STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 1

PROPOSAL

DATE AND TIME OF BID OPENING: JANUARY 20, 2021 AT 2:00 PM

CONTRACT ID: DA00493

WBS ELEMENT NO.: 15RE.12.3

COUNTY: TYRRELL

ROUTE NO.: US64

TYPE OF WORK: REST AREA & VISITOR CENTER RENOVATIONS

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 DIVISION LET PROJECT

5% BID BOND OR BID DEPOSIT REQUIRED

NAME OF BIDDER

ADDRESS OF BIDDER

PROPOSAL FOR THE CONSTRUCTION OF

CONTRACT NO. DA00493 IN TYRRELL COUNTY, NORTH CAROLINA

DATE: DECEMBER 15, 2020

DEPARTMENT OF TRANSPORTATION,

RALEIGH, NORTH CAROLINA

The Bidder has carefully examined the location of the proposed work to be known as Contract No. **DA00493**; 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 be bound upon his execution of the bid and subsequent award to him by the Department of Transportation in accordance with this proposal to provide the necessary contract payment bond and contract performance bond within fourteen days after the written notice of award is received by him. The undersigned Bidder further agrees to provide all necessary machinery, tools, labor, and other means of construction; and to do all the work and to furnish all materials, except as otherwise noted, necessary to perform and complete the said contract in accordance with *the 2018 Standard Specifications for Roads and Structures* by the dates(s) specified in the Project Special Provisions and in accordance with the requirements of the Engineer, and at the unit or lump sum prices, as the case may be, for the various items given on the sheets contained herein.

The Bidder shall provide and furnish all the materials, machinery, implements, appliances and tools, and perform the work and required labor to construct and complete State Highway Contract No. **DA00493** in **Tyrrell 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 2018* with all amendments and supplements thereto, is by reference incorporated into and made a part of this contract; that, except as herein modified, all the construction and work included in this contract is to be done in accordance with the specifications contained in said volume, and amendments and supplements thereto, under the direction of the Engineer.

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

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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INSTRUCTIONS TO BIDDERS

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

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

For preparing and submitting the bid electronically, refer to Article 102-8(B) of the *2018 Standard Specifications.*

Bidders that bid electronically on Raleigh Central-Let projects will need a separate Digital Signature from the approved electronic bidding provider for Division Contracts.

ELECTRONIC ON-LINE BID:

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

PROJECT SPECIAL PROVISIONS

BOND REQUIREMENTS:

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

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

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

CONTRACT TIME AND LIQUIDATED DAMAGES:

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

The date of availability for this contract is **March 1, 2021.**

The completion date for this contract is **May 24, 2021**.

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

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

After award of the project, the Contractor shall notify the Engineer of his expected date for beginning work.

SCOPE OF WORK:

Location: US-64 Tyrrell County Rest Area/Visitor Center in the Town of Columbia, NC

Description of Work: Make repairs and improvements to the Rest Area and Visitor Center Buildings as out lined in the included Specification and Plans. The Rest Area will be closed to the public for the duration of the project in order to give full access to the contractor to safely and efficiently perform the work. Please note that the Walter B. Jones Center for the Sounds is located adjacent to the Rest Area and shares parking with the facility. It will remain open as normal during our construction and the contractor shall not close the shared parking lot. The Parking lot between US-264 and the Rest Area building may be closed to the public during construction.

CONTRACTOR'S LICENSE REQUIREMENTS:
(7-1-95) 102-14 SP1 G88

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

PROSECUTION OF WORK:
(7-1-95) (Rev. 8-21-12) 108 SP1 G15R

The Contractor will be required to prosecute the work in a continuous and uninterrupted manner from the time he begins the work until completion and final acceptance of the project. The Contractor will not be permitted to suspend his operations except for reasons beyond his control or except where the Engineer has authorized a suspension of the Contractor's operations in writing.

In the event that the Contractor's operations are suspended in violation of the above provisions, the sum of **$ 250.00** will be charged the Contractor for each and every calendar day that such suspension takes place. The said amount is hereby agreed upon as liquidated damages due to extra engineering and maintenance costs and due to increased public hazard resulting from a suspension of the work. Liquidated damages chargeable due to suspension of the work will be additional to any liquidated damages that may become chargeable due to failure to complete the work on time.

POSTED WEIGHT LIMITS:
(7-1-95) (Rev.9-15-15) 105 SP1 G24R

The Contractor's attention is directed to Article 105-15 of the *2018 Standard Specifications* and to the fact that various Primary and Secondary Roads and bridges may be posted with weight limits less than the legal limit. Do not exceed the posted weight limits in transporting materials and/or equipment to the projects. Make a thorough examination of all projects and haul routes and be prepared to discuss them at the Preconstruction Conference.

NO MAJOR CONTRACT ITEMS:
(2-19-02) (Rev. 8-21-07) 104 SP1 G31

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

NO SPECIALTY ITEMS:
(7-1-95) 108-6 SP1 G34

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

MINORITY BUSINESS ENTERPRISE AND WOMEN BUSINESS ENTERPRISE (DIVISIONS):

(10-16-07)(Rev. 2-19-19) 102-15(J) SP1 G67

Description

The purpose of this Special Provision is to carry out the North Carolina Department of Transportation's policy of ensuring nondiscrimination in the award and administration of contracts financed in whole or in part with State funds.

Definitions

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

Combined MBE/WBE Goal: A portion of the total contract, expressed as a percentage that is to be performed by committed MBE/WBE subcontractors.

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

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

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

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

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

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.

Replacement / Substitution – A full or partial reduction in the amount of work subcontracted to a committed (or an approved substitute) MBE/WBE firm.

North Carolina Unified Certification Program (NCUCP) - A program that provides comprehensive services and information to applicants for MBE/WBE certification. The MBE/WBE program follows the same regulations as the federal Disadvantaged Business Enterprise (DBE) program 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.

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

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

Forms and Websites Referenced in this Provision

Payment Tracking System - On-line system in which the Contractor enters the payments made to MBE and WBE 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 MBE/WBE firms working on the project. This form is for paper bid projects only. https://connect.ncdot.gov/business/Turnpike/Documents/Form%20DBE-IS%20Subcontractor%20Payment%20Information.pdf

RF-1 *MBE/WBE Replacement Request Form* - Form for replacing a committed MBE or WBE. 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 MBE/WBE subcontractor, manufacturer or regular dealer that affirms that a portion of said contract is going to be performed by the signed MBE/WBE for the estimated amount (based on quantities and unit prices) listed at the time of bid. http://connect.ncdot.gov/letting/LetCentral/Letter%20of%20Intent%20to%20Perform%20as%20a%20Subcontractor.pdf

Listing of MBE and WBE Subcontractors Form - Form for entering MBE/WBE subcontractors on a project that will meet the Combined MBE/WBE goal. This form is for paper bids only.

http://connect.ncdot.gov/municipalities/Bid%20Proposals%20for%20LGA%20Content/09%20MBE-WBE%20Subcontractors%20(State).docx

Subcontractor Quote Comparison Sheet - Spreadsheet for showing all subcontractor quotes in the work areas where MBEs and WBEs 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

Combined MBE/WBE Goal

The Combined MBE/WBE Goal for this project is **1 %**

The Combined Goal was established utilizing the following anticipated participation for Minority Business Enterprises and Women Business Enterprises:

(A) Minority Business Enterprises **1 %**

(1) *If the anticipated MBE participation is more than zero,* the Contractor shall exercise all necessary and reasonable steps to ensure that MBEs participate in at least the percent of the contract as set forth above.

(2) *If the anticipated MBE participation is zero,* the Contractor shall make an effort to recruit and use MBEs during the performance of the contract. Any MBE participation obtained shall be reported to the Department.

(B) Women Business Enterprises **0 %**

(1) *If the anticipated WBE participation is more than zero,* the Contractor shall exercise all necessary and reasonable steps to ensure that WBEs participate in at least the percent of the contract as set forth above.

(2) *If the anticipated WBE participation is zero,* the Contractor shall make an effort to recruit and use WBEs during the performance of the contract. Any WBE participation obtained shall be reported to the Department.

The Bidder is required to submit only participation to meet the Combined MBE/WBE Goal. The Combined Goal may be met by submitting all MBE participation, all WBE participation, or a combination of MBE and WBE participation.

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 MBE and WBE certified shall be used to meet the Combined MBE / WBE goal. The Directory can be found at the following link.
https://www.ebs.nc.gov/VendorDirectory/default.html

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

Listing of MBE/WBE Subcontractors

At the time of bid, bidders shall submit all MBE and WBE participation that they anticipate to use during the life of the contract. Only those identified to meet the Combined MBE/WBE goal will be considered committed, even though the listing shall include both committed MBE/WBE subcontractors and additional MBE/WBE subcontractors. Any additional MBE/WBE subcontractor participation above the goal will follow the banking guidelines found elsewhere in this provision. All other additional MBE/WBE subcontractor participation submitted at the time of bid will be used toward the Department's overall race-neutral goals. Only those firms with current MBE and WBE certification at the time of bid opening will be acceptable for listing in the bidder's submittal of MBE and WBE participation. The Contractor shall indicate the following required information:

(A) Electronic Bids

Bidders shall submit a listing of MBE and WBE participation in the appropriate section of the electronic submittal file.

(1) Submit the names and addresses of MBE and WBE firms identified to participate in the contract. If the bidder uses the updated listing of MBE and WBE firms shown in the electronic submittal file, the bidder may use the dropdown menu to access the name and address of the firms.

(2) Submit the contract line numbers of work to be performed by each MBE and WBE firm. When no figures or firms are entered, the bidder will be considered to have no MBE or WBE participation.

(3) The bidder shall be responsible for ensuring that the MBE and WBE are 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 MBE's or WBE's participation will not count towards achieving the Combined MBE/WBE goal.

(B) Paper Bids

(1) *If the Combined MBE/ WBE goal is more than zero,*

(a) Bidders, at the time the bid proposal is submitted, shall submit a listing of MBE/WBE participation, including the names and addresses on *Listing of MBE and WBE 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 MBE and WBE participation for the contract.

(b) If bidders have no MBE or WBE participation, they shall indicate this on the *Listing of MBE and WBE 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 MBE and WBE participation indicated on the appropriate form will not be read publicly during the opening of bids. The Department will not consider these bids for award and the proposal will be rejected.

(c) The bidder shall be responsible for ensuring that the MBE/WBE 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 MBE's or WBE's participation will not count towards achieving the Combined MBE/WBE goal.

(2) *If the Combined MBE/WBE Goal is zero,* entries on the *Listing of MBE and WBE Subcontractors* are not required for the zero goal, however any MBE or WBE participation that is achieved during the project shall be reported in accordance with requirements contained elsewhere in the special provision.

MBE or WBE Prime Contractor

When a certified MBE or WBE firm bids on a contract that contains a Combined MBE/WBE Goal, the 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 MBE or WBE bidder on a contract will meet the Combined MBE/WBE goal by virtue of the work it performs on the contract with its own forces. However, all the work that is performed by the MBE or WBE bidder and any other similarly certified subcontractors will count toward the goal. The MBE or WBE bidder shall list itself along with any MBE or WBE subcontractors, if any, in order to receive credit toward the goals.

MBE/WBE prime contractors shall also follow Sections A or B listed under *Listing of MBE/WBE Subcontractors* just as a non-MBE/WBE bidder would.

Written Documentation – Letter of Intent

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

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

If the bidder fails to submit the Letter of Intent from each committed MBE and WBE to be used toward the Combined MBE/WBE goal, or if the form is incomplete (i.e. both signatures are not present), the MBE/WBE participation will not count toward meeting the Combined MBE/WBE goal. If the lack of this participation drops the commitment below the Combined MBE/WBE goal, the Contractor shall submit evidence of good faith efforts for the goal not met, completed in its entirety, to the Engineer no later than 2:00 p.m. of the eighth calendar day following opening of bids, unless the eighth day falls on Saturday, Sunday or an official state holiday. In that situation, it is due in the office of the Engineer no later than 10:00 a.m. on the next official state business day.

Banking MBE/WBE Credit

If the committed MBE/WBE participation submitted exceeds the algebraic sum of the Combined MBE/WBE goal by $1,000 or more, the excess will be placed on deposit by the Department for future

use by the bidder. Separate accounts will be maintained for MBE and WBE participation and these may accumulate for a period not to exceed 24 months.

When the apparent lowest responsive bidder fails to submit sufficient participation by MBE and WBE firms to meet the advertised goal, as part of the good faith effort, the Department will consider allowing the bidder to withdraw funds to meet the Combined MBE/WBE goal as long as there are adequate funds available from the bidder's MBE and WBE bank accounts.

Submission of Good Faith Effort

If the bidder fails to meet or exceed the Combined MBE/WBE goal, the apparent lowest responsive bidder shall submit to the Department documentation of adequate good faith efforts made to reach that specific goal.

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

Note: Where the information submitted includes repetitious solicitation letters, it will be acceptable to submit a representative letter along with a distribution list of the firms that were solicited. Documentation of MBE/WBE 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 a Combined MBE/WBE Goal 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 MBE/WBE participation. Adequate good faith efforts also mean that the bidder actively and aggressively sought MBE/WBE 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 goals 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 MBEs/WBEs that are also prequalified subcontractors. The bidder must solicit this interest within at least 10 days prior to bid opening to allow the MBEs/WBEs to respond to the solicitation. Solicitation shall provide the opportunity to MBEs/WBEs within the Division and surrounding Divisions where the project is located. The bidder must determine with certainty if the MBEs/WBEs are interested by taking appropriate steps to follow up initial solicitations.

(B) Selecting portions of the work to be performed by MBEs/WBEs in order to increase the likelihood that the Combined MBE/WBE goal will be achieved.

(1) Where appropriate, break out contract work items into economically feasible units to facilitate MBE/WBE 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 advertised goal when the work to be sublet includes potential for MBE/WBE participation (2nd and 3rd tier subcontractors).

(C) Providing interested certified MBEs/WBEs that are also prequalified subcontractors 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 MBEs/WBEs. It is the bidder's responsibility to make a portion of the work available to MBE/WBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available MBE/WBE subcontractors and suppliers, so as to facilitate MBE/WBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of MBEs/WBEs 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 MBEs/WBEs to perform the work.

(2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including MBE/WBE subcontractors, and would take a firm's price and capabilities as well as the advertised goal into consideration. However, the fact that there may be some additional costs involved in finding and using MBEs/WBEs is not in itself sufficient reason for a bidder's failure to meet the advertised 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 MBEs/WBEs if the price difference is excessive or unreasonable.

(E) Not rejecting MBEs/WBEs 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 MBEs/WBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or bidder.

(G) Making efforts to assist interested MBEs/WBEs 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 MBEs/WBEs. Contact within 7 days from the bid opening the Business Opportunity and Work Force Development Unit at BOWD@ncdot.gov to give notification of the bidder's inability to get MBE or WBE quotes.

(I) Any other evidence that the bidder submits which shows that the bidder has made reasonable good faith efforts to meet the advertised 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 Combined MBE/WBE goal.

(2) The bidders' past performance in meeting the contract goal.

(3) The performance of other bidders in meeting the advertised goal. For example, when the apparent successful bidder fails to meet the 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 advertised goal, but meets or exceeds the average MBE and WBE 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 Combined MBE/WBE goal can be met or that an adequate good faith effort has been made to meet the advertised 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 MBE/WBE Participation Toward Meeting the Combined MBE/WBE Goal

(A) Participation

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

(B) Joint Checks

Prior notification of joint check use shall be required when counting MBE/WBE 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 MBE/WBE may enter into subcontracts. Work that a MBE subcontracts to another MBE firm may be counted toward the anticipated MBE participation. The same holds for work that a WBE subcontracts to another WBE firm. Work that a MBE/WBE subcontracts to a non-MBE/WBE firm does not count toward the contract goal requirement. It should be noted that every effort shall be made by MBE and WBE contractors to subcontract to the same certification (i.e., MBEs to MBEs and WBEs to WBEs), in order to fulfill the MBE or WBE participation breakdown. This, however, may not always be possible due to the limitation of firms in the area. If the MBE or WBE firm shows a good faith effort has been made to reach out to similarly certified firms and there is no interest or availability, and they can get assistance from other certified firms, the Engineer will not hold the prime responsible for meeting the individual MBE or WBE breakdown. If a MBE or WBE 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 MBE or WBE is not performing a commercially useful function.

(D) Joint Venture

When a MBE or WBE 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 MBE or WBE in the joint venture, that portion of the total dollar value being a distinct clearly defined portion of work that the MBE or WBE performs with its forces.

(E) Suppliers

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

(F) Manufacturers and Regular Dealers

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

(1) The fees or commissions charged by a MBE/WBE 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 MBE/WBE, 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) MBE/WBE Utilization

The Contractor may count toward its contract goal requirement only expenditures to MBEs and WBEs that perform a commercially useful function in the work of a contract. A MBE/WBE 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 MBE/WBE 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 MBE/WBE 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 MBE/WBE credit claimed for its performance of the work, and any other relevant factors. If it is determined that a MBE or WBE is not performing a Commercially Useful Function, the contractor may present evidence to rebut this presumption to the Department.

(B) MBE/WBE Utilization in Trucking

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

(1) The MBE/WBE 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 the Combined MBE/WBE goal.

(2) The MBE/WBE shall itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

(3) The MBE/WBE 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 MBE may subcontract the work to another MBE firm, including an owner-operator who is certified as a MBE. The same holds true that a WBE may subcontract the work to another WBE firm, including an owner-operator who is certified as a WBE. When this occurs, the MBE or WBE who subcontracts work receives credit for the total value of the transportation services the subcontracted MBE or WBE provides on the contract. It should be noted that every effort shall be made by MBE and WBE contractors to subcontract to the same certification (i.e., MBEs to MBEs and WBEs to WBEs), in order to fulfill the participation breakdown. This, however, may not always be possible due to the limitation of firms in the area. If the MBE or WBE firm shows a good faith effort has been made to reach out to similarly certified

transportation service providers and there is no interest or availability, and they can get assistance from other certified providers, the Engineer will not hold the prime responsible for meeting the individual MBE or WBE participation breakdown.

(5) The MBE/WBE may also subcontract the work to a non-MBE/WBE firm, including from an owner-operator. The MBE/WBE who subcontracts the work to a non-MBE/WBE is entitled to credit for the total value of transportation services provided by the non-MBE/WBE subcontractor not to exceed the value of transportation services provided by MBE/WBE-owned trucks on the contract. Additional participation by non-MBE/WBE 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 MBE/WBE and the Contractor will not count towards the MBE/WBE contract requirement.

(6) A MBE/WBE may lease truck(s) from an established equipment leasing business open to the general public. The lease must indicate that the MBE/WBE 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 MBE/WBE, so long as the lease gives the MBE/WBE absolute priority for use of the leased truck. This type of lease may count toward the MBE/WBE's credit as long as the driver is under the MBE/WBE's payroll.

(7) Subcontracted/leased trucks shall display clearly on the dashboard the name of the MBE/WBE 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.

MBE/WBE Replacement

When a Contractor has relied on a commitment to a MBE or WBE subcontractor (or an approved substitute MBE or WBE subcontractor) to meet all or part of a contract goal requirement, the contractor shall not terminate the MBE/WBE subcontractor 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 MBE/WBE subcontractor, a non-MBE/WBE subcontractor, or with the Contractor's own forces or those of an affiliate.

The Contractor must give notice in writing both by certified mail and email to the MBE/WBE subcontractor, with a copy to the Engineer of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor must give the MBE/WBE subcontractor five (5) business days to respond to the Contractor's Notice of Intent to Request Termination and/or Substitution. If the MBE/WBE subcontractor objects to the intended termination/substitution, the MBE/WBE, within five (5) business days must advise the Contractor and the Department of the reasons why the action should not be approved. The five-day notice period shall begin on the next business day after written notice is provided to the MBE/WBE subcontractor.

A committed MBE/WBE subcontractor may only be terminated after receiving the Department's written approval based upon a finding of good cause for the proposed termination and/or substitution. For purposes of this section, good cause shall include the following circumstances:

(a) The listed MBE/WBE subcontractor fails or refuses to execute a written contract;

(b) The listed MBE/WBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the MBE/WBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;
(c) The listed MBE/WBE subcontractor fails or refuses to meet the prime contractor's reasonable, nondiscriminatory bond requirements;
(d) The listed MBE/WBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;
(e) The listed MBE/WBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant to 2 CFR Parts 180, 215 and 1,200 or applicable state law;
(f) The listed MBE/WBE subcontractor is not a responsible contractor;
(g) The listed MBE/WBE voluntarily withdraws from the project and provides written notice of withdrawal;
(h) The listed MBE/WBE is ineligible to receive MBE/WBE credit for the type of work required;
(i) A MBE/WBE owner dies or becomes disabled with the result that the listed MBE/WBE contractor is unable to complete its work on the contract;
(j) Other documented good cause that compels the termination of the MBE/WBE subcontractor. Provided, that good cause does not exist if the prime contractor seeks to terminate a MBE/WBE it relied upon to obtain the contract so that the prime contractor can self-perform the work for which the MBE/WBE contractor was engaged or so that the prime contractor can substitute another MBE/WBE or non-MBE/WBE contractor after contract award.

The Contractor shall comply with the following for replacement of a committed MBE/WBE:

(A) Performance Related Replacement

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

If a replacement MBE/WBE is not found that can perform at least the same amount of work as the terminated MBE/WBE, 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 MBE/WBEs that their interest is solicited in contracting the work defaulted by the previous MBE/WBE or in subcontracting other items of work in the contract.

(2) Efforts to negotiate with MBE/WBEs for specific subbids including, at a minimum:

(a) The names, addresses, and telephone numbers of MBE/WBEs who were contacted.
(b) A description of the information provided to MBE/WBEs regarding the plans and specifications for portions of the work to be performed.

(3) A list of reasons why MBE/WBE quotes were not accepted.

(4) Efforts made to assist the MBE/WBEs contacted, if needed, in obtaining bonding or insurance required by the Contractor.

(B) Decertification Replacement

(1) When a committed MBE/WBE 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 MBE/WBE 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 MBE/WBE is decertified prior to the Department receiving the SAF (*Subcontract Approval Form*) for the named MBE/WBE firm, the Contractor shall take all necessary and reasonable steps to replace the MBE/WBE subcontractor with another MBE/WBE subcontractor to perform at least the same amount of work to meet the Combined MBE/WBE goal requirement. If a MBE/WBE 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).

All requests for replacement of a committed MBE/WBE 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.

Changes in the Work

When the Engineer makes changes that result in the reduction or elimination of work to be performed by a committed MBE/WBE, 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 MBE/WBE based upon the Contractor's commitment, the MBE/WBE shall participate in additional work to the same extent as the MBE/WBE 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 MBEs/WBEs 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 MBE/WBE, the Contractor shall seek participation by MBEs/WBEs 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 MBE/WBE, the Contractor shall seek additional participation by MBEs/WBEs equal to the reduced MBE/WBE 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 MBE/WBE subcontractor. The Department reserves the right to require copies of actual subcontract agreements involving MBE/WBE 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 MBE/WBE 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 MBE/WBE credit.

Reporting Minority and Women Business Enterprise Participation

The Contractor shall provide the Engineer with an accounting of payments made to all MBE and WBE 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 MBEs/WBEs, 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 further work on future projects until the required information is submitted.

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

At any time, the Engineer can request written verification of subcontractor payments.
The Contractor shall report the accounting of payments through the Department's DBE Payment Tracking System.

Failure to Meet Contract Requirements

Failure to meet contract requirements in accordance with Subarticle 102-15(J) of the *2018 Standard Specifications* may be cause to disqualify the Contractor.

RESTRICTIONS ON ITS EQUIPMENT AND SERVICES:
(11-17-20) SP01 G090

All telecommunications, video or other ITS equipment or services installed or utilized on this project must be in conformance with UNIFORM ADMINISTRATIVE REQUIREMENTS, COST PRINCIPLES, AND AUDIT REQUIREMENTS FOR FEDERAL AWARDS **2 CFR, § 200.216 Prohibition on certain telecommunications and video surveillance services or equipment.**

USE OF UNMANNED AIRCRAFT SYSTEM (UAS):
(8-20-19) SP1 G092

The Contractor shall adhere to all Federal, State and Local regulations and guidelines for the use of Unmanned Aircraft Systems (UAS). This includes but is not limited to US 14 CFR Part 107 *Small UAS Rule*, NC GS 15A-300.2 *Regulation of launch and recovery sites*, NC GS 63-95 *Training required for the operation of unmanned aircraft systems*, NC GS 63-96 *Permit required for commercial operation of unmanned aircraft system*, and NCDOT UAS Policy. The required operator certifications include possessing a current Federal Aviation Administration (FAA) Remote Pilot Certificate, a NC UAS Operator Permit as well as operating a UAS registered with the FAA. Prior to beginning operations, the Contractor shall complete the NCDOT UAS – Flight Operation Approval Form and submit it to the Engineer for approval. All UAS operations shall be approved by the Engineer prior to beginning the operations.

All contractors or subcontractors operating UAS shall have UAS specific general liability insurance to cover all operations under this contract.

The use of UAS is at the Contractor's discretion. No measurement or payment will be made for the use of UAS. In the event that the Department directs the Contractor to utilize UAS, payment will be in accordance with Article 104-7 Extra Work.

COOPERATION BETWEEN CONTRACTORS:
(7-1-95) 105-7 SP1 G133

The Contractor's attention is directed to Article 105-7 of the *2018 Standard Specifications*.

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

ELECTRONIC BIDDING:

(2-19-19) 101, 102, 103 SP1 G140

Revise the *2018 Standard Specifications* as follows:

Page 1-4, Article 101-3, DEFINITIONS, BID (OR PROPOSAL) ***Electronic Bid,*** **line 1,** replace "Bid Express®" with "the approved electronic bidding provider".

Page 1-15, Subarticle 102-8(B), Electronic Bids, lines 39-40, replace "to Bid Express®" with "via the approved electronic bidding provider".

Page 1-15, Subarticle 102-8(B)(1), Electronic Bids, line 41, delete "from Bid Express®"

Page 1-17, Subarticle 102-9(C)(2), Electronic Bids, line 21, replace "Bid Express® miscellaneous folder within the .ebs" with "electronic submittal".

Page 1-29, Subarticle 103-4(C)(2), Electronic Bids, line 32, replace ".ebs miscellaneous data file of Expedite" with "electronic submittal file"

TWELVE MONTH GUARANTEE:

(7-15-03) 108 SP1 G145

(A) The Contractor shall guarantee materials and workmanship against latent and patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve months following the date of final acceptance of the work for maintenance and shall replace such defective materials and workmanship without cost to the Department. The Contractor will not be responsible for damage due to faulty design, normal wear and tear, for negligence on the part of the Department, and/or for use in excess of the design.

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

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

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

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

OUTSOURCING OUTSIDE THE USA:

(9-21-04) (Rev. 5-16-06) SP1 G150

All work on consultant contracts, services contracts, and construction contracts shall be performed in the United States of America. No work shall be outsourced outside of the United States of America.

Outsourcing for the purpose of this provision is defined as the practice of subcontracting labor, work, services, staffing, or personnel to entities located outside of the United States.

The North Carolina Secretary of Transportation shall approve exceptions to this provision in writing.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

DIVISION ONE

County:	TYRRELL
WBS Element:	15RE.12.1.3
Description:	TYRELL COUNTY REST AREA & VISITOR CENTER RENOVATION US-64 COLUMBIA, NC

Architect

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Ginger Anderson, Architect
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Raleigh, NC 27603
(919) 779-9797
Corp . Cert. 549

GINGER S. ANDERSON
REGISTERED ARCHITECT
11075
NORTH CAROLINA
RALEIGH, NC

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2/27/2019

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2/27/2019

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DIVISION 16 - ELECTRICAL

16 Electrical Work

SECTION 01026 - PAYMENT AND COMPLETION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Schedule of values.
   2. Payment procedures.
   3. Completion procedures.
B. Related Requirements Specified Elsewhere in the Project Manual: Overhead and profit distribution.

1.02 CONTRACT CONDITIONS

A. See the conditions of the contract for additional requirements.
B. Progress payments will be made on or about the 25th of each month.
C. The Architect/Engineer will act upon the Contractor's application for payment within 5 days after receipt.
D. The Owner will act upon the application for payment within 15 days after receipt.
E. No payment will be made for materials or equipment stored off site unless specifically approved in advance, in writing by the owner. Submit copy of the owner's agreement to pay for such materials and equipment with the application for payment covering such materials and equipment.
F. Payments may be withheld if the contractor fails to make dated submittals within the time periods specified.

1.03 DEFINITIONS

A. Final Completion: The stage at which all incomplete and incorrect work has been completed or corrected in accordance with the contract documents.
B. List of Incomplete Work: A comprehensive list of items to be completed or corrected, prepared by the Designer/Owner/Contractor for the purpose of obtaining certification of substantial completion. This list is also referred to as a "Pre-Final and Final Punch List."
C. Schedule of Values: A detailed breakdown of the contract sum into individual cost items, which will serve as the basis for evaluation of applications for progress payments during construction.
D. Substantial Completion: The time at which the work, or a portion of the work which the owner agrees to accept separately, is sufficiently complete in accordance with the contract documents so that the owner can occupy or use the work for its intended purpose.
E. Time and Material Work: Work which will be paid for on the basis of the actual cost of the work, including materials, labor, equipment, and other costs as defined elsewhere, as documented by detailed records. This basis is also referred to using the terms "cost-plus," "cost of the work," "force account," and similar terms.

1.04 SUBMITTALS

A. Schedule of Values: First application for payment will not be reviewed without schedule of values.
   1. Submit in size not larger than 8-1/2 by 11 inches.
   2. Submit 5 copies.
   3. Identify with:
      a. Project name, Project number, Architect's name, Owner's name, Contractor's name and address, and Submittal date.

B. Applications for Progress Payments: Submit sufficiently in advance of date established for the progress payment to allow for the processing indicated.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 SCHEDULE OF VALUES

A. Prepare a schedule of values prior to the first application for payment.
B. Schedule of Values: Break costs down into line items which will be comparable with line items in applications for payment.
   1. Coordinate line items in the schedule of values with portions of the contract documents which identify units or subdivisions of work; provide cross-referencing if necessary to clarify.
      a. Specifically, correlate with the project manual table of contents.
   2. Divide major subcontracts into individual cost items.
   3. Where applications for payment are likely to include products purchased or fabricated but not yet installed, provide individual line items for material cost, installation cost, and other applicable phases of completion.
   4. Include the following information for each line item, using AIA G703, Continuation Sheet.
      a. Item name.
      b. Applicable specification section.
      c. Dollar value, rounded off to the nearest whole dollar (with the total equal to the contract sum).
      d. Proportion of the contract sum represented by this item, to the nearest one-hundredth percent (with the total adjusted to 100 percent).
   5. Provide the following supporting data for each line item:
      a. Subcontractor's name.
      b. Manufacturer or fabricator's name.
      c. Supplier's name.
C. Submit schedule of values not later than 10 days prior to submittal of first application for payment.
D. The Architect/Engineer will notify the contractor if schedule is not satisfactory; revise and resubmit acceptable schedule.
E. Submit a revised schedule of values when modifications change the contract sum or change individual line items.
   1. Make each modification a new line item.
   2. Show the following information for each line item:
      a. All information required for original submittal.
      b. Identification of modifications which have affected its value.
   3. Submit prior to next application for payment.

3.02 APPLICATIONS FOR PAYMENT

A. Application for Payment will be through hicams.
B. Provide the following information with every application for payment which involves work completed on a time and material basis:
   1. Detailed records of work done, including:
      a. Dates and times work was performed, and by whom.
      b. Time records and wage rates paid.
      c. Invoices and receipts for products.
   2. Provide similar detailed records for subcontracts.

C. Transmit application for payment with a transmittal form itemizing supporting documents attached.

3.03 FIRST PAYMENT PROCEDURE

A. The first application for payment will not be reviewed until the following submittals have been received:

1. Schedule of values.
2. List of subcontractors, principal suppliers, and fabricators.
3. Contractor's construction schedule. Monthly Progress Schedules are required, see Section 01200.
4. Names of the contractor's principal staff assigned to the project.
5. All submittals specified to occur prior to first application for payment or prior to first payment.

3.04 SUBSTANTIAL COMPLETION PROCEDURES

A. The architect will perform a Pre-Final Inspection with the contractor two weeks before substantial completion inspection, upon request of the contractor. Plumbing, Mechanical, & Electrical subcontractors shall be present for all Final Inspections.

B. The architect will perform a Final Inspection with the contractor for substantial completion and verification that the Pre-Final Inspection Punchlist is complete, upon request of the contractor.

1. Only one certificate of substantial completion will be issued, for the entire project.

C. Submit the following with application for payment following substantial completion:

1. Certificate of Substantial Completion; use AIA original current editions of G704.
4. Final Inspection list of incomplete work.
5. Other data required by the contract documents.

3.05 FINAL COMPLETION PROCEDURES

A. Request for Final Inspection and final application for payment may coincide.

B. The architect/engineer will perform inspection for final completion, upon request of the contractor.

1. Submit the following with request for inspection:
   a. Previous inspection lists indicating completion of all items.
   b. If any items cannot be completed, obtain prior approval of such delay.

C. Do not submit request for Final Inspection until the following activities have been completed:

1. Completion of all work, Pre-Final Inspection Punch List, except those items agreed upon by the owner.
2. Final cleaning.
3. All activities specified to occur between substantial completion and final completion.

D. Do not submit request for final inspection until the following submittals have been completed:

1. Startup reports; HVAC balance and test reports.
2. Operation and maintenance data. Demonstration reports. Instruction reports.
3. Water bacterial test report of new domestic water supply.
4. Final Electrical Inspection and certification by the State Construction Office electrical inspector.
5. Project record documents, record drawings or as-built drawings.
6. All other outstanding specified submittals.

E. Submit the following with the final application for payment:

1. Certified copy of the previous list of items to be completed or corrected, stating that each has been completed or otherwise resolved for acceptance.
2. Contractor's Affidavit of Payment of Debts and Claims; use AIA original current editions of G706
3. Contractor's Affidavit of Release of Liens; use AIA original current editions of G706A.
4. Consent of surety to final payment; use AIA original current editions of G707.

5. Final liquidated damages statement.
6. Certification that financial obligations to governing authorities and public utilities have been fulfilled.
7. Description of unsettled claims.
8. Other data required by the contract documents.

END OF SECTION 01026

SECTION 01100- COMPENSATION FOR GENERAL CONSTRUCTION

US-64
REST AREA AND VISITOR CENTER
MARCH 2019
TYRRELL COUNTY, NORTH CAROLINA

1.1 COMPENSATION

A. The work of furnishing all materials and constructing/renovating the existing Rest Area Building, the Visitor center, porch, deck, ramp, stairs and storage building in accordance with the plans and specifications, completed and accepted, will be paid for at the contract lump sum price for the "General Construction of Rest Area Building". Such price and payment will be full compensation for all work included in construction documents for renovating the Rest Area Building, & Visitor Center, including but not limited to furnishing all transportation, materials, labor, tools, equipment, fees and incidentals necessary to complete the work. Payment will be made under:

"General Construction of Rest Area Building"……..Lump Sum

US-64
REST AREA AND VISITOR CENTER
MARCH 2019
TYRRELL COUNTY, NORTH CAROLINA

DIVISION 15A- COMPENSATION FOR PLUMBING --

COMPENSATION

A. The work of furnishing materials and constructing the Plumbing installation and demolition for the Rest Area Building and Visitor Center in accordance with the plans and specifications, completed and accepted, will be paid for at the contract lump sum price for the "Plumbing Installation of Rest Area Building". Such price and payment will be full compensation for all work of constructing the Plumbing installation for the Rest Area Building and Visitor Center as indicated within construction documents, including but not limited to furnishing all transportation, materials, labor, tools, equipment, fees and incidentals necessary to complete the work. Payment will be made under:

"Plumbing Installation of Rest Area Building"……..Lump Sum

US-64
REST AREA AND VISITOR CENTER
MARCH 2019
TYRRELL COUNTY, NORTH CAROLINA

DIVISION 16- COMPENSATION FOR ELECTRICAL

COMPENSATION

A. The work of furnishing materials and constructing the Electrical installation for the Rest Area Building and Visitor Center in accordance with the plans and specifications, completed and accepted, will be paid for at the contract lump sum price for the “Electrical Installation for Rest Area Building”. Such price and payment will be full compensation for all work of constructing the Electrical installation for the Rest Area Building and Visitor Center, including but not limited to furnishing all transportation, materials, labor, tools, equipment, fees and incidentals necessary to complete the work. Payment will be made under:

“Electrical Installation for Rest Area Building”…….Lump Sum

SECTION 01151 - CONSTRUCTION AND DEMOLITION MATERIALS RECYCLING REQUIREMENTS

PART 1 GENERAL

1.01 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

1.02 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].

1.03 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 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 01151A**). 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 01151B**) 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.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.01 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.

3.02 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.

3.03 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

SECTION 01200 - PROGRESS DOCUMENTATION AND PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Progress documentation requirements:
      a. Contractor's construction schedule.
   2. Progress procedures:
      a. Progress meetings.

B. Contract time is indicated elsewhere.

1.02 SUBMITTALS

A. Contractor's Construction Schedule.
   1. Submit within 14 days after execution of contract.
   2. Submit revised schedule with application for payment to the Division Resident Engineer

1.03 FORM OF SUBMITTALS

A. Schedules - General:
   1. Provide legend of symbols and abbreviations for each schedule.
   2. Use the same terminology as that used in the contract documents.
   3. When transparencies are submitted, use only media which will not fade or lose contrast over time.

B. Bar Charts:
   1. Provide individual horizontal bars representing the duration of each major activity.
   2. Coordinate each element on the schedule with other construction activities.
   3. Show activities in proper sequence.
   4. Show percentage of completion of each activity.
   5. Include cost bar at top of chart, showing estimated and actual costs of work performed at the date of each application for payment.
   6. Use vertical lines to mark the time scale at not more than one week intervals.
   7. Prepare on reproducible transparency.
   8. Use sheets of sufficient number and width to show the full schedule clearly.

1.04 COORDINATION

A. In preparation of schedules, take into account the time allowed or required for the Engineer's administrative procedures.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Prepare and submit a construction schedule.

B. Provide construction schedule in the form of bar charts:
   1. Where related activities must be performed in sequence, show relationship graphically.
   2. Indicate activities separately for:
      a. Each separate building.
   3. Incorporate the submittal schedule specified elsewhere.
   4. Show dates of:
      a. Each activity that influences the construction time.
      b. Ordering dates for products requiring long lead time.
      c. All submittals required.

d. Completion of structure.
e. Completion of permanent enclosure.
f. Instruction of the owner's personnel in operation and maintenance of equipment and systems.
g. Substantial and final completion, with time frames for the Engineer's completion procedures.

5. In developing the schedule take into account:
   a. Work by owner.
   b. Need for temporary heating, ventilating, or air-conditioning.

C. The Engineer will notify the contractor if schedule is not satisfactory; revise and resubmit.
   1. Resubmit within 7 days.
D. Make and distribute copies of schedule to the Engineer, to subcontractors, and to other entities whose work will be influenced by schedule dates.
   1. Hang a copy of the schedule up in each field office or meeting room.
E. Update the schedule whenever changes occur or are made, or when new information is received, but not less often than at the same intervals at which applications for payment are made.
   1. Indicate changes made since last issue; show actual dates for activities completed.
   2. Submit updated schedule with application for payment.
   3. Issue updated schedule with report of meeting at which revisions are made.
   4. Issue updated schedule in same manner as original schedule.

3.02 PROGRESS MEETINGS

A. Schedule and conduct periodic progress meetings during construction period.
   1. Have meetings once a month.
   2. Notify the Engineer at least one week in advance of date of meeting.
B. The following are required to attend:
   1. Project superintendent.
   2. Major subcontractors and suppliers.
   3. Others who have an interest in the agenda.
   4. State inspectors.
C. Prepare and distribute agenda prior to meetings; cover the following topics when applicable:
   1. Review minutes of previous meeting.
   2. Status of submittals and impending submittals.
   3. Actual progress of activities in relation to the schedule.
   4. Actual and anticipated delays, their impact on the schedule, and corrective actions taken or proposed.
   5. Actual and potential problems.
   6. Status of change order work.
   7. Status of corrective work ordered by the Engineer.
   8. Progress expected to be made during the next period.

END OF SECTION 01200

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Preparing and processing of submittals for review and action.
   2. Preparing and processing of informational submittals.
B. Submit the following for the Architect/Engineer's review and action:
   1. Shop drawings.
   2. Product data.
   3. Samples.
C. Submit the following as informational submittals:
   1. Reports.
D. Specific submittals are described in individual sections.
E. Do not commence work which requires review of any submittals until receipt of returned submittals with an acceptable action.
F. Submit all submittals to the Engineer.
G. Related Sections: The following are specified elsewhere in Division 1:
   1. Progress of work submittals:
      a. Contractor's construction schedules.
   2. Quality control submittals:
      a. Test reports.

1.02 DEFINITIONS

A. "Shop drawings" are drawings and other data prepared, by the entity who is to do the work, specifically to show a portion of the work.
   1. Shop drawings also include:
      a. Product data specifically prepared for this project.
      b. Shop or plant inspection and test reports, when made on specific materials, products, or systems to be used in the work.
B. "Product data submittals" are standard printed data which show or otherwise describe a product or system, or some other portion of the work.
C. "Samples" are actual examples of the products or work to be installed.
D. Informational Submittals: Submittals identified in the contract documents as to be submitted for information only.

1.03 FORM OF SUBMITTALS

A. Sheets Larger Than 8-1/2 by 14 Inches:
   1. Maximum sheet size: 36 by 48 inches.
      a. Exception: Full size pattern or template drawings.
   2. Number of copies:
      a. Submittals for review:
         1. One correctable reproducible print, not folded and 6 copies] of blue- or black-line print(s).
         2. Reproducible will be returned.
B. Small Sheets or Pages:
   1. Minimum sheet size: 8-1/2 by 11 inches.
   2. Maximum sheet size for opaque copies: 8-1/2 by 17 inches.
   3. Number of copies:
      a. One (1) Electronic Submittal Copy: General Contractor to Email one (1) stamped and signed copy to the Architect, Resident Engineer, and Roadside Engineer.

b. Electronic Submittal shall be in PDF. format.
c. Architect and Engineer shall review, stamp and sign submittal; scan and return 1 set to the General Contractor, Resident Engineer, and Roadside Engineer for distribution to his subcontractors, suppliers, and retain 1 copy for his field office.

C. If additional sets are needed by other entities involved in work represented by the samples, submit with original submittal.
D. Copies in excess of the number requested will not be returned.

1.04 COORDINATION OF SUBMITTALS

A. Coordinate submittals and activities that must be performed in sequence, so that the Engineer has enough information to properly review the submittals.
B. Coordinate submittals of different types for the same product or system so that the Engineer has enough information to properly review each submittal.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 TIMING OF SUBMITTALS

A. Transmit each submittal at or before the time indicated on the approved schedule of submittals.
   1. Prepare and submit for approval a schedule showing the required dates of submittal of all submittals.
   2. Organize the schedule by the applicable specification section number.
   3. Incorporate the contractor's construction schedule specified elsewhere.
   4. Submit within 14 days after commencement of the work.
   5. Revise and resubmit the schedule for approval when requested.
B. Deliver each submittal requiring approval in time to allow for adequate review and processing time, including resubmittals if necessary; failure of the contractor in this respect will not be considered as grounds for an extension of the contract time.
C. Deliver each informational submittal prior to start of the work involved, unless the submittal is of a type which cannot be prepared until after completion of the work; submit promptly.
D. If a submittal must be processed within a certain time in order to maintain the progress of the work, state so clearly on the submittal.

3.02 SUBMITTAL PROCEDURES - GENERAL

A. Contractor Review: Sign each copy of each submittal certifying compliance with the requirements of the contract documents.
B. Notify the Engineer, in writing and at time of submittal, of all points upon which the submittal does not conform to the requirements of the contract documents, if any.
C. Preparation of Submittals:
   1. Label each copy of each submittal, with the following information:
      a. Project name.
      b. Date of submittal.
      c. Contractor's name and address.
      d. Engineer's name and address.
      e. Subcontractor's name and address.
      f. Other necessary identifying information.
   2. Pack submittals suitably for shipment.
   3. Submittals to receive Engineer's action marking:

   Provide blank space on the label or on the submittal itself for action marking; minimum 4 inches wide by 5 inches high.

D. Transmittal of Submittals:
   1. Submittals will be accepted from the contractor only. Submittals received from other entities will be returned without review or action.
   2. Submittals received without a transmittal form will be returned without review or action.
   3. Transmittal form: Similar to AIA G810.
   4. Fill out a separate transmittal form for each submittal; also include the following:
      a. Other relevant information.
      b. Requests for additional information.

3.03 SHOP DRAWINGS

A. Content: Include the following information:
   1. Dimensions, at accurate scale.
   2. All field measurements that have been taken, at accurate scale.
   3. Names of specific products and materials used.
   4. Coordination requirements; show relationship to adjacent or critical work.
   5. Name of preparing firm.
B. Preparation:
   1. Identify as indicated for all submittals.
   2. Space for Engineer's action marking shall be adjacent to the title block.

3.04 PRODUCT DATA

A. When product data submittals are prepared specifically for this project (in the absence of standard printed information) submit such information as shop drawings and not as product data submittals.
B. Content:
   1. Submit manufacturer's standard printed data sheets.
   2. Show compliance with properties specified.
   3. Show compliance with the specific standards referenced.
   4. Show compliance with specified testing agency listings; show the limitations of their labels or seals, if any.
   5. Identify dimensions which have been verified by field measurement.
   6. Show special coordination requirements for the product.

3.05 SAMPLES

A. Samples:
   1. Provide samples that are the same as proposed product.
   2. Where unavoidable variations must be expected, submit "range" samples, minimum of 3 units, and describe or identify variations among units of each set.
B. Preparation:
   1. Attach a description to each sample.
   2. Attach name of manufacturer or source to each sample.
C. Keep final sample set(s) at the project site, available for use during progress of the work.

3.06 REVIEW OF SUBMITTALS

A. Submittals for approval will be reviewed, marked with appropriate action, and returned.
B. Informational submittals: Submittals will be reviewed.
   1. "X" action: No action taken.
   2. "Not Approved" action: Revise the submittal or prepare a new submittal complying with the comments made.
   3. A copy will be returned if submittal is unsatisfactory.

3.07 RETURN, RESUBMITTAL, AND DISTRIBUTION

A. Submittals will be returned to the contractor by mail.
B. Perform resubmittals in the same manner as original submittals; indicate all changes other than those requested by the Engineer.
C. Distribution:
   1. Make extra copies for operation and maintenance data submittals, as required.

END OF SECTION 01300

01430 – ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
   1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
   2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
   1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, each party involved shall be notified in writing of the status of each alternate, in particular whether alternates have been accepted, rejected, or deferred for later consideration. Notification shall include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

~~3.1 SCHEDULE OF ALTERNATES~~

~~A.~~ ~~Alternate No. 1~~
1. Base Bid: Standing seam metal roof as drawn
2. ~~Alternate: Substitute for architectural shingle roof with 25 year warranty~~

SECTION 02072 - DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Demolition and removal of portions of the existing Rest Area building or structure; including exterior siding and interior sheathing/drywall/tile walls, wall & roof fiberglass insulation, roofing, roof framing, toilet partition/accessories, plumbing and electrical systems.
      a. Site Clearing including sidewalks, shrub and root removal are by the Contractor; (see Landscape Spec's).
      b. See Section 01151 for the Construction and Demolition Materials Recycling Requirements.
   2. Owner shall have the right to salvage the Contractor removed gutters and toilet partitions.
      a. Removal of existing small shrubbery (may be by NCDOT, Division office).

1.02 SUBMITTALS

A. Project Record Documents:
   1. Identify location of capped utilities.
   2. Submit form Sections 01151A and 01151B per Section 01151 for the Construction and Demolition Materials Recycling Requirements.

1.03 PROJECT CONDITIONS

A. Existing Conditions:
   1. After the project is begun, the contractor is responsible for the condition of structures. The owner does not warrant that the condition of structures will not have changed since the time of inspection for bidding purposes.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 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 Architectural and Electrical drawings. Salvage costs shall be reflected in the Contractor's bid.
C. In so far as is practicable, arrange operations to reveal unknown or concealed structural conditions for examination and verification before removal or demolition.

3.02 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.

3.03 UTILITY SERVICES

A. Arrange with utility companies and shut off indicated utilities serving structures.
B. Disconnect and cap indicated utilities before starting demolition operations.
C. Identify location of capped utilities on project record documents.

3.04 POLLUTION CONTROLS

A. Observe environmental protection regulations.
B. Do not allow water usage that results in freezing or flooding.

3.05 DEMOLITION - GENERAL

A. Remove: Unless items are otherwise indicated to be reinstalled or salvaged, remove and scrap.
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 01151 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.

3.06 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.

3.07 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.

3.08 DISPOSAL OF DEMOLISHED MATERIALS

A. Promptly dispose of materials resulting from demolition operations. Do not allow materials to accumulate on site. See Section 01151 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.

3.09 CLEANING

A. Clean soil, smudges, and dust from surfaces to remain.

END OF SECTION 02072

SECTION 05510 - METAL STAIRS AND LADDERS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Manual disappearing stairway.

1.2 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry.

1.3 REFERENCES

A. ANSI A14.3: Ladders - Fixed - Safety Requirements.

B. ANSI A14.9: Safety Requirements for Ceiling Mounted Disappearing Climbing Systems.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Shop Drawings for Stairs:
   1. Plan and section of stair installation.
   2. Indicate rough opening dimensions for ceiling and/or roof openings.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 year experience manufacturing similar products.

B. Installer Qualifications: Minimum 2 year experience installing similar products.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Store products in manufacturer's unopened packaging until ready for installation. Store stairway until installation inside under cover. If stored outside, under a tarp or suitable cover.

C. Handle materials to avoid damage.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 WARRANTY

A. Limited Warranty: Provide manufacturer's standard limited five year warranty against defective material and workmanship, covering parts only, no labor or freight. Defective parts, if deemed so by the manufacturer, will be replaced at no charge, freight excluded, upon inspection at manufacturer's plant which warrants same.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Precision Ladders, LLC, Morristown, TN
   2. American Stairways, Memphis, TN
   3. Marwin Company, West Columbia, SC

B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 MANUAL DISAPPEARING STAIRWAY

A. Manual Disappearing Stairway: Product: BASIS OF DESIGN- Super Simplex Disappearing Stairway as manufactured by Precision Ladders LLC
   1. Model: Stairs for Ceiling Heights 7 feet-0 inch - 12 feet-0 inch Model 1000

B. Performance Standard: Unit shall comply with ANSI A14.9, Commercial Type, for rough openings between 27 inches to 39 inches (686 mm to 991 mm). Residential Type for rough openings between 22-1/2 inches to 27 inches (572 mm to 686 mm). Stairway capacity shall be rated at 500 lb (227 Kg).

C. Accessories:
   1. Steel pole to aid opening and closing stairways.
   2. Stairs for ceiling heights 9' -10" - 12' -0" shall be equipped with a patented Precision Fold Assist to aid in folding and unfolding of sections.

D. Components:
   1. Ceiling Opening:
      a. Ceiling height of 9 feet 9 inches (2972 mm) or less requires an opening of 30 inches X 54 inches (762 mm X1372 mm).
      b. Ceiling heights from 9 feet 10 inches - 12 feet 0 inch (2997 mm - 3658 mm) require opening of 30 inches X 64 inches (762 mm X 1626 mm).
   2. Stairway Stringer: 6005-T5 Extruded aluminum channel 5 inches X 1 inch X 1/8 inch (127 mm X 25 mm X 3 mm) tri-fold design; steel blade type hinges; adjustable feet with plastic Mar-guard. Pitch shall be 63 degree.
   3. Stairway Tread: 6005-T5 extruded aluminum channel 5-3/16 inches X 1-1/4 inches X 1/8 inch (132 mm X 32 mm X 3 mm). Depth is 5-3/16 inches (132 mm). Deeply serrated top surface. Riser Height: 9-1/2 inches (241 mm). Clear Tread Width for Standard Width: 18 inches (457 mm).
   4. Railing: Aluminum bar handrail riveted to stringers, upper section only.
   5. Frame:
      a. When ceiling to floor (or roof deck) above is under 12 inches (305 mm) frame

shall be 1/8 inch (3 mm) steel formed channel, box.

b. When ceiling to floor (or roof deck) above is 12 inches (305 mm) or greater, the frame shall be 1/8 inch (3 mm) steel, 63 degree (with built-in steps) on the hinge end, 90 degree on the other end, custom depth to fill distance from ceiling to floor above. The custom frame shall require a longer opening in the floor above than shall be required at the ceiling level.

6. Door Panel:
   a. Standard (non-fire rated) door shall be constructed of 1/8 inch (3 mm) aluminum sheet attached to stairway frame with a steel piano hinge. Door overlaps bottom flange of frame. Eye bolt accommodates pole for opening and closing door.
7. Hardware:
   a. Steel blade type hinge connecting stringer sections. Zinc plated and chromate sealed.
   b. Steel operating arms, both sides. Zinc coat with clear trivalent chromate.
   c. Double acting steel springs and cable, both sides.
   d. Rivets rated at 1100 lb (499 Kg) shear strength each.
   e. Steel section alignment clips at stringer section joints.
   f. Molded rubber guards at corners of aluminum door panel.
8. Finish: Mill finish on aluminum stairway components. Prime coat on frame.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Examine materials upon arrival at site. Notify the carrier and manufacturer of any damage.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved submittals. Install in proper relationship with adjacent construction.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Rough carpentry for:
      a. Wood framing and sheathing for the renovation of the existing rest area.
      b. Miscellaneous lumber for attachment and support of other work.
   2. Preservative treatment.

1.02 SUBMITTALS

A. Product Data:
B. Framing Connectors and Supports: Submit manufacturer's standard data demonstrating compliance with building code requirements.
C. Treated Wood: Treating plant's instructions for use, including storage, cutting, and finishing.
   1. Pressure preservative treatment: Treating plant's certification of compliance with specified standards and stating process employed and preservative retention values.
      a. Treatment for above-ground use: Certification of kiln drying after treatment.

1.03 QUALITY ASSURANCE

A. Inspection Agencies:
   1. SPIB: Southern Pine Inspection Bureau; for all structural framing of roof joists and headers.

PART 2 – PRODUCTS

2.01 DIMENSION LUMBER

A. Size: Provide nominal sizes indicated, complying with NIST PS 20 except where actual sizes are specifically required. Provide continuous members; splicing is not acceptable.
   1. Surfacing: Dressed lumber (S4S).
   2. Moisture content: Kiln-dry or MC15 (15 percent maximum moisture content).
C. Joist and Small Beam Framing -- 2 x 6 through 2 x 12:
   1. Species: Spruce-Pine-Fir (SPF), Grade: No. 2.
D. Miscellaneous Lumber: Provide dimension lumber and boards necessary for the support of work specified in other sections, whether or not specifically indicated, and including but not limited to blocking, nailers, etc.
   1. Lumber: S4S, No. 2 or better, 15 percent maximum (kiln-dry).

2.02 CONSTRUCTION PANELS

2. A. Roof Sheathing: Oriented Strand Board sheathing: APA Rated, OSB Structural Panels, Exposure 1 (exterior glue), PS-2 or APA PRP-108 performance standards, 40/20 APA rated, and 5/8” thick.

   B. Wall Sheathing: Oriented Strand Board (OSB), square edged, APA Rated (exterior glue) sheathing panels with nailing pattern recommended by the manufacturer for shear walls, and nominal ½” thick.

2.03 MISCELLANEOUS MATERIALS

A. Fasteners: Provide as required by applicable codes and as otherwise indicated.
   1. Provide fasteners with a hot-dip zinc coating (ASTM A 153) for treated lumber and where wood is in ground contact, subjected to high relative humidity, or exposed to weather.
B. Framing Connectors and Supports: Prefabricated, formed steel units; hot-dip galvanized finish unless otherwise indicated; type and size as required; approved by applicable codes.
   1. The following manufacturer’s products, or approved equal, provided they comply the the requirements of the contract documents, will be among those considered acceptable:

a. Cleveland Steel Specialty Company.
b. Simpson Strong-Tie Company.
c. United Steel Products (USP) Company.

C. Saturated Building Felt (30#)
D. Sill Sealer Gaskets: Glass fiber insulation strips; uncompressed thickness, 1 inch (1/32 inch compressed); width to match sill members.

2.04 WOOD TREATMENT BY PRESSURE PROCESS

A. Aboveground Lumber: AWPB LP-2 (waterborne preservatives).
1. Kiln dried after treatment to 19 percent maximum moisture content.
2. Treat the following:
a. Wood in contact with masonry or concrete.
b. Sill plate.
c. Other members indicated.
B. Fasteners for Preservative Treated Wood: Hot-dip galvanized steel (ASTM A153).

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

A. Arrange work to use full length pieces except where lengths would exceed commercially available lengths. Discard pieces with defects that would lower the required strength or appearance of the work.
B. Cut and fit members accurately. Install plumb and true to line and level.
C. Fasten carpentry in accordance with applicable codes and recognized standards.
D. Where exposed, countersink nails and fill flush with suitable wood filler.

3.02 MISCELLANEOUS CARPENTRY

A. Provide miscellaneous blocking, nailers, grounds, and framing as shown and as required for support of facing materials, fixtures, specialty items, and trim. Cut and shape to the required size. Provide in locations required by other work.
B. Use countersunk fasteners appropriate to applied loading.

3.03 WOOD FRAMING - GENERAL

A. Comply with sizes, spacing, and configurations indicated. Where not specifically indicated, comply with applicable codes and NFPA "Manual for Wood Frame Construction." Splice members only where specifically indicated or approved.
B. Space fasteners as indicated. Where not specifically indicated, comply with applicable codes and the "Recommended Nailing Schedule" of NFPA "Manual for Wood Frame Construction" and "National Design Specification for Wood Construction."

3.04 INSTALLATION OF CONSTRUCTION PANELS

A. Employ the following fastening methods:
1. Nail roof and wall sheathing to framing.
a. Provide solid blocking under panel edges other than intact tongue and groove edges.

3.05 AIR INFILTRATION BARRIER

A. Install air infiltration barrier in accordance with manufacturer's instructions.

END OF SECTION 06100

SECTION 06150 - COMPOSITE WOOD DECKING & RAILING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Wood polymer composite railing system.

B. Wood polymer composite decking system

C. Accessories: Fasteners.

1.2 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Joists and structural framing.

1.3 REFERENCES

A. ASTM D 7032-06 – Standard Specification for Establishing Performance Ratings Wood-Plastic Composite Deck Boards and Guardrail Systems.

B. ICC-ES Acceptance Criteria AC-174 – Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems.

C. CCR 0115 – Architectural Testing, Inc. Code Compliance Research Report

1.4 DESIGN REQUIREMENTS

A. Design railing assemblies to withstand loads as calculated in accordance with the applicable building codes.

B. Structural Performance:
   1. Deck: Uniform Load – 100lbf/sq.ft.
   2. Tread of Stairs: Concentrated Load: 750 lbf/sq.ft., and 1/8” max. deflection with a concentrated load of 300 lbf on area of 4 sq. in.

C. Fire-Test Response Characteristics per ASTM E-84.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Samples

C. Manufacturer's data sheets on each product to be used, including:
   1. Storage and handling requirements and recommendations.
   2. Installation methods, including nailing patterns.
   3. Applicable model code authority evaluation report (ICC-ES, ICBO, SBCCI, BOCA, etc.).

D. Manufacturer's maintenance recommendations.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products off the ground, properly supported on a flat, dry surface. Do not

store in an area where excessive heat build-up can occur. Do not stack products more than four skid high.

B. Refer to Manufacturers instructions for further detail information.

1.7 WARRANTY

A. Manufacturer's Warranty: 25-year limited warranty with 2-year SureStart protection.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

1. TimberTech,- Radiance Rail and Azek decking
2. Trex Company, Inc. – Transcend railing & decking
3. Moisture Shield – Vision Decking

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 APPLICATIONS

A. Wood-Plastic Composite Lumber;

a. Material Description: Composite Decking consisting of recycled Linear Low Density Polyethylene (LLDPE) and recycled wood. The product is extruded into shapes and sizes as follows:

i. Section; 1 x 6”, nominal.

ii. Lengths – 12, 16, and 20 feet

iii. Color – To be specified by architect.

b. Physical and Mechanical Properties as follows:

Test	Test Method	Value	
Flame spread	ASTM E 84	60(Transcend) / 85(Enhance)	
Thermal Expansion	ASTM D 1037	1.9 x 10-5 inch/inch/degreeF	
Moisture Absorption	ASTM D 1037	< 1%	
Screw Withdrawal	ASTM D1761	558 lbs/in	

Fungus Resistance	ASTM D1413	Rating - no decay	
Termite Resistance	AWPAE1 -72	Rating = 9.6	
		Ultimate (Typical)Values *	**Design Values**
Compression Parallel	ASTM D198	1588 psi	540 psi
Compression Perpendicular	ASTM D143	1437 psi	540 psi
Bending Strength	ASTM D198	3280 psi	500 psi
Shear Strength	ASTM D143	1761 psi	360 psi
Modulus of Elasticity	ASTM D4761	412,000psi	200,000 psi
Modulus of Rupture	ASTM D4761	3280 psi	500 psi

* Ultimate strength values are not meant for design analysis. Design values are for temperatures up to 130F (54C)

B. Wood-Polymer Composite Railing System: Wood-composite railing components shall be of sizes indicated on the Drawings. Nominal sizes are as follows:

1. Post Sleeve: 4-1/2 by 4-1/2 inches, field verify.
2. Top Rail: 1 by 3-1/2 inches.
3. Universal Rail: 2 by 2-1/2 inches.
4. Balusters: 1-1/4 by 1-1/4 inches Square Composite or aluminum
5. wood-polymer composite with weather resistant surface, requiring no waterproofing, sealing, or painting for longevity; complying with EPA limits on leachates. Railing materials are manufactured with characteristics in compliance with ASTM D7032.
6. Colors: Gray –exact color to be determined

C. ACCESSORIES

1. Fasteners: Stainless steel. All fasteners to be concealed or have colored heads to match, as supplied by the Manufacturer.

2. Brackets: Stamped 409 stainless steel brackets to be used as the method of rail to structural post attachment, as supplied by the Manufacturer.

PART 3 - EXECUTION

A. EXAMINATION

1. Verify support framing is ready to receive railing system.
2. Verify that structural posts are installed at spacing not exceeding that specified by Manufacturer.
3. Do not begin installation until support framing has been properly prepared.
4. If support framing is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

B. PREPARATION

1. Examine, clean, and repair as necessary any substrate conditions that would be detrimental to proper installation.
2. Do not begin installation until unacceptable conditions have been corrected.

C. INSTALLATION

1. Install in accordance with Manufacturer's instructions, drawing details, and as follows:
    a. Read warranty and comply with all terms necessary to maintain warranty coverage.
    b. Use construction details and fastener spacings indicated on drawings.
    c. Pre-drill screw holes per Manufacturer’s instructions.

D. CLEANING

1. At completion of work, remove all traces of dirt and soiled areas.
2. Remove debris caused by installation from project site.

E. DEMONSTRATION

i. Instruct the Owner’s personnel on proper maintenance of guardrail components.

END OF SECTION

SECTION 06200 - FINISH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

A. Misc. trim
B. Fiber-cement lap siding, siding panels, and trim see Section 07462.

1.02 SUBMITTALS

A. Plastic Laminate:
   1. Product data.
   2. Samples for verification: 8- by 10-inch piece of each type, pattern, and color.
B. Coordinate installation of woodwork with other work to avoid damage.

PART 2 - PRODUCTS

2.01 WOODWORK

A. All Woodwork Finishes: As indicated on drawings.

2.02 WOOD MATERIALS

A. Lumber: Species and grade as indicated; lumber ready for installation shall comply with WM 4, "General Requirements For Wood Molding," Wood Molding and Millwork Producers (WMMP).
   1. Specie(s):
      a. "Pine": Plain sawn Spruce or Idaho white pine at window extensions and window trim
   2. Softwood: Comply with NIST PS 20 and grade in accordance with the grading rules of the grading and inspection agency applicable to the species.
   3. For transparent finish, use only solid pieces of lumber; WM 4 N-grade.
   4. For opaque finish, pieces which are glued up may be used; WM 4 N- or P-grade.
   5. Moisture content: Not greater than that required by applicable grading rules; provide kiln-dried lumber.
   6. Provide lumber dressed on all exposed faces, unless otherwise indicated.
   7. Do not use twisted, warped, bowed, or otherwise defective lumber.
   8. Sizes indicated are nominal, unless otherwise indicated.
   9. Do not mark or color lumber, except where such marking will be concealed in finish work.
B. Plywood: Types, grades, and cores as indicated.
   1. Medium density overlaid plywood: NBS PS 1, Special Exterior MDO.
   1. Plywood in concealed locations: Comply with NBS PS 1, Grade C minimum.

2.03 MELAMINE SHELVING:

A. Shelving: 3/4” thick premium MDF, Medium Density Fiber boards

2.04 FABRICATION

A. Fabricate in sizes and shapes indicated and using details indicated.
B. Complete fabrication and assembly in shop.
   1. Ease edges of solid lumber members where indicated, using:
      a. 1/16-inch radius for members 1 inch or less nominal thickness.

b. 1/8-inch radius for members more than 1 inch nominal thickness.

C. Where woodwork is indicated to be field finished, sand smooth, fill nail holes, clean thoroughly, and otherwise prepare for finishing.

D. Standing and Running Trim: Miter exposed ends of members to match profile.
   1. Rout out backs of flat members over 2 inches wide, unless ends are exposed.
   2. Kerf backs of flat members over 4 inches wide, except where ends are exposed.

PART 3 - EXECUTION

3.01 PREPARATION

A. Verify that blocking and backings have been installed at appropriate locations for anchorage.

3.02 INSTALLATION – GENERAL

A. Do not begin installation of interior woodwork until potentially damaging construction operations are complete in the installation area.

B. Make joints neatly, with uniform appearance.

C. Install woodwork in correct location, plumb and level, without rack or warp.
   1. Where adjoining surfaces are flush, install with maximum 1/16-inch offset.
   2. Where adjoining surfaces are separated by a reveal, install with maximum 1/8-inch offset.

D. Cut woodwork precisely to fit.

E. Secure woodwork to blocking or use anchors indicated.
   1. Where anchorage method is not indicated, conceal all fasteners where possible.
   2. Where exposed nailing is required or indicated, use finishing nails, countersink, and fill.

F. Repair damaged and defective woodwork to eliminate visual and functional defects; where repair is not possible, replace woodwork.

G. Standing and Running Trim: Use longest pieces available and as few joints as possible.
   1. Stagger joints in built-up trim members. Miter all vertical joints tight at 45 degrees at interior T&G Cedar wall siding and fascia corners. Miter external and miter internal corners.
   2. Use diagonal (scarfed) joints in lengths of trim.
   3. Cope or miter at inside corners and miter at outside corners; fit tightly.
   4. Allowed variation in plumb and level: Not more than 1/8 inch in 8 feet.
   5. Install by blind-nailing where possible. Use face-nailing with fine finishing nails countersunk and filled at starter course only.

H. Panel Type Paneling:
   1. Arrange panels for best appearance.
   2. Install with tight joints, unless otherwise indicated.
   1. Install by face-nailing with fine finishing nails countersunk and filled.

3.03 PROTECTION

A. Protect woodwork from damage and maintain design environmental conditions.

END OF SECTION 06200

SECTION 06651 - SOLID SURFACE FABRICATIONS

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following horizontal and trim solid surface product types:
   1. Changing tables
   2. Benches
   3. Windowsills & seats
   4. Cove backsplashes
   5. Visitor Center Countertop

B. Related Sections include the following:
   1. Division 6 Section “Rough Carpentry” for Blocking.

1.3 DEFINITION

A. Solid surface is defined as nonporous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

1.4 SUBMITTALS

A. Product data:
   1. For each type of product indicated.
   2. Product data for the following:
      a. Chemical-resistant tops: chlorine bleach

B. Shop drawings:
   1. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
      a. Show full-size details, edge details, thermoforming requirements, attachments, etc.
      b. Show locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.

C. Samples:
   1. For each type of product indicated.
      a. Submit minimum 6-inch by 6-inch sample in specified gloss.
      b. Cut sample and seam together for representation of inconspicuous seam.
      c. Indicate full range of color and pattern variation.
   2. Approved samples will be retained as a standard for work.

D. Product data:
   1. Indicate product description, fabrication information and compliance with specified performance requirements.

E. Maintenance data:
   1. Submit manufacturer’s care and maintenance data, including repair and cleaning instructions.
      a. Maintenance kit for finishes shall be submitted.
   2. Include in project closeout documents.

1.5 QUALITY ASSURANCE

A. Qualifications:
    1. Shop that employs skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance.
B. Fabricator/installer qualifications:
    1. Work of this section shall be by a certified fabricator/installer, certified in writing by the manufacturer.
C. Applicable standards:
    1. Standards of the following, as referenced herein:
        a. American National Standards Institute (ANSI)
        b. American Society for Testing and Materials (ASTM)
        c. National Electrical Manufacturers Association (NEMA)
        d. NSF International
    2. Fire test response characteristics:
        a. Provide with the following Class A (Class I) surface burning characteristics as determined by testing identical products per UL 723 (ASTM E84) or another testing and inspecting agency acceptable to authorities having jurisdiction:
            1) Flame Spread Index: 25 or less.
            2) Smoke Developed Index: 450 or less.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver no components to project site until areas are ready for installation.
B. Store components indoors prior to installation.
C. Handle materials to prevent damage to finished surfaces.
    1. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.7 WARRANTY

A. Provide manufacturer's warranty against defects in materials.
    1. Warranty shall provide material and labor to repair or replace defective materials.
    2. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.
B. Manufacturer's warranty period:
    1. Ten years from date of substantial completion.

1.8 MAINTENANCE

A. Provide maintenance requirements as specified by the manufacturer.

PART 2 — PRODUCTS

2.1 MATERIALS

A. Solid polymer components

1. Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
2. Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing.

B. Thickness: 1/2 inch
C. Edge treatment: Bullnose
D. Backsplash: Coved.
E. Sidesplash: Applied.

2.2. PERFORMANCE CHARACTERISTICS:

Property	**Typical Result**	**Test**
Tensile Strength	6,000 psi	ASTM D 638
Tensile Modulus	1.5 x 10^{-6} psi	ASTM D 638
Tensile Elongation	0.4% min.	ASTM D 638
Flexural Strength	10,000 psi	ASTM D 790
Flexural Modulus	1.2 x 10^{-6} psi	ASTM D 790
Hardness	>85	Rockwell "M" Scale ASTM D 785
	56	Barcol Impressor ASTM D 2583
Thermal Expansion	3.02 x 10^{-5} in./in./°C (1.80 x 10^{-5} in./in./°F)	ASTM D 696
Gloss (60° Gardner)	5–75 (matte—highly polished)	ANSI Z124
Light Resistance	(Xenon Arc) No effect	NEMA LD 3-2000 Method 3.3
Wear and Cleanability	Passes	ANSI Z124.3 & Z124.6
Stain Resistance: Sheets	Passes	ANSI Z124.3 & Z124.6
Fungus and Bacteria Resistance	Does not support microbial growth	ASTM G21&G22
Boiling Water Resistance	No visible change	NEMA LD 3-2000 Method 3.5
High Temperature Resistance	No change	NEMA LD 3-2000 Method 3.6
Izod Impact (Notched Specimen)	0.28 ft.-lbs./in. of notch	ASTM D 256 (Method A)
Ball Impact Resistance: Sheets	No fracture—1⁄2 lb. ball: 1⁄4" slab—36" drop 1⁄2" slab—144" drop	NEMA LD 3-2000 Method 3.8
Weatherability	ΔE^*_{94}<5 in 1,000 hrs.	ASTM G 155
Specific Gravity †	1.7	
Water Absorption	Long-term 0.4% (3⁄4") 0.6% (1⁄2") 0.8% (1⁄4")	ASTM D 570
Toxicity	99 (solid colors) 66 (patterned colors)	Pittsburgh Protocol Test ("LC50"Test)
Flammability	All colors (Class I and Class A)	ASTM E 84, NFPA 255 & UL 723
Flame Spread Index	<25	
Smoke Developed Index	<25	

† Approximate weight per square foot: 1⁄4" (6 mm) 2.2 lbs., 1⁄2" (12.3 mm) 4.4 lbs.
Shapes meet or exceed the ANSI Z124.3 and ANSI Z124.6 standards for plastic sinks and lavatories.
NEMA results based on the NEMA LD 3-2000

2.3 ACCESSORIES

A. Joint adhesive:
    1. Manufacturer's standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.
B. Sealant:
    1. Manufacturer's standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone — any type), UL-listed silicone sealant in colors matching components.

2.4 FACTORY FABRICATION

A. Shop assembly
    1. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer's printed instructions and technical bulletins.
    2. Form joints between components using manufacturer's standard joint adhesive without conspicuous joints.
        a. Reinforce with strip of solid polymer material, 2" wide.
    3. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.
    4. Rout and finish component edges with clean, sharp returns.
        a. Rout cutouts, radii and contours to template.
        b. Smooth edges.
        c. Repair or reject defective and inaccurate work.

2.5 FINISHES

A. Select from the manufacturer's standard color chart.
    1. Corian, basis of design, color to be selected
B. Other acceptable manufacturers (color to be selected by architect)
    1. Wilsonart-Gibraltar
    2. Avonite

PART 3 — EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.
    1. Provide product in the largest pieces available.

2. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.
a. Exposed joints/seams shall not be allowed.
3. Reinforce field joints with solid surface strips extending a minimum of 1 inch on either side of the seam with the strip being the same thickness as the top.
4. Cut and finish component edges with clean, sharp returns.
5. Rout radii and contours to template.
6. Anchor securely to base cabinets or other supports.
7. Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop.
8. Carefully dress joints smooth, remove surface scratches and clean entire surface.
9. Install countertops with no more than 1/8-inch (3 mm) sag, bow or other variation from a straight line.

B. Coved backsplashes and applied sidesplashes:
1. Install applied sidesplashes using manufacturer's standard color-matched silicone sealant.
2. Adhere applied sidesplashes to countertops using manufacturer's standard color-matched silicone sealant.

3.3 REPAIR

A. Repair or replace damaged work which cannot be repaired to architect's satisfaction.

3.4 CLEANING AND PROTECTION

A. Keep components clean during installation.
B. Remove adhesives, sealants and other stains.

END OF SECTION

SECTION 07130 - SHEET WATERPROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Self-adhering sheet waterproofing membranes.

1.2 RELATED SECTIONS
A. Section 03300 - Concrete.
B. Section 04220 - CMU.
C. Section 06100 - Rough carpentry.
D. Section 07210 - Thermal Insulation.

1.3 REFERENCES
A. ASTM International:
   1. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.
   2. ASTM D 779 - Standard Test Method for Water Resistance of Paper, Paperboard, and Other Sheet Materials by the Dry Indicator Method.
   3. ASTM D 882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
   4. ASTM D 1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
   5. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
B. International Code Council - Evaluation Service (ICC-ES):
   1. ICC-ES AC 38 - Acceptance Criteria for Water-Resistive Barriers.
   2. ICC-ES ESR 2783 - Evaluation Report.

1.4 SUBMITTALS
A. Submit under provisions of Section 013300.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Shop Drawings: Submit shop drawings including details of construction and relationship with adjacent construction.
D. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
E. Warranty: Submit manufacturer's standard warranty.

1.5 QUALITY ASSURANCE
A. Installer Qualifications: Experienced in installation of specified material type with working knowledge of specified products and Project specific application requirements.

1.6 DELIVERY, STORAGE, AND HANDLING
A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
B. Storage:
   1. Store materials in clean, dry, heated area indoors in accordance with manufacturer's instructions.
   2. Store cartons on end and protect from moisture and damage.
   3. Protect from temperatures above 100 degrees F (38 degrees C).
   4. Do not remove rolls from cartons until application.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 WARRANTY

A. Limited Warranty:
   1. Manufacturer warrants materials to be free from leaks caused by defects in material or manufacturing for a period of 5 years from the date of purchase when applied according to published directions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. MFM Building Products Corp., Web:www.mfmbp.com
   2. W.R. Meadows, Inc., Web: www.wrmeadows.com
   3. Tamko Building Products, Inc., Web: www.tamko.com

B. Requests for substitutions will be considered by Architect upon written request.

2.2 WATERPROOFING MEMBRANES

A. Product: Underlayment
   1. Description: Prefabricated self-adhering sheet-type waterproofing membrane.
   2. Composition: High-tensile polyester film coated with a layer of specially formulated rubberized asphalt adhesive.
   3. Release Liners: Protect asphalt, removed as membrane is installed.
   4. Technical Properties:
      a. Installation Temperature Range: Greater than 50 degrees F (10 degrees C).
      b. Material Color: Black.
      c. Material Thickness (ASTM D 1970): 40 Mils (1.0 mm) Nominal.
      d. Flexibility at -20 degrees F (-29 degrees C) (ASTM D 1970): Pass.
      e. Vapor Permeance (ASTM E 96): 0.08 g/m2 Maximum.
      f. Nail Sealability (ASTM D 1970): Pass.
      g. Tensile (ASTM D 412): 37 lbf/in2 (0.04 ksi).
      h. Elongation (ASTM D 412): 135 percent Minimum.

B. Product: Waterproofing membrane for basement walls.
   1. Description: Prefabricated, 40 mil (1 mm) self adhering sheet-type waterproofing membrane.
   2. Composition: Multi-layer high-strength polymer film that is coated with a layer of specially formulated rubberized asphalt adhesive.
   3. Release Liners: Protect asphalt, removed as membrane is installed.
   4. Technical Properties:
      a. Tested to ICC-ES AC 38, ICC-ES ESR 2783.
      b. Material Thickness (ASTM D 1970): 40 Mils (1.0 mm) Nominal.
      c. Pliability (ICC-ES AC 38): Pass.
      d. Vapor Permeance (ASTM E 96): 0.02 g/m2 Maximum.
      e. Water Resistance (ASTM D 779): Greater than 30 hours
      f. Nail Sealability (ASTM D 1970): Pass.
      g. Tensile MD (ASTM D 882): 21 lbf/in2 (0.02 ksi).
      h. Tensile CMD (ASTM D 882): 28 lbf/in2 (0.03 ksi).
      i. Installation Temperature Range: Greater than 50 degrees F (10 degrees C).
      j. Material Color: Black.

2.3 ACCESSORIES

A. Adhesive: MFM Spray Adhesive as manufactured by MFM Building Products Corp.
B. Primer: Asphalt-based commercial primer.
C. Termination Bar.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Inspect and prepare substrates using the methods recommended by the manufacturer for achieving best result for the substrates under project conditions.
B. Clean surfaces thoroughly prior to installation. Do not proceed with installation until substrates have been prepared using the methods recommended by the manufacturer and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.
C. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions including the following:
    1. Apply in clear, dry weather.
    2. Surface must be clean, dry and free from oil.
    3. Masonry must be clean, fully cured and primed with an asphalt primer.
    4. Prime weathered surfaces as necessary - clean, dry, wood and metal surfaces do not require priming.
    5. Use 3 inches (76 mm) side laps and 6 inches (152 mm) head laps.
    6. Apply uniform pressure with a 2 to 3 inches (51 to 76 mm) hand roller to entire surface.
    7. Do not install over solvent-based sealants unless fully cured - active solvents may liquefy bottom adhesive surface.
    8. Test for compatibility with caulks and sealants.
    9. Do not install over flexible vinyl gaskets.
    10. Do not expose installed product to direct sunlight for more than 90 days.

3.3 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 07130

SECTION 07211 - FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Foamed-in-place insulation.
   1. At perimeter of floors and ceilings.

1.02 REFERENCE STANDARDS

A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2010.
B. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2006.
C. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2010.
D. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2003.

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide product description, insulation properties, and preparation requirements.
C. Certificates: Certify that products of this section meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than three years of documented experience.
B. Applicator Qualifications: Company specializing in performing work of the type specified, with minimum one years of experience.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable code for concealment limitations.

1.06 FIELD CONDITIONS

A. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.
B. Do not apply foam when temperature is within 5 F of dew point.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Foamed-In-Place Insulation:
   1. BASF Polyurethane Foam Enterprises LLC: www.basf.us.
   2. Bayer MaterialScience; EcoBay CC : www.spf.bayermaterialscience.com.
   3. Demilec (USA) LLC; HeatLoc Soy-200: www.demilecusa.com.
   4. Icynene Inc; Icynene LD-C-50: www.icynene.com.
   5. NCFI Polyurethanes: www.ncfi.com.
   6. Substitutions: must be requested in writing.

2.02 MATERIALS

A. Foamed-In-Place Insulation: Medium-density, rigid or semi-rigid, closed cell polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
   1. Aged Thermal Resistance (R-value): 6.5 (deg F hr sq ft)/Btu, minimum, when tested at 1 inch thickness in accordance with ASTM C518 after aging for 180 days at 41 degrees F.
   2. Water Vapor Permeance: Vapor retarder; 1 perm, maximum, when tested at intended thickness in accordance with ASTM E96/E96M, desiccant method.
   3. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.
   4. Air Permeance: 0.004 cfm/sq ft, maximum, when tested at intended thickness in accordance with ASTM E2178 at 1.5 psf.
   5. Closed Cell Content: At least 90 percent.
   6. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify work within construction spaces or crevices is complete prior to insulation application.
B. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation adhesion.

3.02 PREPARATION

A. Mask and protect adjacent surfaces from over spray or dusting.
B. Apply primer in accordance with manufacturer's instructions.

3.03 APPLICATION

A. Apply insulation in accordance with manufacturer's instructions.
B. Apply insulation by spray method, to a uniform monolithic density without voids.
C. Apply to a minimum cured thickness of 3 at walls and 6 inch at ceilings/roofs.
D. Patch damaged areas.
E. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.
F. Trim excess away for applied trim or remove as required for continuous sealant bead.

3.04 FIELD QUALITY CONTROL

A. Inspection will include verification of insulation thickness and density.

3.05 PROTECTION

A. Do not permit subsequent construction work to disturb applied insulation.

END OF SECTION

SECTION 07213 – FIBERGLASS INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Blown-in/loose-fill insulation
   2. Attic blanket insulation
   3. Sound Attenuation Blanket

1.02 DEFINITIONS

A. Thermal Resistance (R-value): The temperature difference in degrees F between the two surfaces of a material of given thickness, required to make 1 Btu of energy flow through 1 square foot of the material in 1 hour.

1.03 SUBMITTALS

A. Product Data: Submit for each product specified in this section.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Minimize period between product delivery and actual installation. Protect against exposure to flame, sparks, or excessive heat. Minimize exposure to sunlight. Keep dry.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Blown-in/loose-fill Insulation:
   1. See drawings for required R-values
   2. Noncombustible and passes requirements of ASTM E136
   3. Conforms to the requirements of ASTM C764 Type I.
B. Attic Blanket Insulation
   1. See drawings for required R-values
   2. Noncombustible and passes requirements of ASTM E136
   3. Conforms to the requirements of ASTM C764 Type I.
C. Sound Attenuation Blanket
   1. Unfaced
   2. Conforms to the requirements of ASTM C665, type I and ASTM E136

2.02 ACCESSORIES

A. Provide accessories as necessary to properly install specified products.
   1. Air Barrier.
   2. Friction fit wall supports
   3. Attic Rafter Vent Baffle
   4. Soffit Dam-rigid foam board

PART 3 - EXECUTION

3.01 INSTALLATION

A. Comply with insulation manufacturer's recommendations and installation sequence. Provide permanent placement and support of insulation.
B. Install materials in a manner which will maximize continuity of thermal envelope. Use a single layer of insulation wherever possible to achieve indicated requirements, unless otherwise indicated.
C. Loose-fill Insulation:
    1. Application: Light-gage metal truss construction:
        a. Loose-fill insulation: blown-in between and above framing members.
        b. Support attic insulation with air barrier.
        c. Provide attic rafter vent baffles
D. Sound Attenuation blanket:
    1. Provide supplemental support as needed.

END OF SECTION 07210

SECTION 07310 - ASPHALT SHINGLES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Asphalt roofing shingles.
B. Leak barrier and moisture shedding roof deck protection.
C. Underlayment.
D. Metal flashing associated with shingle roofing.

1.2 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry.

1.3 REFERENCES

A. American Society of Civil Engineers (ASCE): ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
B. Asphalt Roofing Manufacturers Association (ARMA).
C. ASTM International (ASTM):
    1. ASTM D 3018 - Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
    2. ASTM D 3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
    3. ASTM D 3462 - Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
    4. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
    5. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
    6. ASTM B 370 - Standard Specification for Copper Sheet and Strip for Building Construction.
    7. ASTM C 1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
    8. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
    9. ASTM E 903 - Standard Test Method for Solar Absorption, Reflectance and Transmission of Materials Using Integrating Spheres.
D. National Roofing Contractors Association (NRCA).
E. Sheet Metal and Air Conditioning Contractors National Association, 1nc. (SMACNA) - Architectural Sheet Metal Manual.
F. Underwriters Laboratory (UL)
    1. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
    2. UL 997 - Wind Resistance of Prepared Roof Covering Materials.

1.4 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
B. Product Data: Manufacturer's data sheets on each product to be used, showing compliance with requirements.
C. Installation Instructions: Manufacturer's installation instructions, showing required preparation and installation procedures.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide all primary roofing products, including shingles, underlayment, leak barrier, and ventilation, by a single manufacturer.
B. Installer Qualifications: Installer must be approved by manufacturer for installation of all roofing products to be installed under this section.

1.7 REGULATORY REQUIREMENTS

A. Provide a roofing system achieving an Underwriters Laboratories (UL) Class A fire classification.
B. Install all roofing products in accordance with all federal, state and local building codes.
C. All work shall be performed in a manner consistent with current OSHA guidelines.

1.8 PRE-INSTALLATION MEETINGS

A. Convene a pre-installation meeting a minimum two weeks prior to starting work of this section.
    1. Contractor shall schedule and arrange meeting and meeting place and notify attendees.
    2. Mandatory Attendees: Roofing installer and manufacturer's steep slope technical representative (not sales agent).
    3. Optional Attendees: Owner's representative, Architect's representative, prime Contractor's representative.
    4. Review all pertinent requirements for achieving the warranty specified below and set schedule for final warranty inspection.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened labeled packaging until ready for installation.
B. Store products in a covered, ventilated area, at temperature not more than 110 degrees F; do not store near steam pipes, radiators, or in sunlight.
C. Store bundles on flat surface to maximum height recommended by manufacturer; store rolls on end.
D. Store and dispose of solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.10 WEATHER CONDITIONS

A. Proceed with work only when existing and forecasted weather conditions will permit work to be performed in accordance with roofing shingle manufacturer's recommendations.

1.11 WARRANTY

A. Provide manufacturer's standard limited warranty:
   1. Provide to the Owner the manufacturer's warranty.
      a. Warranty Duration: 25 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: CertainTeed, John Mansville, GAF or approved equal

2.2 SHINGLES

A. Architectural Shingles:
   1. Granule surfaced, self-sealing asphalt shingle with a strong fiberglass reinforced Micro Weave core and StainGuard protection, which prevents pronounced discoloration from blue-green algae through formulation/unique blends of granules.
   2. Extra thick tabs and bold profile provide a bold unique appearance with a 7.5in. exposure.
   3. UL 790 Class A rated with UL 997 Wind Resistance Label; ASTM D 7158, Class H; ASTM D 3161, Type 1; ASTM D 3018, Type 1; ASTM D 3462; AC438 compliant; CSA 123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.

2.3 HIP AND RIDGE SHINGLES

A. Distinctive self-sealing hip and ridge cap shingle complementing the color of selected roof shingle.

2.4 STARTER STRIPS

A. Self sealing starter shingle designed for premium roof shingles.

2.5 LEAK BARRIER

A. Self-adhering, self-sealing, bituminous leak barrier surfaced with fine, skid-resistant granules. Approved by UL and ICC.

2.6 UNDERLAYMENT

A. Premium, water repellant, breather type non-asphaltic underlayment. UV stabilized polypropylene construction. Meets or exceeds ASTM D226 and D4869. Approved by ICC.

2.7 ROOFING CEMENT

A. Asphalt Plastic Roofing Cement meeting the requirements of ASTM D 4586, Type I or II.

2.8 ROOF ACCESSORIES

A. Paint: Exterior acrylic rust resistant aerosol roof accessory paint. Each 6 oz can is available

in boxes of 6 and in color to compliment the roof. Shingle-Match Roof Accessory Paint by GAF.

B. Compression Collars: UV stable solid molded PVC compression collar, Kynar PVDF coated 24 gauge galvanized flange, Ultimate Pipe Flashing by Lifetime Tool.

2.9 VENTILATION

A. Ridge Vents:
   1. Flexible rigid plastic ridge ventilator designed to allow the passage of hot air from vented insulation panels, while resisting snow infiltration.

2.10 NAILS

A. Nails: Standard round wire, zinc-coated steel or aluminum; 10 to 12 gauge, smooth, barbed or deformed shank, with heads 3/8 inch (9mm) to 7/16 inch (11mm) in diameter. Length must be sufficient to penetrate into solid wood at least 3/4 inch (19mm) or through plywood or oriented strand board by at least 1/8 inch (3.18mm).

2.11 METAL FLASHING

A. Aluminum: 0.032-inch (0.8mm) aluminum sheet, complying with ASTM B 209.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until roof deck has been properly prepared.
B. If roof deck preparation is the responsibility of another installer, notify Architect or building owner of unsatisfactory preparation before proceeding.

3.2 PREPARATION OF SUBSTRATE

A. Clean deck surfaces thoroughly prior to installation of leak barrier and roof deck protection.
B. At areas to receive leak barrier, fill knot holes and cracks with latex filler.

3.3 INSTALLATION OF UNDERLAYMENT

A. Install using methods recommended by manufacturer in accordance with local building code. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
B. Eaves:
   1. Place eave edge metal flashing tight with fascia boards; lap joints 2 inches and seal with plastic cement; nail at top of flange.
   2. On roofs with slope between 2:12 and 4:12, install leak barrier up the slope from eave edge to 36 inches from the edge or at least 24 inches beyond the interior face of the warm exterior wall, whichever is greater; lap ends 6 inches and bond.
C. Valleys:
   1. Install leak barrier at least 36 inches wide centered on valley; lap ends 6 inches and seal.
   2. Where valleys are indicated to be "open valleys", install metal flashing over leak barrier before roof deck protection is installed; DO NOT NAIL THROUGH metal

flashing; secure by nailing at 18 inches on center just beyond edge of flashing so that nail heads hold down edge.

D. Hips and Ridges:
   1. Install leak barrier along entire lengths. If ridge vents are to be installed, position the leak barrier so that the ridge slots will not be covered.

E. Roof Deck:
   1. Install one layer of roof deck protection over entire area not protected by eave or valley membrane; run sheets horizontally lapped so water sheds; nail in place.
   2. On roofs sloped at more than 4 in 12, lap horizontal edges at least 2 inches and at least 2 inches over eave protection membrane.
   3. On roofs sloped between 2 in 12 and 4 in 12, lap horizontal edges at least 19 inches and at least 19 inches over eave protection membrane.
   4. Lap ends at least 4 inches; stagger end laps of each layer at least 36 inches.
   5. Lap roof deck protection over valley protection at least 6 inches

F. Penetrations:
   1. At vent pipes, install a 24 inch square piece of leak barrier lapping over roof deck protection; seal tightly to pipe.
   2. At vertical walls, install leak barrier extending at least 6 inches up the wall and 12 inches on to the roof surface lapping over roof deck protection.
   3. At rake edges, install metal edge flashing over leak barrier and roof deck protection; set tight to rake boards; lap joints at least 2 inches and seal with plastic cement; secure with nails.
   4. At hips and ridges, install leak barrier along entire lengths. If ridge vents are to be installed, position the leak barrier so that the ridge slots are not covered.

3.4 INSTALLATION OF SHINGLES

A. Install in accordance with manufacturer's instructions and requirements of local building code.
   1. Avoid breakage of shingles by avoiding dropping bundles on edge, by separating shingles carefully (not by "breaking" over ridge or bundles), and by taking extra precautions in temperatures below 40 degrees F.
   2. Handle carefully in hot weather to avoid damaging shingle edges.
   3. Secure with 4 to 6 nails per shingle; use number of nails required by manufacturer or by code, whichever is greater. Nails must be long enough to penetrate through plywood or OSB, or 3/4 inch into dimensional lumber.

B. Install hip and ridge shingles as required by the manufacturer. At ridges, install hip and ridge shingles over ridge or ridge vent material.

C. Make valleys using "woven valley" technique.
   1. Run shingles from both roof slopes at least 12 inches (305 mm) across center of valley, lapping alternate sides in a woven pattern.
   2. Nail not closer than 6 inches (150 mm) to center of valley.

D. All penetrations are to be flashed according to manufacturer, ARMA and NRCA application instructions and construction details.

3.5 INSTALLATION OF VENTILATION

A. Code Requirements: Ventilation shall meet or exceed current FHA, HUD and local code requirements.

B. Ridge Vents:
   1. Cut continuous vent slot through sheathing, stopping 6 inches (150 mm) from each end of ridge.
   2. On roofs without ridge board, make slot 2 inches (50 mm) wide, centered on ridge.

3. On roofs with ridge board, make two slots 1-3/4 inches (89 mm) wide, one on each side.
4. Install ridge vent material full length of ridge, including uncut areas.
5. Butt ends of lengths of ridge vent material and join using plastic cement.
6. Install eave vents in sufficient quantity to equal or exceed the ridge vent area, calculated as specified by manufacturer.
7. Install ridge shingles over ridge vent material; use nails of specified length; do not drive nails home, leaving 3/4 inch (19 mm) slot open between ridge and roof shingles.

3.6 PROTECTION

A. Stage work progress so that traffic is minimized over completed roofing.
B. Protect installed products until completion of project

END OF SECTION

SECTION 07411- METAL ROOF PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mechanically-seamed, standing seam metal roof panels, with related metal trim and accessories.

1.02 RELATED REQUIREMENTS

A. Section 06100 – Rough Carpentry: Roof sheathing.
B. Section 07900 - Joint Sealers: Field-installed sealants.

1.03 REFERENCE STANDARDS

A. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; 2005.
B. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.
C. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2007.
D. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2006.
E. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; 2006.

1.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Storage and handling requirements and recommendations.
   2. Installation methods.
   3. Specimen warranty.
C. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.
   1. Show work to be field-fabricated or field-assembled.
D. Selection Samples: For each roofing system specified, submit color chips representing manufacturer's full range of available colors and patterns.
E. Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in NCDOT's name and are registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in the manufacture of roofing systems similar to those required for this project, with not less than 5 years of documented experience.
B. Installer Qualifications: Experienced Installer certified by metal panel manufacturer with minimum of 5 years experience with successfully completed projects of a similar nature and scope.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store roofing panels on project site as recommended by manufacturer to minimize damage to panels prior to installation.

1.07 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.
B. Finish Warranty: Provide manufacturer's special warranty covering failure of factory-applied exterior finish on metal roof panels and agreeing to repair or replace panels that show evidence of finish degradation, including significant fading, chalking, cracking, or peeling within specified warranty period of 30 year period from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable manufacturers or approved equal are:
   1. Sentriclad, Basis of Design
   2. McElroy Metal
   3. MBCI Metal Roof and Wall Systems

2.02 ARCHITECTURAL ROOF PANELS

A. Performance Requirements: Provide complete engineered system complying with specified requirements and capable of remaining weather tight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.
B. Metal Roofing: Factory-formed panels with factory-applied finish, mechanically seamed, concealed fastener.
   1. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Grade 50, Coating Class AZ50, prepainted by the coil-coating process per ASTM A 755/A 755M.
      a. Nominal Coated Thickness: 24 ga.
      b. Panel Surface: Smooth with striations in pan
   2. Profile: Standing seam, with minimum 1.75 inch seam height; concealed fastener system lapped seam in standing seam profile.
   3. Texture: Smooth.
   4. Length: Full length of roof slope, without lapped horizontal joints.
   5. Width: Maximum panel coverage of 16 inches.

2.03 ATTACHMENT SYSTEM

A. Concealed System: Provide manufacturer's standard stainless steel or nylon-coated aluminum concealed anchor clips designed for specific roofing system and engineered to meet performance requirements, including anticipated thermal movement.

2.04 PANEL FINISH

A. Modified silicone-polyester two-coat system color "**Stone Gray S18**" by Sentriclad for all metal items;

2.05 ACCESSORIES AND MISCELLANEOUS ITEMS

A. Miscellaneous Sheet Metal Items: Provide flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, and equipment curbs of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.
B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of closed-cell synthetic rubber, neoprene, or PVC.

C. Soffit: Half vent.
D. Facia
E. Sealants: As specified in Section 07900.
   1. Exposed sealant must cure to rubber-like consistency.
   2. Concealed sealant must be non-hardening type.
   3. Seam sealant must be factory-applied, non-skinning, non-drying type.
F. Underlayment for Wood Substrate: ASTM D 226 roofing felt, perforated type; covered by water-resistant rosin-sized building paper.
G. 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.
H. Snow Guards: Approved equal to Sno Gem polycarbonate snow guards with adhesive fastening to the standing seam panel and manufacturer's instructions.

2.06 FABRICATION

A. Panels: Fabricate and finish panels and accessory items at factory, using manufacturer's standard processes as required to achieve specified appearance and performance requirements.
B. Joints: Factory-install captive gaskets, sealants, or separator strips at panel joints to provide weathertight seals, eliminate metal-to-metal contact, and minimize noise from panel movements.

PART 3 EXECUTION

3.01 PREPARATION

A. Broom clean wood sheathing prior to installation of roofing system.
B. Coordinate roofing work with provisions for roof drainage, flashing, trim, penetrations, and other adjoining work to assure that the completed roof will be free of leaks.
C. Separate dissimilar metals by applying a bituminous coating, self-adhering rubberized asphalt sheet, or other permanent method approved by roof panel manufacturer.
D. Where metal will be in contact with wood or other absorbent material subject to wetting, seal joints with sealing compound and apply one coat of heavy-bodied bituminous paint.

3.02 INSTALLATION

A. Overall: Install roofing system in accordance with panel manufacturer's instructions and recommendations, as applicable to specific project conditions. Anchor all components of roofing system securely in place while allowing for thermal and structural movement.
   1. Install roofing system with concealed clips and fasteners.
   2. Minimize field cutting of panels. Where field cutting is absolutely required, use methods that will not distort panel profiles. Use of torches for field cutting is absolutely prohibited.
B. Accessories: Install all components required for a complete roofing assembly, including flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, equipment curbs, rib closures, ridge closures, and similar roof accessory items.
C. Ice Protection Underlayment: Install self-adhering ice protection underlayment along full length of eaves from the eave edge to a point 24 inch minimum beyond the 4/12 upper roof slope, and at valley's in accordance with underlayment manufacturer's installation instructions.
D. Underlayment: Install roofing felt and building paper slip sheet on roof deck before installing preformed metal roof panels. Secure by methods acceptable to roof panel manufacturer, minimizing use of metal fasteners. Apply from eaves to ridge in shingle fashion, overlapping horizontal joints a minimum of 2 inches (50 mm) and side and end laps a minimum of 3 inches (75 mm). Offset seams in building paper and seams in roofing felt.

E. Roof Panels: Install panels in strict accordance with manufacturer's instructions, minimizing transverse joints except at junction with penetrations.

3.03 CLEANING

A. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving the work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to the finish.

3.04 PROTECTION

A. Do not permit storage of materials or roof traffic on installed roof panels. Provide temporary walkways or planks as necessary to avoid damage to completed work. Protect roofing until completion of project.
B. Touch-up, repair, or replace damaged roof panels or accessories before date of Substantial Completion.

END OF SECTION

SECTION 07462 – FIBER CEMENT SIDING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fiber cement horizontal siding, panels, single, trim, and accessories;

1.2 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Wood framing and bracing.
B. Section 06100 - Rough Carpentry: Sheathing.

1.3 REFERENCES

A. ASTM D3359 - Standard Test Method for Measuring Adhesion by Tape Test, Tool and Tape.
B. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Shop Drawings: Provide detailed drawings of atypical non-standard applications of cementitious siding materials which are outside the scope of the standard details and specifications provided by the manufacturer.
D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
E. Verification Samples: For each finish product specified, two samples, minimum size 4 by 6 inches (100 by 150 mm), representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Minimum of 2 years experience with installation of similar products.
B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
   3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store siding on edge or lay flat on a smooth level surface. Protect edges and corners from chipping. Store sheets under cover and keep dry prior to installing.
C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. Product Warranty: Limited, non-pro-rated product warranty.
   1. Horizontal siding for 30 years.
   2. Trim boards for 15 years.

B. Workmanship Warranty: Application limited warranty for 2 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer:
   1. James Hardie-Artisan Lap and Accent Trim, Hardi Panel and Hardi-trim
   2. CertainTeed
   3. Nichiha

B. Requests for approval of equal substitutions will be considered in accordance with provisions of Section 01600.

2.2 SIDING

A. Siding requirement for Materials:
   1. Fiber-cement Siding - complies with ASTM C 1186 Type A Grade II.
   2. Fiber-cement Siding - complies with ASTM E 136 as a noncombustible material.
   3. Fiber-cement Siding - complies with ASTM E 84 Flame Spread Index = 0, Smoke Developed Index = 5.
   4. Warnock Hersey Product Listing.
   5. Manufacturer's Technical Data Sheet.

B. Horizontal Siding:
   1. Type: Heavy Lap siding with 5 inches exposure.

C. Trim:
   1. Trim boards
      a. Product: Batten Boards, 2-1/2 inch (63 mm) width, smooth texture.
      b. Product: 5/4 Boards, width varies, smooth texture
      c. Product: 1-1/2” thick trim for adjacent to heavy lap siding
      d. Length: 12 feet (3658 mm).

2.3 FASTENERS

A. Framing Fasteners: see manf. requirements

B. Masonry Walls:
   1. Masonry Walls: Aerico Stud Nail, ET&F ASM No.-144-125, 0.14 inch (3.6 mm) shank by 0.30 inch (7.6 mm) head by 2 inches (51 mm) long corrosion resistant nails.

2.4 FINISHES

A. Factory Primer: Provide factory applied universal primer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If framing preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Install a water-resistive barrier is required in accordance with local building code requirements.
D. The water-resistive barrier must be appropriately installed with penetration and junction flashing in accordance with local building code requirements.
E. Openings and penetrations to be properly flashed

3.3 INSTALLATION - Siding

A. Install materials in strict accordance with manufacturer's installation instructions.
B. Starting: Install a minimum 1/4 inch (6 mm) thick lath starter strip at the bottom course of the wall. Apply planks horizontally with minimum 1-1/4 inches (32 mm) wide laps at the top. The bottom edge of the first plank overlaps the starter strip.
C. Allow minimum vertical clearance between the edge of siding and any other material in strict accordance with the manufacturer's installation instructions.
D. Align vertical joints of the planks over framing members.
E. Maintain clearance between siding and adjacent finished grade.
F. Locate splices at least one stud cavity away from window and door openings.
G. Use off-stud metal joiner in strict accordance with manufacturer's installation instructions.
H. Wind Resistance: Where a specified level of wind resistance is required Hardieplank lap siding is installed to framing members and secured with fasteners described in Table No. 2 in National Evaluation Service Report No. NER-405.
I. Face nail to sheathing.
J. Locate splices at least 12 inches (305 mm) away from window and door openings.

3.4 INSTALLATION – Trim Boards

A. Install materials in strict accordance with manufacturer's installation instructions. Install flashing around all wall openings.
B. Fasten through trim into structural framing or code complying sheathing. Fasteners must penetrate minimum 3/4 inch (19 mm) or full thickness of sheathing. Additional fasteners may be required to ensure adequate security.
C. Place fasteners no closer than 3/4 inch (19 mm) and no further than 2 inches (51 mm) from side edge of trim board and no closer than 1 inch (25 mm) from end. Fasten maximum 16 inches (406 mm) on center.
D. Maintain clearance between trim and adjacent finished grade.
E. Trim inside corner with a single board trim both side of corner.
F. Outside Corner Board Attach Trim on both sides of corner with 16 gage corrosion resistant finish nail 1/2 inch (13 mm) from edge spaced 16 inches (406 mm) apart, weather cut each end spaced minimum 12 inches (305 mm) apart.
G. Allow 1/8 inch gap between trim and siding.
H. Seal gap with high quality, paint-able caulk.

I. Shim frieze board as required to align with corner trim..
J. Fasten through overlapping boards. Do not nail between lap joints.
K. Overlay siding with single board of outside corner board then align second corner board to outside edge of first corner board. Do not fasten HardieTrim boards to HardieTrim boards.
L. Shim frieze board as required to align with corner trim.

3.5 FINISHING

A. Finish primed siding with a two coat high quality, alkali resistant primer and one coat of either, 100 percent acrylic or latex or oil based, exterior grade topcoats or two coats high quality alkali resistant 100 percent acrylic or latex, exterior grade topcoat within 90 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.
B. Finish factory primed siding with a two coat of high quality 100 percent acrylic or latex or oil based exterior grade paint within 180 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.

3.6 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 07625 - SHEET METAL GUTTERS AND DOWNSPOUTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Gutters and downspouts for the renovated **Rest Area, Visitor Center and storage building**.

1.02 SUBMITTALS

A. Product Data.
B. Samples: Submit 3x6 -inch samples of each type of metal and finish required.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Prefinished Aluminum Sheet: ASTM B 209, manufacturer's standard alloy and temper for indicated applications.
   1. Minimum thickness: 0.027 inch thick, unless indicated otherwise.
   2. Finish: 70 percent "Kynar 500" or "Hylar 5000" resin finish over epoxy primer; minimum system thickness 1.0 mil. Provide manufacturer's standard prime coat on underside.
      a. Color: to be determined.
   3. Provide strippable plastic protective film on prefinished surface.

2.02 ACCESSORY MATERIALS

A. Fasteners: Corrosion-resistant metal of same material as the material being fastened, or other material recommended by sheet metal manufacturer. Match finish and color of exposed fastener heads to finish and color of sheet material being fastened.
B. Joint Adhesive: Two-component noncorrosive epoxy adhesive, recommended by metal manufacturer for sealing of nonmoving joints.
C. Bituminous Coating: Heavy bodied, sulfur-free, asphalt-based paint; FS TT-C-494.

2.03 FABRICATION - GENERAL

A. Form sheet metal to match profiles indicated, substantially free from oil-canning, fish-mouths, and other defects.
B. Comply with SMACNA "Engineer rural Sheet Metal Manual" for applications indicated.
C. Conceal fasteners and expansion provisions wherever possible.
   1. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
D. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.
   1. Gage: As recommended by SMACNA or metal manufacturer for application, but in no case less than gage of metal being secured.

2.04 GUTTERS AND DOWNSPOUTS

A. Fabricate from prefinished aluminum sheet.
   1. Gutter: see roof plan for size.
   2. Downspouts: see roof plan for size.
B. Provide expansion joints in gutters at spacing not to exceed 30 feet.
C. Provide sheet metal baffles 6 inches high with legs 18 inches long at gutter corners below roof valleys.
D. Gutter Supports: Brackets.

E. Downspout Supports: Brackets.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: Except as indicated otherwise, comply with sheet metal manufacturer's installation instructions and recommendations in the SMACNA "Architectural Sheet Metal Manual."

3.02 CLEANING AND PROTECTION

A. Repair or replace work which is damaged or defaced, as directed by the Engineer.
B. Protect sheet metal work as recommended by the installer so that completed work will be clean, secured, and without damage at substantial completion.

END OF SECTION 07625

SECTION 07900 - JOINT SEALERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. The sealing of joints indicated on schedule at the end of this section.
   2. The sealing of other joints indicated on drawings.
B. Joints of a nature similar to that of joints indicated on the schedule shall be sealed with same sealer, whether indicated on drawings to be sealed or not.

1.02 DEFINITIONS

A. Substrates:
   1. M-type substrates: Concrete, concrete masonry units, brick, mortar, natural stone. The term “masonry” means brick, stone, and concrete masonry work.
   2. G-type substrates: Glass and transparent plastic glazing sheets.
   3. A-type substrates: Metals, porcelain, glazed tile, and smooth plastics.
   4. O-type substrates: Wood, unglazed tile; substrates not included under other categories.

1.03 SUBMITTALS

A. Product data.
B. Samples for Color Selection. (Products exposed to view only.)

1.04 PROJECT CONDITIONS

A. Environmental Limitations: Do not install sealers if any of the following conditions exist:
   1. Air or substrate temperature exceeds the range recommended by sealer manufacturers.
   2. Substrate is wet, damp, or covered with snow, ice, or frost.
B. Dimensional Limitations: Do not install sealers if joint dimensions are less than or greater than that recommended by sealer manufacturer; notify the Engineer and get sealer manufacturer’s recommendations for alternative procedures.

1.05 WARRANTY

A. Submit Manufacturer’s written warranty for failures in sealer work that occur within 5 years after substantial completion, without reducing or otherwise limiting any other rights to correction which the owner may have under the contract documents. Failure is defined as failure to remain weather-tight due to faulty materials. Correction is limited to replacement of sealers.

PART 2 - PRODUCTS

2.01 MATERIALS - GENERAL

A. General: Provide only products which are recommended and approved by their manufacturer for the specific use to which they are put and which comply with all requirements of the contract documents.
   1. Provide only materials which are compatible with each other and with joint substrates.
   2. Colors of exposed sealers: As selected by the Engineer from manufacturer’s standard colors.
B. Manufacturers: Products of the manufacturers listed or approved equal, provided they comply with requirements of the contract documents will be among those considered acceptable.
   1. Silicone sealants:

a. Dow Corning Corporation.
b. Pecora Corporation.
c. GE Silicones.

2.02 ELASTOMERIC SEALANTS

A. Elastomeric Sealants - General: Chemically curing elastomeric sealants of types indicated, complying with ASTM C 920, including specific Type, Grade, Class, and Uses indicated, as well as all other requirements specified.
   1. Where movement capability exceeding that measured by ASTM C 920 is specified, sealant shall withstand the total movement indicated while remaining in compliance with the other requirements specified, when tested in accord with ASTM C 719, with base joint width measured at the time of application.
   2. For M-type substrates: Comply with requirements for Use M.
   3. For G-type substrates: Comply with requirements for Use G.
   4. For A-type substrates: Comply with requirements for Use A.
   5. For O-type substrates: Comply with requirements for Use M (minimum) and Use O for the particular substrate.

B. Medium Movement Silicone Sealant: One- or two-part non-acid-curing, Grade NS, Class 25, Use NT, plus movement capability of more than 25 percent but less than 50 percent in both extension and compression.

C. Mildew-Resistant Silicone Sealant: One-part, Type S, Grade NS, Class 25, Use NT, formulated with fungicide, for interior use on nonporous substrates, color to match glazed wall tile.

2.03 SILICONE-LATEX SEALANTS

A. Silicone-Latex Emulsion Sealant: One-part, nonsag, mildew-resistant, paintable at H.M. frames and gray to match wall tile; complying with ASTM C 834 use at fiber-cement siding and panel joints.

2.04 SEALANT BACKERS

A. Backers - General: Nonstaining; recommended or approved by sealant manufacturer for specific use.

PART 3 - EXECUTION

3.01 PREPARATION

A. Do not begin joint sealer work until unsatisfactory conditions have been corrected.

B. Masking Tape: Use masking tape to keep primers and sealers off of adjacent surfaces which would be damaged by contact or by cleanup. Remove tape as soon as practical.

3.02 INSTALLATION

A. Comply with sealer manufacturers' installation instructions and recommendations, except where more restrictive requirements are specified.

3.03 SCHEDULE OF JOINT SEALERS

A. Exterior Joints at fiber-cement siding and panel joints.
   1. Use Silicone-Latex sealants, paintable type.
   2. Joint shape: Concave joint configuration.

B. Interior inside corners of all glazed tile walls; Mildew-Resistant Silicone Sealant color to match tile.

C. Interior Joints for Which No Other Sealer Is Indicated:
   1. Use one of the following sealants:

a. Use Silicone-Latex sealants, paintable type.
b. Mildew-resistant silicone sealant at all ceramic tile corners (color to match gray wall tile) and at fixtures.

2. Use bond-breaker tape.
3. Joint shape: Concave joint configuration.

END OF SECTION 07900

SECTION 08310- ACCESS DOORS AND FRAMES

PART 1 GENERAL

1.1 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Roof framing and opening support.

1.2 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Manufacturer's data sheets, including:

1.3 DELIVERY, STORAGE, AND HANDLING

A. Store attic access door hatch in manufacturer's unopened packaging until ready for installation.

B. Store attic access door hatch until installation inside under cover in dry area out of direct sunlight.

1.4 WARRANTY

A. Limited Warranty: One year against defective material and workmanship, covering parts only, no labor or freight. Defective parts, if deemed so by the manufacturer, will be replaced at no charge, freight excluded, upon inspection at manufacturer's plant which warrants same.

PART 2 PRODUCTS

2.1 ACCESS DOOR AND FRAME

A. Non-rated attic access doors and frames
1. Door: White mineral board face, extruded polystyrene (EPS) R-42 core 10” thick and rubber sealing gasket over top of EPS core. Door is pre-finished.
2. Frame: plywood frame is installed in a wood framed rough opening. Frame is 12” tall and provides insulation dam.
3. Trim: Tapered wood trim is pre-finished.
4. Handles: Two recessed handles
5. Seal: for air leakage
6. Rigid insulation board

PART 3 EXECUTION

3.1 EXAMINATION

A. If substrate preparation is the responsibility of another installer, notify Architect of

unsatisfactory preparation before proceeding.

B. Examine materials upon arrival at site. Notify the carrier and manufacturer of any damage.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.3 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 09260 - GYPSUM BOARD SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Gypsum wallboard and ceiling board.
   2. Drywall finishing.

1.02 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

2.01 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.

2.02 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.

2.03 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.

2.04 MISCELLANEOUS MATERIALS

A. General: Provide miscellaneous materials as produced or recommended by manufacturer of gypsum products.

PART 3 - EXECUTION

3.01 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 Metal Framing:
   1. Single-layer application: Install gypsum board by the following method:
      a. Screw attachment.

3.02 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 09260

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Painting and finishing of exposed exterior items and surfaces.
   2. Painting and finishing of exposed interior items and surfaces.

1.02 DEFINITIONS

A. DFM (dry film mils): Thickness, measured in mils, of a coat of paint in the cured state.

1.03 SUBMITTALS

A. Product Data: Manufacturer's technical data sheets for each coating.
B. Color and Texture Samples:
   1. Provide for each coating system, color, and texture and applied to representative substrate samples.
      a. Prepare samples to show bare, prepared surface and each successive coat.
      b. Label each sample with coating name and color.
   2. Miscellaneous substrates: 12-by-12-inch hardboard.
   3. Concrete: 8-inch square samples.
   4. Wood: 8-inch square samples for surfaces; 8-inch long samples for trim.
   5. Metal: 5-by-7-inch samples.

1.04 QUALITY ASSURANCE

A. Materials: All coating materials required by this section shall be provided by a single manufacturer, unless otherwise required or approved.
B. Applicator: Firm with successful experience in painting work similar in scope to work of this project.
   1. Maintain throughout duration of the work a crew of painters who are fully qualified to satisfy requirements of the specifications.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials in manufacturer's original containers bearing coating name and color, material composition data, date of manufacture, legal notices if applicable, and mixing, thinning, and application instructions.

1.06 PROJECT CONDITIONS

A. Apply coatings only under the following environmental conditions:
   1. Provide continuous ventilation and heating to prevent accumulation of hazardous fumes and to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and for 48 hours after application of finishes, or longer if required to obtain fuel cure as indicated by manufacturer's instructions.

1.07 COORDINATION

A. Coordination: Where special coatings will be applied over shop coatings specified in other sections, coordinate work of such other sections to ensure that only approved, compatible primers are applied.

1.08 MAINTENANCE STOCK

A. At time of completing application, deliver stock of maintenance material to the owner. Furnish not less than one properly labeled and sealed 1-gallon can of each type of finish coat of each color, taken from lots furnished for the work.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. The brand-name products listed in the schedule at the end of this section and made by the following manufacturer of Low or No V.O.C. paints are the basis of the contract documents:
   1. Sherwin Williams Company - Health Spec.

B. Products of the following manufacturers or approved equal, provided they comply with requirements of the contract documents, will be among those considered in accordance with standard substitution procedures:
   1. Benjamin Moore & Company - Pristine EcoSpec.
   2. The Glidden Company* - Lifemaster.

2.02 PRODUCTS

A. Colors:
   1. For multicoat systems, apply each coat using a successively darker tint or shade, unless approved otherwise.
   2. Top coat colors: To be determined by owner/architect.

B. **Lead Content:**
   1. **Not more than 0.06 percent lead** by weight (calculated as lead metal) in the total nonvolatile content of the paint or the equivalent measure of lead in the dried film.
   2. Exception: Where permitted by applicable regulations.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that surfaces and conditions are ready for work in accordance with coating manufacturer's recommendations.

3.02 SURFACE PREPARATION

A. Apply coatings to surfaces that are clean and properly prepared in accordance with manufacturer's instructions. Remove dirt, dust, grease, oils, and foreign matter. Prepare surface for proper texture necessary to optimum coating adhesion and intended finished

appearance. Plan cleaning, preparation, and coating operations to avoid contamination of freshly coated surfaces.

1. Do not apply coatings to labels that identify equipment, fire-resistance ratings, etc.
2. Remove hardware, cover plates, and similar items before applying coatings.
3. Provide protection for non-removable items not scheduled for coating. After application of coatings, install removed items. Use only skilled workmen for removal and replacement of such items.
4. Protect surfaces not scheduled for coating. Clean, repair, or replace to the satisfaction of the Engineer any surfaces inadvertently spattered or coated.
5. Allow substrate to dry thoroughly. Test for moisture in accordance with coating manufacturer's recommendations before applying coatings.
6. Intricate fabricated shapes may be pickled in lieu of hand or power tool cleaning.
7. Before hand or power tool cleaning, remove visible oil, grease, soluble welding residue, and salts by solvent cleaning. After hand or power tool cleaning, re-clean surfaces if necessary.
8. Before touching up coatings damaged by handling or welding, re-prepare damaged surfaces.

3.03 MIXING AND THINNING

A. Remove and discard any skin formed on surface of coatings in containers. Discard any containers where skin comprises 2 percent or more of the remaining material. Do not add thinner except as specifically recommended (not merely permitted) by the coating manufacturer for proper coating application under the circumstances prevailing at the project site when application equipment recommended by the coating manufacturer is employed. Use only the quantities and the types of thinner recommended.

3.04 APPLICATION

A. General:
   1. Apply coatings in accordance with coating manufacturer's instructions and using application method best suited for obtaining full, uniform coverage of surfaces to be coated.
   2. Apply each coat to achieve the dry film thickness per coat recommended by the coating manufacturer. Application rates in excess of those recommended and fewer numbers of coats than specified will not be accepted.
   3. Completed coatings shall be free of defects such as runs, sags, variations in color, lap or brush marks, holidays, and skips.
   4. Apply coatings according to the schedule at the end of this section and as otherwise indicated. Coat all similar surfaces not specifically mentioned unless specifically exempted.
   5. Coat front and back of miscellaneous items such as covers, access panels, and grilles. Apply fully finish coats behind movable items of furniture and equipment before installation. Apply prime coat only behind non-movable items of furniture and equipment before installation.
   6. Sand gloss coats before applying subsequent coatings.

B. Remove coatings not in compliance with this specification, re-clean and re-prepare surfaces as specified, and apply coatings to comply with the contract documents.

C. Scheduling:
   1. Apply first coat of material to properly prepared surfaces without delay.
      a. Apply successive coats within the time limits recommended by the manufacturer.

3.05 PRIME COATS

A. General:
   1. Field apply bottom coats scheduled except where the contract documents require shop coating of ferrous metals.
   2. Ferrous metals that have not been shop primed shall be field primed promptly after arrival at the site or shall be stored away from the effects of weather.
   3. Re-prepare and retouch damaged prime coats using approved, compatible primer.

B. Primers for Wood and Wood Products:
   1. Apply first coat to wood upon receipt at the site and before wood is exposed to sun or rain.
   2. Back-prime concealed surfaces and cut edges of exterior wood trim prior to installation.

3.06 FINISH COATS

A. Number of Coats and Minimum Coating Thickness:
   1. Apply not less than the number of coats indicated.
   2. Apply each coat to achieve not less than the dry film thicknesses indicated per coat.
   3. Apply additional coats at no additional cost to the owner when necessary to achieve complete hiding, uniform texture, or uniform sheen and appearance.

3.07 CLEANING AND PROTECTION

A. Cleaning:
   1. Clean work area on a daily basis; dispose of spent materials and empty containers. If requested, turn over the Engineer all empty coatings containers used during the course of each day.
   2. Remove all trace of coatings from adjacent surfaces not scheduled to be coated. Remove by appropriate methods that do not damage surfaces.

B. Protection:
   1. Protect work against damage until fully cured. Provide signs identifying wet surfaces until surfaces are adequately cured.
   2. Shortly before final completion of the project, examine surfaces for damage to coatings and restore coatings to new, undamaged condition.
   3. Touch-up of minor damage will be acceptable where result is not visibly different from surrounding surfaces. Where result is different either in color, sheen, or texture, recoat entire surface.

3.08 SCHEDULE OF COATINGS FOR INTERIOR NONTRAFFIC SURFACES

A. **Gypsum Wallboard: Walls.**
   1. Latex acrylic, Eggshell finish.
      a. Bottom coat: Airless High-Build Flat Interior Primer / Finish; 1.1DFM.
      b. Intermediate coat: Same as top coat.
      c. Top coat: High Performance Waterborne Acrylic Eggshell Enamel (match existing)

B. **Wood: trim, display cabinet, shelving.**
   1. Varnish, satin
      a. Stain: Interior Oil Wood Finishing Stain, (color to be selected).
      b. Bottom and intermediate coats: WoodPride 1908 Interior Polyurethane Satin Varnish.
      c. Top coat: Interior Polyurethane Satin Varnish.

C. **Wood: Doors & frames, windows, ceiling, trim, display cabinet, shelving.**
   1. Latex acrylic, Semi-Gloss finish.
      a. Bottom coat: Airless High-Build Flat Interior Primer / Finish; 1.1DFM.
      b. Intermediate coat: Same as top coat.
      c. Top coat: High Performance Waterborne Acrylic Semi-gloss Enamel (match existing)

3.09 SCHEDULE OF COATINGS FOR EXTERIOR NONTRAFFIC SURFACES

A. **Fiber-Cement: Lap siding & trim;**
   1. Acrylic / Latex, Satin, equal to Duration.
      a. Bottom coat: Same as top coat.
      b. Top coat: Exterior Acrylic Flat Finish; 1.5 DFM.

B. **Fiber-Cement: Vertical siding & trim;**
   1. Acrylic / Latex, Satin, equal to Duration.
      a. Bottom coat: Same as top coat.
      b. Top coat: Exterior Acrylic Flat Finish; 1.5 DFM.

C. Plywood Bead board and Batten Strips
   a. Bottom coat: Same as top coat.
   b. Top coat: Exterior Acrylic Satin Finish; 1.5 DFM.

3.10 SCHEDULE OF PAINT COLORS

TO BE DETERMINED.

END OF SECTION 09900

SECTION 10170 – PLASTIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Water-closet compartments and urinal screens (toilet partitions) metallic finish.
   2. Restroom changing table counters and bench.

1.02 SUBMITTALS

A. Product Data.
B. Shop Drawings.
C. Panel Color Verification Samples: Submit 6-inch-square samples of each panel finish type and color to be installed.
D. Manufacturer's Instructions.
E. Maintenance Data.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements: Products and finished installations to be used by handicapped persons must comply with requirements of the 2012 NC Building Code, Chapter 11, Accessibility, and ICC A117.1-2009.

1.04 COORDINATION

A. Use manufacturer's instructions and data to determine anchorage requirements for panel systems. In a timely manner, distribute to affected installers of related work those system components and anchorage devices provided by panel manufacturer for incorporation into other work.

PART 2 - PRODUCTS

2.01 PANEL SYSTEMS

A. Compartments: Provide compartments fabricated of partitions and erected using the following panel systems at locations indicated on the drawings:
   1. Solid plastic, floor-anchored and overhead-braced.
B. Screen Systems: Provide screens erected using the following panel systems at locations indicated on the drawings:
   1. Solid plastic, wall-hung, floor supported, and overhead braced.

2.02 PANEL MATERIALS

A. Plastic Solid Plastic:
   1. Panel material: High-density polyethylene or polypropylene, of homogeneous composition and color throughout, minimum thickness of material 1 inch. Provide seamless panels with eased edges.
   2. Plastic Panel; Continuous mounting brackets in matching colors;
      a. Accurate Partitions, color to be determined.
      b. Sanymetal, color to be determined.
      c. **Scranton Products.*: "**color to be determined**"** for all Toilet partitions and for all changing tables or approved equal; **www.scrantonproducts.com**.
   3. Hardware, head rails, heat-sink, shoes, and accessories. Manufacturer's standard styles. The following materials will be acceptable:
      a. Chromium-plated nonferrous cast alloy ("Zamac").
      b. Extruded aluminum, anodized and polished and stainless steel shoes.

4. Manufacturers: 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 above):
   a. **Scranton Products***: Santana/Comtec/Capitol.
   b. The Sanymetal Products Company, Inc.
   c. Accurate Partitions Corp. Lyons, IL or approved equal.

2.03 ACCESSORIES

A. General: Provide hardware and accessories as necessary to properly install panel systems indicated.
   1. **Hinge**: Self-closing, continuous type hinge, surface-mounted; adjustable to permit door to rest at any angle or closed angle.
   2. Latch for non-handicapped compartments: Surface-mounted type, with emergency access feature.
      Provide stop and keeper with rubber bumper.
   3. Latch for handicapped compartments: Surface-mounted sliding latch (for inner side of compartment doors), with emergency access feature, designed for use by handicapped persons.
   4. Provide **door pulls** on both sides of all doors, including handicapped compartments (for outer side of compartment doors): Suitable for use by handicapped persons.
   5. Combination coat hook with rubber bumper: Provide unit of sufficient length to prevent compartment door from striking installed toilet accessories. Locate a minimum of 16" below top of door.
   6. Leveling-and-anchorage devices: Rust-resistant steel devices as recommended by panel manufacturer for installation of panels in conditions indicated.
   7. **Metal shoes**: Stainless steel. Minimum shoe height: 3 inches.
   8. Fasteners: Tamper-resistant rust-proof, exposed fasteners as recommended by panel manufacturer for installation of panels and hardware in conditions indicated. Finish to match hardware.
   9. **Overhead bracing**: Antigrip headrail bracing fabricated from continuous extruded aluminum, clear anodized finish.
   10. **Brackets**: All panels shall be mounted with continuous panel brackets of aluminum, and anchored to continuous wall blocking.
   11. **Heat-Sink**: Provide solid aluminum strips at the bottom of all panels or Class A rated panels.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Perform installation in accordance with manufacturer's instructions, except where more restrictive requirements are shown, specified, or are necessary for project conditions.

END OF SECTION 10170

SECTION 10810 - TOILET ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Soap Dispenser
   2. Mirrors (2-year warranty).
   3. Grab bars.
   4. Toilet Paper Dispenser.
   5. Sanitary Napkin Disposal Units.
   6. Baby Changing Station

1.02 SUBMITTALS

A. Product Data.
B. Shop Drawings.
C. Manufacturer's Instructions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. For each distinct type of toilet accessory, provide accessories fabricated by a single manufacturer.
B. All model numbers specified are products of **Bobrick* Washroom Equipment, Inc.** unless noted otherwise
C. Only equivalent products of the following other manufacturers complying with the following **Bobrick Washroom Equipment, Inc.** provided they comply with requirements of the contract documents or approved equal, will be considered acceptable:
   1. A & J Washroom Accessories
   2. American Specialties, Inc. (ASI)

2.02 TOILET ACCESSORIES

A. Toilet Paper Dispensers:
   1. Basis of design: Model B-2892 Bobrick.
      a. Classic series surface-mounted twin jumbo roll toilet tissue dispenser, holds 2-rolls 10” diameter, sliding access panel.
B. Automatic Soap Dispenser
   1. Basis of design: Model U135EA, AJW.
C. Grab Bar 36:
   1. Basis of design: B-6806.99 - 36".
      a. Stainless steel, nonslip gripping surface and concealed mounting, Model B-5806.99, by Bobrick.
D. Grab Bar 42:
   1. Basis of design: B-6806.99 - 42".
      a. Stainless steel, nonslip gripping surface and concealed mounting, Model B-5806.99, by Bobrick.
E. Grab Bar 18:
   1. Basis of design: B-5806.99 - 18".
      a. Stainless steel, nonslip gripping surface and concealed mounting, Model B-5806.99, by Bobrick.
F. Stainless Steel Horizontal Wall Mounted Baby Changing Station: Koala Kare Model KB110-SSWM

G. Partition Mounted Sanitary Napkin Disposal:
   1. Basis of design: ASI 0472-1.
      a. Stainless steel.
      b. Serves 2-compartments.
H. not used
J. Mirrors: Stainless steel framed, ¼" thick float glass mirror (provide a 2-year warranty from mirrored glass from staining or delaminating and frame rusting);.
   1. Size: 18' x 30"
   2. Frame: Radius edges, with mitered and welded and ground corners, and tamperproof hanging system; burr free satin finish.
   3. Product: Model B-2908 manufactured by Bobrick.

2.03 MATERIALS

A. Stainless steel: Type-304 stainless steel with satin finish, typical for all accessories.
B. Mounting Devices and Fasteners: Provide toilet accessory manufacturer's recommended items for substrates and conditions indicated.

2.04 FABRICATION

A. Manufacturer's Trademarks and Model Numbers: Permanently affix manufacturer's name and model number to unexposed surface of accessory.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Perform installation in accordance with manufacturer's instructions, except where more stringent requirements are shown or specified, and except where project conditions require extra precautions or provisions to ensure satisfactory performance of the work.
B. Accessories Installed for Use by Handicapped Persons: Install as indicated on drawings and in accordance with the 2012 NC Building Code, Chapter 11, Accessibility, and ANSI A117.1.
C. If toilet paper dispensers are installed lower than the minimum shown on the drawings, the **Contractor** is responsible for removing and **replacing** the damaged partition panel and installing the dispenser at the correct height and placement.

END OF SECTION 10810

DIVISION 16: ELECTRICAL

SECTION 16010 - BASIC ELECTRICAL REQUIREMENTS

PART I - GENERAL

1.1 GENERAL CONDITIONS

A. The Stipulations and Conditions stated in this Section, together with all provisions of the "Instructions to Bidders", "General Conditions", "Supplemental General Conditions" and "Special Conditions", hereinbefore set forth, shall apply to this and the other Sections of Division 16.

1.2 GENERAL REQUIREMENTS

A. The General Requirements hereinafter listed apply to the Electrical Work Division. If there is any conflict between the General Requirements and the General Conditions, the General Conditions shall take precedence.

1.3 ALTERNATES

A. Carefully examine all alternates at the back of this Specification and on the Drawings to determine if any work described under the Electrical Section will be affected thereby.

1.4 INTENT

A. The intent of these Drawings and Specifications are to describe the installation of a complete, fully adjusted, and operational system. Therefore, any items shown on Drawings and not specifically called for in the Specifications, or any items specified and not specifically indicated or detailed on the Drawings, or any items neither specified or shown, but which are reasonably incidental to and commonly required to make a complete job, will be furnished and installed by the Electrical Contractor at his own expense.

1.5 DEFINITIONS

A. The Electrical Contractor shall provide all supervision, labor, material equipment, machinery, plant, and any and all other items necessary to complete the Electrical systems. All items of equipment are specified in the singular; however, the Electrical Contractor shall provide the number of items of equipment as indicated on the drawings, and as required for complete systems.

Where the word "provide" is used, it shall mean "furnish and install complete and ready to use”.

1.6 VISIT TO THE SITE

A. The Electrical Contractor shall visit the site before submitting his bid so as to be thoroughly familiar with the job conditions and/or peculiarities. No extra payment will be allowed for anything which could have been anticipated from a visit to the site.

1.7 REGULATORY REQUIREMENTS

A. All work under this section shall be accomplished in strict accordance with State codes. Where these plans and specifications conflict with such codes, the codes shall govern.

B. The Electrical Contractor shall notify the Architect or Engineer of such conflicts in writing prior to receipt of bids.

C. References to the National Electrical Code (NEC), Underwriters Laboratories, Inc. (UL),

and National Fire Protection Association (NFPA) are a minimum installation requirement.

D. The following regulatory shall be used as minimum standards:

AEIC	American Association of Edison Illuminating Companies
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronic Engineers
NCCM	N.C. Construction Manual w/G.S. as listed
NCSBC	N.C. State Building Code
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
U/L	Underwriters' Laboratories, Inc.
OSHA	Occupational Safety and Health Standards
ASHRAE/IES	90.1 energy code

1.8 TEST STANDARDS

A. All material and equipment shall be listed, labeled or certified by a nationally recognized testing laboratory to meet Underwriters Laboratories, Inc., or third party agencies accredited by the North Carolina Building Code Councils latest edition or amendment.

1.9 PERMITS AND FEES

A. NA

1.10 DRAWINGS AND SPECIFICATIONS

A. The Electrical Drawings and Specifications are intended to cover all the work enumerated under the respective headings. The Drawings are diagrammatic only. No Contractor shall take advantage of conflict or error between Drawings and Specifications, or between General Drawings and Mechanical, Plumbing and/or Electrical Drawings, but shall request a clarification of such from the Architect/Engineer, should this condition exist. If there is insufficient time to issue an Addendum for this clarification, the Electrical Contractor shall include in his bid the most expensive of the items in conflict.

B. The Electrical Contractor shall refer to the Architectural and Structural Drawings and Specifications for the general construction of the building, for floors and ceiling heights, for locations of walls, partitions, beams, etc., and shall be guided accordingly for setting of all sleeves, inserts and equipment. No Contractor shall under any circumstances scale drawings for the location of equipment. The Electrical Contractor shall verify the locations of all utility services and electrical equipment.

C. The Electrical Contractor shall keep at least one set of corrected Shop and Design Drawings at the site. Drawings are to be current, denoting approved modifications and actual installed departure. Submit Drawings to Architect/Engineer before final payment is made.

1.11 SUPERVISION

A. The Electrical Contractor performing the work specified shall be required to employ a qualified superintendent or foreman to continuously supervise the installation of their work, with authorization to act as agent. He shall be capable of checking layouts, coordinating and supervising the work, establishing grades and levels and locating chases, openings, hangers, inserts, sleeves, etc.

PART II - PRODUCTS

2.1 STANDARD PRODUCTS

A. Unless otherwise indicated in writing by the Architect/Engineer, the materials to be provided under this Specification shall be standard products of manufacturers regularly engaged in the production of such equipment and shall be the manufacturer's latest design. All items of the same type or rating shall be identical.

2.2 SUBMITTAL

A. The Electrical Contractor shall submit, for approval, detailed Shop Drawings on all major equipment and where requested. No materials or equipment may be delivered to the job site or installed until the Electrical Contractor has in his possession the approved Shop Drawing for the particular material or equipment. The Electrical Contractor shall furnish the number of copies required by the General or Special Conditions of the contract, but no case less than six (6) copies.

B. Submitted material shall be properly labeled indicating specific service for which material or equipment is to be used, Section and Article Number of Specifications governing, Contractor's name and name of job.

C. Approval of equipment will not relieve the Electrical Contractor of compliance with the Specifications even if such approval is made in writing, unless the attention of the Engineer is called to the non-complying features by letter accompanying the submittal data. Approval of submittal data by the Engineer shall not be construed as a complete check of approval of detailed dimensions, weights, gauges, and similar details with the proposed articles. The conformance with the necessary coordination between the various other Contractors and suppliers shall be solely the responsibility of the Electrical Contractor and with no additional expense to the Owner.

2.3 SUBSTITUTIONS

A. Manufacturer's lists are to establish a standard of quality and not intended to limit the selection to these manufacturers. All materials and equipment which are essential and have not been specified or shown shall be new and of the highest grade and quality free from defect or other imperfections. It should be understood that where the words "furnished and installed" are used, it is intended that the Electrical Contractor shall purchase and install all materials required, unless otherwise noted.

B. All materials and equipment proposed as substitutes for these specified shall require a ten (10) day prior approval from the Engineer prior to the bid date. No substitutions will be allowed after the ten (10) day period before the bid date.

C. All products shall be furnished in compliance with NC General Statute 133-3.

2.4 PRODUCT HANDLING

A. Equipment and materials shall be properly stored, adequately protected, and carefully handled to prevent damage before and during installation. Equipment and materials shall be handled, stored and protected in accordance with the manufacturer's recommendations and as approved by the Architect/Engineer. Equipment installed with a factory finish shall be fully protected during construction and shall be maintained free of dust, dirt and foreign matter. Dents and other surface damage shall be repaired or replaced to the satisfaction of the Architect/Engineer at no additional cost to the Owner.

B. The Electrical Contractor shall clean up and remove from the job site all waste materials, packaging, crating, and refuse resulting from his work on a daily basis.

2.5 MATERIALS AND WORKMANSHIP

A. The Electrical Contractor shall perform a first class job, both in material and workmanship. None other will be accepted. Deviations from either will be corrected by the Electrical Contractor at the Electrical Contractor's expense.

B. The material used throughout the work, except when otherwise noted, shall be new and of Specification grade and the best of its kind. No substitutes shall be used unless approved by the Architect/Engineer. All work shall be executed with a maximum speed consistent with safety and good workmanship.

C. Any equipment furnished by the Mechanical Contractor or any other Contractor that is larger than those indicated on the Drawings and described in these Specifications or have different Electrical characteristics, the increase in cost to the Electrical Contractor for larger wires, conduit, circuit breakers, switches, etc. or for changes in work already installed shall be borne by the instigating Contractor.

PART III - EXECUTION

3.1 EXCAVATION AND BACKFILL

A. The Electrical Contractor shall preform any and all trench and pit excavation and backfilling required for the installation of his work. Trenches shall be made with the sides vertical and shall be shored where necessary for the protection of men and equipment. All excavation work shall be done in a careful manner to avoid damage to footers and foundations. The backfilling shall be placed in layers not exceeding 4 inches in depth, wetting each layer as it is placed and thoroughly compacting each layer with Mechanical tamper or other approved means. Any damage done during excavation and backfilling operations to roads, sidewalks, curbs, shrubs, sod, footers, foundations, etc. shall be replaced to its original condition prior to construction at no expense to the owner. All work will be approved by the Engineer.

3.2 SCAFFOLDING, RIGGING AND HOISTING

A. The Electrical Contractor shall furnish all necessary scaffolding, staging, rigging and hoisting required for the completion of his work. All such scaffolding, etc., shall be removed from the premises when its use is no longer required on the job.

3.3 CUTTING AND PATCHING

A. The Electrical Contractor shall provide all cutting and patching necessary to install the work specified in the 16000 Sections. The patching shall match adjacent surface material and finishes.

B. No Structural member shall be cut without the approval of the Engineer and all such cutting shall be done in a manner directed by him.

C. Cutting or Holes:

1. Locate holes in advance where they are proposed in the Structural Sections such as ribs or beams. Obtain the approval of the Engineer prior to drilling through Structural Sections.

2. Cut holes through concrete and masonry in new and existing structures with a

diamond core drill or concrete saw. Pneumatic hammer, impact electric, hand or manual hammer type drills are not allowed.

3.4 WATERPROOFING

A. At floor, exterior wall, and roof conduit penetrations, completely seal clearances around the conduit and make watertight. All work subject to approval of the Engineer.

3.5 EQUIPMENT SPACE AND ARRANGEMENT

A. The equipment shall fit into the space allotted and shall allow adequate clearance for entry, installation, replacement, servicing, and maintenance. The Electrical Contractor shall coordinate the work to ensure that equipment may be moved into place without altering building components or other installations. Access space shall not be less than the equipment manufacturer's requirements. Working clearances shall be not less than N.E.C or other regulatory requirements.

B. These drawings indicate the extent and general arrangement of equipment. If any departures are deemed necessary by the Electrical Contractor, details of such departures and the reasons therefore shall be submitted to the Architect/Engineer for approval as soon as practicable and within 30 days after Award of the Contract. No departure shall be made without written approval of the Architect/Engineer. Any delay on the Contractor's part to provide such submittal will not constitute an extension of the Contract time.

3.6 DAMAGE TO WORK ALREADY IN PLACE

A. The Electrical Contractor shall assume full responsibility for any damage done by him, his agents or employees, to any work already in place. Any such damage done shall be repaired at the Contractor's expense by Mechanics skilled at their respective trades, to the approval of the Architect/Engineer.

3.7 JURISDICTION OF WORK

A. It may become necessary for the Electrical Contractor to furnish labor or materials which are not generally accepted as part of this trade. In cases of this type, he shall contract the work or shall furnish materials and employ workmen of the trade involved in order not to cause any delay or stoppage of work caused by infringement of Trade Agreements as to jurisdiction, alleged or actual.

3.8 COORDINATION WITH OTHER TRADES

A. All work shall be coordinated with other trades involved in the construction project. All work shall be carefully laid out in advance to coordinate Architectural, Structural, Mechanical, Plumbing and Electrical features of construction. The Contractor shall verify at the site all locations, grades, elevations and utility service connections indicated. Any conflicts due to lack of proper coordination shall be brought to the attention of the Architect/Engineer for resolution. The Electrical Contractor shall make required changes or relocations at no additional cost to the Owner.

B. Installation, inspection, and testing of work above ceilings shall be completed and approved by the Architect/Engineer prior to installation of the specified finished ceilings. However, a Ceiling Suspension System may be installed as required for coordination.

C. The Electrical Contractor shall consult with the other trades at the start of the work and periodically thereafter, as required to properly coordinate the various items of work, and to avoid interferences. Should any interferences of any nature develop as the work progresses, such interferences shall be resolved and eliminated as directed. The cost of

any work directed shall be borne by the Subcontractor or Contractors directed to do this work.

3.9 DIVISION OF WORK

A. These paragraphs are intended to show exactly the point of division of work between the Electrical Division and the Mechanical Division or any other division.

C. All equipment covered in the Mechanical Division or any other Division of the Specifications shall be furnished, mounted, and aligned under the respective Division. All starters, controls and wiring for this equipment, including final connection to the same, shall be furnished and installed under that Division.

D. Divisions of the Specifications shall be completed under the respective Division.

E. Under Division 16, the Contractor shall be responsible for providing all line side power wiring, conduit, disconnect switches, and junction boxes as shown on the electrical drawings.

3.10 EQUIPMENT INSTALLATION

A. Manufacturer's Instructions: Equipment shall be installed as recommended by the manufacturer to conform to the requirements of the particular application, in accordance with these Drawings and Specifications.

3.11 OPERATION AND MAINTENANCE MANUALS

A. Prepare maintenance manuals in accordance with Division 1 Section "PROJECT CLOSEOUT". In addition to the requirements specified in Division 1, include the following information for equipment items:

1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.

2. Manufacturer's printed Operating Procedures to include start-up, break-in, and routine and normal Operating Instructions; regulation, control, stopping, shutdown, and emergency instructions and summer and winter operating instructions.

3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and re-assembly; aligning and adjusting instructions.

4. Servicing Instructions and Lubrication Charts and Schedules.

3.12 RECORD DOCUMENTS

A. Prepare record documents in accordance with the requirements in Division 1 Section "PROJECT CLOSEOUT". In addition to the requirements specified in Division 1, indicate installed conditions for:

1. Major raceway systems, size and location, for both exterior and interior; locations of control devices; distribution and branch electrical circuitry; and fuse and circuit breaker size and arrangements.

2. Equipment locations (exposed and concealed) dimensioned from prominent building lines.

3. Approved substitutions, Contract modifications and actual equipment and materials installed.

3.13 GUARANTEE

A. The Electrical Contractor shall present to the Owner a written guarantee covering his work, including all equipment, material and workmanship. This guarantee shall be against all defects in any of the above work, and shall run for a period of one (1) year from the date of written acceptance of the Contractor's work.

B. Any defective work, equipment, material and/or workmanship that develops within the Guarantee period, which is not caused by ordinary wear or abuse by other persons, shall be replaced by the Electrical Contractor without cost to the Owner.

3.14 FINAL INSPECTION

A. When the entire Contract has been completed and the work is ready for final inspection, the Architect/Engineer or his duly authorized representative will make the inspection. At the time of inspection, the Electrical Contractor shall demonstrate to the Architect/Engineer that the various systems and pieces of equipment have been adjusted to operate in accordance with the requirements of the Contract.

B. An authorized Inspector from the North Carolina Department of Insurance shall inspect the project during construction and upon completion of the construction phase. It shall be the responsibility of the Electrical Contractor to notify the Inspector as the work progresses. The NCDOI Inspector can be reached at (919) 661-5880.

3.15 FINAL PAYMENTS

A. All Final Payments are contingent upon all necessary Certificates and/or Approvals cited above, together with the written Guarantee being presented to the Owner.

3.16 DOCUMENTATION

A. All tests shall be completely documented indicated time of day, temperature, and all pertinent test information.

B. All required documentation of readings shall be submitted to the engineer prior to, and as one of the prerequisites for, final acceptance of the project.

END OF SECTION 16010

SECTION 16050 - BASIC ELECTRICAL MATERIALS AND METHODS

PART I - 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 SUMMARY

A. This Section includes limited Scope, General Construction Materials and Methods for Application with Electrical Installations as follows:

1. Miscellaneous metals for support of electrical materials and equipment.

2. Joint sealers for sealing around electrical materials and equipment; and for sealing penetrations in fire and smoke barriers, floors, and foundation walls.

1.3 DEFINITIONS

A. The following definitions apply to excavation operations:

1. Additional Excavation: Where excavation has reached required subgrade elevations, if unsuitable bearing materials are encountered, continue excavation until suitable bearing materials are reached. The Contract Sum may be adjusted by an appropriate Contract Modification.

2. Sub-Base: As used in this Section refers to the compacted soil layer used in pavement systems between the subgrade and the pavement base course material.

3. Sub-Grade: As used in this Section refers to the compacted soil immediately below the slab or pavement system.

4. Unauthorized excavation consists of removal of materials beyond indicated sub-grade elevations or dimensions without specific direction from the Architect.

1.4 SEQUENCE AND SCHEDULING

A. Coordinate the shut-off and disconnection of electrical service with the Owner and the utility company.

PART II - PRODUCTS

2.1 SOIL MATERIALS

A. Sub-Base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, or natural or crushed sand.

B. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100 percent passing a 1½ inch sieve, and not more than 5 percent passing a No. 4 sieve.

C. Backfill and Fill Materials: Materials complying with ASTM D2487 soil classification groups GW, GP, GM, SM, SW, and SP; free of clay, rock, or gravel larger than 2 inches

in any dimension; debris; waste; frozen materials; and vegetable and other deleterious matter.

2.2 MISCELLANEOUS METALS

A. Steel plates, shapes, bars, and bar grating: ASTM A 36.

B. Cold-Formed Steel Tubing: ASTM A 500.

C. Hot-Rolled Steel Tubing: ASTM A 501.

D. Steel Pipe: ASTM A 53, Schedule 40, welded.

E. Fasteners: Zinc-coated, type, grade and class as required.

PART III - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting installation and application of joint sealers. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 EXCAVATION

A. Slope sides of excavations to comply with local codes and ordinances. Shore and brace as required for stability of excavation.

B. Install sediment and erosion control measures in accordance with local codes and ordinances.

C. Dewatering: Prevent surface water and subsurface or groundwater from flowing into excavations and from flooding project site and surrounding area.

1. Do not allow water to accumulate in excavations. Remove water to prevent softening of bearing materials.

2. Provide and establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey surface water to collecting or run-off areas. Do not use trench excavations as temporary drainage ditches.

D. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage.

1. Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.

2. Remove and legally dispose of excess excavated materials and materials not acceptable for use as backfill or fill.

E. Trenching: Excavate trenches for electrical installations as follows:

1. Excavate trenches to the uniform width, sufficiently wide to provide ample working room and a minimum of 6 to 9 inches clearance on both sides of raceways and equipment.

2. Excavate trenches to depth indicated or required.
3. Limit the length of open trench to that in which installations can be made and the trench backfilled within the same day.

4. Where rock is encountered, carry excavation below required elevation and backfill with a layer of crushed stone or gravel prior to installation of raceways and equipment. Provide a minimum of 6 inches of stone or gravel cushion between rock bearing surface and electrical installations.

F. Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F (1 degree 2 C).

G. Backfilling and Filling: Place soil materials in layers to required subgrade elevations for each area classification listed below, using materials specified in Part 2 of this Section.

1. Under walks and pavements, use a combination of sub-base materials and excavated or borrowed materials.

2. Under building slabs, use drainage fill materials.

3. Under piping and equipment, use subbase materials where required over rock bearing surface and for correction of unauthorized excavation.

4. For raceways less than 30 inches below surface of roadways, provide 4-inch thick concrete base slab support. After installation of raceways, provide a 4-inch thick concrete encasement (sides and top) prior to backfilling and placement of roadway sub-base.

5. Other areas, use excavated or borrowed materials.

H. Backfill excavations as promptly as work permits, but not until completion of the following:

1. Inspection, testing, approval, and locations of underground utilities have been recorded.

2. Removal of concrete formwork.

3. Removal of shoring and bracing and backfilling of voids.

4. Removal of trash and debris.

I. Placement and Compaction: Place backfill and fill materials in layers of not more than eight (8) inches in loose depth for material compacted by heavy equipment, and not more than four (4) inches in loose depth for material compacted by hand operated tampers.

J. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification specified below. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

K. Place backfill and fill materials evenly adjacent to structures, piping, and equipment to required elevations. Prevent displacement of raceways and equipment by carrying material uniformly around them to approximately same elevation in each lift.

L. Compaction: Control soil compaction during construction, providing minimum percentage of density specified for each area classification indicated below.

1. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils), determined in accordance with ASTM D 1557 and not less than the following percentages of relative density, determined in accordance with ASTM D 2049, for soils which will not exhibit a well-defined moisture density relationship (cohesion-less soils).

2. Areas Under Structures, Building Slabs and Steps, Pavements: Compact top 12 inches of material, or 95 percent relative density for cohesionless material.

    a. Areas Under Walkways: Compact top 6 inches of subgrade and each layer of backfill or fill material to 90 percent maximum density for cohesive material or 95 percent relative density for cohesionless material.

    b. Other Areas: Compact top 6 inches of subgrade and each layer of backfill or fill material to 85 percent maximum density for cohesive soils, and 90 percent relative density for cohesionless soils.

3. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water. Apply water in minimum quantity necessary to achieve required moisture content and to prevent water appearing on surface during, or subsequent to, compaction operations.

4. Subsidence: Where subsidence occurs at electrical installation excavations during the period 12 months after Substantial Completion, remove surface treatment (i.e., pavement, lawn, or other finish), add backfill material, compact to specified conditions, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent areas.

3.3 ERECTION OF METAL SUPPORTS AND ANCHORAGE

A. Cut, fit, and place miscellaneous metal fabrications accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

B. Field Welding: Comply with AWS "Structural Welding Code".

END OF SECTION 16050

SECTION 16120 - WIRES AND CABLES

PART I - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes Building Wires and Cables and Associated Splices, Connectors and Terminations for Wiring Systems rated 600 Volts and Less.

PART II - PRODUCTS

2.1 BUILDING WIRES AND CABLES

A. UL-listed building wires and cables with conductor material, insulation type, cable construction, and rating as specified in Part 3 "Applications" Article.

B. Rubber Insulation: Conform to NEMA WC 3.

C. Thermoplastic Insulation: Conform to NEMA WC 5.

D. Cross-Linked Polyethylene Insulation: Conform to NEMA WC 7.

E. Ethylene Propylene Rubber Insulation: Conform to NEMA WC 8.

F. Solid conductor for 10 AWG and smaller: Stranded conductor for larger than 10 AWG.

2.2 CONNECTORS AND SPLICES

A. UL-listed factory fabricated wiring connectors of size, ampacity rating, material, and type and class for application and for service indicated.

PART III - EXECUTION

3.1 EXAMINATION

A. Examine raceways and building finishes to receive wires and cables for compliance with installation tolerances and other conditions. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 APPLICATIONS

A. Feeders and Branch Circuits: Type THHN\THWN or XHHW, copper conductor, in raceway.

3.3 INSTALLATION

A. All conductors shall be copper.

B. Minimum conductor size for power and lighting circuits shall be #12 AWG. Maximum conductor size shall be 500 KCMIL AWG.

C. All power and lighting circuits #10 awg and smaller shall be solid copper conductors. Conductor sizes #8 awg and larger shall be Class "B" stranded copper conductors.

D. Pull conductors into raceway simultaneously where more than one is being installed in same raceway.

1. Use pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation.

2. Use pulling means, including fish tape, cable, rope, and basket weave wire/cable grips that will not damage cables or raceway.

E. Conductor Splices: Keep to minimum.

F. Wiring at Outlets: Install with at least 8 inches of slack conductor at each outlet.

G. Connect outlets and components to wiring and to ground as indicated. Tighten to UL Standard 486A.

H. Power and Lighting circuits shall have individual neutral conductors.

I. All power circuits noted for computer equipment with isolated grounding shall be individually installed in a separate conduit with separate phase, neutral conductor, grounding conductor, and isolated grounding conductor, unless noted otherwise.

J. In no case shall any wire installed to a device exceed the U.L. rating of the device.

3.4 SPLICING

A. Joints in solid conductors shall be using Idea "wire nuts", 3M Company "scotch lock", or "T&B" "PIGGY" connectors in junction boxes, outlet boxes and lighting fixtures.

B. "Sta-kon" or other permanent type crimp connectors shall not be used for branch circuit connections.

C. Joints in stranded conductors shall be spliced by approved mechanical connectors. Solderless mechanical connectors similar to "NSI" multi-cable connector blocks for splices and taps, provided with UL approved insulating covers, may be used instead of mechanical connectors plus tape.

D. Conductors in all cases, shall be continuous from outlet to outlet unless "taps" are required and shall be made only within outlet, junction boxes, troughs and gutters.

3.5 VOLTAGE DROP

A. Where conductor length from the panel to the first outlet on a 120 volt circuit exceeds 100 feet, the branch circuit conductors from the panel to the first outlet shall be not smaller than #10 awg.

3.6 FIELD QUALITY CONTROL

A. Testing: Upon installation of wires and cables and before electrical circuitry has been energized, demonstrate product capability and compliance with requirements.

1.Procedures: Perform each Visual and Mechanical Inspection and Electrical Test stated in NETA Standard ATS, Section 7.3.1. Certify compliance with test parameters.

B. Correct malfunctioning products at site, where possible, and re-test to demonstrate

compliance; otherwise, remove and replace with new units and re-test.

3.7 ELECTRICAL TESTING

A. Feeder Insulation Resistance Testing:

1. All current carrying phase conductors and neutrals shall be tested as installed, and before connections are made, for insulation resistance and accidental grounds. This shall be done with a 500-volt megger. The procedures listed below shall be followed:

2. Minimum readings shall be one million (1,000,000) or more ohms for # 6 AWG wire and smaller, 250,000 ohms or more for #4 wire or larger, between conductor and the grounding conductor.

3. After all devices and equipment are installed and all connections completed to each panel, the Contractor shall disconnect the neutral feeder conductor from the neutral bar and take a megger reading between the neutral bar and the grounded enclosure. If this reading is less than 250,000 ohms, the Contractor shall disconnect the branch circuit neutral wires from the neutral bar. Test each neutral conductor separately until the low readings are found. The Contractor shall correct troubles, reconnect and re-test until at least 250,000 ohms from the neutral bar to the grounded panel can be achieved with only the neutral feeder disconnected.

4. The Contractor shall send a letter to the Engineer certifying that the above has been done and tabulating the megger readings for each panel. This shall be done at least four (4) days prior to final inspection.

5. At the final inspection, the Contractor shall furnish a megger and show the Engineers that the panels comply with the above requirements. He shall also furnish a hook-on type ammeter and a voltmeter and take current and voltage readings as directed by the representatives.

END OF SECTION 16120

SECTION 16515 - INTERIOR LIGHTING

PART I - 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 SUMMARY

A. This Section includes interior lighting fixtures, lamps, ballasts, emergency lighting units, and accessories.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data describing fixtures, lamps, ballasts, and emergency lighting units. Arrange product data for fixtures in order of fixture designation. Include data on features and accessories and the following information:

1. Outline drawings of fixtures indicating dimensions and principal features.

2. Electrical ratings and photometric data with specified lamps and certified results of independent laboratory tests.

3. Data on batteries and chargers of emergency lighting units.

4. Shop Drawings from manufacturers detailing non-standard fixtures and indicating dimensions, weights, methods of field assembly, components, features and accessories.

5. Non-returnable samples, when requested by Engineer, for verification purposes of specific individual fixtures.

1.4 QUALITY ASSURANCE

A. Comply with NFPA 70 "National Electrical Code" for components and installation.

B. Listing and Labeling: Provide fixtures that are listed and labeled for their indicated use on the Project.

C. Coordination of Fixtures With Ceiling: Coordinate fixtures mounting hardware and trim with the ceiling system. Provide plaster or sheet-rock trims when required on the project whether indicated or not at no additional cost to the Owner. Coordinate with Architectural Plans before ordering fixtures.

1.5 WARRANTY

A. Minimum warranty period on emergency lights shall be three (3) years from date acceptance. Warranty shall include all parts (less lamps).

B. All other lighting products shall be warranted for a period of not less than 1 year from date of acceptance. This warranty does not include miscellaneous parts which are external to the product (i.e. lamps) which are considered maintenance item.

PART II - PRODUCTS

2.1 FIXTURES - GENERAL

A. Comply with the requirements specified in the Articles below and the Lighting Fixture Schedule on the Drawings.

2.2 FIXTURE COMPONENTS - GENERAL

A. Metal Parts: Free from burrs and sharp corners and edges.

B. Sheet Metal Components: Steel, except as indicated. Components are formed and supported to prevent warping and sagging.

C. Doors, Frames, and Other Internal Access: Smooth operating and free from light leakage under operating conditions. Arrange to permit re-lamping without use of tools. Arrange doors, frames, lenses, diffusers, and other pieces to prevent accidental falling during re-lamping and when secured in the operating position. Light seal strips inside the fixture will not be allowed.

D. Reflecting Surfaces: Minimum reflectances as follows, except as otherwise indicated:

1. White Surfaces: 85 percent

2. Specular Surfaces: 83 percent

3. Diffusing Specular Surfaces: 75 percent

4. Laminated Silver Metalized Film: 90 percent

E. Lenses, Diffusers, Covers, and Globes: 100 percent virgin acrylic

1. Plastic: Highly resistance to yellowing and other changes due to aging, exposure to heat and UV radiation.

2. Lens Thickness: 0.125 inches minimum

2.3 SUSPENDED FIXTURE SUPPORT COMPONENTS

A. Single-Stem Hangers: ½ inch steel tubing with swivel ball fitting and ceiling canopy. Finish same as fixture.

B. Twin-Stem Hangers: Two, ½ inch steel tubes with single canopy arranged to mount a single fixture. Finish same as fixture.

C. Rod Hangers: 3/16 inch diameter cadmium plated, threaded steel rod.

2.4 FLUORESCENT FIXTURES

A. Electronic Ballast:

1. Ballast to be "UL listed, Class P”.

2. Ballast to be "Sound Rated A”.

3. Ballast enclosure size shall be same as or smaller than, magnetic ballast.

4. Light regulation shall be +/- 10% input voltage variation.

5. Ballast shall have high power factor (minimum of 90%).

6. Lamp current crest factor shall be equal to, or less than, 1.7.

7. Input current third harmonics shall not exceed ANSI recommendations (32% total harmonic distortion, 27.5% of the third triplets).

8. Flicker shall be 15% or less with any lamp suitable for the ballast.

9. Ballast design shall withstand line transients per IEEE 587, Category A.

10. Ballast case temperature shall not exceed 25 degrees C rise over 40 degrees C ambient.

11. Ballast shall meet FCC Rules and Regulations, Part 18.

12. Parallel wiring between the ballast and fixture is recommended.

13. Minimum of five (5) years warranty is required with each electronic ballast.

14. The manufacturer shall have not less than 5 years of experience in manufacturing electronic ballast.

B. Provide disconnecting means per NEC 410.130 G.

C. Low Temperature Ballast Minimum Starting Temperature: Minus 20 degrees C

D. Where compact fluorescent light fixtures are specified, "High Power Factor" electronic ballast shall be standard.

2.5 FLUORESCENT LAMPS

A. All fluorescent lamps to be {41} K-rated unless noted otherwise.

2.6 EXIT SIGNS

A. Conform to UL 924, "Emergency Lighting and Power Equipment".

1. Arrows: Include as indicated.

B. Emergency Exit Signs shall be of the "LED" style.

C. Units shall be completely self-contained, provided with maintenance-free battery, automatic charger, and other features. Luminaire must be third-party listed as emergency lighting equipment, and meet or exceed the following standards: NEC, NC Building Code, Volume X Energy code, NFPA-101, and NEMA Standards.

D. BATTERY-It shall be sealed, maintenance-free type, with minimum of 90 minutes operating endurance. Must have a normal life expectancy of 10 years. Batteries shall be a high temperature type with an operating range of 0 degree C to 60 degrees C and contain a resealable pressure vent, a sintered + positive and – negative terminal.

E. CHARGER- It shall be fully automatic solid state type, full wave rectifying, with current limiting. Charger shall restore the battery to its full charge within 24 hours after a discharge of 90 minutes under full rated load. The unit shall be activated when the voltage drops below 80%. A low voltage disconnect switch shall be included if LEAD

battery is used to disconnect the battery from the load and prevent damage from a deep discharge during extended power outage.

F. ADDITIONAL FEATURES- Pilot light to indicate the unit is connected to AC power. The battery shall have rate discharge pilot light, unless self-diagnostic type. Test switch to simulate the operation of the unit upon loss of AC power by energizing the lamps from the battery. This simulation must also exercise the transfer relay.

G. WARRANTY-The entire unit shall be warranted for 3 years. The battery must have an additional 2 more years pro-rated warranty. Warranty shall start from the date of project final acceptance. Warranty shall be included in the contract document.

H. LED-The use of LED is required due to their reliable performance, low power consumption, and limited maintenance requirements. Maximum LED failure rate shall be 25% within a seven (7) year period; otherwise, if exceeded, manufacturer shall replace the complete unit at no charge to the owner.

2.7 EMERGENCY LIGHTING UNITS

A. Conform to UL 924, "Emergency Lighting and Power Equipment" requirements for "Unit Equipment". Provide self-contained units with the following features and additional characteristics as indicated.

B. Units shall be completely self-contained, provided with maintenance-free battery, automatic charger, and other features. Luminaire must be third-party listed as emergency lighting equipment, and meet or exceed the following standards: NEC, NC Building Code, Volume X Energy code, NFPA-101, and NEMA Standards.

C. BATTERY-It shall be sealed, maintenance-free type, with minimum of 90 minutes operating endurance. Must have a normal life expectancy of 10 years. Batteries shall be a high temperature type with an operating range of 0 degree C to 60 degrees C and contain a resealable pressure vent, a sintered + positive and – negative terminal.

D. CHARGER- It shall be fully automatic solid state type, full wave rectifying, with current limiting. Charger shall restore the battery to its full charge within 24 hours after a discharge of 90 minutes under full rated load. The unit shall be activated when the voltage drops below 80%. A low voltage disconnect switch shall be included if LEAD battery is used to disconnect the battery from the load and prevent damage from a deep discharge during extended power outage.

E. ADDITIONAL FEATURES- Pilot light to indicate the unit is connected to AC power. The battery shall have rate discharge pilot light, unless self-diagnostic type. Test switch to simulate the operation of the unit upon loss of AC power by energizing the lamps from the battery. This simulation must also exercise the transfer relay.

F WARRANTY-The entire unit shall be warranted for 3 years. The battery must have an additional 2 more years pro-rated warranty. Warranty shall start from the date of project final acceptance. Warranty shall be included in the contract document.

2.8 FINISH

A. Steel Parts: Manufacturer's standard finish applied over corrosion-resistant primer, free of streaks, runs, holidays, stains, blisters, and defects. Remove fixtures showing evidence of corrosion during project warranty period and replace with new fixtures.

B. Paint parts after fabrication.

PART III – EXECUTION

3.1 INSTALLATION

A. Setting and Securing: Set units plumb, square, and level with ceiling and walls, and secure according to manufacturer's printed instructions and approved Shop Drawings.

B. Support For Recessed and Semi-Recessed Fixtures: Units shall be supported independent from suspended ceiling. Install fixture with support wires at 2 diagonal corners to the structure or building steel.

1. Fixtures of Sizes Less Than Ceiling Grid: Center in the acoustical panel. Support fixtures independently with at least two ¾ inch metal channels spanning and secured to the ceiling tees.

2. Install support clips or screws for recessed fixtures, securely fastened to ceiling grid members, at or near each fixture corners.

3. Support wires shall be not less than the support wires for the ceiling system.

C. Support for Suspended Fixtures: Brace pendants and rods that are 4 feet long or longer to limit swinging. Support stem mounted single unit suspended fluorescent fixtures with twin stem hangers. For continuous rows, use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of chassis, including one at each end.

D. Lamping: See Schedule on Drawings, or provide standard lamp for the rating of the fixture.

E. Where mounting height for fixtures are not scheduled, coordinate with the Engineer before any installation.

3.2 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

B. Emergency Battery Units Test: Verify normal operation of each fixture after fixtures have been installed and circuits have been energized with normal power source. Interrupt electrical energy for a period of not less than 90 minutes to demonstrate proper operation of Emergency Lighting installation. Include the following in tests of emergency lighting equipment.

1. Duration of supply
2. Low battery voltage shut-down
3. Normal transfer to battery source and retransfer to normal
4. Low supply voltage transfer

C. Replace or repair malfunctioning fixtures and components, then retest. Repeat procedure until all units operate properly.

D. Contractor shall perform a test on each unit after it is permanently installed and charged for a minimum of 24 hours. Battery shall be tested for 90 minutes. The battery test shall be done 10 days prior to final inspection by the State Construction Office. Any unit which fails the test must be repaired or replaced and tested again. Copy of the test report shall be sent to the State Construction Office.

3.3 ADJUSTING AND CLEANING

A. Clean fixtures upon completion of installation. Use methods and materials recommended by manufacturer.

B. Adjust aimable fixtures to provide required light intensities.

END OF SECTION 16515

DIVISION 15A - PLUMBING

SECTION 15010 - BASIC PLUMBING REQUIREMENTS

PART I - GENERAL

1.1 GENERAL CONDITIONS

A. The stipulations and conditions stated in this Section, together with all provisions of the "Instructions to Bidders", "General Conditions", "Supplemental General Conditions", and "Special Conditions", hereinbefore set forth, shall apply to this and the other Sections of Division 15A.

1.2 GENERAL REQUIREMENTS

A. The General Requirements hereinafter listed apply to the Plumbing Work Division. If there is any conflict between the General Requirements and the General Conditions, the General Conditions shall take precedence.

1.3 ALTERNATES

A. Carefully examine all alternates at the back of this specification to determine if any work described under the Plumbing Section will be affected thereby.

1.4 INTENT

A. The intent of these drawings and specifications are to describe the installation of a complete, fully adjusted and operational system. Therefore, any items shown on drawings and not specifically called for in the specifications, or any items specified and not specifically indicated or detailed on the drawings, or any items neither specified or shown, but which are reasonably incidental to and commonly required to make a complete job, will be furnished and installed by the Plumbing Contractor at his own expense.

1.5 DEFINITIONS

A. The Plumbing Contractor shall provide all supervision, labor, material equipment, machinery, plant, and any and all other items necessary to complete the plumbing systems. All items of equipment are specified in the singular; however, the Plumbing Contractor shall provide the number of items of equipment as indicated on the drawings, and as required for complete systems.

Where the word "provide" is used, it shall mean "furnish and install complete and ready to use".

1.6 VISIT TO THE SITE

The Plumbing Contractor shall visit the site before submitting his bid so as to be thoroughly familiar with the job conditions and/or peculiarities. No extra payment will be allowed for anything which could have been anticipated from a visit to the site.

1.7 REGULATORY REQUIREMENTS

A. All work under this Section shall be accomplished in strict accordance with State codes. Where these plans and specifications conflict with such codes, the codes shall govern. The Plumbing Contractor shall notify the Architect or Engineer of such conflicts in writing prior to receipt of bids.

1.8 PERMITS AND FEES

A. NA

1.9 DRAWINGS AND SPECIFICATIONS

A. The Plumbing Drawings and Specifications are intended to cover all the work enumerated under the respective headings. The drawings are diagrammatic only. No Contractor shall take advantage of conflict or error between Drawings and Specifications, or between General Drawings and Mechanical, Plumbing and/or Electrical Drawings, but shall request a clarification of such from the Architect/Engineer, should this condition exist. If there is insufficient time to issue an Addendum for this clarification, the Plumbing Contractor shall figure on the most expensive of the items in conflict.

B. The Plumbing Contractor shall refer to the Architectural and Structural Drawings and Specifications for the general construction of the building, for floors and ceiling heights, for locations of walls, partitions, beams, etc., and shall be guided accordingly for setting of all sleeves, inserts and equipment. The Plumbing Contractor shall not under any circumstances scale drawings for the location of equipment. The Plumbing Contractor shall verify the locations of all utility services.

C. The Plumbing Contractor shall keep at least one set of corrected Shop and Design Drawings at the site. Drawings are to be current, denoting approved modifications and actual installed departure. Submit drawings to Architect/Engineer before final payment is made.

1.10 SUPERVISION

A. The Plumbing Contractor performing the work specified shall be required to employ a qualified Superintendent or Foreman to continuously supervise the installation of their work, with authorization to act as agent. Contractors: He shall be capable of checking layouts, coordinating and supervising the work, establishing grades and levels, and locating chases, openings, hangers, inserts, sleeves, etc.

PART II - PRODUCTS

2.1 STANDARD PRODUCTS

A. Unless otherwise indicated in writing by the Architect/Engineer, the materials to be provided under this Specification shall be standard products of manufacturers regularly engaged in the production of such equipment and shall be the manufacturer's latest design. All items of the same type or rating shall be identical.

2.2 SUBMITTAL

A. The Plumbing Contractor shall submit, for approval, detailed shop drawings on all major equipment and where requested. No materials or equipment may be delivered to the job site or installed until the Plumbing Contractor has in his possession the approved shop drawing for the particular material or equipment. The Plumbing Contractor shall furnish the number of copies required by the General or Special Conditions of the contract, but no case less than six (6) copies.

B. Submitted material shall be properly labeled indicating specific service for which material or equipment to be used, section and article number of specifications governing, Contractor's name and name of job.

C. Approval of equipment will not relieve the Plumbing Contractor of compliance with the Specifications even if such approval is made in writing, unless the attention of the Engineer is called to the non-complying features by letter accompanying the submittal data. Approval of Submittal Data by the Engineer shall not be construed as a complete check of approval of detailed dimensions, weights, gauges, and similar details with the proposed articles. The conformance with the necessary coordination between the various other Contractors and suppliers shall be solely the responsibility of the Plumbing Contractor and with no additional expense to the Owner.

2.3 SUBSTITUTIONS

A. Manufacturer's lists are to establish a standard of quality and not intended to limit the selection to these manufacturers. All materials and equipment which are essential and have not been specified or shown, shall be new and of the highest grade and quality and free from defect or other imperfections. It should be understood that where the words "furnished and installed" are used, it is intended that the Plumbing Contractor shall purchase and install all materials required.

B. All materials and equipment proposed as substitutes for these specified shall require a ten (10) day prior approval from the Engineer prior to the bid date. No substitutions will be allowed after the ten (10) day period before the bid date.

2.4 PRODUCT HANDLING

A. Equipment and materials shall be properly stored, adequately protected, and carefully handled to prevent damage before and during installation. Equipment and materials shall be handled, stored and protected in accordance with the manufacturer's recommendations and as approved by the Architect/Engineer. Equipment installed with a factory finish shall be fully protected during construction and shall be maintained free of dust, dirt, and foreign matter. Dents and other surface damage shall be repaired or replaced to the satisfaction of the Architect/Engineer at no additional cost to the Owner.

B. The Plumbing Contractor shall clean up and remove from the job site all waste materials, packaging, crating, and refuse resulting from his work on a daily basis.

2.5 MATERIALS AND WORKMANSHIP

A. The Plumbing Contractor shall perform a first class job, both in material and workmanship. None other will be accepted. Deviations from either will be corrected by the Plumbing Contractor at the Plumbing Contractor's expense.

B. The material used throughout the work, except when otherwise noted, shall be new and of the best of its kind. No substitutes shall be used unless approved by the Architect/Engineer. All work shall be executed with a maximum speed consistent with safety and good workmanship.

C. Any equipment furnished by the Plumbing Contractor that is larger than those indicated on the drawings and described in these Specifications or have different electrical characteristics, the increase in cost to the Electrical Contractor for larger wires, conduit, circuit breakers, switches, etc. or for changes in work already installed shall be borne by the instigating Contractor.

PART III - EXECUTION

3.1 EXCAVATION AND BACKFILL

A. The Plumbing Contractor shall preform any and all trench and pit excavation and backfilling required for the installation of his work. Trenches shall be made with the sides vertical and shall be shored where necessary for the protection of men and equipment. All excavation work shall be done in a careful manner to avoid damage to footers and foundations. The backfilling shall be placed in layers not exceeding 4 inches in depth, wetting each layer as it is placed, and thoroughly compacting each layer with mechanical tamper or other approved means. Any damage done during excavation and backfilling operations to roads, sidewalks, curbs, shrubs, sod, footers, foundations, etc. shall be replaced to its condition prior to construction at no expense to the Owner.

3.2 SCAFFOLDING, RIGGING AND HOISTING

A. The Plumbing Contractor shall furnish all necessary scaffolding, staging, rigging and hoisting required for the completion of his work. All such scaffolding, etc., shall be removed from the premises when its use is no longer required on the job.

3.3 CUTTING AND PATCHING

A. The Plumbing Contractor shall provide all cutting and patching necessary to install the work specified in this section. The patching shall match adjacent surfaces.

B. No structural member shall be cut without the approval of the Engineer, and all such cutting shall be done in a manner directed by him.

3.4 EQUIPMENT SPACE AND ARRANGEMENT

A. The equipment shall fit into the space allotted and shall allow adequate clearance for entry, installation, replacement, servicing, and maintenance. The Plumbing Contractor shall coordinate the work to ensure that equipment may be moved into place without altering building components or other installations. Access space shall not be less than the equipment manufacturer's requirements.

B. These drawings indicate the extent and general arrangement of equipment, piping, and ductwork. If any departures are deemed necessary by the Plumbing Contractor, details of such departures and the reasons therefore shall be submitted to the Architect/Engineer for approval as soon as practicable and within 30 days after award of the contract. No departure shall be made without written approval of the Architect/Engineer.

3.5 DAMAGE TO WORK ALREADY IN PLACE

A. The Plumbing Contractor shall assume full responsibility for any damage done by him, his agents or employees, to any work already in place. Any such damage done shall be repaired at the Contractor's expense by mechanics skilled at their respective trades to the approval of the Architect/Engineer.

3.6 JURISDICTION OF WORK

A. It may become necessary for the Plumbing Contractor to furnish labor or materials which is not generally accepted as part of this trade. In cases of this type, he shall contract the work or shall furnish materials and employ workmen of the trade involved in order not to cause any delay or stoppage of work caused by infringement of trade agreements as to jurisdiction, alleged or actual.

3.7 COORDINATION WITH OTHER TRADES

A. All work shall be coordinated with other trades involved in the construction project. All work shall be carefully laid out in advance to coordinate Architectural, Structural, Mechanical, Plumbing and Electrical features of construction. The Plumbing Contractor

shall verify at the site all locations, grades, elevations, and utility service connections indicated. Any conflicts due to lack of proper coordination shall be brought to the attention of the Architect/Engineer for resolution. The Plumbing Contractor shall make required changes or relocations at no additional cost to the Owner.

B. Installation, inspection, and testing of work above ceilings shall be completed and approved by the Architect/Engineer prior to installation of the specified finished ceilings. However, ceiling suspension system may be installed as required for coordination.

C. The Plumbing Contractor shall consult with the other trades at the start of the work and periodically thereafter, as required to properly coordinate the various items of work, and to avoid interferences. Should any interferences of any nature develop as the work progresses, such interferences shall be resolved and eliminated as directed. The cost of any work directed shall be borne by the Subcontractor or Contractors directed to do this work.

3.8 DIVISION OF WORK

A. This paragraph is intended to show exactly the point of division of work between the Electrical Division and the Plumbing Division.

B. All equipment covered in the Plumbing Division of the specifications shall be furnished, mounted, and aligned under the Plumbing Division. All individual motor starters, unless indicated as part of a motor control center, for this equipment shall be furnished and installed by the Plumbing Contractor.

C. All final electrical connections to equipment covered in the Plumbing Division of the specifications shall be completed under the Plumbing Division.

D. The Electrical Contractor shall provide a disconnect switch or junction box for each item of equipment under Division 16.

E. Electrical equipment and wiring that is provided by the Plumbing Contractor shall be in accordance with the Electrical specification.

3.9 EQUIPMENT INSTALLATION

A. Final connections to equipment, including pipe, duct, and controls, shall be provided under applicable sections of this Division, unless otherwise specified or indicated.

B. Manufacturer's Instructions: Equipment shall be installed as recommended by the manufacturer to conform to the requirements of the particular application, in accordance with these drawings and specifications.

3.10 OPERATION AND MAINTENANCE MANUALS

A. One complete manual as outlined herein shall be submitted for approval before conducting instruction sessions in operation, before systems or equipment tests are performed, and before final or beneficial occupancy.

B. Manuals shall have rigid covers and index tabs for each major piece of equipment, auxiliaries, and systems. The following shall be inscribed on the cover: the words "OPERATION AND MAINTENANCE MANUAL", the name and location of the building, the name of the Section, such as "Plumbing" and the name of the Plumbing Contractor. Two copies of each approved manual shall be submitted to the Owner and one copy shall be submitted to the Architect/Engineer.

C. Each piece of equipment shall be listed and identified with the same name, mark, number, or other identification as noted or scheduled in the Contract Documents.

D. Manuals shall include the following:

1. Complete operating installations, covering start-up and shutdown for all components installed.

2. Legible copies of all shop drawings. Any comments incorporated in "as noted" approvals of shop drawings shall be recorded on the drawings included in the manuals.

3. All equipment Maintenance and Service Manuals.

E. A complete parts list for each piece of equipment.

F. All descriptive literature for the equipment.

G. Operating characteristics, performance data, ratings, and curves for each piece of equipment.

H. Internal wiring and control diagrams.

I. All other information pertinent to the maintenance and servicing of equipment and systems provided in the project.

J. Name, address, and telephone number for service on each manufacturer's equipment.

3.11 OPERATING INSTRUCTIONS

A. After all equipment and services are in operation, and the Operation and Maintenance Manuals are available, an instruction and training session shall be conducted for the Owner's operating personnel.

B. Instruction sessions shall be conducted during the Owner's normal working periods, and at times and locations satisfactory to the Owner.

3.12 EQUIPMENT START-UP

A. No equipment shall be placed in operation until it has been inspected by a qualified representative of the manufacturer and Certified to be ready for operation. The manufacturer's representative shall supervise the start-up operation and shall be responsible for all adjustments required to meet design conditions. Such services shall be at no additional cost to the Owner.

3.13 GUARANTEE

A. The Plumbing Contractor shall present to the Owner a written guarantee covering his work, including all equipment, material and workmanship. This guarantee shall be against all defects in any of the above work, and shall run for a period of one (1) year from the date of written acceptance of the Contractor's work.

B. Any defective work, equipment, material and/or workmanship that develops within the guarantee period, which is not caused by ordinary wear or abuse by other persons, shall be replaced by the Plumbing Contractor without cost to the Owner.

3.14 FINAL INSPECTION

A. When the entire Contract has been completed and the work is ready for final inspection, the Architect/Engineer or his duly authorized representative will make the inspection. At the time of inspection, the Plumbing Contractor shall demonstrate to the Architect/Engineer that the various systems and pieces of equipment have been adjusted to operate in accordance with the requirements of the Contract.

3.15 FINAL PAYMENTS

A. All final payments are contingent upon all necessary Certificates and/or Approvals cited above, together with the written Guarantee being presented to the Owner.

END OF SECTION 15010

SECTION 15250 - PLUMBING PIPING INSULATION

PART I - 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 SUMMARY

A. This Section includes Plumbing Pipe Insulation.

1.3 QUALITY ASSURANCE

A. Fire Performance Characteristics: Conform to the following characteristics for insulation including facings, cements, and adhesives, when tested according to ASTM E 84, by UL or other testing or inspecting organization acceptable to the authority having jurisdiction. Label insulation with appropriate markings of testing laboratory.

1. Interior Insulation: Flame spread rating of 25 or less and a smoke developed rating of 50 or less.

2. Exterior Insulation: Flame spread rating of 75 or less and a smoke developed rating of 150 or less.

1.4 SEQUENCING AND SCHEDULING

A. Schedule insulation application after testing of piping systems.

B. Schedule insulation application after installation and testing of heat trace tape.

PART II - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

1. Flexible Elastomeric Cellular:
   a. Armstrong World Industries, Inc.
   b. Halstead Industrial Products
   c. IMCOA
   d. Rubatex Corporation

2.2 FLEXIBLE ELASTOMERIC CELLULAR

A. Material: Flexible expanded closed-cell structure with smooth skin on both sides.

B. Form: Tubular materials conforming to ASTM C 534, Type I.

C. Thermal Conductivity: 0.30 average maximum at 75 degrees F.

D. Coating: Water based latex enamel coating recommended by insulation manufacturer.

2.3 ADHESIVES

A. Flexible Elastomeric Cellular Insulation Adhesive: Solvent-based, contact adhesive recommended by insulation manufacturer.

B. Lagging Adhesive: MIL-A-3316C, non-flammable adhesive in the following Classes and Grades.

1. Class 1, Grade A for bonding glass cloth and tape to un-faced glass fiber insulation, sealing edges of glass fiber insulation, and bonding lagging cloth to un-faced glass fiber insulation.

2. Class 2, Grade A for bonding glass fiber insulation to metal surfaces.

PART III - EXECUTION

3.1 PREPARATION

A. Surface Preparation: Clean, dry, and remove foreign materials such as rust, scale, and dirt.

3.2 INSTALLATION - GENERAL

A. Select accessories compatible with materials suitable for the service. Select accessories that do not corrode, soften, or otherwise attack the insulation or jacket in either the wet or dry state.

B. Apply insulation material, accessories, and finishes according to the manufacturer's printed instructions.

C. Keep insulation materials dry during application and finishing.

D. Apply insulation continuously over fittings, valves and specialties.

E. Apply insulation with a minimum number of joints.

F. Interior Walls and Partitions Penetrations: Apply insulation continuously through walls and partitions, except fire rated walls and partitions.

G. Fire Rated Walls and Partitions Penetrations: Terminate insulation at penetrations through fire rated walls and partitions. Seal insulation ends with vapor barrier coating. Seal around penetration with fire stopping or fire resistant joint sealer.

H. Hangers and Anchors: Apply insulation continuously through hangers and around anchor attachments. Install saddles, shields, and inserts as specified.

1. Inserts and Shields: Cover hanger inserts and shields with jacket material matching adjacent pipe insulation.

3.3 FLEXIBLE ELASTOMERIC CELLULAR INSULATION INSTALLATION

A. Slip insulation on the pipe before making connections wherever possible. Seal joints with adhesive. Where the slip-on technique is not possible, cut one side longitudinally and apply to the pipe. Seal seams and joints with adhesive.

B. Valves, Fittings, and Flanges: Cut insulation segments from pipe or sheet insulation. Bond to valve, fitting, and flange and seal joints with adhesive.

1. Miter cut materials to cover soldered elbows and tees.

2. Fabricate sleeve fitting covers from flexible elastomeric cellular insulation for screwed valves, fittings, and specialties. Miter cut materials. Overlap adjoining pipe insulation.

3.4 FINISHES

A. Flexible Elastomeric Cellular Insulation: After adhesive has fully cured, apply 2 coats of protective coating to exposed insulation.

3.5 PIPE INSULATION SCHEDULES

PIPING	THICKNESS TYPE	INSULATION IN INCHES
Domestic Hot Water Supply	ELASTOMERIC	1/2
Domestic Hot Water Re-Circulating	ELASTOMERIC	1
Domestic Cold Water	ELASTOMERIC	1/2
"P" Trap at Handicapped Fixtures	ELASTOMERIC	1/2 *

(* provide pre-formed insulation kits for the drain and supply lines)

END OF SECTION 15250

SECTION 15410 - PLUMBING PIPING

PART I - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes plumbing piping systems to a point shown on the civil drawings. Systems include the following:

1. Potable water distribution, including cold and hot water supply and hot water circulation.

2. Sanitary Drainage and Vent Systems.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide components and installation capable of producing piping systems with the following minimum working pressure ratings, except where indicated otherwise:

1. Water Distribution Systems, Below Ground: 150 psig.

2. Water Distribution Systems, Above Ground: 125 psig.

3. Soil, Waste and Vent Systems: 10-foot head of water

PART II - PRODUCTS

2.1 SANITARY SEWER PIPING - BURIED

A. Sch. 40 PVC Pipe: ASTM D2665. Fittings: PVC. Joints: ASTM D2564, solvent weld.

2.2 SANITARY SEWER PIPING - ABOVE GRADE

A. Sch. 40 PVC Pipe: ASTM D2665. Fittings: PVC. Joints: ASTM D2564, solvent weld.

2.3 WATER PIPING - BURIED

A. Copper Tubing: ASTM B88, Type K, annealed. Fittings; ANSI/ASME B16.29, wrought copper. Joints: ANSI/ASTM B32, solder, Grade 95TA.

2.4 WATER PIPING - ABOVE GRADE

A. Copper Tubing: ASTM B88, Type L, hard drawn. Fittings: ANSI/ASME B16.23, cast brass, or ANSI/ASME B16.29, wrought copper. Joints: ANSI/ASTM B32, solder, Grade 95TA.

2.5 MANUFACTURERS

A. Acceptable Manufacturers-Valves:

1. Crane
2. Grinnell
3. Nibco
4. Apollo

2.6 GATE VALVES

A. 150 psig rated, bronze body, lever ball type, Apollo or equal.

PART III - EXECUTION

3.1 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION

A. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

B. Route piping in orderly manner and maintain gradient.

C. Install piping to conserve building space and not interfere with use of space.

D. Group piping whenever practical at common elevations.

E. Install piping to allow for expansion and contraction without stressing pipes, joints, or connected equipment.

F. Provide clearance for installation of insulation and access to valves and fittings.

G. Slope water piping and arrange to drain at low points.

H. Establish elevations of buried piping outside the building to ensure not less than 1 ft of cover.

I. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

J. Prepare pipe, fittings, supports, and accessories not pre-finished, ready for finish painting.

K. Establish invert elevations, slopes for drainage to 1/8 inch per foot minimum. Maintain gradients.

L. Excavate in accordance with Sections 15010.

M. Backfill in accordance with Sections 15010.

N. Install bell and spigot pipe with bell end upstream.

O. Copper piping 2” and larger shall be silver-soldered.

P. Install valves with stems upright or horizontal, not inverted.

3.3 APPLICATION

A. Install unions downstream of valves and at equipment or apparatus connections.

B. Install brass male adapters each side of valves in copper piped system. Sweat solder adapters to pipe.

C. Install gate or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

D. Install globe or ball valves for throttling, bypass, or manual flow control services.

3.4 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Prior to starting work, verify system is complete, flushed and clean.

B. Inject disinfectant solution containing 100 ppm of available chlorine and allow to stand for 2 hours before flushing.

C. Flush disinfectant from system until residual is equal to that of incoming water or 1.0 mg/L.

E. Take samples from outlets and analyze in accordance with AWWA C601. Contractor shall engage an independent laboratory to conduct bacteriological and post chlorination tests certifying that the water meets the quality of drinking water. After acceptance by the Engineer of Record, “The Water Test Report for Use” is required to be submitted to SCO prior to requesting the Occupancy Permit.

3.5 SERVICE CONNECTIONS

A. Provide new sanitary sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

END OF SECTION 15410

SECTION 15430 - PLUMBING SPECIALTIES

PART I - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes Plumbing Specialties for water distribution systems; and soil, waste and vent systems.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Submit product data including rated capacities of selected models and weights (shipping, installation, and operation). Indicate materials, finishes, dimensions, required clearances, and methods of assembly of components; and piping and wiring connections.

PART II - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

1. Backflow Preventers:

a. Ames Co., Inc.
b. Hersey Products, Inc., Grinnell Corp.
c. Watts Regulator Co.
d. Wilkins Regulator Div., Zurn Industries, Inc.

2. Water Pressure Regulators:

a. Spence Engineering Co., Inc.
b. Watts Regulator Co.
c. Wilkins Regulator Div., Zurn Industries, Inc.

3. Specialties:

a. Josam Co.
b. Smith by Jay R. Smith Mfg. Co. Div., Smith Industries, Inc.
c. Watts Regulator Co.
d. Woodford Manufacturing Co. Div., WCM Industries, Inc.
e. Zurn by Hydromechanics Div., Zurn Industries, Inc.

2.2 CLEANOUTS

A. Exterior Surfaced Areas: Round cast nickel-bronze access frame and non-skid cover.

B. Exterior Un-Surfaced Areas: Line type with lacquered cast iron body and round epoxy coated gasketed cover.

C. Interior Finished Floor Areas: Lacquered cast iron, two piece body, round with scoriated cover in service areas and round with depressed cover to accept floor finish in finished floor areas.

D. Interior Finished Wall Areas: Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.

2.3 WATER HAMMER ARRESTORS

A. ANSI A112.26.1; sized in accordance with PDI WH-201, pre-charged suitable for operation in temperature range -100 to 300 degrees F and maximum 250 psig working pressure.

2.4 TRAP SEAL PRIMER VALVE:

A. ASSE 1018; water supply fed type, fully automatic 125psig minimum working pressure, Bronze body with atmospheric vented drain chamber, ½ inch threaded or solder joint inlet and outlet connections, Chrome plated, or rough bronze finish. Unit shall be capable of being located on any active water line.

2.5 BACKFLOW PREVENTERS

A. Reduced Pressure Back-flow Preventers: ANSI/ASSE 1013; bronze body with bronze and plastic internal parts and stainless steel springs; two independently operating, spring loaded check valves; diaphragm type differential pressure relief valve located between check valves; third check valve which opens under back pressure in case of diaphragm failure; non-threaded vent outlet; assembled with two gate valves, strainer, and four test cocks.

PART III - EXECUTION

3.1 PREPARATION

A. Coordinate construction areas to receive drains to the required invert elevations.

3.2 INSTALLATION AND APPLICATION

A. Install specialties in accordance with manufacturer's instructions to permit intended performance.

B. Extend clean-outs to finished floor. Lubricate threaded clean-out plugs Teflon pipe dope. Ensure clearance at clean-out for rodding of drainage system.

C. Encase exterior clean-outs in concrete flush with grade.

D. Install water hammer arrestors complete with accessible isolation valve.

END OF SECTION 15430

SECTION 15440 – PLUMBING FIXTURES

PART I - 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 SUMMARY

A. This Section includes plumbing fixtures and trim, fittings, and accessories, appliances, appurtenances, equipment, and supports associated with plumbing fixtures.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of plumbing fixture specified, including fixture and trim, fittings, accessories, appliances, appurtenances, equipment, supports, construction details, dimensions of components, and finishes.

PART II - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers (or approved equal):

1. Fixtures and Trim:
   a. American Standard, Inc.
   b. Eljer; A Household International Co.
   c. Kohler Co.

2. Stainless Steel Sinks:
   a. Elkay Manufacturing Co.
   b. Just Manufacturing Co.
   c. Kohler Co.

3. Mop Basins:
   a. Crane Plumbing/Fiat Products.
   b. Florestone Products Co., Inc.
   c. Swan Corp.

4. Water Coolers:
   a. Elkay Manufacturing Co.
   b. Halsey Taylor
   c. Haws Drinking Faucet Co.
   d. Sunroc Corporation
   e. Oasis

5. Toilet Seats:
   a. Bemis Mfg. Co.
   b. Beneke Division: Sanderson Plumbing Products, Inc.
   c. Church Seat Co.

d. Kohler Co.
e. Olsonite Corp.

6. Flushometers:
   a. Coyne & Delaney Co.
   b. Sloan Valve Co.
   c. Zurn Industries, Inc.; Flush Valve Operations.

7. Commercial/Industrial Cast-Brass Faucets:
   a. American Standard, Inc.
   b. Chicago Faucet Co.
   c. Delta Faucet Co.
   d. Eljer; A Household International Co.
   e. T & S Brass and Bronze Works, Inc.
   f. Cambridge Brass
   g. Elkay Manufacturing Co.
   h. Sloan
   i. Speakman Co.

8. Commercial/Institutional Shower and Bathtub Valves and Trim:
   a. Symmons Industries, Inc.
   b. Bradley Corp.
   c. Speakman Co.
   d. Delta Faucet Co.

END OF SECTION 15440

STANDARD SPECIAL PROVISION

AVAILABILITY OF FUNDS – TERMINATION OF CONTRACTS:

(5-20-08) Z-2

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

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

Payment will be made on any contract terminated pursuant to the special provision in accordance with Subarticle 108-13(E) of the *2018 Standard Specifications*.

BIDS OVER LIMIT:

(08-01-16) SPD 01-400

In accordance with GS 136-28.1(b), if the total bid amount of the contract exceeds $5.0 million, the bid will not be considered for award.

DIVISION LET CONTRACT PREQUALIFICATION:

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

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

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

SAFETY VESTS:

All Contractors' personnel, all subcontractors and their personnel, and any material suppliers and their personnel must wear an OSHA approved reflective vest or outer garment at all times while on the project.

CONTRACTOR CLAIM SUBMITTAL FORM:
(2-12-14) 104-3 SPD 01-440

If the Contractor elects to file a written claim or requests an extension of contract time, it shall be submitted on the *Contractor Claim Submittal Form (CCSF)* available through the Construction Unit or at https://connect.ncdot.gov/projects/construction/Pages/Construction-Resources.aspx as Form CCSF under Construction Forms.

Any claims for additional compensation and/or extensions of the completion date shall be submitted to the Division Engineer in writing, with detailed justification, prior to submitting the final invoice payment. Once an invoice is received and accepted that is marked as "Final", the Contractor shall be barred from recovery.

DRIVEWAYS AND PRIVATE PROPERTY:

The Contractor shall maintain access to driveways for all residents and property owners throughout the life of the project. The Contractor shall not perform work for private citizens or agencies in conjunction with this project or within the project limits of this contract.

COOPERATION WITH STATE FORCES:

The Contractor must cooperate with State forces working within the limits of this project as directed by the Engineer.

ERRATA:
(10-16-18) (Rev.1-15-19) Z-4

Revise the *2018 Standard Specifications* as follows:

Division 6

Page 6-7, Article 609-1 DESCRIPTION, line 29, replace article number "609-10" with "609-9".

Division 7

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

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

Division 10

Page 10-78, Article 1056-4 GEOTEXTILES, TABLE 1056-1, Permittivity, Type 2, replace "Table 6^{D}" with "Table 7^{D}" and **Permittivity, Type 3^{B},** replace "Table 7^{D}" with "Table 8^{D}".

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

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

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

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

Division 17

Page 17-15, Article 1715-4 MEASUREMENT AND PAYMENT, lines 42-44, replace the second sentence with the following:

An example is an installation of a single 1.25 inch HDPE conduit would be paid as:

Directional Drill (1)(1.25″) Linear Foot

PLANT AND PEST QUARANTINES:
(Imported Fire Ant, Gypsy Moth, Witchweed, Emerald Ash Borer, Guava Root Knot Nematode, And Other Noxious Weeds)
(3-18-03) (Rev. 5-21-19) Z-04a

Within Quarantined Area

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

Originating in a Quarantined County

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

Contact

Contact the N.C. Department of Agriculture/United States Department of Agriculture at 1-800-206-9333, 919-707-3730, or *https://www.ncagr.gov/plantindustry/Plant/quaran/table2.htm* to determine those specific project sites located in the quarantined area or for any regulated article used on this project originating in a quarantined county.

Regulated Articles Include

1. Soil, sand, gravel, compost, peat, humus, muck, and decomposed manure, separately or with other articles. This includes movement of articles listed above that may be associated with cut/waste, ditch pulling, and shoulder cutting.

2. Plants with roots including grass sod.
3. Plant crowns and roots.
4. Bulbs, corms, rhizomes, and tubers of ornamental plants.
5. Hay, straw, fodder, and plant litter of any kind.
6. Clearing and grubbing debris.
7. Used agricultural cultivating and harvesting equipment.
8. Used earth-moving equipment.
9. Any other products, articles, or means of conveyance, of any character, if determined by an inspector to present a hazard of spreading imported fire ant, gypsy moth, witchweed, emerald ash borer, guava root knot nematode, or other noxious weeds.

MINIMUM WAGES:
(7-21-09) Z-5

FEDERAL: The Fair Labor Standards Act provides that with certain exceptions every employer shall pay wages at the rate of not less than SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

STATE: The North Carolina Minimum Wage Act provides that every employer shall pay to each of his employees, wages at a rate of not less than SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

The minimum wage paid to all skilled labor employed on this contract shall be SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

The minimum wage paid to all intermediate labor employed on this contract shall be SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

The minimum wage paid to all unskilled labor on this contract shall be SEVEN DOLLARS AND TWENTY FIVE CENTS ($7.25) per hour.

This determination of the intent of the application of this act to the contract on this project is the responsibility of the Contractor.

The Contractor shall have no claim against the Department of Transportation for any changes in the minimum wage laws, Federal or State. It is the responsibility of the Contractor to keep fully informed of all Federal and State Laws affecting his contract.

TITLE VI AND NONDISCRIMINATION:
(6-28-77)(Rev 6/19/2018) Z-6

Revise the *2018 Standard Specifications* as follows:

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

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

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

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

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

(a) Compliance with Regulations

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

(b) Nondiscrimination

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

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

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

(d) Information and Reports

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

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

(e) Sanctions for Noncompliance:

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

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

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

(f) Incorporation of Provisions

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

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

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

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

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

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

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

"The North Carolina Department of Transportation, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 US.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award. In accordance with other related nondiscrimination authorities, bidders and contractors will also not be discriminated against on the grounds of sex, age, disability, low-income level, creed/religion, or limited English proficiency in consideration for an award."

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

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

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

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

1. Applicability

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

2. Eligibility

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

3. Time Limits and Filing Options

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

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

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

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

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

- North Carolina Department of Transportation, Office of Civil Rights, Title VI Program, 1511 Mail Service Center, Raleigh, NC 27699-1511; toll free 1-800-522-0453
- Federal Highway Administration, North Carolina Division Office, 310 New Bern Avenue, Suite 410, Raleigh, NC 27601, 919-747-7010
- US Department of Transportation, Departmental Office of Civil Rights, External Civil Rights Programs Division, 1200 New Jersey Avenue, SE, Washington, DC 20590; 202-366-4070

4. Format for Complaints

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

5. Discrimination Complaint Form

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

6. Complaint Basis

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

TABLE 103-1 COMPLAINT BASIS			
Protected Categories	**Definition**	**Examples**	**Applicable Nondiscrimination Authorities**
Race and Ethnicity	An individual belonging to one of the accepted racial groups; or the perception, based usually on physical characteristics that a person is a member of a racial group	Black/African American, Hispanic/Latino, Asian, American Indian/Alaska Native, Native Hawaiian/Pacific Islander, White	Title VI of the Civil Rights Act of 1964; 49 CFR Part 21; 23 CFR 200; 49 U.S.C. 5332(b); 49 U.S.C. 47123. *(Executive Order 13166)*
Color	Color of skin, including shade of skin within a racial group	Black, White, brown, yellow, etc.	
National Origin *(Limited English Proficiency)*	Place of birth. Citizenship is not a factor. (*Discrimination based on language or a person's accent is also covered)*	Mexican, Cuban, Japanese, Vietnamese, Chinese	
Sex	Gender. The sex of an individual. *Note:* Sex under this program does not include sexual orientation.	Women and Men	1973 Federal-Aid Highway Act; 49 U.S.C. 5332(b); 49 U.S.C. 47123.
Age	Persons of any age	21-year-old person	Age Discrimination Act of 1975 49 U.S.C. 5332(b); 49 U.S.C. 47123.
Disability	Physical or mental impairment, permanent or temporary, or perceived.	Blind, alcoholic, para-amputee, epileptic, diabetic, arthritic	Section 504 of the Rehabilitation Act of 1973; Americans with Disabilities Act of 1990
Religion (in the context of employment) *(Religion/ Creed in all aspects of any aviation or transit-related construction)*	An individual belonging to a religious group; or the perception, based on distinguishable characteristics that a person is a member of a religious group. In practice, actions taken as a result of the moral and ethical beliefs as to what is right and wrong, which are sincerely held with the strength of traditional religious views. ***Note:*** Does not have to be associated with a recognized religious group or church; if an individual sincerely holds to the belief, it is a protected religious practice.	Muslim, Christian, Sikh, Hindu, etc.	Title VII of the Civil Rights Act of 1964; 23 CFR 230; FHWA-1273 Required Contract Provisions. *(49 U.S.C. 5332(b);* *49 U.S.C. 47123)*

(3) **Pertinent Nondiscrimination Authorities**

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

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.

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

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

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

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

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

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

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

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

(4) **Additional Title VI Assurances**

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

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

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

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

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto the North Carolina Department of Transportation (NCDOT) and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the NCDOT, its successors and assigns.
The NCDOT, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the NCDOT will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended [, and (3) that in the event of breach of any of the above-mentioned nondiscrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation and its assigns as such interest existed prior to this instruction].*

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

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

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

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

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

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

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

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

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

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

1. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.

2. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non¬ discrimination covenants, the NCDOT will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued. *
3. With respect to deeds, in the event of breach of any of the above Nondiscrimination covenants, the NCDOT will there upon revert to and vest in and become the absolute property of the NCDOT and its assigns. *

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

ON-THE-JOB TRAINING

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

Description

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

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

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

Minorities and Women

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

Assigning Training Goals

The Department, through the OJT Program Manager, will assign training goals for a calendar year based on the contractors' past three years' activity and the contractors' anticipated upcoming year's activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific

number of annual training goals agreed to by both parties. The number of training assignments may range from 1 to 15 per contractor per calendar year. The Contractor shall sign an agreement to fulfill their annual goal for the year.\

Training Classifications

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

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

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

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

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

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

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

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

Records and Reports

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

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

Trainee Interviews

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

Trainee Wages

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

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

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

Achieving or Failing to Meet Training Goals

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

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

Measurement and Payment

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

ITEMIZED PROPOSAL FOR CONTRACT NO. DA00493

County : Tyrrell

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			ROADWAY ITEMS			
0001	8860000000-N	SP	GENERIC STRUCTURE ITEM ELECTRICAL INSTALLATION FOR RE ST AREA BUILDING	Lump Sum	L.S.	
0002	8860000000-N	SP	GENERIC STRUCTURE ITEM PLUMBING INSTALLATION FOR REST AREA BUILDING	Lump Sum	L.S.	
0004	8860000000-N	SP	GENERIC STRUCTURE ITEM GENERAL CONSTRUCTION OF REST A REA BUILDING	Lump Sum	L.S.	

1059/Dec14/Q3.0/D26580000000/E3

Total Amount Of Bid For Entire Project :

DEBARMENT CERTIFICATION OF PREQUALIFIED BIDDER

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 that is file 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.

Execution of Contract

Contract No: DA00493

County: Tyrrell

ACCEPTED BY THE DEPARTMENT

_____

Contract Officer

_____

Date

Signature Sheet (Bid) - ACCEPTANCE SHEET