section 32 9200 of these specifications or other means of stabilization called for by the contract drawings.

3.11 Clean-Up:

3.11.1 Upon completion or termination of the work, and before final payment is made, the Contractor shall remove from site all equipment, waste materials and rubbish resulting from his operations. In the event of his failure to do so, the same may be done by the Owner at the expense of the Contractor.

4. METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

There is no line item for unclassified grading. Payment for Undercut shall be measured by the Engineer and paid for at the contract unit price for Undercut. Mass rock shall be measured by the Engineer and paid for at the contract unit price for “mass rock”. Trench rock shall be measured by the Engineer and

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paid for at the contract unit price for "trench rock". The quantities for payment of rock are defined by the limits required; no additional payment will be made for rock removal in excess of the requirements.

END OF SECTION

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SECTION 31 3116

TERMITE CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Chemical soil treatment.

1.2 REFERENCE STANDARDS

A. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act; United States Code; 1947 (Revised 2001).

1.3 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.

C. Test Reports: Indicate regulatory agency approval reports when required.

D. Manufacturer's Application Instructions: Indicate caution requirements.

E. Manufacturer's Certificate: Certify that toxicants meet or exceed specified requirements.

F. Record moisture content of soil before application.

G. Warranty: Submit warranty and ensure that forms have been completed in NC DOT's name.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing this type of work and:
   1. Approved by manufacturer of treatment materials.
   2. Licensed in North Carolina.

1.5 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide five year installer's warranty against damage to building caused by termites.
   1. Include coverage for repairs to building and to contents damaged due to building damage. Repair damage and, if required, re-treat.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers:
   1. Bayer Environmental Science Corp: www.backedbybayer.com/pest-management.
   2. FMC Professional Solutions: www.fmcprosolutions.com.
   3. Syngenta Professional Products: www.syngentaprofessionalproducts.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Toxicant Chemical: EPA approved; synthetically color dyed to permit visual identification of treated soil.

C. Diluent: Recommended by toxicant manufacturer.

2.2 MIXES

A. Mix toxicant to manufacturer's instructions.

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PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.

B. Verify final grading is complete.

3.2 APPLICATION

A. Comply with requirements of U.S. EPA and applicable state and local codes.

B. Spray apply toxicant in accordance with manufacturer's instructions.

C. Apply toxicant at following locations:
   1. Under Slabs-on-Grade.

D. Under slabs, apply toxicant immediately prior to installation of vapor barrier.

E. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.

F. Re-treat disturbed treated soil with same toxicant as original treatment.

G. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

3.3 PROTECTION

A. Do not permit soil grading over treated work.

END OF SECTION

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SECTION 33 4600

SUBDRAINAGE SYSTEMS FOR STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Subdrainage systems of the following types: Downspout drains.

B. Related Sections: Earthwork: Section 31 3116.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's technical literature and installation instructions for the following:

1. Drainage piping.

PART 2 - PRODUCTS

2.1 DRAINAGE PIPE

A. Piping System 1:

1. Standard (solid) pipe: Polyethylene pipe; ASTM F 405 or ASTM F 667, as applicable for pipe size.

2. Application: Gutter and downspout drainage.

B. Provide fittings and accessories of same material as pipe or compatible material for intersections, bends, transitions, and the like; provide black plastic downspout boots or downspout adapters; equal to Plastic Trends, Royal Pipe Systems, USPlastic, or Flex-Drain or approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Engineering Layout: Establish lines, grades, and locations of piping and accessories.

1. Maintain grade stakes, batter boards, and the like, to permit rapid checking of grades and lines as work progresses.

3.2 INSTALLATION - GENERAL

A. Earthwork and Trenching: Perform required excavation, backfilling, and compacting in accordance with requirements of other Division 2 sections as applicable.

B. Piping Installation:

1. General: Install piping in accordance with governing authorities, except where more stringent requirements are indicated.

2. Inspect piping before installation to detect apparent defects. Mark defective materials and promptly remove from site.

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3. Lay piping, beginning at low point of system, true to line and grade indicated and with unbroken continuity of invert.

4. Polyethylene pipe: Install in accordance with ASTM F 449.

5. Joint adapters: Make joints between different types of pipe or different diameters of the same type of pipe with standard manufactured adapters intended for that purpose.

C. Filling and Backfilling:

1. Place and compact fill or backfill in uniform layers, and achieve required compaction.

2. Take care when backfilling to avoid damaging or dislodging drainage system components.

3.4 FIELD QUALITY CONTROL

A. Piping: After installation of piping and placement of initial backfill, test piping for crushing and obstructions.

1. Pull a mandrel with diameter of 90 percent of the pipe diameter through the pipe

Locate and replace damaged pipe or remove obstructions and retest until mandrel passes entire length of pipe.

END OF SECTION

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

_____ 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 **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

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

_____ 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

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.

Signature of Witness or Attest	By	Signature of Contractor
Print or type Signer's name		Print or type Signer's name
If Corporation, affix Corporate Seal	and	
Signature of Witness or Attest	By	Signature of Contractor
Print or type Signer's name		Print or type Signer's name
If Corporation, affix Corporate Seal	and	
Signature of Witness or Attest	By	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

_____ _____
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				

***** 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:
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.

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				

***** 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 _____%

** Dollar Volume of DBE Subcontractor Percentage of Total Contract Bid Price:
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.

ADDENDA

ADDENDUM #1

I, _____ representing _____
(SIGNATURE)

Acknowledge receipt of Addendum #1.

ADDENDUM #2

I, _____ representing _____
(SIGNATURE)

Acknowledge receipt of Addendum #2.

ADDENDUM #3

I, _____ representing _____
(SIGNATURE)

Acknowledge receipt of Addendum #3.

County : Alamance

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			ROADWAY ITEMS			
0001	0022000000-E	225	UNCLASSIFIED EXCAVATION	500 CY		
0002	0106000000-E	230	BORROW EXCAVATION	300 CY		
0003	2495000000-E	SP	GENERIC DRAINAGE ITEM 9" CONCRETE BORDER	10 CY		
0004	2591000000-E	848	4" CONCRETE SIDEWALK	200 SY		
0005	2995000000-N	SP	GENERIC DRAINAGE ITEM NBL STORMWATER DRAINAGE SYSTEM	1 EA		
0006	2995000000-N	SP	GENERIC DRAINAGE ITEM SBL STORMWATER DRAINAGE SYSTEM	1 EA		
0007	3574000000-E	867	GENERIC FENCING ITEM TEMPORARY CONSTRUCTION FENCE	1,200 LF		
0008	3575000000-E	SP	GENERIC FENCING ITEM SPLIT RAIL FENCE	170 LF		
0009	6000000000-E	1605	TEMPORARY SILT FENCE	200 LF		
0010	6012000000-E	1610	SEDIMENT CONTROL STONE	2 TON		
0011	6042000000-E	1632	1/4" HARDWARE CLOTH	200 LF		
0012	6084000000-E	1660	SEEDING & MULCHING	2 ACR		
0013	6102000000-E	1664	SODDING	610 SY		
0014	6645000000-N	SP	GENERIC PLANTING ITEM PLACEMENT OF BOULDERS	21 EA		
0015	6650000000-E	1670	MULCH FOR PLANTING	200 CY		
0016	6655000000-E	1670	WATER FOR PLANTING	120 M/G		
0017	6665000000-E	1670	POSTEMERGENT HERBICIDAL TREAT-MENT FOR PLANT BEDS	1,800 SY		
0018	6670000000-E	1670	PREEMERGENT HERBICIDAL TREAT-MENT FOR PLANT BEDS	1,800 SY		

County : Alamance

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0019	6677000000-E	SP	GENERIC PLANTING ITEM RIVER STONE	3 TON		
0020	6690000000-E	SP	GENERIC PLANTING ITEM LANDSCAPE METAL EDGING	200 LF		
0021	6690000000-E	SP	GENERIC PLANTING ITEM TREE PROTECTION FENCE	400 LF		
0022	6900000000-E	SP	TOPSOIL	150 CY		
0023	6905000000-N	SP	PICNIC TABLE, TERRAZZO & STEEL	2 EA		
0024	6970000000-N	SP	GENERIC REST AREA ITEM PARK BENCH	9 EA		
0025	6970000000-N	SP	GENERIC REST AREA ITEM RELOCATE NEWSPAPER BOX	2 EA		
0026	6975000000-N	SP	GENERIC REST AREA ITEM NBL IRRIGATION	Lump Sum	L.S.	
0027	6975000000-N	SP	GENERIC REST AREA ITEM NBL LANDSCAPE AND SITE GRADING	Lump Sum	L.S.	
0028	6975000000-N	SP	GENERIC REST AREA ITEM NBL LANDSCAPE PLANTING	Lump Sum	L.S.	
0029	6975000000-N	SP	GENERIC REST AREA ITEM NBL SITE DEMOLITION	Lump Sum	L.S.	
0030	6975000000-N	SP	GENERIC REST AREA ITEM NBL VENDING BUILDING CONSTRUCT ION	Lump Sum	L.S.	
0031	6975000000-N	SP	GENERIC REST AREA ITEM NBL WATER FEATURE	Lump Sum	L.S.	
0032	6975000000-N	SP	GENERIC REST AREA ITEM ORNAMENTAL TREE LIGHTS	Lump Sum	L.S.	
0033	6975000000-N	SP	GENERIC REST AREA ITEM SBL IRRIGATION	Lump Sum	L.S.	
0034	6975000000-N	SP	GENERIC REST AREA ITEM SBL LANDSCAPE AND SITE GRADING	Lump Sum	L.S.	
0035	6975000000-N	SP	GENERIC REST AREA ITEM SBL LANDSCAPE PLANTING	Lump Sum	L.S.	

County : Alamance

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0036	6975000000-N	SP	GENERIC REST AREA ITEM SBL SITE DEMOLITION	Lump Sum	L.S.	
0037	6975000000-N	SP	GENERIC REST AREA ITEM SBL VENDING BUILDING CONSTRUCT ION	Lump Sum	L.S.	
0038	6975000000-N	SP	GENERIC REST AREA ITEM SBL WATER FEATURE	Lump Sum	L.S.	
0039	6980000000-E	SP	GENERIC REST AREA ITEM 3" PIPE SLEEVE	200 LF		
0040	6982000000-E	SP	GENERIC REST AREA ITEM PERMEABLE PAVERS	13,000 SF		
0041	8801000000-E	SP	MSE RETAINING WALL NO **** WALL NO 1	550 SF		
0042	8802030000-E	SP	SEGMENTAL GRAVITY RETAINING WALLS	300 SF		

EXECUTION OF CONTRACT

Contract No: DG00243

County: Alamance County

ACCEPTED BY THE DEPARTMENT

_____

Proposals Engineer

_____

Date

EXECUTION OF CONTRACT AND BONDS
APPROVED AS TO FORM:

_____

Division Engineer

_____

Date

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH, NC

BID BOND

Contract Number: DG00243 County: Alamance County

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL CONTRACTOR (hereafter, PRINCIPAL) and SURETY above named, are held and firmly bound unto the Department of Transportation in the full and just sum of five (5) percent of the total amount bid by the Principal for the project stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

NOW, THEREFORE, the condition of this obligation is: the Principal shall not withdraw its bid within sixty (60) days after the opening of the bids, or within such other time period as may be provided in the proposal, and if the Board of Transportation shall award a contract to the Principal, the Principal shall, within fourteen (14) calendar days after written notice of award is received by him, provide bonds with good and sufficient surety, as required for the faithful performance of the contract and for the protection of all persons supplying labor, material, and equipment for the prosecution of the work. In the event the Principal requests permission to withdraw his bid due to mistake in accordance with the provisions of Article 103-3 of the *Standard Specifications for Roads and Structures*, the conditions and obligations of this Bid Bond shall remain in full force and effect until the Department of Transportation makes a final determination to either allow the bid to be withdrawn or to proceed with award of the contract. In the event a determination is made to award the contract, the Principal shall have fourteen (14) calendar days to comply with the requirements set forth above. In the event the Principal withdraws its bid after bids are opened except as provided in Article 103-3, or after award of the contract has been made fails to execute such additional documents as may be required and to provide the required bonds within the time period specified above, then the amount of the bid bond shall be immediately paid to the Department of Transportation as liquidated damages.

IN TESTIMONY WHEREOF, the Principal and Surety have caused these presents to be duly signed and sealed.

This the _____ day of _____, 20 _____

_____
Surety

By _____
General Agent or Attorney-in-Fact Signature

Seal of Surety

_____
Print or type Signer's Name

BID BOND

CORPORATION

SIGNATURE OF CONTRACTOR (Principal)

_____
Full name of Corporation

_____
Address as prequalified

By _____
Signature of **President**, **Vice President**, **Assistant Vice President**
Select appropriate title

_____
Print or type Signer's name

Affix Corporate Seal

Attest _____
Signature of **Secretary**, **Assistant Secretary**
Select appropriate title

_____
Print or type Signer's name

BID BOND

LIMITED LIABILITY COMPANY

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor _____

Full name of Firm

_____

Address as prequalified

Signature of Member/ Manager/Authorized Agent _____

Individually

_____

Print or type Signer's name

BID BOND

INDIVIDUAL DOING BUSINESS UNDER A FIRM NAME

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor _____
Individual Name

Trading and doing business as _____
Full name of Firm

_____
Address as prequalified

Signature of Contractor _____
Individually

_____
Print or type Signer's name

_____
Signature of Witness

_____
Print or type Signer's name

BID BOND

INDIVIDUAL DOING BUSINESS IN HIS OWN NAME

SIGNATURE OF CONTRACTOR (Principal)

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

BID BOND

PARTNERSHIP

SIGNATURE OF CONTRACTOR (Principal)

_____
Full name of Partnership

_____
Address as prequalified

By _____
Signature of Partner

_____
Print or type Signer's name

_____
Signature of Witness

_____
Print or type Signer’s name

BID BOND
JOINT VENTURE (2 or 3)
SIGNATURE OF CONTRACTORS (Principal)

Instructions to Bidders: **2 Joint Ventures**, Fill in lines (1), (2) and (3) and execute. **3 Joint Venturers** Fill in lines (1), (2), (3), (4) and execute. Line (1), print or type the name of Joint Venture. On line (2), print or type the name of one of the joint venturers and execute below in the appropriate manner required by Article 102-8 of the *Specifications*. On Line (3), print or type the name of second joint venturer and execute below in the appropriate manner required by said article of the Specifications. On Line (4), print or type the name of the third joint venturer, if applicable and execute below in the appropriate manner required by said article of the Specifications. This form of execution must be strictly followed.

Signature of Witness or Attest	By	Signature of Contractor
Print or type Signer's name		Print or type Signer's name
	and	
Signature of Witness or Attest	By	Signature of Contractor
Print or type Signer's name		Print or type Signer's name
	and	
Signature of Witness or Attest	By	Signature of Contractor
Print or type Signer's name		Print or type Signer's name

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH, NC

BID BOND

Contract Number: DG00243 County: Alamance County

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL CONTRACTOR (hereafter, PRINCIPAL) and SURETY above named, are held and firmly bound unto the Department of Transportation in the full and just sum of five (5) percent of the total amount bid by the Principal for the project stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

NOW, THEREFORE, the condition of this obligation is: the Principal shall not withdraw its bid within sixty (60) days after the opening of the bids, or within such other time period as may be provided in the proposal, and if the Board of Transportation shall award a contract to the Principal, the Principal shall, within fourteen (14) calendar days after written notice of award is received by him, provide bonds with good and sufficient surety, as required for the faithful performance of the contract and for the protection of all persons supplying labor, material, and equipment for the prosecution of the work. In the event the Principal requests permission to withdraw his bid due to mistake in accordance with the provisions of Article 103-3 of the *Standard Specifications for Roads and Structures*, the conditions and obligations of this Bid Bond shall remain in full force and effect until the Department of Transportation makes a final determination to either allow the bid to be withdrawn or to proceed with award of the contract. In the event a determination is made to award the contract, the Principal shall have fourteen (14) calendar days to comply with the requirements set forth above. In the event the Principal withdraws its bid after bids are opened except as provided in Article 103-3, or after award of the contract has been made fails to execute such additional documents as may be required and to provide the required bonds within the time period specified above, then the amount of the bid bond shall be immediately paid to the Department of Transportation as liquidated damages.

IN TESTIMONY WHEREOF, the Principal and Surety have caused these presents to be duly signed and sealed.

This the _____ day of _____, 20 _____

_____
Surety

By _____
General Agent or Attorney-in-Fact Signature

Seal of Surety

_____
Print or type Signer's Name

BID BOND

CORPORATION

SIGNATURE OF CONTRACTOR (Principal)

_____
Full name of Corporation

_____
Address as prequalified

By _____
Signature of **President**, **Vice President**, **Assistant Vice President**
Select appropriate title

_____
Print or type Signer's name

Affix Corporate Seal

Attest _____
Signature of **Secretary**, **Assistant Secretary**
Select appropriate title

_____
Print or type Signer's name

BID BOND

LIMITED LIABILITY COMPANY

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor _____
Full name of Firm

_____
Address as prequalified

Signature of Member/ Manager/Authorized Agent _____
Individually

_____
Print or type Signer's name

BID BOND

INDIVIDUAL DOING BUSINESS UNDER A FIRM NAME

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor _____
Individual Name

Trading and doing business as _____
Full name of Firm

_____
Address as prequalified

Signature of Contractor _____
Individually

_____
Print or type Signer's name

_____
Signature of Witness

_____
Print or type Signer's name

BID BOND

INDIVIDUAL DOING BUSINESS IN HIS OWN NAME

SIGNATURE OF CONTRACTOR (Principal)

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

BID BOND

PARTNERSHIP

SIGNATURE OF CONTRACTOR (Principal)

_____
Full name of Partnership

_____
Address as prequalified

By _____
Signature of Partner

_____
Print or type Signer's name

_____
Signature of Witness

_____
Print or type Signer’s name

BID BOND
JOINT VENTURE (2 or 3)
SIGNATURE OF CONTRACTORS (Principal)

Instructions to Bidders: **2 Joint Ventures**, Fill in lines (1), (2) and (3) and execute. **3 Joint Venturers** Fill in lines (1), (2), (3), (4) and execute. Line (1), print or type the name of Joint Venture. On line (2), print or type the name of one of the joint venturers and execute below in the appropriate manner required by Article 102-8 of the *Specifications*. On Line (3), print or type the name of second joint venturer and execute below in the appropriate manner required by said article of the Specifications. On Line (4), print or type the name of the third joint venturer, if applicable and execute below in the appropriate manner required by said article of the Specifications. This form of execution must be strictly followed.

Signature of Witness or Attest	By	Signature of Contractor
Print or type Signer's name		Print or type Signer's name

and

Signature of Witness or Attest	By	Signature of Contractor
Print or type Signer's name		Print or type Signer's name

and

Signature of Witness or Attest	By	Signature of Contractor
Print or type Signer's name		Print or type Signer's name