Appalachian State University
Field Hockey Fieldhouse
Bid Documents
SPECIFICATIONS
Volume 1 – Architectural/Civil
ASU Project # 20170120
SCO ID # 17-18065-01
ID Project # 1705

Innovative Design, Inc.
1/25/2018
PART 1 GENERAL

1.01 PROJECT IDENTIFICATION
A. Project Name: Appalachian State University Field Hockey Fieldhouse, located at:
   633 Intramural Field Rd.
   Boone, NC 28607.
B. The Owner, hereinafter referred to as Owner: Appalachian State University
C. Owner's Project Manager: Jeff Pierce, PE.
   2. Address: 265 Dale St.
   4. Phone/Fax: 828-262-6579.
   5. E-mail: piercejw@appstate.edu.

1.02 PROJECT DESCRIPTION
A. Summary Project Description: Construct a field hockey fieldhouse and public restroom facility.
B. Contract Scope: Construction.
C. Contract Terms: Lump sum (fixed price, stipulated sum).

1.03 PROJECT CONSULTANTS
A. The Architect, hereinafter referred to as Architect: Innovative Design, Inc..
   1. Address: 850 W. Morgan St..
   2. City, State, Zip: Raleigh, NC 27603.
   3. Phone/Fax: 919-832-6303/919-832-3339.
   4. E-mail: gerics@innovativedesign.net.

1.04 PROCUREMENT TIMETABLE
B. Pre-Bid Briefing: February 8 at 2 PM.
C. Pre-Bid Site Tour: February 8, 2018 at conclusion of pre-Bid meeting.
D. Last Request for Information Due: 7 days prior to due date of bids.
E. Bid Due Date: February 22, 2018, before 3:00 PM local time.
F. Bid Opening: Same day, immediately after 3:00 PM local time.
G. Notice to Proceed: Within 7 days after due date.
H. Bids May Not Be Withdrawn Until: 30 days after due date.
I. Contract Time: _____ calendar days.
J. Desired Construction Start: Not later than ____.
K. Desired Substantial Completion Date: Not later than ____ calendar days from Notice to Proceed.
L. The Owner reserves the right to change the schedule or terminate the entire procurement process at any
time.

1.05 PROCUREMENT DOCUMENTS
A. Availability of Documents: Complete sets of procurement documents may be obtained:
   1. From Owner at the Project Manager's address listed above.

1.06 BID SECURITY
A. Bids shall be accompanied by a security deposit as follows:
   1. Security made payable to Owner in an amount of five percent of proposer's maximum proposal sum.

1.07 SIGNATURE
A. For: Appalachian State University
B. By: Jeff Pierce, PE
1. (Authorized signing officer)

PART 2 PRODUCTS (NOT USED)
PART 3 EXECUTION (NOT USED)

END OF SECTION
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SEALS PAGE

Architect

5/1/17

Electrical Engineer

Mechanical Engineer

Structural Engineer

Civil Engineer

END OF SECTION
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THE NORTH CAROLINA STATE CONSTRUCTION OFFICE ADVERTISEMENT FOR BIDS FOLLOWS.
END OF SECTION
Sealed proposals will be received until 3:00 PM on February 22, 2018 in Boone, NC for the construction of the Field Hockey Fieldhouse at which time and place bids will be opened and read.

Complete plans and specifications for this project will be available for download from ASU website (https://physicalplant.appstate.edu/planning-design-construction/solicitations/advertisements) as well as be open for inspection at ASU Planning, Design and Construction Office, 438 Academy St., Boone, NC 28608, and ASU Physical Plant 265 Dale St, Boone NC 28608 or obtained electronically from Innovative Design, Inc.; 850 W. Morgan St.; Raleigh, NC 27603; by e-mailing gerics@innovativedesign.net after February 1, 2018.

Plan Deposit is Not Required for electronic distribution of bid documents

The state reserves the unqualified right to reject any and all proposals.

Signed: Jeff Pierce, PE (Owner)
SECTION 00-21-13
INSTRUCTIONS TO BIDDERS
THE NORTH CAROLINA STATE CONSTRUCTION OFFICE NOTICE TO BIDDERS IS ATTACHED AS THE FOLLOWING PAGES.

END OF SECTION
NOTICE TO BIDDERS

Sealed proposals will be received by Appalachian State University in Boone, NC, in the office of Jeff Pierce, 265 Dale St., up to 3:00 pm February 22, 2018 and immediately thereafter publicly opened and read for the furnishing of labor, material and equipment entering into the construction of

The Field Hockey Fieldhouse

Construction of a 1,960 SF wood frame, brick clad fieldhouse.

Pre-Bid Meeting

An open pre-bid meeting will be held for all interested bidders on February 8, 2018 --- 2:00 PM --- at the 2nd floor Physical Plant Conference Room, 265 Dale Street, Boone, NC 28608. The meeting will address project specific questions, issues, bidding procedures and bid forms, with a walk-through of the project site.

Contract documents will be available for download from ASU website (https://physicalplant.appstate.edu/planning-design-construction/solicitations/advertisements) as well as open for inspection at ASU Planning, Design and Construction Office, 438 Academy St., Boone, NC 28608, and ASU Physical Plant 265 Dale St, Boone NC 28608 and Design and Innovative Design, Inc. and in the plan rooms of iSqFt for the Associated General Contractors, Carolinas Branch; in the local North Carolina offices of McGraw-Hill Dodge Corporation; in the Eastern Regional Office of Reed Construction Data in Norcross, GA; and in Minority Plan Rooms in

Hispanic Contractors Association of the Carolinas (HCAC) in Winston-Salem, Charlotte and Raleigh Areas – 877-227-1680

NCIMED Plan & Resource Center, 114 West Parrish Street, 6th Floor, Durham, NC 27701, 919-956-8889 or 919-287-3036

or may be obtained electronically by requesting plans from the Architect by e-mailing gerics@innovativedesign.net. Deposit is not required.

NOTE: The bidder shall include with the bid proposal the form Identification of Minority Business Participation identifying the minority business participation it will use on the project and shall include either Affidavit A or Affidavit B as applicable. Forms and instructions are included within the Proposal Form in the bid documents. Failure to complete these forms is grounds for rejection of the bid. (GS143-128.2c Effective 1/1/2002.)

All contractors are hereby notified that they must have proper license as required under the state laws governing their respective trades.
General contractors are notified that Chapter 87, Article 1, General Statutes of North Carolina, will be observed in receiving and awarding general contracts. General contractors submitting bids on this project must have license classification for Unlimited Construction.

NOTE--SINGLE PRIME CONTRACTS: Under GS 87-1, a contractor that superintends or manages construction of any building, highway, public utility, grading, structure or improvement shall be deemed a "general contractor" and shall be so licensed. Therefore a single prime project that involves other trades will require the single prime contractor to hold a proper General Contractors license. **EXCEPT:** On public buildings being bid single prime, where the total value of the general construction does not exceed 25% of the total construction value, contractors under GS87- Arts 2 and 4 (Plumbing, Mechanical & Electrical) may bid and contract directly with the Owner as the SINGLE PRIME CONTRACTOR and may subcontract to other properly licensed trades. **GS87-1.1- Rules .0210**

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company, insured by the Federal Deposit Insurance Corporation, of an amount equal to not less than five percent (5%) of the proposal, or in lieu thereof a bidder may offer a bid bond of five percent (5%) of the bid executed by a surety company licensed under the laws of North Carolina to execute the contract in accordance with the bid bond. Said deposit shall be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten days after the award or to give satisfactory surety as required by law.

A performance bond and a payment bond will be required for one hundred percent (100%) of the contract price.

Payment will be made based on ninety-five percent (95%) of monthly estimates and final payment made upon completion and acceptance of work.

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of 30 days.

The owner reserves the right to reject any or all bids and to waive informalities.

Designer: Owner:
Louis Gerics, AIA Appalaching State University
850 W. Morgan St.; Raleigh, NC 27603 265 Dale St., Boonel NC 27599
919-832-6303 828-262-6579
SECTION 00-41-00
BID FORM
THE NORTH CAROLINA STATE CONSTRUCTION OFFICE FORM OF PROPOSAL IS ATTACHED AS THE FOLLOWING PAGES.

END OF SECTION
FORM OF PROPOSAL

Field Hockey Fieldhouse
Appalachian State University
SCO ID #17-18065-01
Contract: ____________________________
Bidder: ____________________________
Date: ____________________________

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The bidder further declares that he and his subcontractors have fully complied with NCGS 64, Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

The Bidder proposes and agrees if this proposal is accepted to contract with the State of North Carolina through Appalachian State University in the form of contract specified below, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of a 1,960 SF fieldhouse for the Appalachian State University women's field hockey team in full in complete accordance with the plans, specifications and contract documents, to the full and entire satisfaction of the State of North Carolina, and Appalachian State University and Innovative Design, Inc. with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and the contract documents, for the sum of:

SINGLE PRIME CONTRACT:

Base Bid: ____________________________ Dollars($)__________________________

General Subcontractor: ____________________________ Lic__________

Plumbing Subcontractor: ____________________________ Lic__________

Mechanical Subcontractor: ____________________________ Lic__________

Electrical Subcontractor: ____________________________ Lic__________

GS143-128(d) requires all single prime bidders to identify their subcontractors for the above subdivisions of work. A contractor whose bid is accepted shall not substitute any person as subcontractor in the place of the subcontractor listed in the original bid, except (i) if the listed subcontractor's bid is later determined by the contractor to be non-responsible or non-responsive or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work, or (ii) with the approval of the awarding authority for good cause shown by the contractor.

ALTERNATES:
Should any of the alternates as described in the contract documents be accepted, the amount written below shall be the amount to be "added to" or "deducted from" the base bid. (Strike out "Add" or "Deduct" as appropriate.)

**GENERAL CONTRACT:**

Alternate No. G-1  
(Add) (Deduct) Dollars($) 

Alternate No. G-2  
(Add) (Deduct) Dollars($) 

Alternate No. G-3  
(Add) (Deduct) Dollars($) 

**UNIT PRICES**

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents.

**GENERAL CONTRACT:**

No. 1 (n/a) (Unit) Unit Price ($) 

The bidder further proposes and agrees hereby to commence work under this contract on a date to be specified in a written order of the designer and shall fully complete all work thereunder within the time specified in the Supplementary General Conditions Article 23. Applicable liquidated damages amount is also stated in the Supplementary General Conditions Article 23.

**MINORITY BUSINESS PARTICIPATION REQUIREMENTS**

*Provide with the bid* - Under GS 143-128.2(c) the undersigned bidder shall identify on its bid (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. Also list the good faith efforts (Affidavit A) made to solicit minority participation in the bid effort.

**NOTE:** A contractor that performs all of the work with its own workforce may submit an Affidavit (B) to that effect in lieu of Affidavit (A) required above. The MB Participation Form must still be submitted even if there is zero participation.

*After the bid opening* - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

An Affidavit (C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and Affidavit D is not necessary;

* OR *

If less than the 10% goal, Affidavit (D) of its good faith effort to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations.
and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

**Note:** Bidders must always submit *with their bid* the Identification of Minority Business Participation Form listing all MB contractors, vendors and suppliers that will be used. If there is no MB participation, then enter none or zero on the form. Affidavit A or Affidavit B, as applicable, also must be submitted with the bid. Failure to file a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.
Proposal Signature Page

The undersigned further agrees that in the case of failure on his part to execute the said contract and the bonds within ten (10) consecutive calendar days after being given written notice of the award of contract, the certified check, cash or bid bond accompanying this bid shall be paid into the funds of the owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash or bid bond accompanying this proposal shall be returned to the undersigned.

Respectfully submitted this day of ____________________________

__________________________________________________________
(Name of firm or corporation making bid)

WITNESS: By: ____________________________

__________________________
Name:

__________________________
(Proprietorship or Partnership)

__________________________
Title: ____________________________
(Owner/Partner/Pres./V.Pres.)

__________________________
Address

ATTEST: ____________________________

__________________________
License No.

__________________________
Federal I.D. No.

__________________________
Email Address: ____________________________

(CORPORATE SEAL)

Addendum received and used in computing bid:
Addendum No. 1 _____ Addendum No. 3 _____ Addendum No. 5 _____ Addendum No. 6 _____
Addendum No. 2 _____ Addendum No. 4 _____ Addendum No. 6 _____ Addendum No. 7 _____
FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT ________________

______________________________________________, as principal, and ____________________________________________________________________________, as surety, who is duly licensed to act as surety in North Carolina, are held and firmly bound unto the State of North Carolina* through ____________________________________________________________________________ as obligee, in the penal sum of ___________________________ DOLLARS, lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Signed, sealed and dated this ____ day of ____ 20____

WHEREAS, the said principal is herewith submitting proposal for ________________

and the principal desires to file this bid bond in lieu of making the cash deposit as required by G.S. 143-129.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such, that if the principal shall be awarded the contract for which the bid is submitted and shall execute the contract and give bond for the faithful performance thereof within ten days after the award of same to the principal, then this obligation shall be null and void; but if the principal fails to so execute such contract and give performance bond as required by G.S. 143-129, the surety shall, upon demand, forthwith pay to the obligee the amount set forth in the first paragraph hereof. Provided further, that the bid may be withdrawn as provided by G.S. 143-129.1

_________________________________(SEAL)

________________________________(SEAL)

________________________________(SEAL)

________________________________(SEAL)

________________________________(SEAL)

________________________________(SEAL)
# Identification of HUB Certified/ Minority Business Participation

I, ____________________________ (Name of Bidder) do hereby certify that on this project, we will use the following HUB Certified/ minority business as construction subcontractors, vendors, suppliers or providers of professional services.

<table>
<thead>
<tr>
<th>Firm Name, Address and Phone #</th>
<th>Work Type</th>
<th>*Minority Category</th>
<th>**HUB Certified (Y/N)</th>
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*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

** HUB Certification with the state HUB Office required to be counted toward state participation goals.

The total value of minority business contracting will be ($) ________________.
State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of ______________________

(Name of Bidder)

Affidavit of ______________________

I have made a good faith effort to comply under the following areas checked:

**Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive.** (1 NC Administrative Code 30 I.0101)

- [ ] 1 – (10 pts) Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.

- [ ] 2 – (10 pts) Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.

- [ ] 3 – (15 pts) Broken down or combined elements of work into economically feasible units to facilitate minority participation.

- [ ] 4 – (10 pts) Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.

- [ ] 5 – (10 pts) Attended prebid meetings scheduled by the public owner.

- [ ] 6 – (20 pts) Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.

- [ ] 7 – (15 pts) Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.

- [ ] 8 – (25 pts) Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.

- [ ] 9 – (20 pts) Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.

- [ ] 10 - (20 pts) Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _______________ Name of Authorized Officer: ______________________

Signature: ________________________

Title: ________________________

State of ________________, County of ______________________

Subscribed and sworn to before me this ______ day of __________ 20____

Notary Public ______________________

My commission expires ________________

MBForms 2002-Revised July 2010
State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract with Own Workforce.

County of __________________________

Affidavit of ____________________________ (Name of Bidder)
I hereby certify that it is our intent to perform 100% of the work required for the ____________________________ (Name of Project) contract.

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: __________ Name of Authorized Officer: __________________________________________

________________________________________
Signature:

________________________________________
Title:

State of __________________________, County of __________________________
Subscribed and sworn to before me this ___________ day of _______20__
Notary Public __________________________
My commission expires __________________________
State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of _____________________________

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit.

This affidavit shall be provided by the apparent lowest responsible, responsive bidder within 72 hours after notification of being low bidder.

Affidavit of ___________________________________ I do hereby certify that on the

(Name of Bidder)

(Project Name)

Project ID# ____________________________ Amount of Bid $ __________________________

I will expend a minimum of _______ % of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.

<table>
<thead>
<tr>
<th>Name and Phone Number</th>
<th>*Minority Category</th>
<th>**HUB Certified Y/N</th>
<th>Work Description</th>
<th>Dollar Value</th>
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*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

** HUB Certification with the state HUB Office required to be counted toward state participation goals.

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: ____________________________ Name of Authorized Officer: ____________________________

Signature: ____________________________ Title: ____________________________

State of ____________________________ County of ____________________________

Subscribed and sworn to before me this _______ day of _______ 20____
Notary Public ____________________________
My commission expires ____________________________

MBForms 2002-Revised July 2010
State of North Carolina  AFFIDAVIT D – Good Faith Efforts

County of ____________________________
(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business is not achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of ____________________________
(Name of Bidder)

<table>
<thead>
<tr>
<th>Project ID#</th>
<th>Amount of Bid</th>
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I do hereby certify that on the ___ day of ___, 20__, the Bidder will expend a minimum of ______% of the total dollar amount of the contract with HUB certified/ minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

<table>
<thead>
<tr>
<th>Name and Phone Number</th>
<th>*Minority Category</th>
<th>**HUB Certified Y/N</th>
<th>Work Description</th>
<th>Dollar Value</th>
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</table>

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

** HUB Certification with the state HUB Office required to be counted toward state participation goals.

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.

B. Copies of quotes or responses received from each firm responding to the solicitation.

C. A telephone log of follow-up calls to each firm sent a solicitation.

D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.

E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.

F. Copy of pre-bid roster

G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.

H. Letter detailing reasons for rejection of minority business due to lack of qualification.

I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

MBForms 2002-Revised May 2010
The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:__________ Name of Authorized Officer:________________________________________

Signature:________________________________________

Title:________________________________________

State of ______________________, County of ______________________

Subscribed and sworn to before me this ______day of __________ 20___

Notary Public ______________________

My commission expires __________
APPENDIX E

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: _____________________________________________________

Address & Phone: ____________________________________________________________

Project Name: _______________________________________________________________

SCO Project ID: ___________________________________________________________________

Pay Application #: _________________  Period: ___________________________________________________________________

The following is a list of payments made to Minority Business Enterprises on this project for the above-mentioned period.

<table>
<thead>
<tr>
<th>MBE FIRM NAME</th>
<th>* TYPE OF MBE</th>
<th>AMOUNT PAID THIS MONTH (With This Pay App)</th>
<th>TOTAL PAYMENTS TO DATE</th>
<th>TOTAL AMOUNT COMMITTED</th>
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*Minority categories:  Black (B), Hispanic (H), Asian American (AA), American Indian (AI), White Female (WF), Socially and Economically Disadvantaged (SED)

Approved/Certified By:

Name: ___________________________________________  Title: ___________________________________________

Date: ___________________________  Signature: ___________________________________________

SUBMIT WITH EACH PAY REQUEST - FINAL PAYMENT - FINAL REPORT
SECTION 00-52-00
AGREEMENT FORM

PART 1  GENERAL

1.01  FORM OF AGREEMENT

1.02  THE NORTH CAROLINA STATE CONSTRUCTION OFFICE FORM OF CONSTRUCTION CONTRACT TO BE EXECUTED IS ATTACHED FOLLOWING THIS PAGE.

1.03  RELATED REQUIREMENTS
   A.  Section 00-72-00 - General Conditions.
   B.  Section 00-73-00 - Supplementary Conditions.

PART 2  PRODUCTS (NOT USED)
PART 3  EXECUTION (NOT USED)

END OF SECTION
FORM OF CONSTRUCTION CONTRACT  
(ALL PRIME CONTRACTS)  

THIS AGREEMENT, made the ____________ day of ___________ in the year of 20__ by and between _______________________________  
__________________________________________________________________  
hereinafter called the Party of the First Part and the State of North Carolina, through Appalachian State University hereinafter called the Party of the Second Part.  

WITNESSETH:  

That the Party of the First Part and the Party of the Second Part for the consideration herein named agree as follows:  

1. Scope of Work: The Party of the First Part shall furnish and deliver all of the materials, and perform all of the work in the manner and form as provided by the following enumerated plans, specifications and documents, which are attached hereto and made a part thereof as if fully contained herein: advertisement; Instructions to Bidders; General Conditions; Supplementary General Conditions; specifications; accepted proposal; contract; performance bond; payment bond; power of attorney; workmen's compensation; public liability; property damage and builder's risk insurance certificates; approval of attorney general; certificate by the Office of State Budget and Management, and drawings, titled:  

Field Hockey Fieldhouse  

Consisting of the following sheets: CO01-CO03, LS100, A000, A001 A100, A111, A201, A301, A311, A402, A403, A541, A611, A612, A621, C100, C100A, C101, C102; S100-S102; P001, P002, P100, M000, M001, M100, E000-E002, E100, E200  

Dated: 2/22/2018 and the following addenda:  

Addendum No. _____ Dated: ____________ Addendum No. _____ Dated: ____________  
Addendum No. _____ Dated: ____________ Addendum No. _____ Dated: ____________  
Addendum No. _____ Dated: ____________ Addendum No. _____ Dated: ____________  
Addendum No. _____ Dated: ____________ Addendum No. _____ Dated: ____________  

2. That the Party of the First Part shall commence work to be performed under this agreement on a date to be specified in a written order of the Party of the Second Part and shall fully complete all work hereunder within _____________ consecutive calendar days from said date. For each day in excess thereof, liquidated damages shall be as stated in Supplementary General Conditions. The Party of the First Part, as one of the considerations for the awarding of this contract, shall furnish to the Party of the Second Part a construction schedule setting forth planned progress of the project broken down by
the various divisions or part of the work and by calendar days as outlined in Article 14 of the General Conditions of the Contract.

3. The Party of the Second Part hereby agrees to pay to the Party of the First Part for the faithful performance of this agreement, subject to additions and deductions as provided in the specifications or proposal, in lawful money of the United States as follows:

_______________________________________             ____________
________________________________________ ($ __________________).

Summary of Contract Award:

4. In accordance with Article 31 and Article 32 of the General Conditions of the Contract, the Party of the Second Part shall review, and if approved, process the Party of the First Party’s pay request within 30 days upon receipt from the Designer. The Party of the Second Part, after reviewing and approving said pay request, shall make payments to the Party of the First Part on the basis of a duly certified and approved estimate of work performed during the preceding calendar month by the First Party, less five percent (5%) of the amount of such estimate which is to be retained by the Second Party until all work has been performed strictly in accordance with this agreement and until such work has been accepted by the Second Party. The Second Party may elect to waive retainage requirements after 50 percent of the work has been satisfactorily completed on schedule as referred to in Article 31 of the General Conditions.

5. Upon submission by the First Party of evidence satisfactory to the Second Party that all payrolls, material bills and other costs incurred by the First Party in connection with the construction of the work have been paid in full, final payment on account of this agreement shall be made within thirty (30) days after the completion by the First Party of all work covered by this agreement and the acceptance of such work by the Second Party.

6. It is further mutually agreed between the parties hereto that if at any time after the execution of this agreement and the surety bonds hereto attached for its faithful performance, the Second Party shall deem the surety or sureties upon such bonds to be unsatisfactory, or if, for any reason, such bonds cease to be adequate to cover the performance of the work, the First Party shall, at its expense, within five (5) days after the receipt of notice from the Second Party so to do, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the Second Party. In such event no further payment to the First Party shall be deemed to be due under this agreement until such new or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to the Second Party.

7. The Party of the First Part attest that it and all of its subcontractors have fully complied with all requirements of NCGS 64 Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).
IN WITNESS WHEREOF, the Parties hereto have executed this agreement on the day and date first above written in ______________ counterparts, each of which shall without proof or accounting for other counterparts, be deemed an original contract.

Witness:

Contractor: (Trade or Corporate Name)

By: ______________________________

Title: _____________________________

(Owner, Partner, or Corp. Pres. or Vice Pres. only)

(Proprietorship or Partnership)

Attest: (Corporation)

By: ______________________________

Title: _____________________________

(Corp. Sec. or Asst. Sec. only)

The State of North Carolina through*

(CORPORATE SEAL)

(Agency, Department or Institution)

Witness:

By: ______________________________

Title: _____________________________
FORM OF PERFORMANCE BOND

Date of Contract: ____________________________________________________________

Date of Execution: ___________________________________________________________

Name of Principal
(Contractor) ________________________________________________________________

Name of Surety: _________________________________________________________________

Name of Contracting
Body: _____________________________________________________________________

Amount of Bond: ______________________________________________________________

Project Field Hockey Fieldhouse

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind, ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body, identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the contracting body, with or without notice to the surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in ______________________ counterparts.
Witness: ____________________________________

(Proprietorship or Partnership)

Attest: (Corporation)

By: ________________________________

Title: ______________________________

(Corp. Sec. or Asst. Sec. only)

(Corporate Seal)

Contractor: (Trade or Corporate Name)

By: ________________________________

Title: ______________________________

(Owner, Partner, or Corp. Pres. or Vice Pres. only)

By: ________________________________

Title: ______________________________

(Corp. Sec. or Asst. Sec. only)

(Surety Company)

By: ________________________________

Title: ______________________________

(Attorney in Fact)

(Surety Corporate Seal)

Countersigned: ________________________________

(N.C. Licensed Resident Agent)

Name and Address-Surety Agency

Surety Company Name and N.C. Regional or Branch Office Address
FORM OF PAYMENT BOND

Date of Contract: 

Date of Execution: 

Name of Principal (Contractor): 

Name of Surety: 

Name of Contracting Body: 

Amount of Bond: 

Project: Field Hockey Fieldhouse 

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall promptly make payment to all persons supplying labor/material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in __________________ counterparts.
Sheet for Attaching Power of Attorney
Sheet for Attaching Insurance Certificates
APPROVAL OF THE ATTORNEY GENERAL
CERTIFICATION BY THE OFFICE OF STATE
BUDGET AND MANAGEMENT

Provision for the payment of money to fall due and payable by the

__________________________________________________________

under this agreement has been provided for by allocation made and is
available for the purpose of carrying out this agreement.

This ___________ day of ________________ 20___.

Signed  __________________________________________
         Budget Officer
SECTION 00-72-00
GENERAL CONDITIONS

FORM OF GENERAL CONDITIONS
1.01 THE NORTH CAROLINA STATE CONSTRUCTIN OFFICE GENERAL CONDITIONS (FORM OC-15)
APPLICABLE TO THIS CONTRACT IS ATTACHED FOLLOWING THIS PAGE.

RELATED REQUIREMENTS
2.01 SECTION 00-73-00 - SUPPLEMENTARY CONDITIONS.

END OF SECTION
INSTRUCTIONS TO BIDDERS

AND

GENERAL CONDITIONS OF THE CONTRACT

STANDARD FORM FOR CONSTRUCTION PROJECTS

STATE CONSTRUCTION OFFICE

NORTH CAROLINA

DEPARTMENT OF ADMINISTRATION

Form OC-15

This document is intended for use on State capital construction projects and shall not be used on any project that is not reviewed and approved by the State Construction Office. Extensive modification to the General Conditions by means of “Supplementary General Conditions” is strongly discouraged. State agencies and institutions may include special requirements in “Division 1 – General Requirements” of the specifications, where they do not conflict with the General Conditions.

Twenty Third Edition January 2002
Revised March 2002
INSTRUCTIONS TO BIDDERS

For a proposal to be considered it must be in accordance with the following instructions:

1. PROPOSALS

Proposals must be made in strict accordance with the Form of Proposal provided therefor, and all blank spaces for bids, alternates, and unit prices applicable to bidder’s work shall be properly filled in. When requested alternates are not bid, the proposal may be considered incomplete. The bidder agrees that bid on Form of Proposal detached from specifications will be considered and will have the same force and effect as if attached thereto. Photocopied or faxed proposals will not be considered. Numbers shall be stated both in writing and in figures for the base bids and alternates.

Any modifications to the Form of Proposal (including alternates and/or unit prices) will disqualify the bid and may cause the bid to be rejected.

The bidder shall fill in the Form of Proposal as follows:

a. If the documents are executed by a sole owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them.

b. If the documents are executed by a partnership, that fact shall be evidenced by the word "Co-Partner" appearing after the name of the partner executing them.

c. If the documents are executed on the part of a corporation, they shall be executed by either the president or the vice president and attested by the secretary or assistant secretary in either case, and the title of the office of such persons shall appear after their signatures. The seal of the corporation shall be impressed on each signature page of the documents.

d. If the proposal is made by a joint venture, it shall be executed by each member of the joint venture in the above form for sole owner, partnership or corporation, whichever form is applicable.

e. All signatures shall be properly witnessed.

f. If the contractor’s license of a bidder is held by a person other than an owner, partner or officer of a firm, then the licensee shall also sign and be a party to the proposal. The title "Licensee" shall appear under his/her signature.

Proposals shall be addressed as indicated in the Advertisement for Bids and shall be delivered, enclosed in an opaque sealed envelope, marked "Proposal" and bearing the title of the work, name of the bidder, and the contractor’s license number of the bidder. Bidders shall clearly mark on the outside of the bid envelope which contract(s) they are bidding.

Bidder shall identify on the bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts or an affidavit indicating work under contract will be self-performed, as required by G.S. 143-128.2(c) and G.S. 143-128.2(f). Failure to comply with these requirements is grounds for rejection of the bid.

For projects bid in the single-prime alternative, the names and license numbers of major subcontractors shall be listed on the proposal form.
It shall be the specific responsibility of the bidder to deliver his bid to the proper official at the selected place and prior to the announced time for the opening of bids. Later delivery of a bid for any reason, including delivery by the United States Postal Service, shall disqualify the bid.

Modifications of previously deposited bids will be acceptable only if delivered in writing or by telegram or fax to the place of the bid opening prior to the time for opening bids. Telegraphic and fax modifications must be confirmed in writing within 72 hours of the opening of bids.

Unit prices quoted in the proposal shall include overhead and profit and shall be the full compensation for the contractor's cost involved in the work. See General Conditions, Article 19c-1.

2. EXAMINATION OF CONDITIONS

It is understood and mutually agreed that by submitting a bid the bidder acknowledges that he has carefully examined all documents pertaining to the work, the location, accessibility and general character of the site of the work and all existing buildings and structures within and adjacent to the site, and has satisfied himself as to the nature of the work, the condition of existing buildings and structures, the conformation of the ground, the character, quality and quantity of the material to be encountered, the character of the equipment, machinery, plant and any other facilities needed preliminary to and during prosecution of the work, the general and local conditions, the construction hazards, and all other matters, including, but not limited to, the labor situation which can in any way affect the work under the contract, and including all safety measures required by the Occupational Safety and Health Act of 1970 and all rules and regulations issued pursuant thereto. It is further mutually agreed that by submitting a proposal the bidder acknowledges that he has satisfied himself as to the feasibility and meaning of the plans, drawings, specifications and other contract documents for the construction of the work and that he accepts all the terms, conditions and stipulations contained therein; and that he is prepared to work in cooperation with other contractors performing work on the site.

Reference is made to contract documents for the identification of those surveys and investigation reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the work which have been relied upon by the designer in preparing the documents. The owner will make copies of all such surveys and reports available to the bidder upon request.

Each bidder may, at his own expense, make such additional surveys and investigations as he may deem necessary to determine his bid price for the performance of the work. Any on-site investigation shall be done at the convenience of the owner. Any reasonable request for access to the site will be honored by the owner.

3. BULLETINS AND ADDENDA

Any addenda to specifications issued during the time of bidding are to be considered covered in the proposal and in closing a contract they will become a part thereof. It shall be the bidder’s responsibility to ascertain prior to bid time the addenda issued and to see that his bid includes any changes thereby required.

Should the bidder find discrepancies in, or omission from, the drawings or documents or should he be in doubt as to their meaning, he shall at once notify the designer who will send written instructions in the form of addenda to all bidders. Notification should be no later than seven (7) days prior to the date set for receipt of bids. Neither the owner nor the designer will be responsible for any oral instructions.
All addenda shall be acknowledged by the bidder(s) on the Form of Proposal.

4. BID SECURITY

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company insured by the Federal Deposit Insurance Corporation, or a bid bond in an amount equal to not less than five percent (5%) of the proposal, said deposit to be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten (10) days after the award or to give satisfactory surety as required by law (G.S. 143-129).

Bid bond shall be conditioned that the surety will, upon demand, forthwith make payment to the obligee upon said bond if the bidder fails to execute the contract. The owner may retain bid securities of any bidder(s) who may have a reasonable chance of award of contract for the full duration of time stated in the Notice to Bidders. Other bid securities may be released sooner, at the discretion of the owner. All bid securities (cash or certified checks) shall be returned to the bidders promptly after award of contracts, and no later then seven (7) days after expiration of the holding period stated in the Notice to Bidders. Standard Form of Bid Bond is included in these specifications (Section 304).

5. RECEIPT OF BIDS

Bids shall be received in strict accordance with requirements of the General Statutes of North Carolina. Bid security shall be required as prescribed by statute. Prior to opening of any bids on the project, the bidder will be permitted to change or withdraw his bid. Guidelines for opening of public construction bids are available from the State Construction Office.

6. OPENING OF BIDS

Upon opening, all bids shall be read aloud. Once any bid is opened, there shall not be any withdrawal of bids by any bidder and no bids may be returned by the designer to any bidder. After the bid opening, a bidder may request that his bid be withdrawn from consideration without forfeiture of his bid security in accordance with the provisions of the North Carolina General Statute 143-129.1. After the opening of bids, no bid may be withdrawn, except under the provisions of General Statute 143-129.1, for a period of thirty days unless otherwise specified. Should the successful bidder default and fail to execute a contract, the contract may be awarded to the next lowest and responsible bidder. The owner reserves the unqualified right to reject any and all bids. Reasons for rejection may include, but shall not be limited to, the following:

   a. If the Form of Proposal furnished to the bidder is not used or is altered.

   b. If the bidder fails to insert a price for all bid items, alternate and unit prices requested.

   c. If the bidder adds any provisions reserving the right to accept or reject any award.

   d. If there are unauthorized additions or conditional bids, or irregularities of any kind which tend to make the proposal incomplete, indefinite or ambiguous as to its meaning.

   e. If the bidder fails to complete the proposal form where information is requested so the bid may be properly evaluated by the owner.

   f. If the unit prices contained in the bid schedule are unacceptable to the owner and the State Construction Office.
g. If the bidder fails to comply with other instructions stated herein.

7. BID EVALUATION

The award of the contract will be made to the lowest responsible bidder as soon as practical. The owner may award on the basis of the base bid and any alternates the owner chooses.

Before awarding a contract, the owner may require the apparent low bidder to qualify himself to be a responsible bidder by furnishing any or all of the following data:

a. The latest financial statement showing assets and liabilities of the company or other information satisfactory to the owner.

b. A listing of completed projects of similar size.

c. Permanent name and address of place of business.

d. The number of regular employees of the organization and length of time the organization has been in business under present name.

e. The name and home office address of the surety proposed and the name and address of the responsible local claim agent.

f. The names of members of the firms who hold appropriate trade licenses, together with license numbers.

Failure or refusal to furnish any of the above information, if requested, shall constitute a basis for disqualification of any bidder.

In determining the lowest responsible, responsive bidder, the owner shall take into consideration the bidder’s compliance with the requirements of G.S. 143-128.2(c), the past performance of the bidder on construction contracts for the State with particular concern given to completion times, quality of work, cooperation with other contractors, and cooperation with the designer and owner. Failure of the low bidder to furnish affidavit and/or documentation as required by G.S. 143-128.2(c) may constitute a basis for disqualification of the bid.

Should the owner adjudge that the apparent low bidder is not the lowest responsible, responsive bidder by virtue of the above information, said apparent low bidder will be so notified and his bid security shall be returned to him.

8. PERFORMANCE BOND

The successful bidder, upon award of contract, shall furnish a performance bond in an amount equal to 100 percent of the contract price. See Article 35, General Conditions.

9. PAYMENT BOND

The successful bidder, upon award of contract, shall furnish a payment bond in an amount equal to 100 percent of the contract price. See Article 35, General Conditions.
10. **PAYMENTS**

Payments to the successful bidders (contractors) will be made on the basis of monthly estimates. See Article 31, General Conditions.

11. **PRE-BID CONFERENCE**

Prior to the date set for receiving bids, the Designer may arrange and conduct a Pre-Bid Conference for all prospective bidders. The purpose of this conference is to review project requirements and to respond to questions from prospective bidders and their subcontractors or material suppliers related to the intent of bid documents. Attendance by prospective bidders shall be as required by the “Notice to Bidders”.

12. **SUBSTITUTIONS**

In accordance with the provisions of G.S. 133-3, material, product, or equipment substitutions proposed by the bidders to those specified herein can only be considered during the bidding phase until ten (10) days prior to the receipt of bids when submitted to the Designer with sufficient data to confirm material, product, or equipment equality. Proposed substitutions submitted after this time will be considered only as potential change order.

Submittals for proposed substitutions shall include the following information:

a. Name, address, and telephone number of manufacturer and supplier as appropriate.

b. Trade name, model or catalog designation.

c. Product data including performance and test data, reference standards, and technical descriptions of material, product, or equipment. Include color samples and samples of available finishes as appropriate.

d. Detailed comparison with specified products including performance capabilities, warranties, and test results.

e. Other pertinent data including data requested by the Designer to confirm product equality.

If a proposed material, product, or equipment substitution is deemed equal by the Designer to those specified, all bidders of record will be notified by Addendum.
GENERAL CONDITIONS OF THE CONTRACT

The use or reproduction of this document or any part thereof is authorized for and limited to use on projects of the State of North Carolina, and is distributed by, through and at the discretion of the State Construction Office, Raleigh, North Carolina, for that distinct and sole purpose.

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ARTICLE 1 - DEFINITIONS

a. The **contract documents** consist of the Notice to Bidders; Instructions to Bidders; General Conditions of the Contract; special conditions if applicable; Supplementary General Conditions; the drawing and specifications, including all bulletins, addenda or other modifications of the drawings and specifications incorporated into the documents prior to their execution; the proposal; the contract; the performance bond; the payment bond; insurance certificates; the approval of the attorney general; and the certificate of the Office of State Budget and Management. All of these items together form the contract.

b. The **owner** is the State of North Carolina through the agency named in the contract.

c. The **designer(s)** are those referred to within this contract, or their authorized representatives. The designer(s), as referred to herein, shall mean architect and/or engineer. They will be referred to hereinafter as if each were of the singular number, masculine gender.

d. The **contractor**, as referred to hereinafter, shall be deemed to be either of the several contracting parties called the "Party of the First Part" in either of the several contracts in connection with the total project. Where, in special instances hereinafter, a particular contractor is intended, an adjective precedes the word "contractor," as "general," "heating," etc. For the purposes of a single prime contract, the term Contractor shall be deemed to be the single contracting entity identified as the “Party of the First Part” in the single Construction Contract. Any references or adjectives that name or infer multiple prime contractors shall be interpreted to mean the single prime Contractor.

e. A **subcontractor**, as the term is used herein, shall be understood to be one who has entered into a direct contract with a contractor, and includes one who furnishes materials worked to a special design in accordance with plans and specifications covered by the contract, but does not include one who only sells or furnishes materials not requiring work so described or detailed.

f. **Written notice** shall be defined as notice in writing delivered in person to the contractor, or to a partner of the firm in the case of a partnership, or to a member of the contracting organization, or to an officer of the organization in the case of a corporation, or sent to the last known business address of the contracting organization by registered mail.

g. **Work**, as used herein as a noun, is intended to include materials, labor, and workmanship of the appropriate contractor.

h. The **project** is the total construction work to be performed under the contract documents by the several contractors.

i. **Project Expediter**, as used herein, is an entity stated in the contract documents, designated to effectively facilitate scheduling and coordination of work activities. See Article 14(f) for responsibilities of a Project Expediter. **For the purposes of a single prime contract, the single prime contractor shall be designated as the Project Expediter.**

j. **Change order**, as used herein, shall mean a written order to the contractor subsequent to the signing of the contract authorizing a change in the contract. The change order shall be signed by the contractor, designer and the owner, and approved by the State Construction Office, in that order (Article 19).
k. **Field Order**, as used herein, shall mean a written approval for the contractor to proceed with the work requested by owner prior to issuance of a formal Change Order. The field order shall be signed by the contractor, designer, owner, and State Construction Office.

l. **Time of completion**, as stated in the contract documents, is to be interpreted as consecutive calendar days measured from the date established in the written Notice to Proceed, or such other date as may be established herein (Article 23).

m. **Liquidated damages**, as stated in the contract documents, is an amount reasonably estimated in advance to cover the losses incurred by the owner by reason of failure of the contractor(s) to complete the work within the time specified.

n. **Surety**, as used herein, shall mean the bonding company or corporate body which is bound with and for the contractor, and which engages to be responsible for the contractor and his acceptable performance of the work.

o. **Routine written communications between the Designer and the Contractor** are any communication other than a “request for information” provided in letter, memo, or transmittal format, sent by mail, courier, electronic mail, or facsimile. Such communications can not be identified as “request for information”.

p. **Clarification or Request for information (RFI)** is a request from the Contractor seeking an interpretation or clarification by the Designer relative to the contract documents. The RFI, which shall be labeled (RFI), shall clearly and concisely set forth the issue or item requiring clarification or interpretation and why the response is needed. The RFI must set forth the Contractor’s interpretation or understanding of the contract documents requirements in question, along with reasons for such an understanding.

q. **Approval** means written or imprinted acknowledgement that materials, equipment or methods of construction are acceptable for use in the work.

r. **Inspection** shall mean examination or observation of work completed or in progress to determine its compliance with contract documents.

s. **“Equal to” or “approved equal”** shall mean materials, products, equipment, assemblies, or installation methods considered equal by the bidder in all characteristics (physical, functional, and aesthetic) to those specified in the contract documents.

t. **“Substitution” or “substitute”** shall mean materials, products, equipment, assemblies, or installation methods deviating in at least one characteristic (physical, functional, or aesthetic) from those specified, but which in the opinion of the bidder would improve competition and/or enhance the finished installation.

ARTICLE 2 - INTENT AND EXECUTION OF DOCUMENTS

a. The drawings and specifications are complementary, one to the other. That which is shown on the drawings or called for in the specifications shall be as binding as if it were both called for and shown. The intent of the drawings and specifications is to establish the scope of all labor, materials, transportation, equipment, and any and all other things necessary to provide a complete job. In case of discrepancy or disagreement in the contract documents, the order of precedence shall be: Form of Contract, specifications, large-scale detail drawings, small-scale drawings.
b. The wording of the specifications shall be interpreted in accordance with common usage of the language except that words having a commonly used technical or trade meaning shall be so interpreted in preference to other meanings.

c. The contractor shall execute each copy of the proposal, contract, performance bond and payment bond as follows:

1. If the documents are executed by a sole owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them.

2. If the documents are executed by a partnership, that fact shall be evidenced by the word "Co-Partner" appearing after the name of the partner executing them.

3. If the documents are executed on the part of a corporation, they shall be executed by either the president or the vice president and attested by the secretary or assistant secretary in either case, and the title of the office of such persons shall appear after their signatures. The seal of the corporation shall be impressed on each signature page of the documents.

4. If the documents are made by a joint venture, they shall be executed by each member of the joint venture in the above form for sole owner, partnership or corporation, whichever form is applicable to each particular member.

5. All signatures shall be properly witnessed.

6. If the contractor's license is held by a person other than an owner, partner or officer of a firm, then the licensee shall also sign and be a party to the contract. The title "Licensee" shall appear under his/her signature.

7. The bonds shall be executed by an attorney-in-fact. There shall be attached to each copy of the bond a certified copy of power of attorney properly executed and dated.

8. Each copy of the bonds shall be countersigned by an authorized individual agent of the bonding company licensed to do business in North Carolina. The title "Licensed Resident Agent" shall appear after the signature.

9. The seal of the bonding company shall be impressed on each signature page of the bonds.

10. The contractor's signature on the performance bond and the payment bond shall correspond with that on the contract.

ARTICLE 3 - CLARIFICATIONS AND DETAIL DRAWINGS

a. In such cases where the nature of the work requires clarification by the designer, such clarification shall be furnished by the designer with reasonable promptness by means of written instructions or detail drawings, or both. Clarifications and drawings shall be consistent with the intent of contract documents, and shall become a part thereof.

b. The contractor(s) and the designer shall prepare, if deemed necessary, a schedule fixing dates upon which foreseeable clarifications will be required. The schedule will be subject to addition or change in accordance with progress of the work. The designer shall furnish drawings or clarifications in accordance with that schedule. The contractor shall not proceed with the work without such detail drawings and/or written clarifications.
ARTICLE 4 - COPIES OF DRAWINGS AND SPECIFICATIONS

The designer shall furnish free of charge to the contractors copies of plans and specifications as follows:

a. General contractor - Up to twelve (12) sets of general contractor drawings and specifications, up to six (6) sets of which shall include drawings and specifications of all other contracts, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.

b. Each other contractor - Up to six (6) sets of the appropriate drawings and specifications, up to three (3) sets of which shall include drawings and specifications of all other contracts, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.

c. Additional sets shall be furnished at cost, including mailing, to the contractor upon request by the contractor. This cost shall be stated in the bidding documents.

d. For the purposes of a single-prime contract, the contractor shall receive up to 30 sets of drawings and specifications, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.

ARTICLE 5 - SHOP DRAWINGS, SUBMITTALS, SAMPLES, DATA

a. Within 30 consecutive calendar days after the notice to proceed, each prime contractor shall submit a schedule for anticipated submission of all shop drawings, product data, samples, and similar submittals to the Project Expediter and the Designer. This schedule shall indicate the items, relevant specification sections, other related submittal, data, and the date when these items will be furnished to the designer.

b. The Contractor shall review, approve and submit to the Designer all Shop or Setting Drawings, Product Data, Samples, Color Charts, and similar submittal data required or reasonably implied by the Contract Documents. Required Submittals shall bear the Contractor’s stamp of approval, any exceptions to the Contract Documents shall be noted on the submittals, and copies of all submittals shall be of sufficient quantity for the Designer to retain up to three (3) copies of each submittal for his own use plus additional copies as may be required by the Contractor. Submittals shall be presented to the Designer with reasonable promptness and time so as to cause no delay in the activities of the Owner or of separate Contractors.

c. The Designer shall review required submittals promptly, noting desired corrections if any, and retaining three (3) copies for his use. The remaining copies of each submittal shall be returned to the Contractor not later than twenty (20) days from the date of receipt by the Designer, for the Contractor’s use or for corrections and resubmittal as noted by the Designer. When resubmittals are required, the submittal procedure shall be the same as for the original submittals.

d. Approval of shop drawings by the Designer shall not be construed as relieving the Contractor from responsibility for compliance with the design or terms of the contract documents nor from responsibility of errors of any sort in the shop drawings, unless such lack of compliance or errors first have been called in writing to the attention of the Designer by the Contractor.
ARTICLE 6 - WORKING DRAWINGS AND SPECIFICATIONS AT THE JOB SITE

a. The contractor shall maintain, in readable condition at his job office, one complete set of working drawings and specifications for his work including all shop drawings. Such drawings and specifications shall be available for use by the designer or his authorized representative.

b. The contractor shall maintain at the job office, a day-to-day record of work-in-place that is at variance with the contract documents. Such variations shall be fully noted on project drawings by the contractor and submitted to the designer upon project completion and no later than 30 days after acceptance of the project.

ARTICLE 7 - OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

All drawings and specifications are instruments of service and remain the property of the owner. The use of these instruments on work other than this contract without permission of the owner is prohibited. All copies of drawings and specifications other than contract copies shall be returned to the owner upon request after completion of the work.

ARTICLE 8 - MATERIALS, EQUIPMENT, EMPLOYEES

a. The contractor shall, unless otherwise specified, supply and pay for all labor, transportation, materials, tools, apparatus, lights, power, heat, sanitary facilities, water, scaffolding and incidentals necessary for the completion of his work, and shall install, maintain and remove all equipment of the construction, other utensils or things, and be responsible for the safe, proper and lawful construction, maintenance and use of same, and shall construct in the best and most workmanlike manner, a complete job and everything incidental thereto, as shown on the plans, stated in the specifications, or reasonably implied therefrom, all in accordance with the contract documents.

b. All materials shall be new and of quality specified, except where reclaimed material is authorized herein and approved for use. Workmanship shall at all times be of a grade accepted as the best practice of the particular trade involved, and as stipulated in written standards of recognized organizations or institutes of the respective trades except as exceeded or qualified by the specifications.

c. Upon notice, the contractor shall furnish evidence as to quality of materials.

d. Products are generally specified by ASTM or other reference standard and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer combination listed. However, the contractor shall be aware that the cited examples are used only to denote the quality standard of product desired and that they do not restrict bidders to a specific brand, make, manufacturer or specific name; that they are used only to set forth and convey to bidders the general style, type, character and quality of product desired; and that equivalent products will be acceptable. Request for substitution of materials, items, or equipment shall be submitted to the designer for approval or disapproval; such approval or disapproval shall be made by the designer prior to the opening of bids.

e. Each contractor shall obtain written approval from the designer for the use of products, materials, equipment, assemblies or installation methods claimed as equal to those
specified. Such approvals must be obtained as soon after contract awards as possible and before any materials are ordered. Applications for approvals shall be made by the contractor and not by subcontractors or material suppliers within thirty (30) days following award of contract. When the submittal schedule provided under Article 5a is approved, no further substitutions will be permitted except in unusual or extenuating circumstances. If no list is submitted, the contractor shall supply materials specified.

f. The designer is the judge of equality for proposed substitution of products, materials or equipment.

g. If at any time during the construction and completion of the work covered by these contract documents, the conduct of any workman of the various crafts be adjudged a nuisance to the owner or designer, or if any workman be considered detrimental to the work, the contractor shall order such parties removed immediately from grounds.

ARTICLE 9 - ROYALTIES, LICENSES AND PATENTS

It is the intention of the contract documents that the work covered herein will not constitute in any way infringement of any patent whatsoever unless the fact of such patent is clearly evidenced herein. The contractor shall protect and save harmless the owner against suit on account of alleged or actual infringement. The contractor shall pay all royalties and/or license fees required on account of patented articles or processes, whether the patent rights are evidenced hereinafter.

ARTICLE 10 - PERMITS, INSPECTIONS, FEES, REGULATIONS

a. The contractor shall give all notices and comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work under this contract. If the contractor observes that the drawings and specifications are at variance therewith, he shall promptly notify the designer in writing. See Instructions to Bidders, Paragraph 3, Bulletins and Addenda. Any necessary changes required after contract award shall be made by change order in accordance with Article 19. If the contractor performs any work knowing it to be contrary to such laws, ordinances, codes, rules and regulations, and without such notice to the designer, he shall bear all cost arising therefrom. Additional requirements implemented after bidding will be subject to equitable negotiations.

b. All work under this contract shall conform to the North Carolina State Building Code and other State, local and national codes as are applicable. The cost of all required inspections and permits shall be the responsibility of the contractor.

c. Projects constructed by the State of North Carolina or by any agency or institution of the State are not subject to inspection by any county or municipal authorities and are not subject to county or municipal building codes. The contractor shall, however, cooperate with the county or municipal authorities by obtaining building permits. Permits shall be obtained at no cost.

d. Projects involving local funding (community colleges) are subject to county and municipal building codes and inspection by local authorities. The contractor shall pay the cost of these permits and inspections.
ARTICLE 11 - PROTECTION OF WORK, PROPERTY AND THE PUBLIC

a. The contractors shall be jointly responsible for the entire site and the building or construction of the same and provide all the necessary protections, as required by the owner or designer, and by laws or ordinances governing such conditions. They shall be responsible for any damage to the owner's property, or of that of others on the job, by them, their personnel, or their subcontractors, and shall make good such damages. They shall be responsible for and pay for any damages caused to the owner. All contractors shall have access to the project at all times.

b. The contractor shall provide cover and protect all portions of the structure when the work is not in progress, provide and set all temporary roofs, covers for doorways, sash and windows, and all other materials necessary to protect all the work on the building, whether set by him, or any of the subcontractors. Any work damaged through the lack of proper protection or from any other cause, shall be repaired or replaced without extra cost to the owner.

c. No fires of any kind will be allowed inside or around the operations during the course of construction without special permission from the designer.

d. The contractor shall protect all trees and shrubs designated to remain in the vicinity of the operations by building substantial boxes around same. He shall barricade all walks, roads, etc., as directed by the designer to keep the public away from the construction. All trenches, excavations or other hazards in the vicinity of the work shall be well barricaded and properly lighted at night.

e. The contractor shall provide all necessary safety measures for the protection of all persons on the job, including the requirements of the A.G.C. Accident Prevention Manual in Construction, as amended, and shall fully comply with all state laws or regulations and North Carolina State Building Code requirements to prevent accident or injury to persons on or about the location of the work. He shall clearly mark or post signs warning of hazards existing, and shall barricade excavations, elevator shafts, stairwells and similar hazards. He shall protect against damage or injury resulting from falling materials and he shall maintain all protective devices and signs throughout the progress of the work.


g. The contractor shall designate a responsible member of his organization as safety inspector, whose duties shall include accident prevention on the work project. The name of the safety inspector shall be made known to the designer at the time the work is started.

h. In the event of emergency affecting the safety of life, the protection of work, or the safety of adjoining properties, the contractor is hereby authorized to act at his own discretion, without further authorization from anyone, to prevent such threatened injury or damage. Any compensation claimed by the contractor on account of such action shall be determined as provided for under Article 19(b).
ARTICLE 12 - SEDIMENTATION POLLUTION CONTROL ACT OF 1973

a. Any land-disturbing activity performed by the contractor(s) in connection with the project shall comply with all erosion control measures set forth in the contract documents and any additional measures which may be required in order to ensure that the project is in full compliance with the Sedimentation Pollution Control Act of 1973, as implemented by Title 15, North Carolina Administrative Code, Chapter 4, Sedimentation Control, Subchapters 4A, 4B and 4C, as amended (15 N.C.A.C. 4A, 4B and 4C).

b. Upon receipt of notice that a land-disturbing activity is in violation of said act, the contractor(s) shall be responsible for ensuring that all steps or actions necessary to bring the project in compliance with said act are promptly taken.

c. The contractor(s) shall be responsible for defending any legal actions instituted pursuant to N.C.G.S. 113A-64 against any party or persons described in this article.

d. To the fullest extent permitted by law, the contractor(s) shall indemnify and hold harmless the owner, the designer and the agents, consultants and employees of the owner and designer, from and against all claims, damages, civil penalties, losses and expenses, including, but not limited to, attorneys' fees, arising out of or resulting from the performance of work or failure of performance of work, provided that any such claim, damage, civil penalty, loss or expense is attributable to a violation of the Sedimentation Pollution Control Act. Such obligation shall not be construed to negate, abridge or otherwise reduced any other right or obligation of indemnity which would otherwise exist as to any party or persons described in this article.

ARTICLE 13 - INSPECTION OF THE WORK

a. It is a condition of this contract that the work shall be subject to inspection during normal working hours by the designer, designated official representatives of the owner, and those persons required by state law to test special work for official approval. The contractor shall therefore provide safe access to the work at all times for such inspections.

b. All instructions to the contractor will be made only by or through the designer or his designated project representative. Observations made by official representatives of the owner shall be conveyed to the designer for review and coordination prior to issuance to the contractor.

c. Where special inspection or testing is required by virtue of any state laws, instructions of the designer, specifications or codes, the contractor shall give adequate notice to the designer of the time set for such inspection or test, if the inspection or test will be conducted by a party other than the designer. Such special tests or inspections will be made in the presence of the designer, or his authorized representative, and it shall be the contractor's responsibility to serve ample notice of such tests.

d. All laboratory tests shall be paid by the owner unless provided otherwise in the contract documents except the general contractor shall pay for laboratory tests to establish design mix for concrete, and for additional tests to prove compliance with contract documents where materials have tested deficient except when the testing laboratory did not follow the appropriate ASTM testing procedures.

e. Should any work be covered up or concealed prior to inspection and approval by the designer, such work shall be uncovered or exposed for inspection, if so requested by the designer in writing. Inspection of the work will be made promptly upon notice from the contractor. All cost involved in uncovering, repairing, replacing, recovering and restoring
to design condition, the work that has been covered or concealed will be paid by the contractor involved.

f. If any other portion of the work has been covered which the designer has not specifically requested to observe prior to being covered, the designer may request to see such work and it shall be uncovered by the contractor. If such work be found in accordance with the contract documents, the cost of uncovering and replacement shall, by appropriate change order, be charged to the owner. If such work be found not in accordance with the contract documents, the contractor shall pay such costs unless it be found that this condition was caused by the owner or a separate contractor as provided in Article 15, in which event the owner or the separate contractor shall be responsible for the payment of such costs.

ARTICLE 14 - CONSTRUCTION SUPERVISION AND SCHEDULE

a. Throughout the progress of the work, each contractor shall keep at the job site, a competent superintendent or supervisory staff satisfactory to the designer. The superintendent shall not be changed without the consent of the designer unless said superintendent ceases to be employed by the contractor or ceases to be competent. The superintendent shall have authority to act on behalf of the contractor, and instructions, directions or notices given to him shall be as binding as if given to the contractor. However, directions, instructions, and notices shall be confirmed in writing.

b. The contractor shall examine and study the drawings and specifications and fully understand the project design, and shall provide constant and efficient supervision to the work. Should he discover any discrepancies of any sort in the drawings or specifications, he shall report them to the designer without delay. He will not be held responsible for discrepancies in the drawings and/or specifications, but shall be held responsible to report them should they become known to him.

c. All contractors shall be required to cooperate and consult with each other during the construction of this project. Prior to installation of work, all contractors shall jointly prepare coordination drawings, showing locations of various ductworks, piping, motors, pumps, and other mechanical or electrical equipment, in relation to the structure, walls and ceilings. These drawings shall be submitted to the designer through the Project Expediter for information only. Each contractor shall lay out and execute his work to cause the least delay to other contractors. Each contractor shall be financially responsible for any damage to other contractor's work and for undue delay caused to other contractors on the project.

d. The contractor is required to attend monthly job site progress conferences as called by the designer. The contractor shall be represented at these job progress conferences by both home office and project personnel. These representatives shall have authority to act on behalf of the contractor. These meetings shall be open to subcontractors, material suppliers and any others who can contribute toward maintaining required job progress. It shall be the principal purpose of these meetings, or conferences, to effect coordination, cooperation and assistance in every practical way toward the end of maintaining progress of the project on schedule and to complete the project within the specified contract time. Each contractor shall be prepared to assess progress of the work as required in his particular contract and to recommend remedial measures for correction of progress as may be appropriate. The designer or his authorized representative shall be the coordinator of the conferences and shall preside as chairman.

e. The contractor(s) shall, if required by the Supplementary General Conditions, employ an engineer or a land surveyor licensed in the State of North Carolina to lay out the work
and to establish a bench mark nearby in a location where same will not be disturbed and where direct instruments sights may be taken.

f. The designer shall designate a Project Expediter on projects involving two or more prime contracts. The Project Expediter shall be designated in the Supplementary General Conditions. The Project Expediter shall have the following responsibilities.

1. Prepare the project construction schedule and shall allow all prime contractors (multi-prime contract) and subcontractors (single-prime contract) performing general, plumbing, HVAC, and electrical work equal input into the preparation of the initial construction schedule.

2. Maintain a project progress schedule for all contractors.

3. Give adequate notice to all contractors to ensure efficient continuity of all phases of the work.

4. Notify the designer of any changes in the project schedule.

5. Recommend to the owner whether payment to a contractor shall be approved.

g. It shall be the responsibility of the Project Expediter to cooperate with and obtain from several prime contractors and subcontractors on the job, their respective work activities and integrate these activities into a project construction schedule in form of a detailed bar chart or Critical Path Method (CPM) schedule. Each prime contractor shall provide work activities within fourteen (14) days of request by the Project Expediter. A “work activity”, for scheduling purposes, shall be any component or contractual requirement of the project requiring at least one (1) day, but not more than fourteen (14) days, to complete or fulfill. The project construction schedule shall graphically show all salient features of the work required to construct the project from start to finish and within the allotted time established in the contract. The time (in days) between the contractor’s early completion and contractual completion dates is part of the project total float time; and shall be used as such, unless amended by a change order. On a multi-prime project, each prime contractor shall review the proposed construction schedule and approve same in writing. The Project Expediter shall submit the proposed construction schedule to the designer for comments. The complete Project construction schedule shall be of the type set forth in the Supplementary General Condition or subparagraph (1) or (2) below, as appropriate:

1. For a project with total contracts of $1,000,000 or less, a bar chart schedule will satisfy the above requirement. The schedule shall indicate the estimated starting and completion dates for each major element of the work.

2. For a project with total contracts over $1,000,000, a Critical Path Method (CPM) schedule shall be utilized to control the planning and scheduling of the Work. The CPM schedule shall be the responsibility of the Project Expediter and shall be paid for by the Project Expediter.
Bar Chart Schedule: Where a bar chart schedule is required, it shall be time-scaled in weekly increments, shall indicate the estimated starting and completion dates for each major element of the work by trade and by area, level, or zone, and shall schedule dates for all salient features, including but not limited to the placing of orders for materials, submission of shop drawings and other Submittals for approval, approval of shop drawings by designers, the manufacture and delivery of material, the testing and the installation of materials, supplies and equipment, and all Work activities to be performed by the Contractor. The Contractor shall allow sufficient time in his schedule for all required inspections. Each Work activity will be assigned a time estimate by the Contractor. One day shall be the smallest time unit used.

CPM Schedule: Where a CPM schedule is required, it shall be in time-scaled precedence format using the Project Expediter’s logic and time estimates. The CPM schedule shall be drawn or plotted with activities grouped or zoned by Work area or subcontract as opposed to a random (or scattered) format. The CPM schedule shall be time-scaled on a weekly basis and shall be drawn or plotted at a level of detail and logic which will schedule all salient features of the work to be performed by the Contractor. The Contractor shall allow sufficient time in his schedule for all required inspections. Each Work activity will be assigned a time estimate by the Contractor. One day shall be the smallest time unit used.

The CPM schedule will identify and describe each activity, state the duration of each activity, the calendar dates for the early and late start and the early and late finish of each activity, and clearly highlight all activities on the critical path. "Total float" and "free float" shall be indicated for all activities. Float time shall not be considered for the exclusive use or benefit of either the Owner or the Contractor, but must be allocated in the best interest of completing the Work within the Contract time. Extensions to the Contract time, when granted by Change Order, will be granted only when equitable time adjustment exceeds the Total Float in the activity or path of activities affected by the change. On contracts with a price over $2,500,000, the CPM schedule shall also show what part of the Contract Price is attributable to each activity on the schedule, the sum of which for all activities shall equal the total Contract Price.

Early Completion of Project: The Contractor may attempt to complete the project prior to the Contract Completion Date. However, such planned early completion shall be for the Contractor's convenience only and shall not create any additional rights of the Contractor or obligations of the Owner under this Contract, nor shall it change the Time for Completion or the Contract Completion Date. The Contractor shall not be required to pay liquidated damages to the Owner because of its failure to complete by its planned earlier date. Likewise, the Owner shall not pay the Contractor any additional compensation for early completion nor will the Owner owe the Contractor any compensation should the Owner, its officers, employees, or agents cause the Contractor not to complete earlier than the date required by the Contract Documents.
h. The proposed project construction schedule shall be presented to the designer no later than thirty (30) days after written notice to proceed. No application for payment will be processed until this schedule is accepted by the owner.

i. The approved project construction schedule shall be distributed to all contractors and displayed at the job site by the Project Expediter.

j. The several contractors shall be responsible for their work activities and shall notify the Project Expediter of any necessary changes or adjustments to their work. The Project Expediter shall maintain the project construction schedule, making monthly adjustments, updates, corrections, etc., that are necessary to finish the project within the Contract time, keeping all contractors and the designer fully informed. Copy of a bar chart schedule annotated to show the current progress shall be submitted by the Contractor(s) to the designer, along with monthly request for payment. For project requiring CPM schedule, the Contractor shall submit a monthly report of the status of all activities. The bar chart schedule or monthly status report shall show the actual Work completed to date in comparison with the original Work scheduled for all activities. If any activities of the work of several contractors are behind schedule, the contractor must indicate in writing, what measures will be taken to bring each such activity back on schedule and to ensure that the Contract Completion Date is not exceeded. A plan of action and recovery schedule shall be developed and submitted to the designer by the Project Expediter, when (1) the contractor’s monthly report indicates delays, that are in the opinion of the designer or the owner, of sufficient magnitude that the contractor’s ability to complete the work by the scheduled completion is brought into question; (2) the updated construction schedule is thirty (30) days behind the planned or baseline schedule and no legitimate time extensions are in process; and (3) the contractor desires to make changes in the logic (sequencing of work) or the planned duration of future activities of the CPM schedule which, in the opinion of the designer or the owner, are of a major nature. The plan of action, when required shall be submitted to the Owner for review within two (2) business days of the Contractor receiving the Owner's written demand. The recovery schedule, when required, shall be submitted to the Owner within five (5) calendar days of the Contractor's receiving the Owner's written demand. Failure to provide an updated construction schedule or a recovery schedule may be grounds for rejection of payment applications or withholding of funds as set forth in Article 33.

k. The Project Expediter shall notify each contractor of such events or time frames that are critical to the progress of the job. Such notice shall be timely and reasonable. Should the progress be delayed due to the work of any of the several contractors, it shall be the duty of the Project Expediter to immediately notify the contractor(s) responsible for such delay, the designer, the State Construction Office and other prime contractors. The designer shall determine the contractor(s) who caused the delays and notify the bonding company of the responsible contractor(s) of the delays; and shall make a recommendation to the owner regarding further action.

l. Designation as Project Expediter entails an additional project control responsibility and does not alter in any way the responsibility of the contractor so designated, nor the responsibility of the other contractors involved in the project.

ARTICLE 15 - SEPARATE CONTRACTS AND CONTRACTOR RELATIONSHIPS

a. Effective from January 1, 2002, Chapter 143, Article 8, was amended, to allow public contracts to be bid in single-prime, dual (single-prime and separate-prime), construction manager at risk, and alternative contracting method as approved by the State Building Commission. The owner reserves the right to prepare separate specifications, receive
separate bids, and award separate contracts for such other major items of work as may be in the best interest of the State. For the purposes of a single prime contract, refer to Article 1 – Definitions.

b. All contractors shall cooperate with each other in the execution of their work, and shall plan their work in such manner as to avoid conflicting schedules or delay of the work. See Article 14, Construction Supervision.

c. If any part of contractor's work depends upon the work of another contractor, defects which may affect that work shall be reported to the designer in order that prompt inspection may be made and the defects corrected. Commencement of work by a contractor where such condition exists will constitute acceptance of the other contractor's work as being satisfactory in all respects to receive the work commenced, except as to defects which may later develop. The designer shall be the judge as to the quality of work and shall settle all disputes on the matter between contractors.

d. Any mechanical or electrical work such as sleeves, inserts, chases, openings, penetrations, etc., which is located in the work of the general contractor shall be built in by the general contractor. The respective mechanical and electrical contractors shall set all sleeves, inserts and other devices that are to be incorporated into the structure in cooperation and under the supervision of the general contractor. The responsibility for the exact location of such items shall be that of the mechanical and/or electrical contractor.

e. The designer and the owner shall have access to the work whenever it is in preparation and progress during normal working hours. The contractor shall provide facilities for such access so the designer may perform his functions under the contract documents.

f. Should a contractor cause damage to the work or property of another contractor, he shall be directly responsible, and upon notice, shall promptly settle the claim or otherwise resolve the dispute.

ARTICLE 16 - SUBCONTRACTS AND SUBCONTRACTORS

a. Within thirty (30) days after award of the contract, the contractor shall submit to the designer and to the State Construction Office a list giving the names and addresses of subcontractors and equipment and material suppliers he proposes to use, together with the scope of their respective parts of the work. Should any subcontractor be disapproved by the designer, the designer shall submit his reasons for disapproval in writing to the State Construction Office for its consideration with a copy to the contractor. If the State Construction Office concurs with the designer's recommendation, the contractor shall submit a substitute for approval. The designer shall act promptly in the approval of subcontractors, and when approval of the list is given, no changes of subcontractors will be permitted except for cause or reason considered justifiable by the designer.

b. The designer will furnish to any subcontractor, upon request, evidence regarding amounts of money paid to the contractor on account of the subcontractor's work.

c. The contractor is and remains fully responsible for his own acts or omissions as well as those of any subcontractor or of any employee of either. The contractor agrees that no contractual relationship exists between the subcontractor and the owner in regard to the contract, and that the subcontractor acts on this work as an agent or employee of the contractor.

d. The owner reserves the right to limit the amount of portions of work to be subcontracted as hereinafter specified.
ARTICLE 17 - CONTRACTOR AND SUBCONTRACTOR RELATIONSHIPS

The contractor agrees that the terms of these contract documents shall apply equally to each subcontractor as to the contractor, and the contractor agrees to take such action as may be necessary to bind each subcontractor to these terms. The contractor further agrees to conform to the Code of Ethical Conduct as adopted by the Associated General Contractors of America, Inc., with respect to contractor-subcontractor relationships, and that payments to subcontractors shall be made in accordance with the provisions of G.S. 143-134.1 titled Interest on final payments due to prime contractors: payments to subcontractors.

a. On all public construction contracts which are let by a board or governing body of the state government or any political subdivision thereof, except contracts let by the Department of Transportation pursuant to G.S. 136-28.1, the balance due prime contractors shall be paid in full within 45 days after respective prime contracts of the project have been accepted by the owner, certified by the architect, engineer or designer to be completed in accordance with terms of the plans and specifications, or occupied by the owner and used for the purpose for which the project was constructed, whichever occurs first. Provided, however, that whenever the architect or consulting engineer in charge of the project determines that delay in completion of the project in accordance with terms of the plans and specifications is the fault of the contractor, the project may be occupied and used for the purposes for which it was constructed without payment of any interest on amounts withheld past the 45 day limit. No payment shall be delayed because of the failure of another prime contractor on such project to complete his contract. Should final payment to any prime contractor beyond the date such contracts have been certified to be completed by the designer or architect, accepted by the owner, or occupied by the owner and used for the purposes for which the project was constructed, be delayed by more than 45 days, said prime contractor shall be paid interest, beginning on the 46th day, at the rate of one percent (1%) per month or fraction thereof unless a lower rate is agreed upon on such unpaid balance as may be due. In addition to the above final payment provisions, periodic payments due a prime contractor during construction shall be paid in accordance with the payment provisions of the contract documents or said prime contractor shall be paid interest on any such unpaid amount at the rate stipulated above for delayed final payments. Such interest shall begin on the date the payment is due and continue until the date on which payment is made. Such due date may be established by the terms of the contract. Funds for payment of such interest on state-owned projects shall be obtained from the current budget of the owning department, institution or agency. Where a conditional acceptance of a contract exists, and where the owner is retaining a reasonable sum pending correction of such conditions, interest on such reasonable sum shall not apply.

b. Within seven days of receipt by the prime contractor of each periodic or final payment, the prime contractor shall pay the subcontractor based on work completed or service provided under the subcontract. Should any periodic or final payment to the subcontractor be delayed by more than seven days after receipt of periodic or final payment by the prime contractor, the prime contractor shall pay the subcontractor interest, beginning on the eighth day, at the rate of one percent (1%) per month or fraction thereof on such unpaid balance as may be due.

c. The percentage of retainage on payments made by the prime contractor to the subcontractor shall not exceed the percentage of retainage on payments made by the owner to the prime contractor. Any percentage of retainage on payments made by the
prime contractor to the subcontractor that exceeds the percentage of retainage on payments made by the owner to the prime contractor shall be subject to interest to be paid by the prime contractor to the subcontractor at the rate of one percent (1%) per month or fraction thereof.

d. Nothing in this section shall prevent the prime contractor at the time of application and certification to the owner from withholding application and certification to the owner for payment to the subcontractor for unsatisfactory job progress; defective construction not remedied; disputed work; third-party claims filed or reasonable evidence that claim will be filed; failure of subcontractor to make timely payments for labor, equipment and materials; damage to prime contractor or another subcontractor; reasonable evidence that subcontract cannot be completed for the unpaid balance of the subcontract sum; or a reasonable amount for retainage not to exceed the initial percentage retained by owner.

ARTICLE 18 - DESIGNER'S STATUS

a. The designer shall provide general administration of the performance of construction contracts, including liaison and necessary inspection of the work to ensure compliance with plans and specifications. He is the agent of the owner only for the purpose of constructing this work and to the extent stipulated in the contract documents. He has authority to stop work or to order work removed, or to order corrections of faulty work where such action may be necessary to assure successful completion of the work.

b. The designer is the impartial interpreter of the contract documents, and, as such, he shall exercise his powers under the contract to enforce faithful performance by both the owner and the contractor, taking sides with neither.

c. Should the designer cease to be employed on the work for any reason whatsoever, then the owner shall employ a competent replacement who shall assume the status of the former designer.

d. The designer will make periodic inspections of the project at intervals appropriate to the stage of construction. He will inspect the progress, the quality and the quantity of the work.

e. The designer and the owner shall have access to the work whenever it is in preparation and progress during normal working hours. The contractor shall provide facilities for such access so the designer may perform his functions under the contract documents.

f. Based on the designer's inspections and evaluations of the project, the designer shall issue interpretations, directives and decisions as may be necessary to administer the project. His decisions relating to artistic effect and technical matters shall be final, provided such decisions are within the limitations of the contract.

ARTICLE 19 - CHANGES IN THE WORK

a. The owner may have changes made in the work covered by the contract. These changes will not invalidate and will not relieve or release the contractor from any guarantee given by him pertinent to the contract provisions. These changes will not affect the validity of the guarantee bond and will not relieve the surety or sureties of said bond. All extra work shall be executed under conditions of the original contract.

b. Except in an emergency endangering life or property, NO CHANGE SHALL BE MADE BY THE CONTRACTOR EXCEPT UPON RECEIPT OF APPROVED CHANGE ORDER OR WRITTEN FIELD ORDER FROM THE DESIGNER,
COUNTERSIGNED BY THE OWNER AND THE STATE CONSTRUCTION OFFICE AUTHORIZING SUCH CHANGE. NO CLAIM FOR ADJUSTMENTS OF THE CONTRACT PRICE SHALL BE VALID UNLESS THIS PROCEDURE IS FOLLOWED.

A FIELD ORDER, TRANSMITTED BY FAX OR HAND DELIVERED, MAY BE USED WHERE THE CHANGE INVOLVED IMPACTS THE CRITICAL PATH OF THE WORK. A FORMAL CHANGE ORDER SHALL BE ISSUED WITHIN THE TIME STATED ON THE FIELD ORDER.

In the event of emergency endangering life or property, the contractor may be directed to proceed on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as may be required, a correct account of costs together with all proper invoices, payrolls and supporting data. Upon completion of the work the change order will be prepared as outlined under either Method "c(1)" or Method "c(2)" or both.

c. In determining the values of changes, either additive or deductive, contractors are restricted to the use of the following methods:

1. Where the extra work involved is covered by unit prices quoted in the proposal, the value of the change shall be computed by application of unit prices based on quantities, estimated or actual as agreed of the items involved, except in such cases where a quantity exceeds the estimated quantity allowance in the contract by one hundred percent (100%) or more. In such cases, either party may elect to proceed under subparagraph c2 herein. If neither party elects to proceed under c2, then unit prices shall apply.

2. The contracting parties shall negotiate and agree upon the equitable value of the change prior to issuance of the change order, and the change order shall stipulate the corresponding lump sum adjustment to the contract price.

d. Under Paragraph “b” and Methods "c(2)" above, the allowances for overhead and profit combined shall not exceed twenty percent (20%) of net cost except where the change involves a subcontractor, allowance shall not exceed fifteen percent (15%) for the subcontractor, and ten percent (10%) for the prime contractor. Under Method "c(1)", no additional allowances shall be made for overhead and profit. In the case of deductible change orders, under Method "c(2)" and Paragraph (b) above, the contractor shall include no less than five percent (5%) profit, but no allowances for overhead.

e. The term "net cost" as used herein shall mean the difference between all proper cost additions and deductions. The "cost" as used herein shall be limited to the following:

1. The actual costs of materials and supplies incorporated or consumed as part of the project;

2. The actual costs of labor expended on the project site;

3. The actual costs of labor burden, limited to the costs of social security (FICA) and Medicare/Medicaid taxes; unemployment insurance costs; health/dental/vision insurance premiums; paid employee leave for holidays, vacation, sick leave, and/or petty leave, not to exceed a total of 30 days per year; retirement contributions; worker’s compensation insurance premiums; and the costs of general liability insurance when premiums are computed based on payroll amounts; the total of which shall not exceed forty percent (40%) of the actual costs of labor;
4. The actual costs of rental for tools, excluding hand tools; equipment; machinery; and temporary facilities required for the project;

5. The actual costs of premiums for bonds, insurance, permit fees, and sales or use taxes related to the project.

Overtime and extra pay for holidays and weekends may be a cost item only to the extent approved by the owner.

f. Should concealed conditions be encountered in the performance of the work below grade, or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the contract documents, the contract sum and time for completion may be equitably adjusted by change order upon claim by either party made within thirty (30) days after the condition has been identified. The cost of such change shall be arrived at by one of the foregoing methods.

ALL CHANGE ORDERS SHALL BE SUPPORTED BY A BREAKDOWN SHOWING METHOD OF ARRIVING AT NET COST AS DEFINED ABOVE.

g. In all change orders, the procedure will be for the designer to request proposals for the change order work in writing. The contractor will provide such proposal and supporting data in suitable format. The designer shall verify correctness. Within fourteen (14) days after receipt of the contractor’s proposal, the designer shall prepare the change order and forward to the contractor for his signature or otherwise respond, in writing, to the contractor’s proposal. Within seven (7) days after receipt of the change order executed by the contractor, the designer shall, certify the change order by his signature, and forward the change order and all supporting data to the owner for the owner's signature. The owner shall execute the change order and forward to the State Construction Office for final approval, within seven (7) days of receipt. The State Construction Office shall act on the change order within seven (7) days. Upon approval by the State Construction Office, one copy remains with the State Construction Office, and the remaining copies are sent to the designer for distribution to the owner(s), contractor(s) and the surety. In case of emergency or extenuating circumstances, approval of changes may be obtained verbally by telephone or field orders approved by all parties, then shall be substantiated in writing as outlined under normal procedure.

h. At the time of signing a change order, the contractor shall be required to certify as follows:

"I certify that my bonding company will be notified forthwith that my contract has been changed by the amount of this change order, and that a copy of the approved change order will be mailed upon receipt by me to my surety."

i. A change order, when issued, shall be full compensation, or credit, for the work included, omitted or substituted. It shall show on its face the adjustment in time for completion of the project as a result of the change in the work.

j. If, during the progress of the work, the owner requests a change order and the contractor's terms are unacceptable, the owner, with the approval of the State Construction Office, may require the contractor to perform such work on a time and material basis in accordance with paragraph “b” above. Without prejudice, nothing in this paragraph shall preclude the owner from performing or to have performed that portion of the work requested in the change order.
ARTICLE 20 - CLAIMS FOR EXTRA COST

a. Should the contractor consider that as a result of any instructions given in any form by the designer, he is entitled to extra cost above that stated in the contract, he shall give written notice thereof to the designer within seven (7) days without delay, and shall not proceed with the work affected until further advised, except in emergency involving the safety of life or property, which condition is covered in Article 19(b) and Article 11(h). No claims for extra compensation will be considered unless the claim is so made. The designer shall render a written decision within seven (7) days of receipt of claim.

b. THE CONTRACTOR SHALL NOT ACT ON INSTRUCTIONS RECEIVED BY HIM FROM PERSONS OTHER THAN THE DESIGNER, AND ANY CLAIMS FOR EXTRA COMPENSATION OR EXTENSION OF TIME ON ACCOUNT OF SUCH INSTRUCTION WILL NOT BE HONORED. The designer will not be responsible for misunderstandings claimed by the contractor of verbal instructions which have not been confirmed in writing, and in no case shall instructions be interpreted as permitting a departure from the contract documents unless such instruction is confirmed in writing and supported by a properly authorized change order.

c. Should a claim for extra compensation by the contractor be denied by the designer or owner, and cannot be resolved by a representative of the State Construction Office, the contractor may request a mediation in connection with GS 143-128(f1) in the dispute resolution rules adopted by the State Building Commission. If the contractor is unable to resolve its claim as a result of mediation, the contractor may pursue the claim in accordance with the provisions of G.S. 143-135.3 and the following:

1. A contractor who has not completed a contract with a board for construction or repair work and who has not received the amount he claims is due under the contract may submit a verified written claim to the director of the State Construction Office of the Department of Administration for the amount the contractor claims is due. The director may deny, allow or compromise the claim, in whole or in part. A claim under this subsection is not a contested case under Chapter 150B of the General Statutes.

2. (a) A contractor who has completed a contract with a board for construction or repair work and who has not received the amount he claims is due under the contract may submit a verified written claim to the director of the State Construction Office of the Department of Administration for the amount the contractor claims is due. The claim shall be submitted within sixty (60) days after the contractor receives a final statement of the board's disposition of his claim and shall state the factual basis for the claim.

(b) The director shall investigate a submitted claim within ninety (90) days of receiving the claim, or within any longer time period upon which the director and the contractor agree. The contractor may appear before the director, either in person or through counsel, to present facts and arguments in support of his claim. The director may allow, deny or compromise the claim, in whole or in part. The director shall give the contractor a written statement of the director's decision on the contractor's claim.

(c) A contractor who is dissatisfied with the director's decision on a claim submitted under this subsection may commence a contested case on the claim under Chapter 150B of the General Statutes. The contested case shall be commenced within sixty (60) days of receiving the director's written statement of the decision.
(d) As to any portion of a claim that is denied by the director, the contractor may, in lieu of the procedures set forth in the preceding subsection of this section, within six (6) months of receipt of the director’s final decision, institute a civil action for the sum he claims to be entitled to under the contract by filing a verified complaint and the issuance of a summons in the Superior Court of Wake County or in the superior court of any county where the work under the contract was performed. The procedure shall be the same as in all civil actions except that all issues shall be tried by the judge, without a jury.

ARTICLE 21 - MINOR CHANGES IN THE WORK

The designer will have the authority to order minor changes in the work not involving an adjustment in the contract sum or time for completion, and not inconsistent with the intent of the contract documents. Such changes shall be effected by written order, copied to the State Construction Office, and shall be binding on the owner and the contractor.

ARTICLE 22 - UNCORRECTED FAULTY WORK

Should the correction of faulty or damaged work be considered inadvisable or inexpedient by the owner and the designer, the owner shall be reimbursed by the contractor. A change order will be issued to reflect a reduction in the contract sum.

ARTICLE 23 - TIME OF COMPLETION, DELAYS, EXTENSION OF TIME

a. The time of completion is stated in the Supplementary General Conditions and in the Form of Construction Contract. The Project Expediter, upon notice of award of contract, shall prepare a construction schedule to complete the project within the time of completion as required by Article 14.

b. The contractors shall commence work to be performed under this agreement on a date to be specified in a written Notice to Proceed from the designer and shall fully complete all work hereunder within the time of completion stated. For each day in excess of the above number of days, the contractor(s) shall pay the owner the sum stated as liquidated damages reasonably estimated in advance to cover the losses to be incurred by the owner by reason of failure of said contractor(s) to complete the work within the time specified, such time being in the essence of this contract and a material consideration thereof.

c. The designer shall be the judge as to the division of responsibility between the contractor(s), based on the construction schedule, weekly reports and job records, and shall apportion the amount of liquidated damages to be paid by each of them, according to delay caused by any or all of them.

d. If the contractor is delayed at any time in the progress of his work by any act or negligence of the owner or the designer, or by any employee of either; by any separate contractor employed by the owner; by changes ordered in the work; by labor disputes at the project site; by abnormal weather conditions not reasonably anticipated for the locality where the work is performed; by unavoidable casualties; by any causes beyond the contractor's control; or by any other causes which the designer and owner determine may justify the delay, then the contract time may be extended by change order for the time which the designer and owner may determine is reasonable.

Time extensions will not be granted for rain, wind, snow or other natural phenomena of normal intensity for the locality where work is performed. For purpose of determining extent of delay attributable to unusual weather phenomena, a determination shall be made
by comparing the weather for the contract period involved with the average of the preceding five (5) year climatic range during the same time interval based on the National Oceanic and Atmospheric Administration National Weather Service statistics for the locality where work is performed and on daily weather logs kept on the job site by the contractor reflecting the effect of the weather on progress of the work and initialed by the designer's representative. Time extensions for weather delays do not entitle the contractor to "extended overhead" recovery.

e. Request for extension of time shall be made in writing within twenty (20) days following cause of delay. In case of continuing cause for delay, the Contractor shall notify the Designer of the delay within 20 days of the beginning of the delay and only one claim is necessary.

f. The contractor shall notify his surety in writing of extension of time granted.

g. No claim shall be allowed on account of failure of the designer to furnish drawings or instructions until twenty (20) days after demand for such drawings and/or instructions. See Article 5c.

ARTICLE 24 - PARTIAL UTILIZATION/BENEFICIAL OCCUPANCY

a. The owner may desire to occupy or utilize all or a portion of the project when the work is substantially complete.

b. Prior to the final payment, the owner, with the approval of the State Construction Office, may request the contractor(s) in writing, through the designer if applicable, to permit him to use a specified part of the project which he believes he may use without significant interference with construction of the other parts of the project. If the contractor(s) agree, the designer will schedule a beneficial occupancy inspection, with the approval of the State Construction Office, after which the designer may issue a certificate of substantial completion. The certificate shall include the following documentation:

1. Date of substantial completion.
2. A tentative list of items to be completed or corrected before final payment.
3. Establishing responsibility between contractor and owner for maintenance, heat, utilities and insurance.
4. Establishing the date for guarantees and warranties under terms of the contract.
5. Consent of surety.
6. Endorsement from insurance company permitting occupancy.

c. The owner shall have the right to exclude the contractor from any part of the project which the designer has so certified to be substantially complete, but the owner will allow the contractor reasonable access to complete or correct work to bring it into compliance with the contract.

d. Occupancy by the owner under this article will in no way relieve the contractor from his contractual requirement to complete the project within the specified time. The contractor will not be relieved of liquidated damages because of beneficial occupancy. The designer may prorate liquidated damages based on the percentage of project occupied.
ARTICLE 25 - FINAL INSPECTION, ACCEPTANCE, AND PROJECT CLOSEOUT

a. Upon notification from the contractor(s) that the project is complete and ready for inspection, the designer shall make a preliminary final inspection to verify that the project is complete and ready for final inspection. Prior to final inspection, the contractor(s) shall complete all items requiring corrective measures noted at the preliminary inspection. The designer shall schedule a final inspection at a time and date acceptable to the owner, contractor(s) and State Construction Office.

b. When contractors finish their work prior to completion by other contractors, these contracts shall be closed out through the final inspection, acceptance and final payment process on recommendation of the designer and approval of the State Construction Office.

c. At the final inspection, the designer shall, if job conditions warrant, record a list of items that are found to be incomplete or not in accordance with the contract documents. At the conclusion of the final inspection, the designer and State Construction Office representative shall make the following determinations:

1. That the project is completed and accepted.
2. That the project is accepted subject to the list of discrepancies (punch list). All punch list items must be completed within thirty (30) days of acceptance or the owner may invoke Article 28, Owner's Right to Do Work.
3. That the project is not complete and another date for a final inspection will be established.

d. Within fourteen (14) days of acceptance per Paragraph c1 or within fourteen (14) days after completion of punch list per Paragraph c2 above, the designer shall certify the work and issue applicable certificate(s) of compliance.

e. Any discrepancies listed or discovered after the date of final inspection and acceptance under Paragraphs c1 or c2 above shall be handled in accordance with Article 42.

f. The date of acceptance will establish the following:

1. The beginning of guarantees and warranties period.
2. The date on which the contractor's insurance coverage for public liability, property damage and builder's risk may be terminated.
3. That no liquidated damages (if applicable) shall be assessed after this date.
4. The termination date of utility cost to the contractor.

ARTICLE 26 - CORRECTION OF WORK BEFORE FINAL PAYMENT

a. Any work, materials, fabricated items or other parts of the work which have been condemned or declared not in accordance with the contract by the designer shall be promptly removed from the work site by the contractor, and shall be immediately replaced by new work in accordance with the contract at no additional cost to the owner. Work or property of other contractors or the owner, damaged or destroyed by virtue of such faulty work, shall be made good at the expense of the contractor whose work is faulty.
b. Correction of condemned work described above shall commence within twenty-four (24) hours after receipt of notice from the designer, and shall make satisfactory progress until completed.

c. Should the contractor fail to proceed with the required corrections, then the owner may complete the work in accordance with the provisions of Article 28.

ARTICLE 27 - CORRECTION OF WORK AFTER FINAL PAYMENT

See Article 35, Performance Bond and Payment Bond, and Article 42, Guarantee. Neither the final certificate, final payment, occupancy of the premises by the owner, nor any provision of the contract, nor any other act or instrument of the owner, nor the designer, shall relieve the contractor from responsibility for negligence, or faulty material or workmanship, or failure to comply with the drawings and specifications. He shall correct or make good any defects due thereto and repair any damage resulting therefrom, which may appear during the guarantee period following final acceptance of the work except as stated otherwise under Article 42, Guarantee. The owner will report any defects as they may appear to the contractor and establish a time limit for completion of corrections by the contractor. The owner will be the judge as to the responsibility for correction of defects.

ARTICLE 28 - OWNER'S RIGHT TO DO WORK

If, during the progress of the work or during the period of guarantee, the contractor fails to prosecute the work properly or to perform any provision of the contract, the owner, after fifteen (15) days' written notice sent by certified mail, return receipt requested, to the contractor from the designer, may perform or have performed that portion of the work. The cost of the work may be deducted from any amounts due or to become due to the contractor, such action and cost of same having been first approved by the designer. Should the cost of such action of the owner exceed the amount due or to become due the contractor, then the contractor or his surety, or both, shall be liable for and shall pay to the owner the amount of said excess.

ARTICLE 29 - ANNULMENT OF CONTRACT

If the contractor fails to begin the work under the contract within the time specified, or the progress of the work is not maintained on schedule, or the work is not completed within the time above specified, or fails to perform the work with sufficient workmen and equipment or with sufficient materials to ensure the prompt completion of said work, or shall perform the work unsuitably or shall discontinue the prosecution of the work, or if the contractor shall become insolvent or be declared bankrupt or commit any act of bankruptcy or insolvency, or allow any final judgment to stand against him unsatisfied for a period of forty-eight (48) hours, or shall make an assignment for the benefit of creditors, or for any other cause whatsoever shall not carry on the work in an acceptable manner, the owner may give notice in writing, sent by certified mail, return receipt requested, to the contractor and his surety of such delay, neglect or default, specifying the same, and if the contractor within a period of fifteen (15) days after such notice shall not proceed in accordance therewith, then the owner shall, declare this contract in default, and, thereupon, the surety shall promptly take over the work and complete the performance of this contract in the manner and within the time frame specified. In the event the surety shall fail to take over the work to be done under this contract within fifteen (15) days after being so notified and notify the owner in writing, sent by certified mail, return receipt requested, that he is taking the same over and stating that he will diligently pursue and complete the same, the owner shall have full power and authority, without violating the contract, to take the prosecution of the work out of the hands of said contractor, to appropriate or use any or all contract materials and equipment on the grounds
as may be suitable and acceptable and may enter into an agreement, either by public letting or negotiation, for the completion of said contract according to the terms and provisions thereof or use such other methods as in his opinion shall be required for the completion of said contract in an acceptable manner. All costs and charges incurred by the owner, together with the costs of completing the work under contract, shall be deducted from any monies due or which may become due said contractor and surety. In case the expense so incurred by the owner shall be less than the sum which would have been payable under the contract, if it had been completed by said contractor, then the said contractor and surety shall be entitled to receive the difference, but in case such expense shall exceed the sum which would have been payable under the contract, then the contractor and the surety shall be liable and shall pay to the owner the amount of said excess.

ARTICLE 30 - CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE THE CONTRACT

a. Should the work be stopped by order of a court having jurisdiction, or by order of any other public authority for a period of three months, due to cause beyond the fault or control of the contractor, or if the owner should fail or refuse to make payment on account of a certificate issued by the designer within thirty (30) days after receipt of same, then the contractor, after fifteen (15) days' written notice sent by certified mail, return receipt requested, to the owner and the designer, may suspend operations on the work or terminate the contract.

b. The owner shall be liable to the contractor for the cost of all materials delivered and work performed on this contract plus 20 percent overhead and profit and shall make such payment. The designer shall be the judge as to the correctness of such payment.

ARTICLE 31 - REQUEST FOR PAYMENT

a. Not later than the fifth day of the month, the contractor shall submit to the designer a request for payment for work done during the previous month. The request shall be in the form agreed upon between the contractor and the designer, but shall show substantially the value of work done and materials delivered to the site during the period since the last payment, and shall sum up the financial status of the contract with the following information:

1. Total of contract including change orders.

2. Value of work completed to date.

3. Less five percent (5%) retainage, provided however, that after fifty percent (50%) of the contractor’s work has been satisfactorily completed on schedule, with approval of the owner and the State Construction Office and written consent of the surety, further requirements for retainage will be waived only so long as work continues to be completed satisfactorily and on schedule.

4. Less previous payments.

5. Current amount due.

b. The contractor, upon request of the designer, shall substantiate the request with invoices of vouchers or payrolls or other evidence.

c. Prior to submitting the first request, the contractor shall prepare for the designer a schedule showing a breakdown of the contract price into values of the various parts of
the work, so arranged as to facilitate payments to subcontractors in accordance with Article 17, Contractor and Subcontractor Relationships. The contractor(s) shall list the value of each subcontractor and supplier, identifying each minority business subcontractor and supplier as listed in Affidavit C, if applicable.

d. When payment is made on account of stored materials and equipment, such materials must be stored on the owner's property, and the requests for payments shall be accompanied by invoices or bills of sale or other evidence to establish the owner's title to such materials and equipment. Responsibility for such stored materials and equipment shall remain with the contractor regardless of ownership title. Such stored materials and equipment shall not be removed from the owner's property. Should the space for storage on-site be limited, the contractor, at his option, shall be permitted to store such materials and/or equipment in a suitable space off-site. Should the contractor desire to include any such materials or equipment in his application for payment, they must be stored in the name of the owner in a commercial warehouse approved by the designer and the State Construction Office and located as close to the site as possible. The warehouse selected must be approved by the contractor's bonding and insurance companies; the material to be paid for shall be assigned to the owner and shall be inspected by the designer. Upon approval by the designer of the storage facilities and materials and equipment, payment therefore will be certified. Responsibility for such stored materials and equipment shall remain with the contractor. Such stored materials and equipment shall not be moved except for transportation to the project site. Under certain conditions, the designer may approve storage of materials at the point of manufacture, which conditions shall be approved by the designer, the owner and the State Construction Office prior to approval for the storage and shall include an agreement by the storing party which unconditionally gives the State absolute right to possession of the materials at anytime. Bond, security and insurance protection shall continue to be the responsibility of the contractor(s).

e. In the event of beneficial occupancy, retainage of funds due the contractor(s) may be reduced with the approval of the State Construction Office to an equitable amount to cover the list of items to be completed or corrected. Retainage may not be reduced to less than two and one-half (2 1/2) times the estimated value of the work to be completed or corrected. Reduction of retainage must be with the consent and approval of the contractor's bonding company.

ARTICLE 32 - CERTIFICATES OF PAYMENT AND FINAL PAYMENT

a. Within five (5) days from receipt of request for payment from the contractor, the designer shall issue and forward to the owner a certificate for payment. This certificate shall indicate the amount requested or as approved by the designer. If the certificate is not approved by the designer, he shall state in writing to the contractor and the owner his reasons for withholding payment.

b. No certificate issued or payment made shall constitute an acceptance of the work or any part thereof. The making and acceptance of final payment shall constitute a waiver of all claims by the owner except:

1. Claims arising from unsettled liens or claims against the contractor.
2. Faulty work or materials appearing after final payment.
3. Failure of the contractor to perform the work in accordance with drawings and specifications, such failure appearing after payment.
4. As conditioned in the performance bond and payment bond.
c. The making and acceptance of final payment shall constitute a waiver of all claims by the contractor except those claims previously made and remaining unsettled (Article 20(c)).

d. Prior to submitting request for final payment to the designer for approval, the contractor shall fully comply with all requirements specified in the “project closeout” section of the specifications. These requirements include but not limited to the following:

1. Submittal of Product and Operating Manuals, Warranties and Bonds, Guarantees, Maintenance Agreements, As-Built Drawings, Certificates of Inspection or Approval from agencies having jurisdiction. (The designer must approve the Manuals prior to delivery to the owner).

2. Transfer of Required attic stock material and all keys in an organized manner.

3. Record of Owner’s training.

4. Resolution of any final inspection discrepancies.

e. The contractor shall forward to the designer, the final application for payment along with the following documents:

1. List of minority business subcontractors and material suppliers showing breakdown of contracts amount.


3. Affidavit of contractors of payment to material suppliers and subcontractors. (See Article 36).

4. Consent of Surety to Final Payment.

5. Certificates of state agencies required by state law.

f. The designer will not authorize final payment until the work under contract has been certified by designer, certificates of compliance issued, and the contractor has complied with the closeout requirements. The designer shall forward the contractor’s final application for payment to the owner along with respective certificate(s) of compliance required by law.

ARTICLE 33 - PAYMENTS WITHHELD

a. The designer with the approval of the State Construction Office may withhold payment for the following reasons:

1. Faulty work not corrected.

2. The unpaid balance on the contract is insufficient to complete the work in the judgment of the designer.

3. To provide for sufficient contract balance to cover liquidated damages that will be assessed.

b. The secretary of the Department of Administration may authorize the withholding of payment for the following reasons:
1. Claims filed against the contractor or evidence that a claim will be filed.

2. Evidence that subcontractors have not been paid.

c. When grounds for withholding payments have been removed, payment will be released. Delay of payment due the contractor without cause will make owner liable for payment of interest to the contractor as provided in G.S. 143-134.1.

ARTICLE 34 - MINIMUM INSURANCE REQUIREMENTS

The work under this contract shall not commence until the contractor has obtained all required insurance and verifying certificates of insurance have been approved in writing by the owner. These certificates shall contain a provision that coverages afforded under the policies will not be cancelled, reduced in amount or coverages eliminated until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the owner of such alteration or cancellation.

a. Worker's Compensation and Employer's Liability

The contractor shall provide and maintain, during the life of the contract, workmen's compensation insurance, as required by law, as well as employer's liability coverage with minimum limits of $100,000.

b. Public Liability and Property Damage

The contractor shall provide and maintain, during the life of the contract, comprehensive general liability insurance, including coverage for premises operations, independent contractors, completed operations, products and contractual exposures, as shall protect such contractors from claims arising out of any bodily injury, including accidental death, as well as from claims for property damages which may arise from operations under this contract, whether such operations be by the contractor or by any subcontractor, or by anyone directly or indirectly employed by either of them and the minimum limits of such insurance shall be as follows:

Bodily Injury: $500,000 per occurrence
Property Damage: $100,000 per occurrence / $300,000 aggregate

In lieu of limits listed above, a $500,000 combined single limit shall satisfy both conditions.

Such coverage for completed operations must be maintained for at least two (2) years following final acceptance of the work performed under the contract.

c. Property Insurance (Builder's Risk/Installation Floater)

The contractor shall purchase and maintain property insurance during the life of this contract, upon the entire work at the site to the full insurable value thereof. This insurance shall include the interests of the owner, the contractor, the subcontractors and subsubcontractors in the work and shall insure against the perils of fire, extended coverage, and vandalism and malicious mischief. If the owner is damaged by failure of the contractor to purchase or maintain such insurance, then the contractor shall bear all reasonable costs properly attributable thereto; the contractor shall effect and maintain similar property insurance on portions of the work stored off the site when request for payment per articles so includes such portions.
d. **Deductible**

Any deductible, if applicable to loss covered by insurance provided, is to be borne by the contractor.

e. **Other Insurance**

The contractor shall obtain such additional insurance as may be required by the owner or by the General Statutes of North Carolina including motor vehicle insurance, in amounts not less than the statutory limits.

f. **Proof of Carriage**

The contractor shall furnish the owner with satisfactory proof of carriage of the insurance required before written approval is granted by the owner.

**ARTICLE 35 - PERFORMANCE BOND AND PAYMENT BOND**

a. Each contractor shall furnish a performance bond and payment bond executed by a surety company authorized to do business in North Carolina. The bonds shall be in the full contract amount. Bonds shall be executed in the form bound with these specifications (Section 307 and Section 308).

b. All bonds shall be countersigned by an authorized agent of the bonding company who is licensed to do business in North Carolina.

**ARTICLE 36 - CONTRACTOR'S AFFIDAVIT**

The final payment of retained amount due the contractor on account of the contract shall not become due until the contractor has furnished to the owner through the designer an affidavit signed, sworn and notarized to the effect that all payments for materials, services or subcontracted work in connection with his contract have been satisfied, and that no claims or liens exist against the contractor in connection with this contract. In the event that the contractor cannot obtain similar affidavits from subcontractors to protect the contractor and the owner from possible liens or claims against the subcontractor, the contractor shall state in his affidavit that no claims or liens exist against any subcontractor to the best of his (the contractor's) knowledge, and if any appear afterward, the contractor shall save the owner harmless.

**ARTICLE 37 - ASSIGNMENTS**

The contractor shall not assign any portion of this contract nor subcontract in its entirety. Except as may be required under terms of the performance bond or payment bond, no funds or sums of money due or become due the contractor under the contract may be assigned.
ARTICLE 38 - USE OF PREMISES

a. The contractor(s) shall confine his apparatus, the storage of materials and the operations of his workmen to limits indicated by law, ordinances, permits or directions of the designer and shall not exceed those established limits in his operations.

b. The contractor(s) shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety.

c. The contractor(s) shall enforce the designer's instructions regarding signs, advertisements, fires and smoking.

d. No firearms, any type of alcoholic beverages, or drugs (other than those prescribed by a physician) will be permitted at the job site.

ARTICLE 39 - CUTTING, PATCHING AND DIGGING

a. The contractor shall do all cutting, fitting or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of other contractors shown upon or reasonably implied by the drawings and specifications for the completed structure, as the designer may direct.

b. Any cost brought about by defective or ill-timed work shall be borne by the party responsible therefor.

c. No contractor shall endanger any work of another contractor by cutting, digging or other means. No contractor shall cut or alter the work of any other contractor without the consent of the designer and the affected contractor(s).

ARTICLE 40 - UTILITIES, STRUCTURES, SIGNS

a. The Project Expediter shall provide necessary and adequate facilities for water, electricity, gas, oil, sewer, and other utility services, which may be necessary and required for completion of the project. Any permanent meters installed shall be listed in the Project Expediter's name until his work is fully accepted by the owner. As stipulated in the Supplementary General Conditions, the Owner may: (1) pay utilities cost directly, (2) the Project Expediter to pay all utilities cost, (3) or reimburse the Project Expediter for the actual cost of utilities. The Owner or Project Expediter, as applicable, may recover actual costs of metered utilities from the responsible party should delays occur in project completion.

b. Meters shall be relisted in the owner's name on the day following completion and acceptance of the Project Expediter's work, and the owner shall pay for services used after that date.

c. The owner shall be reimbursed for all metered utility charges after the meter is relisted in the owner's name and prior to completion and acceptance of the work of all contractors. Reimbursement shall be made by the contractor whose work has not been completed and accepted. If the work of two or more contractors has not been completed and accepted, reimbursement to the owner shall be paid by the contractors involved on the basis of assessments by the designer.
d. Prior to the operation of permanent systems, the Project Expediter will provide temporary power, lighting, water, and heat to maintain space temperature above freezing, as required for construction operations.

e. All contractors shall have the permanent building systems in sufficient readiness for furnishing temporary climatic control at the time a building is enclosed and secured. The HVAC systems shall maintain climatic control throughout the enclosed portion of the building sufficient to allow completion of the interior finishes of the building. A building shall be considered enclosed and secured when windows, doorways (exterior, mechanical, and electrical equipment rooms), and hardware are installed; and other openings have protection which will provide reasonable climatic control. The appropriate time to start the mechanical systems and climatic condition shall be jointly determined by the contractor(s) and the designer. Use of the equipment in this manner shall in no way affect the warranty requirements of the contractor(s).

f. The electrical contractor shall have the building's permanent power wiring distribution system in sufficient readiness to provide power as required by the HVAC contractor for temporary climatic control.

g. The electrical contractor shall have the building's permanent lighting system ready at the time the general contractor begins interior painting and shall provide adequate lighting in those areas where interior painting and finishing is being performed.

h. Each prime contractor shall be responsible for his permanently fixed service facilities and systems in use during progress of the work. The following procedures shall be strictly adhered to:

1. Prior to acceptance of work by the owner, each contractor shall remove and replace any parts of the permanent building systems damaged through use during construction.

2. Temporary filters shall be installed in each of the heating and air conditioning units and at each return grille during construction. New filters shall be installed in each unit prior to the owner’s acceptance of the work.

3. Extra effort shall be maintained to keep the building and the site adjacent to the building clean and under no circumstances shall air systems be operated if finishing and site work operations are creating dust in excess of what would be considered normal if the building were occupied.

4. It shall be understood that any warranty on equipment presented to the owner shall extend from the day of final acceptance by the owner. The cost of warranting the equipment during operation in the finishing stages of construction shall be borne by the contractor whose system is utilized.

5. The electrical contractor shall have all lamps in proper working condition at the time of final project acceptance.

i. The Project Expediter shall provide, if required and where directed, a shed for toilet facilities and shall furnish and install in this shed all water closets required for a complete and adequate sanitary arrangement. These facilities will be available to other contractors on the job and shall be kept in a neat and sanitary condition at all times. Chemical toilets are acceptable.
j. The Project Expediter shall, if required by the Supplementary General Conditions and where directed, erect a temporary field office, complete with lights, telephone, heat and air conditioning. A portion of this office shall be partitioned off, of sufficient size, for the use of a resident inspector, should the designer so direct.

k. On multi-story construction projects, the Project Expediter shall provide temporary elevators, lifts, or other special equipment for the general use of all contractors. The cost for such elevators, lifts or other special equipment and the operation thereof shall be included in the Project Expediter’s bid.

l. The Project Expediter will erect one sign on the project if required. The sign shall be of sound construction, and shall be neatly lettered with black letters on white background. The sign shall bear the name of the project, and the names of prime contractors on the project, and the name of the designer and consultants. Directional signs may be erected on the owner’s property subject to approval of the owner with respect to size, style and location of such directional signs. Such signs may bear the name of the contractor and a directional symbol. No other signs will be permitted except by permission of the owner.

ARTICLE 41 - CLEANING UP

a. The contractors shall keep the building and surrounding area reasonably free from rubbish at all times, and shall remove debris from the site on a timely basis or when directed to do so by the designer or Project Expediter. The Project Expediter shall provide an on site refuse container(s) for the use of all contractors. Each contractor shall remove their rubbish and debris from the building on a daily basis. The Project Expediter shall broom clean the building as required to minimize dust and dirt accumulation.

b. The Project Expediter shall provide and maintain suitable all-weather access to the building.

c. Before final inspection and acceptance of the building, each contractor shall clean his portion of the work, including glass, hardware, fixtures, masonry, tile and marble (using no acid), clean and wax all floors as specified, and completely prepare the building for use by the owner, with no cleaning required by the owner.

ARTICLE 42 - GUARANTEE

a. The contractor shall unconditionally guarantee materials and workmanship against patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve (12) months following the date of final acceptance of the work or beneficial occupancy and shall replace such defective materials or workmanship without cost to the owner.

b. Where items of equipment or material carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material. The contractor shall replace such defective equipment or materials, without cost to the owner, within the manufacturer's warranty period.

c. Additionally, the owner may bring an action for latent defects caused by the negligence of the contractor which is hidden or not readily apparent to the owner at the time of beneficial occupancy or final acceptance, whichever occurred first, in accordance with applicable law.
d. Guarantees for roof, equipment, materials, and supplies shall be stipulated in the specifications sections governing such roof, equipment, materials, or supplies.

ARTICLE 43 - CODES AND STANDARDS

Wherever reference is given to codes, standard specifications or other data published by regulating agencies including, but not limited to, national electrical codes, North Carolina state building codes, federal specifications, ASTM specifications, various institute specifications, etc., it shall be understood that such reference is to the latest edition including addenda published prior to the date of the contract documents.

ARTICLE 44 - INDEMNIFICATION

To the fullest extent permitted by law, the contractor shall indemnify and hold harmless the owner, the designer and the agents, consultants and employees of the owner and designer, from and against all claims, damages, losses and expenses, including, but not limited to, attorneys' fees, arising out of or resulting from the performance or failure of performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom, and (2) is caused in whole or in part by any negligent act or omission of the contractor, the contractor's subcontractor, or the agents of either the contractor or the contractor's subcontractor. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this article.

ARTICLE 45 - TAXES

a. Federal excise taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3442(3)).

b. Federal transportation taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3475(b) as amended).

c. North Carolina sales tax and use tax, as required by law, do apply to materials entering into state work and such costs shall be included in the bid proposal and contract sum.

d. Local option sales and use taxes, as required by law, do apply to materials entering into state work as applicable and such costs shall be included in the bid proposal and contract sum.

e. Accounting Procedures for Refund of County Sales & Use Tax

Amount of county sales and use tax paid per contractor's statements:

Contractors performing contracts for state agencies shall give the state agency for whose project the property was purchased a signed statement containing the information listed in G.S. 105-164.14(e).

The Department of Revenue has agreed that in lieu of obtaining copies of sales receipts from contractors, an agency may obtain a certified statement as of April 1, 1991 from the contractor setting forth the date, the type of property and the cost of the property purchased from each vendor, the county in which the vendor made the sale and the amount of local sales and use taxes paid thereon. If the property was purchased out-of-state, the county in which the property was delivered should be listed. The contractor should also be notified that the certified statement may be subject to audit.
In the event the contractors make several purchases from the same vendor, such certified statement must indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices, the counties, and the county sales and use taxes paid thereon.

Name of taxing county: The position of a sale is the retailer's place of business located within a taxing county where the vendor becomes contractually obligated to make the sale. Therefore, it is important that the county tax be reported for the county of sale rather than the county of use.

When property is purchased from out-of-state vendors and the county tax is charged, the county should be identified where delivery is made when reporting the county tax.

Such statement must also include the cost of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of county sales or use tax paid thereon by the contractor.

Similar certified statements by his subcontractors must be obtained by the general contractor and furnished to the claimant.

Contractors are not to include any tax paid on supplies, tools and equipment which they use to perform their contracts and should include only those building materials, supplies, fixtures and equipment which actually become a part of or annexed to the building or structure.

ARTICLE 46 - EQUAL OPPORTUNITY CLAUSE

The non-discrimination clause contained in Section 202 (Federal) Executive Order 11246, as amended by Executive Order 11375, relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations prescribed by the secretary of Labor, are incorporated herein.

ARTICLE 47 - EMPLOYMENT OF THE HANDICAPPED

The contractor(s) agree not to discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant is qualified. The contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices.

ARTICLE 48 - ASBESTOS-CONTAINING MATERIALS (ACM)

The State of North Carolina has attempted to address all asbestos-containing materials that are to be disturbed in the project. However, there may be other asbestos-containing materials in the work areas that are not to be disturbed and do not create an exposure hazard. Contractors are reminded of the requirements of instructions under Instructions to Bidders and General Conditions of the Contract, titled Examination of Conditions. Statute 130A, Article 19, amended August 3, 1989, established the Asbestos Hazard Management Program that controls asbestos abatement in North Carolina. The latest edition of Guideline Criteria for Asbestos Abatement from the State Construction Office is to be incorporated in all asbestos abatement projects for the Capital Improvement Program.
ARTICLE 49 - MINORITY BUSINESS PARTICIPATION

GS 143-128.2 establishes a ten percent (10%) goal for participation by minority businesses in total value of work for each State building project. The document, *Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts* including Affidavits and Appendix E are hereby incorporated into and made a part of this contract.

ARTICLE 50 – CONTRACTOR EVALUATION

The contractor’s overall work performance on the project shall be fairly evaluated in accordance with the State Building Commission policy and procedures, for determining qualifications to bid on future State capital improvement projects. In addition to final evaluation, interim evaluation may be prepared during the progress of project. The document, Contractor Evaluation Procedures, is hereby incorporated and made a part of this contract. The owner may request the contractor’s comments to evaluate the designer.
SECTION 00-73-00
SUPPLEMENTARY CONDITIONS

PART 1  GENERAL
1.01  SUMMARY
   A.  THE APPALACHIAN STATE UNIVERSITY SUPPLEMENTARY GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT ARE ATTACHED FOLLOWING THIS PAGE.

PART 2  PRODUCTS - NOT USED
PART 3  EXECUTION - NOT USED

END OF SECTION
Appalachian State University

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

CONDUCT OF THE WORK

All construction contracts for State capital construction projects will incorporate the latest edition of the Office of State Construction's form OC-15, "Instructions to Bidders and General Conditions of the Contract". In addition, all capital construction contracts for University projects must incorporate Supplementary General Conditions, which address the following concerns. The University's Department of Business Affairs provides Supplementary General Conditions, which are continuously up-dated, and the Designer must be sure to refer to the latest edition.

4.1.0 Definitions

The Owner is the State of North Carolina, acting through Appalachian State University. The University's Director of Design & Construction represents the Owner in all matters pertaining to contract construction. The Department will designate a Construction Manager, who will be the single spokes-person for the University during the construction of the project. All official contact, decisions, direction, problem resolution, and coordination with the University will be through the assigned Construction Manager. This does not alleviate any of the Designers' responsibilities as stated in the General Conditions.

4.2.0 Intent and Execution of Documents

Site Visitation

The Contractor shall examine the site before bidding the project and shall familiarize himself or herself with all existing conditions. Failure of the Contractor to visit the site before submission of a bid shall not relive him or her of any special problems which might have been avoided had the Contractor examined the existing site conditions.

Contract Drawings

The Contract drawings contain information to a degree of detail, which is considered to be both consistent with their scales and adequate to accomplish their purpose. Beyond this point they are diagrammatic. The Contractor shall provide all miscellaneous materials required to completely install the work in accordance with the intent of the drawings and the specified functions. Any omissions from either the drawing or the specifications are unintentional and it shall be the responsibility of the Contractor to call to the attention of the Designer any pertinent omissions prior to submission of a bid.
The Contractor shall not scale any drawing to determine lengths and distances, and shall refer only to indicated dimensions.

4.8.0 Materials, Equipment, Employees

Workmanship

All work shall be executed in a neat and workmanlike manner by skilled mechanics and shall have a neat appearance when complete. All contract and sub-contract work shall be done by personnel normally employed for such work.

Condition of Contiguous Work

If any part of the Contractor's work is dependent for its proper execution, or for its subsequent efficiency or appearance, on the character or condition of contiguous work not executed by him or her, then the Contractor shall examine and measure such contiguous work and report to the Designer in writing any imperfection therein, or any condition which renders it unsuitable for the reception of his or her work. In case the Contractor proceeds without making such written report, he or she shall be held to have accepted such work and the existing conditions. Consequently, the Contractor shall be responsible for any defects in his or her work thereon. The Contractor will not be relieved of the obligation of any guarantee because of any such imperfection or condition.

Equipment Manufacturers

In certain instances the name of a particular manufacturer may be mentioned in connection with materials to be furnished and installed on this project. In every case this shall be construed to be for descriptive rather than restrictive purposes, unless otherwise noted. The Contractor shall submit to the Designer, within twenty (20) days following the award of the contract, a complete list of materials and manufacturers proposed for the project.

4.10.0 Permits, Inspections, Fees, Regulations

Permits and Fees

The Contractor shall be responsible for obtaining all permits and fees required for the installation of his or her work and shall determine the amounts prior to bidding and shall include this (these) amount(s) in the bid. In no case will any extra charge be allowed unless authorized in writing by the Designer.
Under state law local jurisdiction building permits are not required of the owner and consequently the contractor.

Building Codes

The work executed under this contract shall be done in accordance with the applicable North Carolina State Building Codes, all codes published by the National Fire Protection Association (NFPA), and all other local and state codes, which may apply. The editions of these codes in effect on the date of advertisement of bids shall be incorporated by reference into the construction documents. The contractor shall provide the University's Safety Office with copies of the Contractors Drug and Safety Policies.

4.11.0 Protection of Work and Property

General Guidelines for Fire Loss Prevention and Control

1. Prohibit smoking in hazardous areas. Clearly mark "No Smoking" zones and actively promote observance of the smoking regulations.

2. Provide fire extinguishers and other special fire protection equipment during hazardous construction operations. Properly distribute a sufficient number of portable fire extinguishers for quick access and use.

3. Locate bulk storage of gasoline, fuel oil, paint, solvents, welding gases, and other flammable and combustible liquids or gases outside the buildings. No more than one day's working supply should be allowed inside the buildings. Only approved containers and dispensing facilities should be used.

4. Keep combustible materials out of buildings until sprinklers are in service.

5. Keep roofers' tar kettles outside of, and as far away from, buildings as practical. Suitable fire extinguishing equipment should be provided nearby.

6. Take special care in the placement, operation, and service of combustion engine-driven equipment. Refuel small gasoline units from listed or approved safety cans and large units from listed or approved containers in suitable refueling areas.

7. Insure hot work operations that involve cutting, welding, soldering, etc. are safely performed. Remove nearby combustibles at least 35 feet from hot work operations or protect them by use of metal guards or flame proofed curtains or covers rather than by the use of ordinary tarpaulins.

Protection of Underground Utilities Lines
Each Contractor who does excavation work will be responsible for location of underground utilities prior to excavation. The Contractor may obtain the services of a commercial utilities locator and/or call the various utility companies who may have lines in the area. With regard to excavation within any public right-of-way, the General Statutes of North Carolina require Contractors to notify the NC One-Call Center (ULOC) at 1-800-632-4949; http://www.ncocc.org for Excavation Manual online, at least two days but not more than 10 days prior to beginning the excavation. In addition, the Contractor should notify the ASU Physical Plant at least five (5) days prior to any excavation. The Contractor will be responsible for the consequences of any utility interruption caused by his or her excavation, and will be responsible for the cost of repairing any damage done to the utilities themselves.

Protection of Storm Drainage System

Appropriate measures, such as block and gravel filters or silt fences, shall be provided during construction as required to protect catch basins, storm drains, and streams from the entry of all silt and construction debris. The Designer should refer to the North Carolina Erosion and Sediment Control Planning and Design Manual.

The residue from the cleaning of ready-mix trucks, wheelbarrows, concrete buddies, etc. shall be contained and the residue removed from the campus with other refuse.

No debris shall be dumped into drains or catch basins. Contractor shall be responsible for cleaning or replacing drain lines if a violation occurs.

The Designer's Erosion and Sediment Control Plan for the project should clearly state which measures are temporary and which measures are permanent. All temporary erosion control measures including silt fencing, inlet protection measures, and sediment traps should be required to be removed by the Contractor after the site is stabilized and prior to final inspection.

Protection of Existing Landscaping

The University Grounds Section shall be notified before construction begins so they may determine if any plant material within the construction site can be salvaged. Two (2) weeks advance notification is required so the Owner may remove trees and shrubs that will be retained by the Owner for use elsewhere.

Special attention should be given to any trees, shrubs or lawn that will remain inside the construction area. To protect such materials, a landscape protection fence shall be installed prior to the initial stage of grading, excavation, or tree removal. This fence or barricade shall be a minimum of 3 feet high and shall be required to remain in place for as long as is practical. The landscape protection area should extend to at least the drip line of any trees or shrubs that are to remain.
No storage, access or activity of any kind shall be permitted in the landscape protection areas. This specifically includes the felling of trees into the landscape protection area. No limbs, tops, stumps, fill, material storage or equipment shall be permitted in the landscape protection areas at any time.

Care shall be taken to protect trees and shrubs from damage by cranes, falling objects, etc. Trees and shrubs shall not be pruned or moved by the Contractor. When pruning or moving is necessary, the Designer shall be notified and the work will in turn be performed by the Owner at no cost to the Contractor.

Trees outside the construction limits shall be protected from:

a. Compaction of root area by equipment, materials, or fill dirt.

b. Trunk damage by moving equipment, material storage, mauling or bolting.

c. Poisoning by pouring solvents, gas, paint, etc, on or around roots.

d. Damage of branches by improper equipment activity.

e. Cutting of roots within the drip line of the tree.

It is specifically prohibited to fell or bulldoze trees into a wooded area that will be adjacent to the site being cleared for construction. Site clearing should be done so as to prevent damage to wooded areas adjacent to the project.

Trees shall not be used as props or anchors for materials, guy wires, cables or utility wires.

Damaged trees, shrubs or lawns shall be repaired or replaced by a tree surgeon or nurseryman in a manner acceptable to the University and cost of the repairs or replacements shall be paid by the Contractor.

Protection of Campus Buildings, Streets and Sidewalks

The Contractor shall be responsible for protection of existing buildings, roof, trees, shrubbery and lawn areas from damage by vehicles, equipment, overhead cranes, falling objects, etc..

The Contractor shall be responsible for protecting the campus streets and walks connecting to the project from deposits of mud, sand, stone, litter, or debris in any form, and shall remove any such debris immediately before it becomes a traffic hazard or is carried into the surrounding buildings.
Where equipment must cross walks, lawns, and other transitional areas used by pedestrian and vehicular traffic, the Contractor shall provide a minimum protection of 3/4" thick plywood sheets for equipment to roll over.

Shutdown of Existing Fire Protection Systems

The shutdown of existing fire protection systems for renovations shall be kept to a minimum. The Boone Fire Department, and the Appalachian State University Physical Plant and Safety Office should be contacted to perform this operation where necessary.

Generating Smoke, Heat, or Dust

When conducting smoke, heat or dust generation operations, care should be exercised not to set off smoke detectors installed in buildings. As a rule the Construction Manager should be contacted to review the circumstances and to have the smoke detection equipment shut down by the Physical Plant if necessary.

4.12.0 Protection of the Public

Safety Measures

Appropriate steps shall be taken at each construction site to protect the general public from hazards created by demolition and construction operations.

All projects shall comply in full with NFPA 241 Standard for Safeguarding Construction Alterations, and Demolition Operations, NC-OSHA Regulations, and with the NC Regulations for Protection Against Radiation.

The demolition or construction site shall be separated from public access by fences, barricades, or other appropriate security measures. Accident prevention signs and markers shall be in accordance with NC OSHA regulations to warn of dangers (e.g., overhead electrical wires) and restrictions (e.g., restricted access areas, hard hat areas). Where necessary, protected detour routes for vehicles or pedestrian traffic shall be provided.

Barricades and signs must meet OSHA, NCDOT, and University approval, and be substantial enough to deter bypassing, vandalizing, or theft. In addition to meeting all applicable codes and regulations, signs must be neat and legible at all times. Hand-made signs are not acceptable.

Contractors shall be reminded of the presence on campus of handicapped students, staff, and faculty, particularly mobility impaired, visually impaired, and hearing impaired individuals. All barricades, temporary walkways, excavation, and stockpiles of materials
shall be formed in such a manner as to accommodate access, provide adequate warning, and prevent injury to this segment of the University population.

Security Measures

The University will provide only those security measures which are deemed prudent for its own operations. The Contractor shall provide the necessary security means to protect his or her work, materials, tools, and construction equipment from vandalism, theft, and fire. Watchmen services shall be supplied by the Contractor as he or she deems necessary. Any watchmen service set up by the Contractor, as well as any security measure in general, must be acceptable to the Owner. The Contractor shall be responsible for replacement of his or her materials, machinery, equipment, tools, and supplies which are the subject of theft or mysterious disappearance. All tools and equipment shall be clearly marked with the Contractor's identification. All tool boxes shall be clearly marked by the Contractor.

The Contractor shall provide the Owner with a list of day and night phone numbers to be used in case of emergencies during the course of the project.

Hazard Communication Standard

All Contractors shall comply with the OSHA Hazard Communication Standard. The written Hazard Communications Program and Material Safety Data Sheets for each hazardous chemical shall be readily available and centrally located on site. Also, all contractors shall comply with the NC Hazardous Chemical Right to Know Act covering bulk chemicals in quantities above 55 gallons or 500 pounds. This information needs to be sent to the Boone Fire Department and covers gasoline, diesel fuel, as well as other hazardous chemicals.

4.13.0 Inspection of the Work

Refer to STANDARD SPECIFICATIONS, Section 014000, Quality Requirements

4.31.0 Request for Payment

The first sentence only of Article 31a, General Conditions, is revised to read as follows: "Not later than the last day of the month, the contractors shall submit to the Designer a request for payment for work done through the 25th day of the month." The Owner will make payment by the end of the following calendar month, in the manner described in Articles 31 through 33 of the General Conditions.
4.31.1 Refund of Sales and Use Taxes

North Carolina General Statute 105-164.14(e) authorizes refunds to the state of county sales and use taxes paid by contractors on materials, which are incorporated into a state building or structure. The Contractor shall report all county sales and use taxes paid, in accordance with Article 4.31.2.

4.31.2 Submittal of Tax Forms

The Contractor shall attach to each request for payment certified statements of county sales and use taxes paid on materials claimed for payment on the request. Certified statements in the same format shall be obtained from all subcontractors and provided with the request for payment. The Designer will not approve payment for any materials until the supporting county tax statement has been provided. The statement must include the cons of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of county sales or use tax paid thereon by the contractor. These certified statements may be subject to audit. Contractors shall not include any tax paid on supplies, tools and equipment, which they use to perform their contracts and shall include only those building materials, supplies, fixtures and equipment which actually become a part of or annexed to the building or structure. The position of a sale is the retailer's place of business located within a taxing county where the vendor becomes contractually obligated to make the sale. Therefore, it is important that the county tax be reported for the county of sale rather than the county of use. When property is purchased from out-of-state vendors and the county tax is charged, you should identify the county where delivery is made when reporting the county tax.

4.38.0 Use of Premises

Use of Owner's Drinking and Toilet Facilities

Unless specifically authorized the Contractor's personnel will not be allowed to use the Owner's toilet and drinking water facilities.

Contractor's Working Hours

The Contractor may establish a work schedule of his or her own choosing, but the Contractor shall submit his or her regular daily work schedule to the ASU Business Affairs Department and to the Designer, and shall notify the Construction Manager in advance of any deviations from this schedule. The University reserves the right to limit the Contractors' activities when they conflict with the University operations.
Additional restrictions may be enforced by the University during certain periods of the year. These periods are:

During examination periods, generally occurring in December and May for two weeks each and June, July and August for four days each.

Graduation, generally on a Saturday or Sunday in mid-May and mid-December.

Approximately 15 home basketball games per year.

Approximately 6 home football games per year.

Concerts, approximately 20 per year.

Convocation Day, Mid-September.

Family Weekend, First weekend in October.

Student move-in/move-out days, generally twice a year for one week each.

In most cases, the University will require the Contractor to comply with the Town of Boone Noise Ordinance; however, there are other situations where stricter noise control is required.

During examination periods the Contractor will restrict noise-making activities to the hours between 8:00am to 5:00pm. If the project involves work in or near a building in which an examination is being conducted, the Contractor will be required to restrict operations which are disturbing to students during the hours of the exam(s).

Work will not be permitted on Graduation Day, nor the day preceding it (Saturday), Convocation Day, nor on the Family Weekend. The Contractor shall be required to provide extra-ordinary cleanup and additional warning signs and barricades on these occasions.

Work is normally permitted on the days of sporting events and concerts, but traffic is extremely heavy on those days, and Contractors may have difficulty, and experience delays, in getting to and from the job site.

Work is normally permitted on student move-in/move-out days, but traffic is heavier than normal, parking is restricted, and some campus roads are temporally closed or designated one-way.

Temporary Interruptions of Utilities and Traffic Movement

Procedures for making temporary disruptions to existing utilities and roads, or pedestrian walks, shall be planned well in advance of the work, and the work shall be executed in a
manner to provide reasonably continuous service throughout the construction period. Connections to existing utilities shall be make only at times approved by the University. University will probably schedule interruption of service at times other than the Contractors' normal working hours. Only designated University personnel are authorized to interrupt services. Frequently, outages are scheduled to reduce disruption of classes and special events.

For interruption of service in major utility system, the Contractor must submit to the ASU Director of Design & Construction a step-by-step sequence of operations planned to accomplish the work. This outline must show tentative dates and times of day for shut-off and restoration of services. Upon approval of the planned operations, the Construction Manager will make arrangements with appropriate University personnel for interruption of services.

Road and sidewalk cuts shall be scheduled in advance, and made only after they have been approved by the University. Contractors shall plan and coordinate their work to minimize the duration of such disruptions. Appropriate detours shall be planned, subject to the approval of the University, giving consideration to the handicapped. Warning barricades and signs shall be installed by the Contractor, as well as informational signs indicating detours. No service disruptions or excavations may be made until barricades and signs are in place to protect the public. If the nature of the site does not allow barricades to be in place prior to the excavations, the barricade materials must be physically present on site before excavation begins, in order that they may be erected as soon as it is possible to do so.

Site Limits

The Construction area shall be enclosed with a six feet (6') high (minimum) chain link type fence with top rail. At the completion of the project the Contractor shall remove the construction fence completely including below ground level. Fence posts shall not be sawed off flush with the soil line.

Contractor's Parking and Storage

Parking is extremely limited at the University. Contractors must confine their parking and storage to those areas within the limits of the construction site. There will be no parking spaces provided in the vicinity of the project for construction workers. Contractors are encouraged to locate fringe parking areas and shuttle their workers to and from the job site. If a construction fence has been erected, the Contractor may allow his or her employees to park inside the fence. The only type of permit available to a Contractor or a Contractor's employees for parking outside the fence is a temporary permit which is available through the University's Police Department.

Parking for large storage trailers is limited to within the boundaries of the construction site. If additional trailer parking is required, the ASU Physical Plant maintains an off-campus facility on State Farm Road. There may be a monthly fee at this storage area.
All Contractors are responsible for informing their employees that they cannot park at any locations on the campus other than the allocated spaces. All existing University parking regulations will be enforced.

4.40.0 Utilities, Structures, Signs

Utilities

The University operates the electric distribution system serving the campus, a district steam and hot water heating system, and chilled water systems in some of the Academic Buildings. To establish services, determine rates, or to make general inquiries, the Contractor should contact the Physical Plant Mechanical Engineer.

Telephone service is provided by AT&T. The contractor should directly contact our ITS Phone Representative (Deb Weddington) located in the new Data Center located at 165 Dale St, (Phone 828-262-2078), for any assistance.

Water is provided by Appalachian State University. The Contractor should contact the Eric Greer at the Physical Plant (ext 3190) for assistance.

Sewer service is provided by the Town of Boone. The Contractor should directly contact their sewer department to establish sewer services.

Signs at Construction Sites

Identification of a construction project and those principal parties participation in the project shall be provided by the Contractor. There shall be only one such sign per project. No additional signs identifying participants shall be used.

The design of the project identification sign must be approved by the Department of Business Affairs, Planning Design & Construction. The sign shall give the name of the University, the title of the project, and, in smaller lettering, the names of the Designer and Contractors(s).

Warning and safety signs are to be used as required. All other informational signage must be kept to a minimum.

All signs shall be maintained by the Contractor in a first-class condition, throughout the duration of the project, by re-painting, repairing, and re-erecting as necessary and as required.

Identification by Room Number
During construction, once the interior layout has been partitioned off into rooms, all rooms shall be identified on the site by a number that corresponds with the number on the design drawings, unless another numbering system is agreed upon by the Owner.

4.41.0 Cleaning Up

The construction site, and adjacent campus area, shall be kept free from the accumulation of trash, litter, or debris at all times. Trash cans/dumpsters shall be emptied and the contents removed from campus before they overflow. Removal of litter, rubbish, and debris are to be performed daily by the Contractor. Use of University trash receptacles for such debris is not allowed. The outdoor burning of trash and debris on campus is not allowed either.

The Contractor shall be fully responsible for the containment of mud and debris on the site as well as removal of these from roads and walkways.

Grass and other vegetation on the construction site shall be trimmed or mowed to maintain a neat appearance. Grass inside the construction area should generally be mowed once a week during the growing season.

Debris shall not be allowed to accumulate in corridors or stairways, and as the various stages of construction are completed, the work must be protected to prevent soiling or spotting, particularly with regard to flooring systems. Carpet shall be cleaned and without spots or traffic patterns. Resilient floors shall be cleaned, sealed, properly finished and of a uniform appearance with no streaks or smears.

Article 25 FINAL INSPECTION, ACCEPTANCE, AND PROJECT CLOSEOUT

Add Paragraph G – Liquidated Damages shall be accessed at $500 per day for each day after the date established for Substantial Completion that the Project is not Substantially Complete. Liquidated Damages shall be accessed at $500 per day for each day after the date established for Final Completion that the Project has not obtained Final Completion.
SECTION 01-30-00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Preconstruction meeting.
B. Progress meetings.
C. Construction progress schedule.
D. Progress photographs.
E. Coordination drawings.
F. Submittals for review, information, and project closeout.
G. Number of copies of submittals.
H. Submittal procedures.

1.02 RELATED REQUIREMENTS
A. Document 00-72-00 - General Conditions: Dates for applications for payment.
B. Document 00-72-00 - General Conditions: Duties of the Construction Manager.

1.03 PROJECT COORDINATION
A. Project Coordinator: Construction Manager.
B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for delivery access, traffic, and parking facilities.
C. During construction, coordinate use of site and facilities through the Project Coordinator.
D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
F. Coordinate field engineering and layout work under instructions of the Project Coordinator.
G. Make the following types of submittals to Architect through the Project Coordinator:
   1. Requests for interpretation.
   2. Shop drawings, product data, and samples.
   3. Test and inspection reports.
   4. Design data.
   5. Manufacturer's instructions and field reports.
   6. Applications for payment and change order requests.
   7. Progress schedules.
   8. Coordination drawings.
   9. Correction Punch List and Final Correction Punch List for Substantial Completion.
   10. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING
A. Project Coordinator will schedule a meeting after Notice of Award.
B. Attendance Required:
   1. Owner.
   3. Contractor.
   4. Major Subcontractors.
C. Agenda:
   1. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
   2. Designation of personnel representing the parties to Contract and Architect.
3. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.

4. Scheduling.

D. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

A. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

B. Attendance Required:
   1. Contractor.
   2. Owner.
   3. Architect.
   4. Contractor's Superintendent.
   5. Major Subcontractors.

C. Agenda:
   1. Review minutes of previous meetings.
   2. Review of Work progress.
   3. Field observations, problems, and decisions.
   4. Identification of problems that impede, or will impede, planned progress.
   5. Review of submittals schedule and status of submittals.
   6. Maintenance of progress schedule.
   7. Corrective measures to regain projected schedules.
   8. Planned progress during succeeding work period.
   10. Effect of proposed changes on progress schedule and coordination.
   11. Other business relating to Work.

D. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.03 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date established in Notice to Proceed, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
   1. Include written certification that major contractors have reviewed and accepted proposed schedule.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

3.04 PROGRESS PHOTOGRAPHS

A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.

B. Photography Type: Digital; electronic files.

C. Provide photographs of construction throughout progress of Work produced by an experienced photographer, acceptable to Architect.

D. In addition to periodic, recurring views, take photographs of each of the following events:
   1. Excavations in progress.
   2. Foundations in progress and upon completion.
   3. Structural framing in progress and upon completion.
   4. Enclosure of building, upon completion.
   5. Final completion, minimum of ten (10) photos.

E. Views:
   1. Provide non-aerial photographs from four cardinal views at each specified time, until Date of Substantial Completion.
   2. Consult with Architect for instructions on views required.
3. Provide factual presentation.
4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
   1. Delivery Medium: Via email.
   2. File Naming: Include project identification, date and time of view, and view identification.
   3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
   4. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

3.05 COORDINATION DRAWINGS
   A. Provide information required by Project Coordinator for preparation of coordination drawings.
   B. Review drawings prior to submission to Architect.

3.06 SUBMITTALS FOR REVIEW
   A. When the following are specified in individual sections, submit them for review:
      1. Product data.
      2. Shop drawings.
      3. Samples for selection.
      4. Samples for verification.
   B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
   C. Samples will be reviewed only for aesthetic, color, or finish selection.
   D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01-78-00 - Closeout Submittals.

3.07 SUBMITTALS FOR INFORMATION
   A. When the following are specified in individual sections, submit them for information:
      1. Design data.
      2. Certificates.
      3. Test reports.
      4. Inspection reports.
      5. Manufacturer's instructions.
      6. Manufacturer's field reports.
      7. Other types indicated.
   B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.08 SUBMITTALS FOR PROJECT CLOSEOUT
   A. Submit Correction Punch List for Substantial Completion.
   B. Submit Final Correction Punch List for Substantial Completion.
   C. When the following are specified in individual sections, submit them at project closeout:
      1. Project record documents.
      2. Operation and maintenance data.
      3. Warranties.
      5. Other types as indicated.
   D. Submit for Owner's benefit during and after project completion.

3.09 NUMBER OF COPIES OF SUBMITTALS
   A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
   B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
      1. After review, produce duplicates.
      2. Retained samples will not be returned to Contractor unless specifically so stated.
3.10 SUBMITTAL PROCEDURES

A. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related Work.
2. Do not reproduce the Contract Documents to create shop drawings.
3. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.

B. Transmit each submittal with a copy of approved submittal form.

C. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

D. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

E. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

F. Deliver submittals to Architect at business address.

G. Schedule submittals to expedite the Project, and coordinate submission of related items.

H. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.

I. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

J. Provide space for Contractor and Architect review stamps.

K. When revised for resubmission, identify all changes made since previous submission.

L. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

M. Submittals not requested will not be recognized or processed.

END OF SECTION
SECTION 01-40-00
QUALITY REQUIREMENTS

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Submittals.
B. References and standards.
C. Testing and inspection agencies and services.
D. Control of installation.
E. Tolerances.
F. Manufacturers' field services.
G. Defect Assessment.

1.02 RELATED REQUIREMENTS
A. Document 00-72-00 - General Conditions: Inspections and approvals required by public authorities.
B. Section 01-21-00 - Allowances: Allowance for payment of testing services.
C. Section 01-30-00 - Administrative Requirements: Submittal procedures.
D. Section 01-60-00 - Product Requirements: Requirements for material and product quality.

1.03 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
C. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Conformance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.
   2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
F. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

G. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.04 REFERENCES AND STANDARDS
A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
C. Obtain copies of standards where required by product specification sections.
D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.05 TESTING AND INSPECTION AGENCIES AND SERVICES
A. Owner will employ services of an independent testing agency to perform certain specified testing; payment for cost of services will be derived from allowance specified in Section 01-21-00; see Section 01-21-00 and applicable sections for description of services included in allowance.
B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 3 EXECUTION
2.01 CONTROL OF INSTALLATION
A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
B. Comply with manufacturers' instructions, including each step in sequence.
C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
E. Have Work performed by persons qualified to produce required and specified quality.
F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

2.02 TOLERANCES
A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
C. Adjust products to appropriate dimensions; position before securing products in place.

2.03 TESTING AND INSPECTION
A. Testing Agency Duties:
   1. Test samples of mixes submitted by Contractor.
   3. Perform specified sampling and testing of products in accordance with specified standards.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
6. Perform additional tests and inspections required by Architect.
7. Submit reports of all tests/inspections specified.

B. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.

C. Contractor Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers’ facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
   5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
   6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

D. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.

E. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

2.04 MANUFACTURERS’ FIELD SERVICES
A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers’ written instructions.

2.05 DEFECT ASSESSMENT
A. Replace Work or portions of the Work not conforming to specified requirements.
B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. General product requirements.
   B. Sustainable design-related product requirements.
   C. Transportation, handling, storage and protection.
   D. Product option requirements.
   E. Substitution limitations and procedures.
   F. Procedures for Owner-supplied products.
   G. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS
   A. Document 00-21-13 - Instructions to Bidders: Product options and substitution procedures prior to bid date.
   B. Section 01-74-19 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting packaging and substitutions.

1.03 SUBMITTALS
   A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
   B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
   C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
      1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS
   A. Provide new products unless specifically required or permitted by the Contract Documents.
   B. DO NOT USE products having any of the following characteristics:
      1. Made outside the United States, its territories, Canada, or Mexico.
      2. Made using or containing CFC's or HCFC's.
      3. Made of wood from newly cut old growth timber.
      4. Containing lead, cadmium, asbestos.
   C. Where all other criteria are met, Contractor shall give preference to products that:
      1. If used on interior, have lower emissions, as defined in Section 01-61-16.
      2. If wet-applied, have lower VOC content, as defined in Section 01-61-16.
      3. Have a published GreenScreen Chemical Hazard Analysis.

2.02 PRODUCT OPTIONS
   A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
   B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
   C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.03 MAINTENANCE MATERIALS
   A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specifies time restrictions for submitting requests for substitutions during the bidding period and the documents required. Comply with requirements specified in Section 00-21-13.

B. Substitutions will be considered when a product, through no fault of the Contractor, becomes unavailable or unsuitable due to regulatory change.
   1. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect.

C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

D. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.

E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

F. Substitution Submittal Procedure (after contract award):
   1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
   2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
   3. Architect will notify Contractor in writing of decision to accept or reject request.

3.02 OWNER-SUPPLIED PRODUCTS

A. Owner's Responsibilities:
   1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
   2. Arrange and pay for product delivery to site.
   3. On delivery, inspect products jointly with Contractor.
   4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
   5. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:
   1. Review Owner reviewed shop drawings, product data, and samples.
   2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
   3. Handle, store, install and finish products.
   4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers’ instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.

G. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

H. Comply with manufacturer’s warranty conditions, if any.

I. Do not store products directly on the ground.

J. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

K. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

L. Prevent contact with material that may cause corrosion, discoloration, or staining.

M. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

N. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION
SECTION 01-70-00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Examination, preparation, and general installation procedures.
B. Cutting and patching.
C. Surveying for laying out the work.
D. Cleaning and protection.
E. Starting of systems and equipment.
F. Demonstration and instruction of Owner personnel.
G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
H. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS
A. Section 01-30-00 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
B. Section 01-78-00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.
C. Section 07-84-00 - Firestopping.

1.03 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
   3. Submit surveys and survey logs for the project record.
C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   5. Work of Owner or separate Contractor.
D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 QUALIFICATIONS
A. For survey work, employ a land surveyor registered in North Carolina and acceptable to Architect. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.

1.05 PROJECT CONDITIONS
A. Use of explosives is not permitted.
B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
C. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Minimize amount of bare soil exposed at one time.
   2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
D. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
E. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.
F. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.06 COORDINATION
A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
B. Notify affected utility companies and comply with their requirements.
C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
F. Coordinate completion and clean-up of work of separate sections.
G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS
A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01-60-00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
C. Examine and verify specific conditions described in individual specification sections.
D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION
A. Clean substrate surfaces prior to applying next material or substance.
B. Seal cracks or openings of substrate prior to applying next material or substance.
C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK
A. Verify locations of survey control points prior to starting work.
B. Promptly notify Architect of any discrepancies discovered.
C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

D. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.

F. Utilize recognized engineering survey practices.

G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations; and ________.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations, and ________.

H. Periodically verify layouts by same means.

I. Maintain a complete and accurate log of control and survey work as it progresses.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-conforming work.

C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07-84-00, to full thickness of the penetrated element.

I. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.
3.06 PROGRESS CLEANING
A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK
A. Protect installed work from damage by construction operations.
B. Provide special protection where specified in individual specification sections.
C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 SYSTEM STARTUP
A. Coordinate schedule for start-up of various equipment and systems.
B. Notify Architect and owner seven days prior to start-up of each item.
C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
E. Verify that wiring and support components for equipment are complete and tested.
F. Execute start-up under supervision of applicable Contractor personnel and manufacturer’s representative in accordance with manufacturers’ instructions.
G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.09 DEMONSTRATION AND INSTRUCTION
A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.

3.10 ADJUSTING
A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.11 FINAL CLEANING
A. Execute final cleaning prior to Substantial Completion.
B. Use cleaning materials that are nonhazardous.
C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
F. Clean filters of operating equipment.
G. Clean debris from roofs, gutters, downspouts, and drainage systems.
H. Clean site; sweep paved areas, rake clean landscaped surfaces.
I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES
A. Make submittals that are required by governing or other authorities.
B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.13 MAINTENANCE
A. Provide service and maintenance of components indicated in specification sections.
B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Project Record Documents.
   B. Operation and Maintenance Data.
   C. Warranties and bonds.

1.02 RELATED REQUIREMENTS
   A. Section 00-72-00 - General Conditions and 00-73-00 - Supplementary Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
   B. Section 01-30-00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
   C. Individual Product Sections: Specific requirements for operation and maintenance data.
   D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS
   A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
   B. Operation and Maintenance Data:
      1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
      2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
      3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
      4. Submit two sets of revised final documents in final form within 10 days after final inspection.
   C. Warranties and Bonds:
      1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
      2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
      3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS
   A. Maintain on site one set of the following record documents; record actual revisions to the Work:
      1. Drawings.
      2. Specifications.
      3. Addenda.
      4. Change Orders and other modifications to the Contract.
      5. Reviewed shop drawings, product data, and samples.
      6. Manufacturer's instruction for assembly, installation, and adjusting.
   B. Ensure entries are complete and accurate, enabling future reference by Owner.
   C. Store record documents separate from documents used for construction.
   D. Record information concurrent with construction progress.
   E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
      1. Changes made by Addenda and modifications.
   F. Record Drawings: Legibly mark each item to record actual construction including:
1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
2. Field changes of dimension and detail.
3. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA
A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES
A. For Each Product, Applied Material, and Finish:
   B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
C. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS
A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.
B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
D. Include color coded wiring diagrams as installed.
E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
G. Provide servicing and lubrication schedule, and list of lubricants required.
H. Include manufacturer's printed operation and maintenance instructions.
I. Include sequence of operation by controls manufacturer.
J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
K. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS
A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

J. Arrangement of Contents: Organize each volume in parts as follows:
   1. Project Directory.
   2. Table of Contents, of all volumes, and of this volume.
   3. Operation and Maintenance Data: Arranged by system, then by product category.
      a. Source data.
      b. Product data, shop drawings, and other submittals.
      c. Operation and maintenance data.
      d. Field quality control data.
      e. Photocopies of warranties and bonds.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION
PART 1  GENERAL

1.01 SECTION INCLUDES
A. Concrete formwork.
B. Floors and slabs on grade.
C. Concrete reinforcement.
D. Joint devices associated with concrete work.
E. Miscellaneous concrete elements, including equipment pads.
F. Concrete curing.

1.02 RELATED REQUIREMENTS
A. Section 07-92-00 - Joint Sealants: Products and installation for sealants for saw cut joints and isolation joints in slabs.

1.03 REFERENCE STANDARDS
C. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete; 1998 (Reapproved 2004).
D. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
E. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).
G. ACI 305R - Hot Weather Concreting; 2010.
I. ACI 308R - Guide to Curing Concrete; 2001 (Reapproved 2008).
J. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
K. ACI 347R - Guide to Formwork for Concrete; 2014.
W. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
AB. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting; 2015.
AC. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011.
AD. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Submit manufacturers’ data on manufactured products showing compliance with specified requirements and installation instructions.
   1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
C. Mix Design: Submit proposed concrete mix design.
   1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
   2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.
D. Samples: Submit samples of underslab vapor retarder to be used.
E. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.
F. Sustainable Design Submittal: If any fly ash, ground granulated blast furnace slag, silica fume, rice hull ash, or other waste material is used in mix designs to replace Portland cement, submit the total volume of concrete cast in place, mix design(s) used showing the quantity of portland cement replaced, reports showing successful cylinder testing, and temperature on day of pour if cold weather mix is used; use LEED New Product Content Form.
G. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.
H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE
A. Perform work of this section in accordance with ACI 301 and ACI 318.
B. Follow recommendations of ACI 305R when concreting during hot weather.
C. Follow recommendations of ACI 306R when concreting during cold weather.

1.06 WARRANTY
A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.
B. Moisture Emission Reducing Curing and Sealing Compound: Provide warranty to cost of flooring delamination failures for 10 years.
   1. Include cost of repair or removal of failed flooring, remediation with a moisture vapor impermeable surface coating, and replacement of flooring with comparable flooring system.

PART 2 PRODUCTS

2.01 FORMWORK
A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.
B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
   1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
2. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
3. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT
A. Reinfocing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
   1. Type: Deformed billet-steel bars.
   2. Finish: Unfinished, unless otherwise indicated.
B. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
   3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

2.03 CONCRETE MATERIALS
A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
C. Lightweight Aggregate: ASTM C330/C330M.
D. Fly Ash: ASTM C618, Class C or F.
E. Water: Clean and not detrimental to concrete.
F. Structural Fiber Reinforcement: ASTM C1116/C1116M.
   1. Fiber Type: Alkali-resistant polypropylene.
   2. Fiber Length: 2.5 inch, nominal.

2.04 ADMIXTURES
A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
B. Air Entrainment Admixture: ASTM C260/C260M.
C. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
D. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
E. Retarding Admixture: ASTM C494/C494M Type B.
F. Water Reducing Admixture: ASTM C494/C494M Type A.

2.05 ACCESSORY MATERIALS
A. Underslab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
   1. Installation: Comply with ASTM E1643.
   2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.
B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
   1. Grout: Comply with ASTM C1107/C1107M.
   2. Minimum Compressive Strength at 48 Hours, ASTM C109/C109M: 2,000 pounds per square inch.

2.06 BONDING AND JOINTING PRODUCTS
A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.

2.07 CURING MATERIALS
A. Curing and Sealing Compound, Moisture Emission Reducing: Liquid, membrane-forming, clear sealer, for application to newly placed concrete; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission.
1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
2. Comply with ASTM C309 and ASTM C1315 Type I Class A.
3. VOC Content: Less than 100 g/L.

B. Curing and Sealing Compound, Low Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
   1. Application: Use at all areas.
   3. VOC Content: OTC compliant.

C. Curing and Sealing Compound, High Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
   3. VOC Content: OTC compliant.

D. Polyethylene Film: ASTM D2103, 10 mil thick, white opaque color.

E. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
   1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.

B. Proportioning Structural Lightweight Concrete: Comply with ACI 211.2 recommendations.
   1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.

C. Concrete Strength: Establish required average strength for each type of concrete on the basis of trial mixtures, as specified in ACI 301.
   1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.

D. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

E. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.

F. Normal Weight Concrete:
   1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 4,000 pounds per square inch.
   2. Fly Ash Content: Maximum 25 percent of cementitious materials by weight.
   3. Water-Cement Ratio: Maximum 40 percent by weight.
   4. Total Air Content: 3 percent, determined in accordance with ASTM C173/C173M.
   5. Maximum Slump: 3 inches.

2.09 MIXING

A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

B. Verify that forms are clean and free of rust before applying release agent.

C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
   1. Use latex bonding agent only for non-load-bearing applications.
E. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

B. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

D. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

E. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.05 SLAB JOINTING

A. Locate joints as indicated on the drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
   1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.

D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.

3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Maximum Variation of Surface Flatness:
   1. Exposed Concrete Floors: 1/8 inch in 10 feet.
   2. Under Seamless Resilient Flooring: 1/8 inch in 10 feet.

B. Correct the slab surface if tolerances are less than specified.

C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.07 CONCRETE FINISHING

A. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
   1. Surfaces to Receive Thick Floor Coverings: "Wood float" as described in ACI 302.1R; thick floor coverings include ceramic tile with full bed setting system.
   2. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include carpeting and resilient flooring.
   3. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

B. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.08 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
C. Surfaces Not in Contact with Forms:
   1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
   2. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
   3. Final Curing: Begin after initial curing but before surface is dry.
      a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
      b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.09 FIELD QUALITY CONTROL
   A. An independent testing agency will perform field quality control tests, as specified in Section 01-40-00 - Quality Requirements.
   B. Provide free access to concrete operations at project site and cooperate with appointed firm.
   C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
   D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
   E. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.
   F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
   G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.10 DEFECTIVE CONCRETE
   A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
   B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
   C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

3.11 PROTECTION
   A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
A. Concrete Block.
B. Clay Facing Brick.
C. Mortar and Grout.
D. Reinforcement and Anchorage.
E. Flashings.
F. Lintels.
G. Accessories.

1.02 RELATED REQUIREMENTS
A. Section 07-21-00 - Thermal Insulation: Insulation for cavity spaces.
B. Section 07-92-00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS
K. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2014.
O. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
C. Samples: Submit four samples of decorative block units to illustrate color, texture, and extremes of color range.
D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
E. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.
F. Test Reports: Concrete masonry manufacturer's test reports for units with integral water repellent admixture.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-60-00 - Product Requirements, for additional provisions.

1.05 QUALITY ASSURANCE
A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.
B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum threefive years of documented experience.
C. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

1.06 MOCK-UP
A. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include mortar, accessories, structural backup, and flashings (with lap joint, corner, and end dam) in mock-up.
B. Locate where directed.
C. Mock-up may remain as part of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING
A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS
A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on the drawings for specific locations.
   2. Non-Loadbearing Units: ASTM C129:
      a. Hollow block.
      b. Lightweight.

2.02 BRICK UNITS
A. Manufacturers:
   5. Substitutions: See section 01-60-00 - Product Requirements.
B. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.
   1. Nominal size: As indicated on drawings.

2.03 MORTAR AND GROUT MATERIALS
A. Masonry Cement: ASTM C91/C91M, Type N.
B. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
C. Hydrated Lime: ASTM C207, Type S.
D. Mortar Aggregate: ASTM C144.
E. Grout Aggregate: ASTM C404.
F. Water: Clean and potable.

2.04 REINFORCEMENT AND ANCHORAGE
A. Manufacturers:
   4. Substitutions: See Section 01-60-00 - Product Requirements.
B. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi), deformed billet bars; galvanized.
C. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
D. Single Wythe Joint Reinforcement: Truss or ladder type; ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
E. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A153/A153M, Class B.
   1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
   2. Wire ties: Manufacturer’s standard shape, 0.1875 inch thick.
   3. Vertical adjustment: Not less than 3-1/2 inches.
   4. Seismic Feature: Provide lip, hook, or clip on end of wire ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483 inch diameter.

2.05 FLASHINGS
A. Rubberized Asphalt Flashing: Self-adhering polymer modified asphalt sheet; 40 mils (0.040 inch) minimum total thickness; with cross laminated polyethylene top and bottom surfaces.
B. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.

2.06 ACCESSORIES
A. Preformed Control Joints: Neoprene material. Provide with corner and tee accessories, fused joints.
   1. Manufacturers:
      d. Substitutions: See Section 01-60-00 - Product Requirements.
B. Joint Filler: Closed cell polyurethane; oversized 50 percent to joint width; self expanding; in maximum lengths available.
C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
   1. Full-Height Airspace Maintenance and Drainage Material: Mesh panels, fitted between masonry ties.
      a. Manufacturers:
         2) CavClear/Archovations, Inc; CavClear Masonry Mat: www.cavclear.com.
         4) Substitutions: See Section 01-60-00 - Product Requirements.
D. Nailing Strips: Softwood lumber, preservative treated for moisture resistance, dovetail shape, sized to masonry joints.
E. Weeps:
   1. Type: Molded PVC grilles, insect resistant.
   2. Manufacturers:
      d. Substitutions: See Section 01-60-00 - Product Requirements.
F. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.
2.07 LINTELS
A. Prefabricated Steel Lintels:

2.08 MORTAR AND GROUT MIXES
A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
   1. Masonry below grade and in contact with earth: Type S.
   2. Exterior, non-loadbearing masonry: Type S.
B. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.
C. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that field conditions are acceptable and are ready to receive masonry.
B. Verify that related items provided under other sections are properly sized and located.
C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION
A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

3.04 COURSING
A. Establish lines, levels, and coursing indicated. Protect from displacement.
B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
C. Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
D. Brick Units:
   1. Bond: Running.
   2. Coursing: Three units and three mortar joints to equal 8 inches.

3.05 PLACING AND BONDING
A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
C. Remove excess mortar and mortar smears as work progresses.
D. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
E. Interlock intersections and external corners.
F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
H. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.

3.06 WEEPS/CAVITY VENTS
A. Install weeps in veneer and cavity walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

3.07 CAVITY MORTAR CONTROL
A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
B. Install cavity mortar control panels continuously throughout full height of exterior masonry cavities during construction of exterior wythe, complying with manufacturer's installation instructions. Verify that airspace width is no more than 3/8 inch greater than panel thickness. Install horizontally between joint reinforcement. Stagger end joints in adjacent rows. Fit to perimeter construction and penetrations without voids.

3.08 REINFORCEMENT AND ANCHORAGE - GENERAL
A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
B. Lap joint reinforcement ends minimum 6 inches.
C. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

3.09 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER
A. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches on center vertically and 36 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.
B. Seismic Reinforcement: Connect veneer anchors with continuous horizontal wire reinforcement before embedding anchors in mortar.

3.10 MASONRY FLASHINGS
A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
B. Extend rubberized asphalt flashings to within 1/4 inch of exterior face of masonry.
C. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

3.11 LINTELS
A. Install loose steel lintels over openings.
B. Maintain minimum 4 inch bearing on each side of opening.

3.12 CONTROL AND EXPANSION JOINTS
A. Do not continue horizontal joint reinforcement through control or expansion joints.
B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

3.13 BUILT-IN WORK
A. As work progresses, install built-in metal door frames and window frames and other items to be built into the work and furnished under other sections.
B. Install built-in items plumb, level, and true to line.
C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.

3.14 TOLERANCES
A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
E. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
F. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.15 FIELD QUALITY CONTROL
A. An independent testing agency will perform field quality control tests, as specified in Section 01-40-00 - Quality Requirements.

3.16 CLEANING
A. Remove excess mortar and mortar droppings.
B. Replace defective mortar. Match adjacent work.
C. Clean soiled surfaces with cleaning solution.

END OF SECTION
SECTION 05-40-00
COLD-FORMED METAL FRAMING

PART 1  GENERAL

1.01  SECTION INCLUDES
A. Formed steel hat channel framing and bridging.

1.02  RELATED REQUIREMENTS
A. Section 06-10-00 - Rough Carpentry: Wood blocking and miscellaneous framing.
B. Section 07-42-13 - Metal Wall Panels: Metal soffit panels.

1.03  REFERENCE STANDARDS

1.04  SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.
C. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.

1.05  QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum five years of documented experience.
B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.

PART 2  PRODUCTS

2.01  MANUFACTURERS
A. Metal Framing:
   4. Substitutions: See Section 01-60-00 - Product Requirements.

B. Framing Connectors and Accessories:

2.02  FRAMING SYSTEM
A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.

2.03  ACCESSORIES
A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.

2.04  FASTENERS
A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.

PART 3  EXECUTION

3.01  EXAMINATION
A. Verify that substrate surfaces are ready to receive work.

END OF SECTION
SECTION 06-10-00
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Structural dimension lumber framing.
B. Non-structural dimension lumber framing.
C. Sheathing.
D. Roofing nailers.
E. Preservative treated wood materials.
F. Miscellaneous framing and sheathing.
G. Concealed wood blocking, nailers, and supports.

1.02 RELATED REQUIREMENTS
A. Section 07-25-00 - Weather Barriers: Air barrier over sheathing.
B. Section 07-62-00 - Sheet Metal Flashing and Trim: Sill flashings.

1.03 REFERENCE STANDARDS
E. PS 1 - Structural Plywood; 2009.
F. PS 2 - Performance Standard for Wood-Based Structural-Use Panels; 2010.
H. SPIB (GR) - Grading Rules; 2014.

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.

1.05 DELIVERY, STORAGE, AND HANDLING
A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

1.06 WARRANTY
A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS
A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Spruce-Pine-Fir (South), unless otherwise indicated.
   2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
   3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
B. Lumber fabricated from old growth timber is not permitted.
C. Provide sustainably harvested wood; see Section 01-60-00 - Product Requirements for requirements.
D. Provide wood harvested within a 500 mile radius of the project site.
E. Lumber salvaged from deconstruction or demolition of existing buildings or structures is permitted in lieu of sustainably harvested lumber provided it is clean, denailed, and free of paint and finish materials, and other contamination; identify source.
1. Where salvaged lumber is used for structural applications, provide lumber re-graded by an
inspection service accredited by the American Lumber Standard Committee, Inc; www.alsc.org.

2.02 DIMENSION LUMBER
A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).
B. Sizes: Nominal sizes as indicated on drawings, S4S.
C. Moisture Content: S-dry or MC19.
D. Stud Framing (2 by 2 through 2 by 6):
   1. Species: Any allowed under referenced grading rules.
   2. Grade: No. 2.
E. Small Beam Framing (2 by 6 through 4 by 16):
   1. Machine stress-rated (MSR) as follows:
      a. Fb-single (minimum extreme fiber stress in bending): 1350 psi.
      b. E (minimum modulus of elasticity): 1,400,000 psi.
   2. Species: Spruce-Pine-Fir (South).
F. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS
A. Roof Sheathing: Any PS 2 type, rated Structural I Sheathing.
   3. Performance Category: 3/4 PERF CAT.
B. Wall Sheathing: Any PS 2 type.
   2. Grade: Structural I Sheathing.
   4. Performance Category: 5/16 PERF CAT.
   5. Edge Profile: Square edge.
C. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density
   fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when
tested in accordance with ASTM E84.

2.04 ACCESSORIES
A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity
      and preservative-treated wood locations, unfinished steel elsewhere.
   2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of
      sheathing.
   3. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete.
B. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from
   continuous rolls.
C. Sill Flashing: As specified in Section 07-62-00.
D. Construction Adhesives:
   1. Products:
      a. Franklin International, Inc.; Titebond Fast Set Polyurethane Construction Adhesive:
         www.titebond.com/sle.
      b. Substitutions: See Section 01-60-00 - Product Requirements.

2.05 FACTORY WOOD TREATMENT
A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood
   treatments determined by use categories, expected service conditions, and specific applications.
   1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an
      ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA
      standards.
B. Preservative Treatment:
1. Manufacturers:
   d. Substitutions:  See Section 01-60-00 - Product Requirements.
   a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
   b. Treat lumber in contact with roofing, flashing, or waterproofing.
   c. Treat lumber in contact with masonry or concrete.
   d. Treat lumber less than 18 inches above grade.
   a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
   b. Treat plywood in contact with roofing, flashing, or waterproofing.
   c. Treat plywood in contact with masonry or concrete.
   d. Treat plywood less than 18 inches above grade.

PART 3 EXECUTION

3.01 PREPARATION
A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.
B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

3.02 INSTALLATION - GENERAL
A. Select material sizes to minimize waste.
B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION
A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
C. Install structural members full length without splices unless otherwise specifically detailed.
D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWI (WFCM) Wood Frame Construction Manual.
E. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
F. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.04 BLOCKING, NAILERS, AND SUPPORTS
A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

E. Provide the following specific non-structural framing and blocking:
1. Cabinets and shelf supports.
2. Wall brackets.
3. Handrails.
4. Grab bars.
5. Towel and bath accessories.
6. Wall-mounted door stops.
7. Chalkboards and marker boards.
8. Wall paneling and trim.
9. Joints of rigid wall coverings that occur between studs.
10. Wide screen televisions.

3.05 ROOF-RELATED CARPENTRY
A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

3.06 INSTALLATION OF CONSTRUCTION PANELS
A. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
   1. At long edges use sheathing clips where joints occur between roof framing members.
   2. Nail panels to framing; staples are not permitted.
B. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails or screws.
   1. Use plywood or other acceptable structural panels at building corners, for not less than 96 inches, measured horizontally.
C. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
   1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
   2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   3. Install adjacent boards without gaps.
   4. Size: 48 by 96 inches, installed horizontally at ceiling height.

3.07 TOLERANCES
A. Framing Members: 1/4 inch from true position, maximum.
B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.08 FIELD QUALITY CONTROL
A. See Section 01-40-00 - Quality Requirements, for additional requirements.

3.09 CLEANING
A. Waste Disposal: Comply with the requirements of Section 01-74-19 - Construction Waste Management and Disposal.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.
B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION
SECTION 06-17-53
SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Shop fabricated wood trusses for roof framing.
B. Bridging, bracing, and anchorage.
C. Preservative treatment of wood.

1.02 RELATED REQUIREMENTS
A. Section 06-10-00 - Rough Carpentry: Installation requirements for miscellaneous framing.

1.03 REFERENCE STANDARDS
A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
B. SPIB (GR) - Grading Rules; 2014.

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on plate connectors, bearing plates, and metal bracing components.
C. Shop Drawings: Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing.
   1. Include identification of engineering software used for design.
   2. Provide shop drawings stamped or sealed by design engineer.

1.05 QUALITY ASSURANCE
A. Designer Qualifications: Perform design by or under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in North Carolina.
B. Fabricator Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Handle and erect trusses in accordance with TPI BCSI 1.
B. Store trusses in vertical position resting on bearing ends.

PART 2 PRODUCTS

2.01 TRUSSES
A. Wood Trusses: Designed and fabricated in accordance with TPI 1 and TPI DSB-89 to achieve structural requirements indicated.
   1. Species and Grade: Southern Pine, SPIB (GR) Grade No. 2.
   2. Connectors: Steel plate.
   3. Design Roof Live and Dead Load: 40 lbs/sq ft.
   5. Decay Resistance: Provide factory preservative pressure treated wood.

2.02 MATERIALS
A. Lumber:
   1. Moisture Content: Between 7 and 9 percent.
   2. Lumber fabricated from old growth timber is not permitted.
   3. Provide sustainably harvested lumber, certified or labeled as specified in Section 01-60-00.
   4. Provide lumber harvested within a 500 mile radius of the project site.
5. Lumber salvaged from deconstruction or demolition of existing buildings or structures is permitted provided it is clean, denailed, and free of paint and finish materials, and other contamination; identify source.
   a. Where used for structural applications, provide lumber re-graded by an inspection service accredited by the American Lumber Standard Committee, Inc.
6. Lumber fabricated from timber recovered from riverbeds or otherwise abandoned is permitted, unless otherwise noted, provided it is clean and free of contamination; identify source.
   a. Where used for structural applications, provide lumber re-graded by an inspection service accredited by the American Lumber Standard Committee, Inc.

B. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653/A653M Structural Steel (SS) Grade 33/230, with G90/Z275 coating; die stamped with integral teeth; thickness as indicated.

C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.03 ACCESSORIES
A. Wood Blocking, Bridging, Plates, and Miscellaneous Framing: Softwood lumber, Spruce/Pine/Fir, construction grade, 19 percent maximum and 7 percent minimum moisture content.
B. Fasteners: Electrogalvanized steel, type to suit application.

2.04 WOOD TREATMENT
A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
B. Preservative Pressure Treatment of Lumber: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
   1. Kiln dry after treatment to maximum moisture content of 19 percent.
   2. Marking: Mark each piece with stamp of an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that supports and openings are ready to receive trusses.

3.02 ERECTION
A. Install trusses in accordance with manufacturer’s instructions and TPI DSB-89 and TPI BCSI 1; maintain a copy of each TPI document on site until installation is complete.
B. Set members level and plumb, in correct position.
C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in true alignment until completion of erection and installation of permanent bracing.
D. Do not field cut or alter structural members without approval of Architect.
E. Install permanent bridging and bracing.
F. Install headers and supports to frame openings required.
G. Frame openings between trusses with lumber in accordance with Section 06-10-00.
H. Coordinate placement of decking with work of this section.
I. After erection, touch-up galvanized surfaces with primer consistent with shop coat.

3.03 SITE APPLIED WOOD TREATMENT
A. Apply treatment in accordance with manufacturer's instructions.

3.04 TOLERANCES
A. Framing Members: 1/2 inch maximum, from true position.

END OF SECTION
SECTION 06-41-00
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Specially fabricated cabinet units.
B. Countertops.
C. Cabinet hardware.
D. Factory finishing.
E. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS
A. Section 06-10-00 - Rough Carpentry: Support framing, grounds, and concealed blocking.

1.03 REFERENCE STANDARDS
A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
D. BHMA A156.9 - American National Standard for Cabinet Hardware; 2010.
E. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 ADMINISTRATIVE REQUIREMENTS
A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
   2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
C. Product Data: Provide data for hardware accessories.
D. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.
E. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

1.06 QUALITY ASSURANCE
A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
B. Quality Certification: Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section.
   1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   2. Provide designated labels on shop drawings as required by certification program.
   3. Provide designated labels on installed products as required by certification program.
   4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
   5. Replace, repair, or rework all work for which certification is refused.

1.07 MOCK-UP
A. Provide mock-up of typical base cabinet, wall cabinet, and countertop, including hardware, finishes, and plumbing accessories.
B. Locate where directed.
C. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING
A. Protect units from moisture damage.

1.09 FIELD CONDITIONS
A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 CABINETS
A. Quality Standard: Premium Grade, in accordance with AWI/AWMAC/WI (AWS) or 1, unless noted otherwise.
B. Plastic Laminate Faced Cabinets: Custom grade.
C. Cabinets at Lounge, Taping and Storage:
   2. Finish - Exposed Interior Surfaces: Solid phenolic.
   3. Finish - Concealed Surfaces: Manufacturer's option.
   4. Door and Drawer Front Edge Profiles: Radius edge with thick applied band.
   5. Door and Drawer Front Retention Profiles: Fixed panel.
   6. Casework Construction Type: Type A - Frameless.
   7. Interface Style for Cabinet and Door: Style 2 - Finish Inset; reveal overlay.
   8. Layout for Cabinet and Door Fronts: Flush panel.
      a. Premium Grade:
         1) Provide vertical run and match for doors, drawer fronts and false fronts within each cabinet unit.
         2) Provide well-matched doors, drawer fronts and false fronts across multiple cabinet faces in one elevation.
   9. Adjustable Shelf Loading: 50 lbs. per sq. ft.
      a. Deflection: L/144.

2.02 WOOD-BASED COMPONENTS
A. Wood fabricated from old growth timber is not permitted.
B. Provide sustainably harvested wood, certified or labeled as specified in Section 01-60-00.
C. Provide wood harvested within a 500 mile radius of the project site.
D. Wood fabricated from timber recovered from riverbeds or otherwise abandoned is permitted, unless otherwise noted, provided it is clean and free of contamination; identify source; provide lumber re-graded by an inspection service accredited by the American Lumber Standard Committee, Inc.

2.03 LAMINATE MATERIALS
A. Manufacturers:
   4. Substitutions: See Section 01-60-00 - Product Requirements.
B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
C. Provide specific types as follows:
   1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, color as selected, satin finish.
   2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, color as selected, satin finish.
   3. Post-Formed Horizontal Surfaces: HGP, 0.039 inch nominal thickness, through color, color as selected, satin finish.
4. Post-Formed Vertical Surfaces: VGP, 0.028 inch nominal thickness, through color, color as selected, satin finish.
5. Cabinet Liner: CLS, 0.020 inch nominal thickness, through color, colors as scheduled, finish as scheduled.
6. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

2.04 COUNTERTOPS
A. Plastic Laminate Countertops: Medium density fiberboard substrate covered with HPDL, post-formed, with coved integral backsplash.

2.05 ACCESSORIES
A. Adhesive: Type recommended by fabricator to suit application.
B. Plastic Edge Banding: Extruded PVC, convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness.
   1. Color: As selected by Architect from manufacturer's standard range.
   2. Use at all exposed plywood edges.
   3. Use at all exposed shelf edges.
C. Fasteners: Size and type to suit application.
D. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.
E. Concealed Joint Fasteners: Threaded steel.
F. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface.

2.06 HARDWARE
A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.
B. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.
C. Drawer and Door Pulls: "U" shaped wire pull, steel with chrome finish, 4 inch centers.
D. Sliding Door Pulls: Circular shape for recessed installation, steel with satin finish.
E. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with chrome finish.
F. Catches: Magnetic.
G. Drawer Slides:
   1. Type: Full extension.
   2. Static Load Capacity: Commercial grade.
   4. Stops: Integral type.
   5. Features: Provide self closing/stay closed type.
H. Hinges: European style concealed self-closing type, steel with polished finish.

2.07 FABRICATION
A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
E. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.
PART 3  EXECUTION
3.01  EXAMINATION
   A. Verify adequacy of backing and support framing.
3.02  INSTALLATION
   A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
   B. Use fixture attachments in concealed locations for wall mounted components.
   C. Use concealed joint fasteners to align and secure adjoining cabinet units.
   D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
   E. Secure cabinets and counter bases to floor using appropriate angles and anchorages.
   F. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.
3.03  ADJUSTING
   A. Adjust installed work.
   B. Adjust moving or operating parts to function smoothly and correctly.

END OF SECTION
SECTION 07-13-00
SHEET WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Sheet Waterproofing:
      1. Butyl rubber sheet membrane.

1.02 RELATED REQUIREMENTS
   A. Section 03-30-00 - Cast-in-Place Concrete: Concrete substrate.
   B. Section 07-62-00 - Sheet Metal Flashing and Trim: Metal counterflashing.
   C. Section 22-10-06 - Plumbing Piping Specialties: Roof drain and plumbing vent flashing flanges.

1.03 ABBREVIATIONS

1.04 REFERENCE STANDARDS
   D. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover; 2008a (Reapproved 2013).

1.05 SUBMITTALS
   A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
   B. Product Data: Provide data for membrane.
   C. Certificate: Certify that products meet or exceed specified requirements.
   D. Manufacturer's Installation Instructions: Indicate special procedures.
   E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE
   A. Membrane Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
   B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

1.07 FIELD CONDITIONS
   A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until liquid or mastic accessories have cured.

1.08 WARRANTY
   A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.
   B. Contractor shall correct defective Work within a five year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no extra cost to Owner.
   C. Provide five year manufacturer warranty for waterproofing failing to resist penetration of water, except where such failures are the result of structural failures of building. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.

PART 2 PRODUCTS

2.01 WATERPROOFING APPLICATIONS
   A. Butyl Rubber Sheet Membrane:
      1. Location: Foundation.
      2. Vertical Surfaces: Adhesive bonded to substrate.
3. Horizontal Surfaces: Adhesive bonded to substrate.
4. Cover with drainage panel.

2.02 MEMBRANE MATERIALS

A. Butyl Rubber Sheet Membrane: Unreinforced IIR sheet complying with ASTM D6134, Type II.
   1. Thickness: 0.060 inch, minimum.
   2. Sheet Width: As large as is practical, with factory vulcanized splices.
   3. Field Seaming: Contact cement and lap edge sealant.
   4. Ultimate Elongation: 300 percent, minimum, measured in accordance with ASTM D412.
   5. Tensile Strength: 1200 pounds per square inch, measured in accordance with ASTM D412.
   6. Puncture Resistance: 95 pounds, minimum, measured in accordance with ASTM E154/E154M.
   7. Adhesives, Sealants, Tapes, and Accessories: As recommended by membrane manufacturer.

B. Seaming Materials: As recommended by membrane manufacturer.
C. Membrane Sealant: As recommended by membrane manufacturer.
D. Adhesives: As recommended by membrane manufacturer.
E. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with sheet membrane.

2.03 ACCESSORIES

A. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and waterproofing materials.
B. Drainage Panel: Drainage layer with geotextile filter fabric on earth side.
   2. Products:
      c. Mar-flex Waterproofing & Building Products; Type II Drain Core Foundation Dimpleboard: www.mar-flex.com/sle.
      d. Mar-flex Waterproofing & Building Products; Type III Drain Core Decking Drainage: www.mar-flex.com/sle.
      e. W.R. Meadows, Inc; Mel-Drain 5012: www.wrmeadows.com/sle.
      f. Substitutions: See Section 01-60-00 - Product Requirements.
C. Flexible Flashings: Type recommended by membrane manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions are acceptable prior to starting this work.
B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.
C. Verify items that penetrate surfaces to receive waterproofing are securely installed.

3.02 PREPARATION

A. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
B. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.
C. Fill non-moving joints and cracks with a filler compatible with waterproofing materials.
D. Seal moving cracks with sealant and non-rigid filler, using procedures recommended by sealant and waterproofing manufacturers.
E. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.
F. Concrete Surfaces for Adhesive Bonding: Prepare concrete substrate according to ASTM D5295/D5295M.
   1. Remove substances that inhibit adhesion including form release agents, curing compounds admixtures, laitance, moisture, dust, dirt, grease and oil.
2. Repair surface defects including honeycombs, fins, tie holes, bug holes, sharp offsets, rutted cracks, ragged corners, deviations in surface plane, spalling and delaminations, as described in the reference standard.
3. Remove and replace areas of defective concrete as specified in Section 03-30-00.
4. Prepare concrete for adhesive bonded waterproofing using mechanical or chemical methods described in the referenced standard.
5. Test concrete surfaces as described in the referenced standards. Verify surfaces are ready to receive adhesive bonded waterproofing membrane system.

3.03 INSTALLATION - MEMBRANE
   A. Install membrane waterproofing in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.
   B. Roll out membrane, and minimize wrinkles and bubbles.
   C. Adhesive Bonded Membrane: Apply adhesive in accordance with manufacturer's instructions, and bond sheet to substrate except in those areas directly over or within 3 inches of a control or expansion joint.
   D. Mechanically Fastened Membrane: Install mechanical fasteners in accordance with manufacturer's instructions, and bond sheet to membrane discs.
   E. Overlap edges and ends, minimum 3 inches, seal permanently waterproof by method recommended by manufacturer, and apply uniform bead of sealant to joint edge.
   F. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.
   G. Weather lap joints on sloped substrate in direction of drainage, and seal joints and seams.
   H. Coordinate with drain installation; refer to Section 22-10-06.
   I. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.
   J. Seal membrane and flashings to adjoining surfaces.

3.04 INSTALLATION - DRAINAGE PANEL

3.05 PROTECTION
   A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION
SECTION 07-21-00
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Board insulation at cavity wall construction, perimeter foundation wall, underside of floor slabs, over roof deck, and over roof sheathing.

1.02 RELATED REQUIREMENTS
A. Section 06-10-00 - Rough Carpentry: Installation requirements for board insulation over steep slope roof sheathing or roof structure.
B. Section 07-21-19 - Foamed-In-Place Insulation: Plastic foam insulation other than boards.
C. Section 07-25-00 - Weather Barriers: Separate air barrier and vapor retarder materials.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.05 FIELD CONDITIONS
A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS
A. Insulation Under Concrete Slabs: Extruded polystyrene board.
B. Insulation at Perimeter of Foundation: Extruded polystyrene board.
C. Insulation Over Roof Deck: Polyisocyanurate board.

2.02 FOAM BOARD INSULATION MATERIALS
A. Extruded Polystyrene Board Insulation: Extruded polystyrene board; ASTM C578; with either natural skin or cut cell surfaces, and the following characteristics:
   1. Type: ASTM C578.
   2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
   4. R-value; 1 inch of material at 72 degrees F: 5, minimum.
   6. Water Absorption, Maximum: 0.3 percent, by volume.
   7. Manufacturers:
      d. Substitutions: See Section 01-60-00 - Product Requirements.
B. Composite Polyisocyanurate Board Insulation Faced with Plywood: Rigid cellular foam, complying with ASTM C1289; Type V, with fire-retardant-treated plywood one face and glass fiber mat facer on other face.
   1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
   3. Compressive Strength: 25 psi
5. Plywood Thickness: 1/2 inch.
6. Insulation Board Thickness: 4 1/2 inches.
9. Manufacturers:
   a. Atlas Roofing Corporation; ACFoam Nail Base Roof Insulation Panels:
      www.atlasroofing.com/sle.
   c. Substitutions: See Section 01-60-00 - Product Requirements.

2.03 ACCESSORIES
A. Sheet Vapor Retarder: Specified in Section 07-25-00.
B. Tape: Polyethylene self-adhering type, mesh reinforced, 2 inch wide.
C. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers’ instructions.
D. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER
A. Install boards horizontally on foundation perimeter.
B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BOARD INSTALLATION AT CAVITY WALLS
A. Install boards to fit snugly between wall ties.
   1. Place membrane surface against adhesive.
   2. Place membrane surface facing out, and tape seal board joints.
B. Install boards horizontally on walls.
   1. Place boards to maximize adhesive contact.
   2. Install in running bond pattern.
   3. Butt edges and ends tightly to adjacent boards and to protrusions.
   4. Place impale fastener locking discs.
C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.04 BOARD INSTALLATION UNDER CONCRETE SLABS
A. Place insulation under slabs on grade after base for slab has been compacted.
B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.05 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK
A. Board Installation Over Roof Deck, General:
   1. See applicable roofing specification section for specific board installation requirements.
   2. Fasten insulation to deck in accordance with roofing manufacturer’s written instructions and applicable Factory Mutual requirements.
   3. Do not apply more insulation than can be covered with roofing in same day.

3.06 BOARD INSTALLATION OVER STEEP SLOPE ROOF SHEATHING OR ROOF STRUCTURE
A. Installation of board insulation over steep slope roof structure or roof sheathing is specified in Section 06-10-00.
3.07 PROTECTION
   A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Foamed-in-place insulation.
      1. In exterior framed walls.
      2. At junctions of dissimilar wall and roof materials.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS
   A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
   B. Product Data: Provide product description, insulation properties, overcoat properties, and preparation requirements.
   C. Certificates: Certify that products of this section meet or exceed specified requirements.
   D. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.
   E. Manufacturer's Installation Instructions: Indicate special procedures, and perimeter conditions requiring special attention.
   F. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.
   G. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of all contractor accreditation and installer certification on site during and after installation. Present on-site documentation upon request.

1.04 QUALITY ASSURANCE
   A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than three-five years of documented experience.
   B. Applicator Qualifications: Company specializing in performing work of the type specified, with minimum five years of documented experience.
   C. Air Barrier Association of America (ABAA) Quality Assurance Program (QAP); www.airbarrier.org/sle:
      1. Installer Qualification: Use accredited contractor, certified installers, evaluated materials, and third-party field quality control audit.
      2. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture. Use secondary materials approved in writing by primary material manufacturer.

1.05 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 degrees F of dew point.
PART 2 PRODUCTS

2.01 MATERIALS
A. Foamed-In-Place Insulation: Medium-density, rigid or semi-rigid, open or closed cell polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
1. Aged Thermal Resistance: R-value of 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; 2 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 E84.
4. Air Permeance: 0.004 cfm/sq ft, maximum, when tested at intended thickness in accordance with ASTM E2178 or ASTM E283 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.
7. Products:
   d. Gaco Western; GacoOnePass F1850R: www.gaco.com.
   g. Rhino Linings Corporation; ThermalGuard CC2: www.rhinolinings.com/sle.
   h. Substitutions: See Section 01-60-00 - Product Requirements.

2.02 ACCESSORIES
A. Primer: As required by insulation manufacturer.
B. Overcoat: Intumescent coating of type recommended by insulation manufacturer and as required to comply with applicable codes.

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 or overcoat 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. Patch damaged areas.
C. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.
D. Trim excess away for applied trim or remove as required for continuous sealant bead.

END OF SECTION
SECTION 07-25-00
WEATHER BARRIERS

PART 1  GENERAL

1.01 SECTION INCLUDES
A. Air Barriers: Materials that form a system to stop passage of air through exterior walls and joints around frames of openings in exterior walls.

1.02 RELATED REQUIREMENTS
A. Section 06-10-00 - Rough Carpentry: Water-resistive barrier under exterior cladding.
B. Section 07-62-00 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.
C. Section 07-92-00 - Joint Sealants: Sealing building expansion joints.

1.03 DEFINITIONS
A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.
C. Vapor Retarder: Air tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
1. Water Vapor Permeance: For purposes of conversion, 57.2 ng/(Pa s sq m) = 1 perm.

1.04 REFERENCE STANDARDS

1.05 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on material characteristics.
C. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.
D. Manufacturer's Installation Instructions: Indicate preparation.
E. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.
F. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of all contractor accreditation and installer certification on site during and after installation. Present on-site documentation upon request.

1.06 FIELD CONDITIONS
A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

PART 2  PRODUCTS

2.01 WEATHER BARRIER ASSEMBLIES
A. Air Barrier:
1. On outside surface of sheathing of exterior walls use air barrier sheet, self-adhesive type.
2.02 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

A. Air Barrier Sheet, Mechanically Fastened:
   1. Air Permeance: 0.004 cubic feet per minute per square foot, maximum, when tested in accordance with ASTM E2178.
   2. Water Vapor Permeance: 5 perms, minimum, when tested in accordance with ASTM E96/E96M Procedure A (desiccant procedure).
   3. Water Penetration Resistance: Withstand a water head of 21 inches, minimum, for minimum of 5 hours, when tested in accordance with AATCC Test Method 127.
   4. Ultraviolet and Weathering Resistance: Approved in writing by manufacturer for minimum of 180 days weather exposure.
   5. Surface Burning Characteristics: Flame spread index of 25 or less, and smoke developed index of 50 or less, when tested in accordance with ASTM E84.
   6. Seam and Perimeter Tape: Polyethylene self adhering type, mesh reinforced, 2 inches wide, compatible with sheet material; unless otherwise specified.
   7. Products:
      e. Substitutions: See Section 01-60-00 - Product Requirements.

B. Air Barrier Sheet, Self-Adhered:
   1. Air Permeance: 0.004 cubic feet per minute per square foot, maximum, when tested in accordance with ASTM E2178.
   2. Water Vapor Permeance: 10 perms, minimum, when tested in accordance with ASTM E96/E96M Procedure A (desiccant procedure).
   3. Ultraviolet and Weathering Resistance: Approved in writing by manufacturer for maximum of 150 days weather exposure.
   4. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less (Class A), when tested in accordance with ASTM E84.
   5. Seam and Perimeter Tape: As recommended by sheet manufacturer.
   6. Products:
      d. Henry Company; Blueskin VP100: www.henry.com/sle.
      e. Substitutions: See Section 01-60-00 - Product Requirements.

C. Air Barrier, Fluid Applied: Vapor permeable, elastomeric waterproofing:
   1. Air Barrier Coating:
      a. Air Permeance: 0.001 cubic feet per minute per square foot, maximum, when tested in accordance with ASTM E2178.
      b. Water Vapor Permeance: 18 perms, minimum, when tested in accordance with ASTM E96/E96M, Procedure B.
      c. Elongation: 300 percent, minimum, when tested in accordance with ASTM D412.
      d. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
      e. Nail Sealability: Pass, when tested in accordance with ASTM D1970/D1970M.
      f. Code Acceptance: Comply with applicable requirements of ICC-ES AC212.
      g. Sealants, Tapes and Accessories: As recommended by coating manufacturer.
      h. Products:
         1) 3M Company: www.3M.com/construction.
         2) BASF Corporation; MasterSeal AWB 660: www.master-builders-solutions.basf.us.
         3) Parex USA, Inc; Parex USA WeatherSeal Spray & Roll-on: www.parexusa.com/sle.
4) PROSOCO, Inc; R-GUARD Spray Wrap MVP: www.prosoco.com/r-guardsle.
5) Substitutions: See Section 01-60-00 - Product Requirements.

2.03 ACCESSORIES

A. Sealants, Tapes, and Accessories for Sealing Weather Barrier and Sealing Weather Barrier to Adjacent Substrates: As specified or as recommended by weather barrier manufacturer.

   1. Thickness: 70 mil (0.070 inch), nominal.
   2. Products:
      e. Fortifiber Building Systems Group; Fortiflash Butyl: www.fortifiber.com/sle.
      f. Substitutions: See Section 01-60-00 - Product Requirements.

C. Thinners and Cleaners: As recommended by material manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions are ready to accept the work of this section.

3.02 PREPARATION

A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

B. Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer’s instructions.

3.03 INSTALLATION

A. Install materials in accordance with manufacturer’s instructions.

B. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.

C. Apply sealants and adhesives within recommended application temperature ranges. Consult manufacturer if temperature is out of this range.

D. Mechanically Fastened Sheets - On Exterior:
   1. Install sheets shingle-fashion to shed water, with seams generally horizontal.
   2. Overlap seams as recommended by manufacturer but at least 6 inches.
   3. Overlap at outside and inside corners as recommended by manufacturer but at least 12 inches.
   4. Attach to framed construction with fasteners extending through sheathing into framing. Space fasteners at 12 to 18 inches on center along each framing member supporting sheathing.
   5. For applications specified to be air tight, seal seams, laps, penetrations, tears, and cuts with self-adhesive tape; use only large-headed, gasketed fasteners recommended by the manufacturer.
   6. Where stud framing rests on concrete or masonry, extend lower edge of sheet at least 4 inches below bottom of framing and seal to foundation with sealant.
   7. Install water-resistive barrier over jamb flashings.
   8. Install air barrier and vapor retarder UNDER jamb flashings.
   9. Install head flashings under weather barrier.
   10. At openings to be filled with frames having nailing flanges, wrap excess sheet into opening; at head, seal sheet over flange and flashing.

E. Coatings:
   1. Prepare substrate in manner recommended by coating manufacturer; treat joints in substrate and between dissimilar materials as recommended by manufacturer.
   2. Where exterior masonry veneer is to be installed, install masonry anchors before installing weather barrier over masonry; seal around anchors air tight.
   3. Use flashing to seal to adjacent construction and to bridge joints.

F. Openings and Penetrations in Exterior Weather Barriers:
   1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches onto weather barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with at least 4 inches wide; do not seal sill flange.

3. At openings to be filled with non-flanged frames, seal weather barrier to all sides of opening framing, using flashing at least 9 inches wide, covering entire depth of framing.

4. At head of openings, install flashing under weather barrier extending at least 2 inches beyond face of jambs; seal weather barrier to flashing.

5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.

6. Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

3.04 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION
PART 1 GENERAL

1.01 SUMMARY
A. Section Includes: Self-adhering polymer modified membrane as a sloped roof ice shield and water protection where a roof assembly intersects with a wall assembly behind flashing.

1.02 RELATED SECTIONS:
A. Section 01-74-19 - Construction Waste Management and Disposal.
B. Section 07-21-00 - Thermal Insulation - Roof deck insulation.
C. Section 07-41-13 - Metal Roof Panels
D. Section 07-62-00 - Sheet Metal Flashing and Trim

1.03 REFERENCES
A. ASTM D412 Standard Test Methods for Vulcanized Rubber and Elastomeric Tension
B. ASTM D461 Standard Test Methods for Felt
C. ASTM D903 Test Methods for Peel or Stripping Strength of Adhesive Bonds
F. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials

1.04 SUBMITTALS
A. Manufacturer's product data sheet and product sample.

1.05 QUALITY ASSURANCE
A. Manufacturer Qualifications: Self-adhesive membrane roofing underlayment shall be manufactured by a firm with a minimum of 25 years experience in the production and sales of self-adhered membrane roofing underlayments.

1.06 DELIVERY, STORAGE AND HANDLING
A. The membrane and accessory products must be handled properly. Read all product labels and Material Safety Data Sheets (MSDS) for proper handling and disposal. Deliver all materials in manufacturer’s unopened packages and store all materials under cover. Do not double stack palletized material.

PART 2 PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS
A. Acceptable Products and Manufacturers:
   4. Substitutions: See Section 01-60-00 - Product Requirements.

2.02 MATERIALS
A. Cold-applied, self-adhering and self-healing membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of rubberized asphalt adhesive. Provide a embossed, slip resistant surface interwound with a disposable silicone coated release sheet. Membrane shall conform to the physical properties as listed in the chart below:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Gray-black</td>
<td></td>
</tr>
<tr>
<td>Thickness, membrane</td>
<td>40 mil (1.02 mm)</td>
<td>ASTM D3767 procedure A (Section 9.1)</td>
</tr>
<tr>
<td>Tensile strength, membrane</td>
<td>250 psi (1720 kN/m2)</td>
<td>ASTM D412 (Die C modified)</td>
</tr>
<tr>
<td>Elongation, membrane</td>
<td>250%</td>
<td>ASTM D412 (Die C modified)</td>
</tr>
<tr>
<td>Low temperature flexibility</td>
<td>Unaffected @ -20°F (-29°C)</td>
<td>ASTM D1970</td>
</tr>
<tr>
<td>Adhesion to plywood</td>
<td>3.0 lbs/in. width (525 N/m)</td>
<td>ASTM D903</td>
</tr>
</tbody>
</table>
Permeance (max) 0.05 Perms (2.9 ng/m2s Pa) ASTM E96
Material weight installed (max) 0.3 lb/ft2 (1.3 kg/m2) ASTM D461

2.03 ACCESSORIES
A. Accessory Products: Perm-A-Barrier WB Primer or approved equal.

PART 3 EXECUTION
3.01 PREPARATION
A. Install the membrane directly on a clean, dry, continuous structural deck. Some suitable deck materials include plywood, wood composition, wood plank, metal, concrete, or gypsum sheathing. Remove dust, dirt, loose nails, and old roofing materials. Protrusions from the deck area must be removed. Decks shall have no voids, damaged, or unsupported areas. Repair deck areas before installing the membrane.
B. Install membrane beginning at 24" to the interior side of exterior walls and terminate 6" down wood fascias.
C. Prime concrete, masonry surfaces and DensDeck with Perm-A-Barrier WB Primer at a rate of 250-350 ft2/gal (6-8 m2/L). Prime wood composition and gypsum sheathing with Perm-A-Barrier WB Primer if adhesion is found to be marginal. Apply at same rate.
D. Priming is not required for other suitable surfaces provided that they are clean and dry.
3.02 INSTALLATION
A. Install in strict accordance with manufacturer's printed application procedures, precautions, and limitations.

END OF SECTION
SECTION 07-41-13
METAL ROOF PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Architectural roofing system of preformed steel panels.
B. Fastening system.
C. Factory finishing.
D. Accessories and miscellaneous components.

1.02 RELATED REQUIREMENTS
A. Section 07-21-00 - Thermal Insulation: Rigid roof insulation.
B. Section 07-92-00 - Joint Sealants: Sealing joints between metal roof panel system and adjacent construction.

1.03 REFERENCE STANDARDS
B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Summary of test results, indicating compliance with specified requirements.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. 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. Manufacturer Qualification Statement: Provide documentation showing metal roof panel fabricator is accredited under IAS AC472.
F. Test Reports: Indicate compliance of metal roofing system to specified requirements.
G. Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner'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.
   1. Not less than 5 years of documented experience.
B. Installer Qualifications: Company trained and authorized by roofing system manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Provide strippable plastic protection on prefinished roofing panels for removal after installation.
B. Store roofing panels on project site as recommended by manufacturer to minimize damage to panels prior to installation.
1.07 WARRANTY
A. See Section 01-78-00 - 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 25 year period from date of Substantial Completion.
C. Waterproofing Warranty: Provide manufacturer’s warranty for weathertightness of roofing system, including agreement to repair or replace roofing that fails to keep out water within specified warranty period of 20 years from date of Substantial Completion.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Design is based on Tite-Loc Plus Panel, manufactured by Petersen Aluminum Corp.
B. Metal Roof Panels:
   6. Substitutions: See Section 01-60-00 - Product Requirements.

2.02 ARCHITECTURAL METAL ROOF PANELS
A. Architectural Metal Roofing: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.
B. Metal Panels: Factory-formed panels with factory-applied finish.
   1. Steel Panels: One of the following:
      a. Zinc-coated steel conforming to ASTM A653/A653M; minimum G60 galvanizing.
      b. Aluminum-zinc alloy-coated steel conforming to ASTM A792/A792M; minimum AZ50 coating.
      c. Aluminum-coated steel conforming to ASTM A463/A463M; minimum Type 2 T2-65 coating.
      d. Steel Thickness: Minimum 24 gage (0.024 inch).
   2. Profile: Standing seam, with minimum 1.5 inch seam height; concealed fastener system for field seaming with special tool.
   3. Texture: Smooth, with intermediate ribs for added stiffness.
   4. Length: Full length of roof slope, without lapped horizontal joints.
   5. Width: Maximum panel coverage of 24 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. Fluoropolymer Coating System: Manufacturer’s standard multi-coat thermocured coating system, including minimum 70 percent fluoropolymer color topcoat with minimum total dry film thickness of 0.9 mil; color and gloss Hartford Green.
B. Solar Reflectance Index (SRI): 29.

2.05 ACCESSORIES AND MISCELLANEOUS ITEMS
A. Miscellaneous Sheet Metal Items: Provide flashings, gutters, downspouts, trim, moldings, closure strips, 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. Sealants:
   1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
   2. Concealed Sealant: Non-curing butyl sealant or tape sealant.

2.06 FABRICATION
A. Panels: Fabricate panels and accessory items at factory, using manufacturer’s standard processes as required to achieve specified appearance and performance requirements.

PART 3 EXECUTION

3.01 EXAMINATION
A. Do not begin installation of preformed metal roof panels until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 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. Remove protective film from surface of roof panels immediately prior to installation. Strip film carefully, to avoid damage to prefinished surfaces.
D. Separate dissimilar metals by applying a bituminous coating, self-adhering rubberized asphalt sheet, or other permanent method approved by roof panel manufacturer.
E. 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.

3.03 INSTALLATION
A. Overall: Install roofing system in accordance with approved shop drawings and 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, except as otherwise recommended by manufacturer for specific circumstances.
   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. 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 and side and end laps a minimum of 3 inches. Offset seams in building paper and seams in roofing felt.
D. Roof Panels: Install panels in strict accordance with manufacturer's instructions, minimizing transverse joints except at junction with penetrations.
   1. Form weathertight standing seams incorporating concealed clips, using an automatic mechanical seaming device approved by the panel manufacturer.
   2. Incorporate concealed clips at panel joints, and apply snap-on battens to provide weathertight joints.
   3. Provide sealant tape or other approved joint sealer at lapped panel joints.
   4. Install sealant or sealant tape, as recommended by panel manufacturer, at end laps and side joints.

3.04 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.

3.05 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 07-42-13
METAL WALL PANELS

PART 1  GENERAL

1.01 SECTION INCLUDES
A. Manufactured metal panels for soffits, with accessory components.

1.02 RELATED REQUIREMENTS
A. Section 06-10-00 - Rough Carpentry: Wall panel substrate.
B. Section 07-92-00 - Joint Sealants: Sealing joints between metal wall panel system and adjacent construction.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate dimensions, layout, joints, construction details, methods of anchorage.
C. Samples: Submit two samples of wall panel and soffit panel, 12 inch by 12 inch in size illustrating finish color, sheen, and texture.

1.05 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.
B. Installer Qualifications: Company specializing in installing the products specified in this section with minimum five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
B. Store prefinished material off ground and protected from weather. Prevent twisting, bending, or abrasion, and provide ventilation to stored materials. Slope metal sheets to ensure drainage.
C. Prevent contact with materials that may cause discoloration or staining of products.

1.07 WARRANTY
A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.
B. Correct defective work within a five year period after the Date of Substantial Completion for degradation of panel finish, including color fading caused by exposure to weather.

PART 2  PRODUCTS

2.01 MANUFACTURERS
A. Metal Soffit Panels:
   3. Substitutions: See Section 01-60-00 - Product Requirements.
B. Other Acceptable Manufacturers:
   3. MBCI: www.mbcicom.
   5. Substitutions: See Section 01-60-00 - Product Requirements.
2.02 MANUFACTURED METAL PANELS
A. Soffit Panels:
   1. Profile: Style as indicated.
   2. Material: Precoated aluminum sheet, 20 gage, 0.032 inch minimum thickness.
   3. Color: to match PAC standing seam roof "Hartford Green".
B. Subgirts:
   1. Profile as indicated; to attach panel system to building.
C. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; shop cut and factory mitered to required angles.
D. Trim: Same material, thickness and finish as exterior sheets; brake formed to required profiles.
E. Anchors: Galvanized steel or Stainless steel.

2.03 MATERIALS
A. Precoated Aluminum Sheet: ASTM B209 (ASTM B209M), 3105 alloy, O temper, smooth surface texture; continuous-coil-coated on exposed surfaces with specified finish coating and on panel back with specified panel back coating.

2.04 ACCESSORIES
A. Fasteners: Manufacturer’s standard type to suit application; with soft neoprene washers, stainless steel. Fastener cap same color as exterior panel.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that building framing members are ready to receive panels.

3.02 PREPARATION
A. Install subgirts perpendicular to panel length, securely fastened to substrates and shimmed and leveled to uniform plane. Space at intervals indicated.

3.03 INSTALLATION
A. Install panels on soffits in accordance with manufacturer’s instructions.
B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.
C. Fasten panels to structural supports; aligned, level, and plumb.
D. Locate joints over supports. Lap panel ends minimum 2 inches.
E. Use concealed fasteners unless otherwise approved by Architect.
F. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.04 TOLERANCES
A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/16 inch.
B. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch.

3.05 CLEANING
A. Remove site cuttings from finish surfaces.
B. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.
C. Upon completion of installation, thoroughly clean prefinished aluminum surfaces in accordance with AAMA 609 & 610.

END OF SECTION
SECTION 07-62-00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Fabricated sheet metal items, including flashings, counterflashings, gutters, and downspouts.
B. Sealants for joints within sheet metal fabrications.

1.02 RELATED REQUIREMENTS
A. Section 04-20-00 - Unit Masonry: Metal flashings embedded in masonry.
B. Section 07-72-00 - Roof Accessories: Manufactured metal roof curbs.
C. Section 07-92-00 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Samples: Submit two samples 4 by 4 inch in size illustrating metal finish color.

1.05 QUALITY ASSURANCE
A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.
B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 5 years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS
A. Pre-Finished Aluminum: ASTM B209 (ASTM B209M); 20 gage, (0.032 inch) thick; plain finish shop pre-coated with fluoropolymer coating.
   1. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
   2. Color: As selected by Architect from manufacturer's standard colors.

2.02 FABRICATION
A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
B. Fabricate cleats of same material as sheet, minimum 1 inches wide, interlocking with sheet.
C. Form pieces in longest possible lengths.
D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
E. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
F. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
G. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.03 GUTTER AND DOWNSPOUT FABRICATION
A. Gutters: SMACNA (ASMM), Rectangular profile.
B. Downspouts: Rectangular profile.
C. Gutters and Downspouts: Size indicated.
D. Accessories: Profiled to suit gutters and downspouts.
   1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
   2. Gutter Supports: Brackets.
   3. Downspout Supports: Brackets.
E. Downspout Boots: Cast iron.
F. Seal metal joints.

2.04 ACCESSORIES
A. Fasteners: Stainless steel, with soft neoprene washers.
B. Underlayment: ASTM D226/D226M, organic roofing felt, Type I (No. 15).
C. Primer: Zinc chromate type.
D. Concealed Sealants: Non-curing butyl sealant.
E. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
F. Plastic Cement: ASTM D4586/D4586M, Type I.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION
A. Install starter and edge strips, and cleats before starting installation.
B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION
A. Secure flashings in place using concealed fasteners.
B. Apply plastic cement compound between metal flashings and felt flashings.
C. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
D. Secure gutters and downspouts in place with concealed fasteners.
E. Connect downspouts to downspout boots, and seal connection watertight.

END OF SECTION
SECTION 07-72-00
ROOF ACCESSORIES

PART 1  GENERAL

1.01  SECTION INCLUDES
A. Snow guards.

1.02  RELATED REQUIREMENTS
A. Section 07-41-13 - Metal Roof Panels.

1.03  SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Maintenance requirements.
C. Shop Drawings: Submit detailed layout developed for this project. Show dimensioned location and number for each type of roof accessory.
   1. Snow Guards: Submit design calculations for loadings and spacings based on manufacturer testing.
   2. Submit shop drawings sealed and signed by a Professional Engineer experienced in design of this type of work and licensed in North Carolina.
D. Warranty Documentation:
   1. Submit manufacturer warranty.
   2. Ensure that forms have been completed in Owner's name and registered with manufacturer.
   3. Submit documentation that roof accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

1.04  DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store products under cover and elevated above grade.

1.05  WARRANTY
A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.
B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2  PRODUCTS

2.01  SNOW GUARDS
A. Fence Type Snow Guard: Continuous snow guard; manufacturer's standard pipe, bar, channel, or solid rod, set in brackets or posts, with optional plates and optional metal trim to match roof.
   1. Pipe or Square Tube: Aluminum, mill finish.
      a. Outside Dimensions, Square: 1 inch.
      b. Sleeve Couplings: As recommended by manufacturer.
      c. End Collars and Caps: Metal to match.
   2. Clamps for Standing Seam Roof: Aluminum clamps attached to standing seams of roof panels; for attachment of fence type snow guard.
      a. Seam Profile: Selected by Architect from manufacturer's standard range; match profile of metal roof.
   3. Manufacturers:
      d. TRA Snow and Sun; C22Z Clamp-On: www.trasnowandsun.com/sle.
      e. Substitutions: See Section 01-60-00 - Product Requirements.
PART 3 EXECUTION

3.01 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.

3.02 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.

3.03 INSTALLATION
   A. Install in accordance with manufacturer’s instructions, in manner that maintains roofing weather integrity.

3.04 CLEANING
   A. Clean installed work to like-new condition.

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

END OF SECTION
SECTION 07-84-00
FIRESTOPPING

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Firestopping systems.

1.02 REFERENCE STANDARDS
E. ITS (DIR) - Directory of Listed Products; current edition.

1.03 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
D. Sustainable Design Submittal: Submit VOC content documentation for all non-preformed materials.
E. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
G. Installer Qualification: Submit qualification statements for installing mechanics.

1.04 QUALITY ASSURANCE
A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum threefive years documented experience.
C. Installer Qualifications: Company specializing in performing the work of this section and:
   1. With minimum five years documented experience installing work of this type.
   2. Able to show at least 5 satisfactorily completed projects of comparable size and type.

1.05 FIELD CONDITIONS
A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.
B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS
2.01 FIRESTOPPING - GENERAL REQUIREMENTS
A. Manufacturers:
   2. 3M Fire Protection Products: www.3m.com/firestop.
   6. Substitutions: See Section 01-60-00 - Product Requirements.
B. Firestopping: Any material meeting requirements.
C. Mold Resistance: Provide firestopping materials with mold and mildew resistance rating of 0 as determined by ASTM G21.
D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

2.02 FIRESTOPPING ASSEMBLY REQUIREMENTS
A. Head-of-Wall Firestopping at Joints Between Non-Rated Floor and Fire-Rated Wall: Use any system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of floor or wall, whichever is greater.
B. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use any system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
C. Through Penetration Firestopping: Use any system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.

2.03 FIRESTOPPING FOR FLOOR-TO-FLOOR, WALL-TO-FLOOR, AND WALL-TO-WALL JOINTS
A. Gypsum Board Walls:
   1. Wall to Wall Joints:
      a. 2 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
      b. 1 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.

2.04 FIRESTOPPING PENETRATIONS THROUGH GYPSUM BOARD WALLS
A. Blank Openings:
   1. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
   2. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.

2.05 FIRESTOPPING SYSTEMS
A. Firestopping: Any material meeting requirements.

END OF SECTION
SECTION 07-90-05
JOINT SEALERS

PART 1  GENERAL

1.01  SECTION INCLUDES
A. Sealants and joint backing.
B. Precompressed foam sealers.

1.02  RELATED REQUIREMENTS
A. Section 07-25-00 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders:
B. Section 08-80-00 - Glazing: Glazing sealants and accessories.

1.03  REFERENCE STANDARDS
E. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.

1.04  SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data indicating sealant chemical characteristics.
C. Manufacturer's Installation Instructions: Indicate special procedures.

1.05  QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
B. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.

1.06  FIELD CONDITIONS
A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.07  WARRANTY
A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.
B. Correct defective work within a five year period after Date of Substantial Completion.
C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2  PRODUCTS

2.01  MANUFACTURERS
A. Gunnable and Pourable Sealants:
   12. Substitutions: See Section 01-60-00 - Product Requirements.
B. Preformed Compressible Foam Sealers:
   5. Substitutions:  See Section 01-60-00 - Product Requirements.

2.02 SEALANTS

A. Sealants and Primers - General:  Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

B. General Purpose Exterior Sealant:  Polyurethane; ASTM C920, Grade NS, Class 25 minimum; Uses M, G, and A; single component.
   1. Color:  Match adjacent finished surfaces.
   2. Applications:  Use for:
      a. Control, expansion, and soft joints in masonry.
      b. Joints between concrete and other materials.
      c. Joints between metal frames and other materials.
      d. Other exterior joints for which no other sealant is indicated.

C. Exterior Expansion Joint Sealer:  Precompressed foam sealer; urethane with water-repellent;  
   2. Size as required to provide weathertight seal when installed.
   3. Provide product recommended by manufacturer for traffic-bearing use.
   4. Applications:  Use for:
      a. Exterior wall expansion joints.

D. Exterior Metal Lap Joint Sealant:  Butyl or polyisobutylene, nondrying, nonskinning, noncuring.
   1. Applications:  Use for:
      a. Concealed sealant bead in sheet metal work.
      b. Concealed sealant bead in siding overlaps.

E. General Purpose Interior Sealant:  Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
   1. Color:  Match adjacent finished surfaces.
   2. Applications:  Use for:
      a. Interior wall and ceiling control joints.
      b. Joints between door and window frames and wall surfaces.
      c. Other interior joints for which no other type of sealant is indicated.

F. Bathtub/Tile Sealant:  White silicone; ASTM C920, Uses I, M and A; single component, mildew resistant.
   1. Applications:  Use for:
      a. Joints between plumbing fixtures and floor and wall surfaces.
      b. Joints between kitchen and bath countertops and wall surfaces.

G. Concrete Floor Joint Filler:  Self-leveling, pourable, semi-rigid sealant intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
   1. Composition:  Single or multi-part,100 percent solids by weight.
   2. Hardness:  85 after 7 days, when tested in accordance with ASTM D2240 Shore A.
   4. Applications:  Use for:
      a. Control joints in concrete slabs and floors not filled with filler placed in form.
      b. Joints in concrete slabs and floors.

   1. Color:  Match adjacent finished surfaces.
   2. Applications:  Use for:
      a. Expansion joints in floors.

I. Acrylic Emulsion Latex:  ASTM C834, single component, non-staining, non-bleeding, non-sagging.
   1. Color:  Standard colors matching finished surfaces, Type OP (opaque).
   2. Movement Capability:  2 to 5 percent.
   3. Grade:  ASTM C834 Grade minus 18 degrees C

J. Nonsag Polysulfide Sealant: ASTM C920, Grade NS, Class 25, Uses NT, I, M, A, G, O; two component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, non-sagging type.
   1. Color: Match adjacent finished surfaces.
   3. Service Temperature Range: -40 to 180 degrees F.

   1. Color: Match adjacent finished surfaces.
   3. Service Temperature Range: -40 to 180 degrees F.

   3. Service Temperature Range: -40 to 180 degrees F.

M. Silicone Sealant: ASTM C920, Grade NS, Class 25 minimum; Uses NT, A, G, M, O; single component, neutral curing, non-sagging, non-staining, fungus resistant, non-bleeding.
   1. Color: Match adjacent finished surfaces.
   3. Service Temperature Range: -65 to 180 degrees F.

2.03 ACCESSORIES
A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
C. Joint Backing: Round foam rod compatible with sealant; ASTM D1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.
D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that substrate surfaces are ready to receive work.
B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION
A. Remove loose materials and foreign matter that could impair adhesion of sealant.
B. Clean and prime joints in accordance with manufacturer's instructions.
C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
D. Protect elements surrounding the work of this section from damage or disfigurement.
E. Exposed Concrete Floor Joints: Test joint filler in inconspicuous area of floor slab. Verify specified product does not stain or discolor slab.

3.03 INSTALLATION
A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
B. Perform installation in accordance with ASTM C1193.
C. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
   2. Neck dimension no greater than 1/3 of the joint width.
3. Surface bond area on each side not less than 75 percent of joint width.

D. Install bond breaker where joint backing is not used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

G. Tool joints concave.

H. Precompressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

I. Concrete Floor Joint Filler: Install concrete floor joint filler per manufacturer’s written instructions. After floor joint filler is fully cured, shave joint filler flush with top of concrete slab.

3.04 CLEANING
A. Clean adjacent soiled surfaces.

3.05 PROTECTION
A. Protect sealants until cured.

END OF SECTION
SECTION 08-11-13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Non-fire-rated hollow metal doors and frames.
B. Thermally insulated hollow metal doors with frames.
C. Sound-rated hollow metal doors and frames.

1.02 RELATED REQUIREMENTS
A. Section 08-71-00 - Door Hardware.
B. Section 09-90-00 - Painting and Coating: Field painting.

1.03 ABBREVIATIONS AND ACRONYMS
B. ASCE - American Society of Civil Engineers.
C. HMMA - Hollow Metal Manufacturers Association.
D. NAAMM - National Association of Architectural Metal Manufacturers.
F. SDI - Steel Door Institute.
G. UL - Underwriters Laboratories.

1.04 REFERENCE STANDARDS
C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2014.
F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
J. ASTM E413 - Classification for Rating Sound Insulation; 2010.
K. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2014.
M. ITS (DIR) - Directory of Listed Products; current edition.
O. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.
P. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.
1.05 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.
C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.
D. Samples: Submit two samples of metal, 2 inch by 2 inch in size showing factory finishes, colors, and surface texture.
E. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
F. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.06 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
B. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes installation requirements.

1.07 DELIVERY, STORAGE, AND HANDLING
A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Hollow Metal Doors and Frames:

2.02 DESIGN CRITERIA
A. Requirements for Hollow Metal Doors and Frames:
   1. Steel used for fabrication of doors and frames shall comply with one or more of the following requirements; Galvannealed steel conforming to ASTM A653/A653M, cold-rolled steel conforming to ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel conforming to ASTM A1011/A1011M, Commercial Steel (CS) Type B for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.
   3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
   4. Door Edge Profile: Manufacturers standard for application indicated.
   5. Typical Door Face Sheets: Flush.
   6. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
   7. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished.

B. Exterior Doors: Thermally insulated.

1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 2 - Heavy-duty.
   b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 18 gage, 0.042 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.

2. Core Material: Polystyrene, 1 lbs/cu ft minimum density.

3. Door Thermal Resistance: R-Value of 6.0 minimum, for installed thickness of polystyrene.


5. Weatherstripping: Refer to Section 08-71-00.

C. Interior Doors, Non-Fire Rated:

1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 2 - Heavy-duty.
   b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 18 gage, 0.042 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.


D. Sound-Rated Interior Doors:

1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 2 - Heavy-duty.
   b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 18 gage, 0.042 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.

2. Sound Transmission Class (STC) Rating of Door and Frame Assembly: STC of 35, calculated in accordance with ASTM E413, and tested in accordance with ASTM E90.

3. Core Material: Manufacturer's standard construction as required to meet acoustic requirements indicated.

4. Door Thickness: As required to meet acoustic requirements indicated.

5. Opening Force of Sound-Rated Doors, Non-Fire Rated: 5 lbs, maximum, in compliance with ADA Standards.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Exterior Door Frames: Knock-down type.

1. Frame Metal Thickness: 18 gage, 0.042 inch, minimum.

2. Frame Finish: Factory primed and field finished.

3. Weatherstripping: Separate, see Section 08-71-00.

C. Interior Door Frames, Non-Fire Rated: Knock-down type.

1. Frame Metal Thickness: 18 gage, 0.042 inch, minimum.

2. Frame Finish: Factory primed and field finished.

D. Sound-Rated Door Frames: Knock-down type.

1. Frame Metal Thickness: 18 gage, 0.042 inch, minimum.

2. Frame Finish: Factory primed and field finished.
2.05 ACCESSORIES
   A. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.
   B. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

2.06 FINISHES
   A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

PART 3 EXECUTION
3.01 EXAMINATION
   A. Verify existing conditions before starting work.
   B. Verify that opening sizes and tolerances are acceptable.
   C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 INSTALLATION
   A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
   B. Coordinate frame anchor placement with wall construction.
   C. Install door hardware as specified in Section 08-71-00.

3.03 TOLERANCES
   A. Clearances Between Door and Frame: Comply with related requirements of specified door and frame standards or custom guidelines indicated.
   B. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.04 ADJUSTING
   A. Adjust for smooth and balanced door movement.
   B. Adjust sound control doors so that seals are fully engaged when door is closed.

3.05 SCHEDULE
   A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION
SECTION 08-43-13
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Aluminum-framed storefront, with vision glass.

1.02 RELATED REQUIREMENTS
A. Section 07-25-00 - Weather Barriers: Sealing framing to weather barrier installed on adjacent construction.
B. Section 07-92-00 - Joint Sealants: Sealing joints between frames and adjacent construction.
C. Section 08-80-00 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS
A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details.
C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
D. Samples: Submit two samples 4 by 4 inches in size illustrating finished aluminum surface, glass, infill panels, glazing materials.
E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.
F. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.
G. Report of field testing for water leakage.
H. Designer Qualifications Statement.
I. Manufacturer Qualifications Statement.
J. Installer Qualifications Statement.
K. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
1.05 QUALITY ASSURANCE
A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in North Carolina.
B. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience.
C. Installer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Handle products of this section in accordance with AAMA CW-10.
B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.07 FIELD CONDITIONS
A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.08 WARRANTY
A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.
B. Correct defective Work within a five year period after Date of Substantial Completion.
C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS
2.01 BASIS OF DESIGN -- FRAMING FOR INSULATING GLAZING
A. Center-Set Style, Thermally-Broken:
   1. Basis of Design: YKK AP YES 60 XT Series.
   2. Vertical Mullion Dimensions: 2 inches wide by 6 inches deep.
B. Center-Set Style, Not Thermally-Broken:
C. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
D. Substitutions: See Section 01-60-00 - Product Requirements.
   1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.02 STOREFRONT
A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Glazing Rabbet: For 1 inch insulating glazing.
      a. Factory finish all surfaces that will be exposed in completed assemblies.
      b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
      c. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
4. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.


6. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.

7. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.

8. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.

9. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

10. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glazing and heel bead of glazing compound.

B. Performance Requirements:

1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
   a. Design Wind Loads: Comply with requirements of ASCE 7.
   b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.

2. Water Penetration Resistance: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf.

3. Air Leakage: Maximum of 0.06 cu ft/min sq ft of wall area, when tested in accordance with ASTM E283 at 6.27 psf pressure differential across assembly.

2.03 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
   2. Cross-Section: As indicated on drawings.

B. Glazing: As specified in Section 08-80-00.

2.04 MATERIALS


B. Fasteners: Stainless steel.

C. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.

D. Sealant for Setting Thresholds: Non-curing butyl type.

E. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

F. Glazing Accessories: As specified in Section 08-80-00.

2.05 FINISHES

A. High Performance Organic Coatings: AAMA 2604; multiple coats, thermally cured fluoropolymer system.

B. Color: match Petersen Alum. Co. standing seam roof "Hartford Green".

C. Touch-Up Materials: As recommended by coating manufacturer for field application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.
3.02 INSTALLATION
A. Install wall system in accordance with manufacturer's instructions.
B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
C. Provide alignment attachments and shims to permanently fasten system to building structure.
D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
E. Provide thermal isolation where components penetrate or disrupt building insulation.
F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
I. Install glass in accordance with Section 08-80-00, using glazing method required to achieve performance criteria.
J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES
A. Maximum Variation from Plumb: 0.06 inches every 3 ft non-cumulative or 1/16 inches per 10 ft, whichever is less.
B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 FIELD QUALITY CONTROL
A. See Section 01-40-00 - Quality Requirements, for independent testing and inspection requirements. Inspection will monitor quality of installation and glazing.
B. Test installed storefront for water penetration in accordance with ASTM E1105 with a uniform test pressure difference of 2.86 lbf/sq ft.

3.05 CLEANING
A. Remove protective material from pre-finished aluminum surfaces.
B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.06 PROTECTION
A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION
SECTION 08-71-00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Hardware for hollow metal doors.
B. Thresholds.
C. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS
A. Section 08-11-13 - Hollow Metal Doors and Frames.

1.03 REFERENCE STANDARDS
B. BHMA (CPD) - Certified Products Directory; 2016.
D. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches; 2011.
E. BHMA A156.3 - American National Standard for Exit Devices; 2014.
F. BHMA A156.4 - American National Standard for Door Controls - Closers; 2013.
G. BHMA A156.5 - American National Standard for Cylinders and Input Devices for Locks; 2014.
H. BHMA A156.6 - American National Standard for Architectural Door Trim; 2010.
I. BHMA A156.8 - American National Standard for Door Controls - Overhead Stops and Holders; 2010.
J. BHMA A156.16 - American National Standard for Auxiliary Hardware; 2013.
N. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2014.

1.04 ADMINISTRATIVE REQUIREMENTS
A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
B. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
C. Keying Requirements Meeting:
   1. Attendance Required:
   2. Agenda:
   3. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
   4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
   5. Deliver established keying requirements to manufacturers.

1.05 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
   2. List groups and suffixes in proper sequence.
   3. Provide complete description for each door listed.
   4. Provide manufacturer's and product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
   5. Include account of abbreviations and symbols used in schedule.

D. Samples for Verification:
   1. Submit minimum size of 2 by 4 inch for sheet samples, and minimum length of 4 inch for other products.
   2. Submit one (1) sample of hinge, latchset, lockset, and closer illustrating style, color, and finish.
   3. Return full-size samples to Contractor.
   4. Submit product description with samples.

E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

F. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
   1. Submit manufacturer's parts lists and templates.
   2. Bitting List: List of combinations as furnished.

G. Keying Schedule:
   1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

H. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

I. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.

J. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-60-00 - Product Requirements, for additional provisions.
   2. Lock Cylinders: One for each master keyed group.
   3. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.06 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least five years of documented experience.

C. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) to assist in work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING
A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY
A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.

B. Warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion.
   1. Closers: Five years, minimum.
   2. Exit Devices: Three years, minimum.
   3. Locksets and Cylinders: Three years, minimum.
   4. Other Hardware: Two years, minimum.
PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
   1. Applicable provisions of federal, state, and local codes.
   3. Listed and certified compliant with specified standards by BHMA (CPD).

D. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer’s series. Refer to Door Hardware Schedule.

E. Fasteners:
   1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
      a. Aluminum fasteners are not permitted.
      b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
   2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
      a. Self-drilling (Tek) type screws are not permitted.
   3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
   4. Provide wall grip inserts for hollow wall construction.
   5. Provide spacers or sex bolts with sleeves for through bolting of hollow metal doors and frames.
      a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
      b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

2.02 HINGES

A. Hinges: Complying with BHMA A156.1, Grade 1.
   1. Provide hinges on every swinging door.
   2. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
   3. Provide ball-bearing hinges at each door with closer.
   4. Provide non-removable pins on exterior outswinging doors.
   5. Provide following quantity of butt hinges for each door:
      a. Doors From 60 inches High up to 90 inches High: Three hinges.

2.03 FLUSHBOLTS

A. Flushbolts: Complying with BHMA A156.16, Grade 1.
   1. Flushbolt Throw: 3/4 inch, minimum.
   2. Provides extension bolts in leading edge of door, one bolt into floor, one bolt into top of frame.
      a. Pairs of Swing Doors: At inactive leaves, provide flushbolts of type as required to comply with code.
   3. Provide dustproof floor strike for bolt into floor, except at metal thresholds.
   4. Self-Latching Flushbolts: Automatically latch upon closing of door; manually retracted; located on inactive leaf of pair of doors.
   5. Automatic Flushbolts: Automatically latch upon closing of door; automatic retraction of bolts when active leaf is opened; located on inactive leaf of pair of doors.

2.04 EXIT DEVICES

A. Manufacturers:

B. Exit Devices: Complying with BHMA A156.3, Grade 1.
   1. Lever design to match lockset trim.
   2. Provide cylinder with cylinder dogging or locking trim.
3. Provide exit devices properly sized for door width and height.
4. Provide strike as recommended by manufacturer for application indicated.
5. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.

2.05 LOCK CYLINDERS
A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
1. Provide standard, conventional, full size interchangeable core (FSIC), and small format interchangeable core (SFIC) type cylinders, Grade 1, with six-pin core in compliance with BHMA A156.5 at locations indicated.
2. Provide cylinders from same manufacturer as locking device.
3. Provide cams and/or tailpieces as required for locking devices.

2.06 CYLINDRICAL LOCKS
A. Cylindrical Locks (Bored): Complying with BHMA A156.2, Grade 1, 4000 Series.
1. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
   a. Finish: To match lock or latch.
   b. Flat-Lip Strikes: Provide for locks with three piece antifriction latchbolts as recommended by manufacturer.
   c. Extra-Long-Lip Strikes: Provide for locks used on frames with applied wood casing trim.
   d. Rabbet Front and Strike: Provide on locksets for use with rabbeted meeting rails.
2. Provide a lock for each door, unless otherwise indicated that lock is not required.
3. Provide an office lockset for swinging door where hardware set is not indicated.
4. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.

2.07 DOOR PULLS AND PUSH PLATES
A. Door Pulls and Push Plates: Complying with BHMA A156.6.
1. Pull Type: Straight, unless otherwise indicated.
2. Push Plate Type: Flat, with square corners, unless otherwise indicated.
   a. Edges: Beveled, unless otherwise indicated.
3. Material: Aluminum, unless otherwise indicated.
4. Provide door pulls and push plates on doors without a lockset, latchset, exit device, or auxiliary lock unless otherwise indicated.
5. On solid doors, provide matching door pull and push plate on opposite faces.

2.08 DOOR PULLS AND PUSH BARS
A. Door Pulls and Push Bars: Complying with BHMA A156.6.
1. Bar Type: Bar set, unless otherwise indicated.
2. Material: Aluminum, unless otherwise indicated.

2.09 CLOSERS
A. Manufacturers; Surface Mounted:
B. Closers: Complying with BHMA A156.4, Grade 1.
   1. Type: Surface mounted to door.
   2. Provide door closer on each exterior door.
   3. At outswinging exterior doors, mount closer on interior side of door.

2.10 OVERHEAD STOPS AND HOLDERS
A. Overhead Stops and Holders (Door Checks): Complying with BHMA A156.8, Grade 1.
   1. Provide stop for every swinging door, unless otherwise indicated.
   2. Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop, unless otherwise indicated.

2.11 PROTECTION PLATES
A. Protection Plates: Complying with BHMA A156.6.
B. Metal Properties: Stainless steel.
   1. Metal, Heavy Duty: Thickness 0.062 inch, minimum.
C. Edges: Beveled, on four sides unless otherwise indicated.
D. Fasteners: Countersunk screw fasteners.
E. Drip Guard: Provide at head of exterior doors unless covered by roof or canopy.

2.12 KICK PLATES
A. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
   1. Size: 8 inch high by 2 inch less door width (LDW) on push side of door.

2.13 FLOOR STOPS
A. Floor Stops: Complying with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Type: Manual hold-open, with pencil floor stop.

2.14 WALL STOPS
A. Wall Stops: Complying with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Type: Bumper, concave, wall stop.

2.15 ASTRAGALS
A. Astragals: Complying with BHMA A156.22.
   1. Type: Split, two parts, and with sealing gasket.
   2. Material: Aluminum, with neoprene weatherstripping.
   3. Provide non-corroding fasteners at exterior locations.

2.16 THRESHOLDS
A. Thresholds: Complying with BHMA A156.21.
   1. Provide threshold at interior doors for transition between two different floor types, unless otherwise indicated.
   2. Provide threshold at each exterior door, unless otherwise indicated.
   3. Provide threshold with Sound Transmission Class (STC) of 25-30 at locations indicated.
   4. Type: Flat surface.
   5. Material: Aluminum.
   7. Field cut threshold to profile of frame and width of door sill for tight fit.
   8. Provide non-corroding fasteners at exterior locations.

2.17 WEATHERSTRIPPING AND GASKETING
A. Weatherstripping and Gasketing: Complying with BHMA A156.22.
   1. Head and Jamb Type: Adjustable.
   2. Door Sweep Type: Encased in retainer.
   3. Material: Aluminum, with brush weatherstripping.
   4. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
   5. Provide door bottom sweep on each exterior door, unless otherwise indicated.
   6. Provide sound-rated gasketing and automatic door bottom on doors indicated as "Sound-Rated", "Acoustical", or with "Sound Transmission Class (STC) rating"; fabricate as continuous gasketing, do not cut or notch gasketing material.

2.18 SILENCERS
A. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
   1. Single Door: Provide three on strike jamb of frame.
   2. Pair of Doors: Provide two on head of frame, one for each door at latch side.

2.19 FIRE DEPARTMENT LOCK BOX
A. Manufacturers:
   2. Substitutions: See Section 01-60-00 - Product Requirements.
B. Fire Department Lock Box:
   1. Heavy-duty, recessed, solid stainless-steel box with hinged door and interior gasket seal; single drill resistant lock with dust covers.
   3. Finish: Manufacturer's standard black.

2.20 FINISHES
A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
   1. Primary Finish: 652; satin chromium plated over nickel, with steel base material (former US equivalent US26D); BHMA A156.18.
   2. Secondary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18.
      a. Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide primary finish on one side of door and secondary finish on other side if necessary.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

3.02 INSTALLATION
A. Install hardware in accordance with manufacturer's instructions and applicable codes.
B. Use templates provided by hardware item manufacturer.
C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
   1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
   2. Mounting heights in compliance with ADA Standards:
      b. Push Plates/Pull Bars: 42 inch.
      c. Deadlocks (Deadbolts): 48 inch.
D. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 FIELD QUALITY CONTROL
A. Perform field inspection and testing under provisions of Section 01-40-00 - Quality Requirements.
B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING
A. Adjust work under provisions of Section 01-70-00 - Execution and Closeout Requirements.
B. Adjust hardware for smooth operation.
C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING
A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
B. Clean adjacent surfaces soiled by hardware installation.
C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.
D. See Section 01-74-19 - Construction Waste Management and Disposal, for additional requirements.

3.06 PROTECTION
A. Protect finished Work under provisions of Section 01-70-00 - Execution and Closeout Requirements.
B. Do not permit adjacent work to damage hardware or finish.

END OF SECTION
FURNISH THE FOLLOWING PRODUCTS OR REQUEST PERMISSION FOR SUBSTITUTION *TEN DAYS PRIOR TO BID DATE.*

**HINGES:**
- HAGER: BB1199, BB1279, BB1168, BB1193
- MCKINNEY: T4A3386, TA2714, T4A3786, TA2314
- STANLEY: FBB199, FBB168, FBB179, FBB191
- HB IVES: 5BB1HW, 5BB1

**EXIT DEVICES:**
- SARGENT: 88 SERIES, US32D
- VON DUPRIN: 99 SERIES, US26D
- PRECISION: 2000 SERIES, US32D

**LOCKS:**
- SARGENT: 8200 LNJ, US26D
- SCHLAGE: 9000 03A, US26D
- BEST: 45H 3H, US26D

**CLOSERS:**
- SARGENT: 281 SERIES
- LCN: 4040XP SERIES
- RYOBI: 4550 SERIES

**OH STOPS**
- GLYNN JOHNSON: 900 SERIES, US32D
- 454 SERIES, US32D
- ABH: 9020 SERIES, US32D
- 4400 SERIES, US32D
- SARGENT: 590 SERIES, US26D
- 1540 SERIES, US26D

**OWNERS PREFERED PRODUCTS. SEE ALTERNATES FOR DETAILS.**

**Manufacturer List**

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**Hardware Sets**

**SET #01**
Doors: 101A, 104A, 110

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Doors: 102, 117

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**NOTE:** ACTIVE LEAF

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END OF SECTION
SECTION 08-80-00
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Insulating glass units.
   B. Glazing units.
   C. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS
   A. Section 08-43-13 - Aluminum-Framed Storefronts: Glazing furnished as part of storefront assembly.

1.03 REFERENCE STANDARDS
   L. GANA (GM) - GANA Glazing Manual; 2009.

1.04 SUBMITTALS
   A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
   B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
   C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.
   D. Samples: Submit two samples 4 by 4 inch in size of glass units.
   E. Certificate: Certify that products of this section meet or exceed specified requirements.
   F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
   G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
      1. See Section 01-60-00 - Product Requirements, for additional provisions.
      2. Extra Insulating Glass Units: One of each glass size and each glass type.
1.05 QUALITY ASSURANCE
   A. Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for
      glazing installation methods. Maintain one copy on site.
   B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section
      with minimum five years of documented experience.
   C. Installer Qualifications: Company specializing in performing work of the type specified and with at least
      five years documented experience.

1.06 FIELD CONDITIONS
   A. Do not install glazing when ambient temperature is less than 40 degrees F.
   B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing
      compounds.

1.07 WARRANTY
   A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.
   B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure,
      interpane dusting or misting, including replacement of failed units.

PART 2 PRODUCTS
2.01 MANUFACTURERS
   A. Float Glass Manufacturers:
      6. Substitutions: Refer to Section 01-60-00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES
   A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to
      withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
      1. Design Pressure: Calculated in accordance with ASCE 7.
      2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and
         maximum lateral deflection of supported glass.
      3. Seismic Loads: Design and size glazing components to withstand seismic loads and sway
         displacement in accordance with the requirements of ASCE 7.
      4. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass
         edges to less than 1/175 of their lengths under specified design load.
      5. Glass thicknesses listed are minimum.
   B. Vapor Retarder and Air Barrier Seals: Provide completed assemblies that maintain continuity of building
      enclosure vapor retarder and air barrier.
      1. In conjunction with vapor retarder and joint sealer materials described in other sections.
   C. Thermal and Optical Performance: Provide glass products with performance properties as indicated.
      Performance properties are in accordance with manufacturer's published data as determined with the
      following procedures and/or test methods:
      1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory
         (LBNL) WINDOW 6.3 computer program.
      2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence
         Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.

2.03 GLASS MATERIALS
   A. Float Glass: Provide float glass based glazing unless noted otherwise.
      1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality-Q3.
      2. Heat-Strengthened and Fully Tempered Types: ASTM C1048, Kind HS and FT.
4. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

2.04 INSULATING GLASS UNITS

A. Manufacturers:
   1. Any of the manufacturers specified for float glass.

B. Insulating Glass Units: Types as indicated.
   1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
   2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
   3. Metal Edge Spacers: Aluminum, bent and soldered corners.
   5. Edge Seal:
      a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
   7. Purge interpane space with dry air, hermetically sealed.

C. Type IG-1 - Insulating Glass Units: Vision glass, double glazed.
   1. Applications: Exterior glazing unless otherwise indicated.
   2. Space between lites filled with air.
   3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
      a. Tint: Clear.
   4. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
      a. Tint: Clear.
   5. Total Thickness: 1 inch.
   6. Thermal Transmittance (U-Value), Summer - Center of Glass: .27, nominal.

2.05 GLAZING UNITS

A. Type G-2 - Monolithic Interior Vision Glazing:
   1. Applications: Interior glazing unless otherwise indicated.
   2. Glass Type: Annealed float glass.
   3. Tint: Clear.
   4. Thickness: 1/4 inch, nominal.

2.06 GLAZING COMPOUNDS

A. Type GC-1 - Glazing Putty: Polymer modified latex recommended by manufacturer for outdoor use, knife grade consistency; grey color.

B. Type GC-2 - Butyl Sealant: Single component; ASTM C920, Grade NS, Class 12-1/2, Uses M and A, Shore A hardness of 10 to 20; black color.

2.07 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.

C. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

D. Glazing Clips: Manufacturer's standard type.
PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS
   A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
   B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

3.02 PREPARATION
   A. Clean contact surfaces with appropriate solvent and wipe dry immediately before glazing. Remove coatings that are not tightly bonded to substrates.
   B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
   C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL
   A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
   B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.
   C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
   D. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)
   A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.
   B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
   C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
   D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 CLEANING
   A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
   B. Remove non-permanent labels immediately after glazing installation is complete.
   C. Clean glass and adjacent surfaces after sealants are fully cured.
   D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.06 PROTECTION
   A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
   B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION
SECTION 08-91-00
LOUVERS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Louvers, frames, and accessories.

1.02 RELATED REQUIREMENTS
A. Section 07-25-00 - Weather Barriers: Sealing frames to weather barrier installed on adjacent
construction.
B. Section 07-62-00 - Sheet Metal Flashing and Trim.
C. Section 07-92-00 - Joint Sealants: Sealing joints between frames and adjacent construction.
D. Section 23-31-00 - HVAC Ducts and Casings: Ductwork attachment to louvers.

1.03 REFERENCE STANDARDS
A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High
B. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating; 2012.
C. AMCA 511 - Certified Ratings Program for Air Control Devices; 2010.

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data describing design characteristics, maximum recommended air velocity,
design free area, materials and finishes.
C. Shop Drawings: Indicate louver layout plan and elevations, opening and clearance dimensions,
tolerances; head, jamb and sill details; blade configuration, screens, blankout areas required, and frames.
D. Samples: Submit two samples 2 by 2 inches in size illustrating finish and color of exterior surfaces.
E. Test Reports: Independent agency reports showing compliance with specified performance criteria.
F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
G. Maintenance Data: Include lubrication schedules, adjustment requirements.

1.05 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this
section, with minimum five years of documented experience.
B. Installer Qualifications: Company specializing in performing work of type specified and with at least five
years of documented experience.

1.06 WARRANTY
A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.
B. Provide twenty year manufacturer warranty against distortion, metal degradation, and failure of
connections.
  1. Finish: Include coverage against degradation of exterior finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Louvers:
  6. Substitutions: See Section 01-60-00 - Product Requirements.

2.02 LOUVERS
A. Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA
Certified in accordance with AMCA 511.
1. Wind Load Resistance: Design to resist positive and negative wind load of 25 psf without damage or permanent deformation.
2. Intake Louvers: Design to allow maximum of 0.01 oz/sq ft water penetration at calculated intake design velocity based on design air flow and actual free area, when tested in accordance with AMCA 500-L.
3. Drainable Blades: Continuous rain stop at front or rear of blade aligned with vertical gutter recessed into both jambs of frame.
4. Screens: Provide insect screens at intake louvers and bird screens at exhaust louvers.

B. Stationary Louvers: Horizontal blade, extruded aluminum construction, with intermediate mullions matching frame.
   1. Free Area: 50 percent, minimum.
   2. Static Pressure Loss: 1 inch wg maximum per square foot of free area at velocity of 2,000 fpm, when tested in accordance with AMCA 500-L.
   4. Frame: 4 inches deep, channel profile; corner joints mitered and, with continuous recessed caulking channel each side.
   5. Aluminum Thickness: Frame 12 gage, 0.0808 inch minimum; blades 12 gage, 0.0808 inch minimum.

2.03 MATERIALS

2.04 FINISHES
   A. High Performance Organic Coatings: AAMA 2604; multiple coats, thermally cured fluoropolymer system.
   B. Color: Match Peterson Aluminum Co. “Hartford Green”.

2.05 ACCESSORIES
   A. Blank-Off Panels: Same material as louver, painted black on exterior side; provide where duct connected to louver is smaller than louver frame, sealing off louver area outside duct.
   B. Screens: Frame of same material as louver, with reinforced corners; removable, screw attached; installed on inside face of louver frame.
   C. Bird Screen: Interwoven wire mesh of steel, 14 gage, 0.0641 inch diameter wire, 1/2 inch open weave, diagonal design.
   D. Insect Screen: 18 x 16 size aluminum mesh.
   E. Fasteners and Anchors: Galvanized Stainless steel.
   F. Head and Sill Flashings: See Section 07-62-00.
   G. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that prepared openings and flashings are ready to receive this work and opening dimensions are as indicated on shop drawings.

3.02 INSTALLATION
   A. Install louver assembly in accordance with manufacturer's instructions.
   B. Coordinate with installation of flashings by others.
   C. Install louvers level and plumb.
   D. Align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.
   E. Secure louver frames in openings with concealed fasteners.
   F. Coordinate with installation of mechanical ductwork.

3.03 ADJUSTING

3.04 CLEANING
   A. Strip protective finish coverings.
B. Clean surfaces and components.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
A. Metal stud wall framing.
B. Acoustic insulation.
C. Gypsum wallboard.
D. Joint treatment and accessories.
E. Acoustic (sound-dampening) wall and ceiling board.

1.02 RELATED REQUIREMENTS
A. Section 06-10-00 - Rough Carpentry: Building framing.
B. Section 06-10-00 - Rough Carpentry: Wood blocking product and execution requirements.
C. Section 07-25-00 - Weather Barriers: Water-resistive barrier over sheathing.
D. Section 07-92-00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.03 REFERENCE STANDARDS
G. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.
O. ASTM E413 - Classification for Rating Sound Insulation; 2010.

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on gypsum board, accessories, and joint finishing system.
C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
D. Test Reports: For stud framing products that do not comply with ASTM C645 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.05 QUALITY ASSURANCE
A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum five years of documented experience.

PART 2 PRODUCTS
2.01 GYPSUM BOARD ASSEMBLIES
A. Provide completed assemblies complying with ASTM C840 and GA-216.

2.02 METAL FRAMING MATERIALS
A. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
   1. Studs: "C" shaped with flat or formed webs with knurled faces.
   2. Runners: U shaped, sized to match studs.

2.03 BOARD MATERIALS
A. Manufacturers - Gypsum-Based Board:
   5. Substitutions: See Section 01-60-00 - Product Requirements.
B. No Chinese manufactured gypsum based board shall be allowed in the project.
C. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Glass mat faced gypsum panels as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold resistant board is required at all locations.
   4. Thickness:
      b. Ceilings: 1/2 inch.
D. Abuse Resistant Wallboard:
   1. Application: All wall areas.
   2. Surface Abrasion: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
   3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
   4. Soft Body Impact: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
   5. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   6. Glass Mat-Faced Type: Gypsum wallboard as defined in ASTM C1658/C1658M.
E. Backing Board For Wet Areas:
   1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. Glass Mat Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C1178/C1178M.
F. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Ceilings, unless otherwise indicated.
   2. Thickness: 1/2 inch.
G. Acoustical Sound Dampening Wall and Ceiling Board: Two layers of heavy paper faced, high density gypsum board separated by a viscoelastic polymer layer and capable of achieving STC rating of 50 or more in typical stud wall assemblies as calculated in accordance with ASTM E413 and when tested in accordance with ASTM E90.
   1. Thickness: 5/8 inch.
   2. Long Edges: Tapered.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.

2.04 ACCESSORIES
A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: 2 1/2 inch.
B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
C. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
   1. Rigid Corner Beads: Low profile, for 90 degree outside corners.
D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Tape: 2 inch wide, coated glass fiber tape for joints and corners.
   2. Tape: 2 inch wide, creased paper tape for joints and corners.
   4. Chemical hardening type compound.
E. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inch in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.
F. Nails for Attachment to Wood Members: ASTM C514.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that project conditions are appropriate for work of this section to commence.

3.02 ACOUSTIC ACCESSORIES INSTALLATION
A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
   1. Place one bead continuously on substrate before installation of perimeter framing members.
   2. Place continuous bead at perimeter of each layer of gypsum board.
   3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.03 BOARD INSTALLATION
A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
C. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.
D. Installation on Wood Framing: For non-rated assemblies, install as follows:

3.04 INSTALLATION OF TRIM AND ACCESSORIES
A. Corner Beads: Install at external corners, using longest practical lengths.
B. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.05 JOINT TREATMENT
A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, bedded and finished with chemical hardening type joint compound.
C. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 3: Walls to receive textured wall finish.
   3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
   4. Level 1: Wall areas above finished ceilings, whether or not accessible in the completed construction.

D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

3.06 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION
SECTION 09-51-00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Suspended metal grid ceiling system.
B. Acoustical units.

1.02 REFERENCE STANDARDS
D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.

1.03 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate grid layout and related dimensioning.
C. Product Data: Provide data on suspension system components.
D. Samples: Submit two samples 4 by 4 inch in size illustrating material and finish of acoustical units.
E. Samples: Submit two samples each, 4 inches long, of suspension system main runner.
F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-60-00 - Product Requirements, for additional provisions.
   2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.04 QUALITY ASSURANCE
A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.05 FIELD CONDITIONS
A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Acoustic Tiles/Panels:
   6. Substitutions: See Section 01-60-00 - Product Requirements.
B. Suspension Systems:
   1. Same as for acoustical units.
   2. Substitutions: Not permitted.

2.02 ACOUSTICAL UNITS
A. Acoustical Units - General: ASTM E1264, Class A.
B. Acoustical Panels: Painted mineral fiber, ASTM E1264 Type III, with the following characteristics:
   1. Size: 24 by 24 inches.
   2. Thickness: 3/4 inches.
   3. Composition: Wet felted.
4. Light Reflectance: 82 percent, determined in accordance with ASTM E1264.
5. NRC Range:.50 to.60, determined in accordance with ASTM E1264.
7. Surface Color: White.
10. Products:
    a. Armstrong Ceramigard Fine Fissured or eq.

2.03 SUSPENSION SYSTEM(S)
A. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
B. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; heavy-duty.
   1. Profile: Tee; 15/16 inch wide face.
   2. Construction: Double web.

2.04 ACCESSORIES
A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
B. Perimeter Moldings: Same material and finish as grid.
   1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
C. Acoustical Insulation: ASTM C665, friction fit type, unfaced batts.
   1. Thickness: 2 inch.
   2. Size: To fit acoustical suspension system.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify existing conditions before starting work.
B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM
A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
C. Locate system on room axis according to reflected plan.
D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
E. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
I. Do not eccentrically load system or induce rotation of runners.
J. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.
   2. Overlap and rivet corners.

3.03 INSTALLATION - ACOUSTICAL UNITS
A. Install acoustical units in accordance with manufacturer's instructions.
B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
C. Fit border trim neatly against abutting surfaces.
D. Install units after above-ceiling work is complete.
E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
F. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.
G. Where round obstructions occur, provide preformed closures to match perimeter molding.
H. Lay acoustical insulation for a distance of 48 inches either side of acoustical partitions as indicated.

3.04 TOLERANCES
A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION
SECTION 09-65-00
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Resilient tile flooring.
B. Resilient base.
C. Installation accessories.

1.02 RELATED REQUIREMENTS
A. Section 03-30-00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.

1.03 REFERENCE STANDARDS
A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
D. Concrete Testing Standard: Submit a copy of ASTM F710.
E. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of sub-floor is acceptable.
F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-60-00 - Product Requirements, for additional provisions.
   2. Extra Flooring Material: Provide one box of each type and color.
   3. Extra Wall Base: Provide one box of each type and color.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
B. Store all materials off of the floor in an acclimatized, weather-tight space.
C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
D. Do not double stack pallets.

1.06 FIELD CONDITIONS
A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 TILE FLOORING
A. Rubber Tile: Type I- Homogeneous, color and pattern throughout thickness; Type II- Heterogeneous, laminated.
   1. Manufacturers:
      e. Substitutions: See Section 01-60-00 - Product Requirements.
   2. Minimum Requirements: Comply with ASTM F1344, of Class corresponding to type specified.
4. Total Thickness: min. 0.14 inch.
5. Texture: Hammered.
6. Color: To be selected by Architect from manufacturer's full range.

2.02 RESILIENT BASE
A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove.
   1. Manufacturers:
      d. Substitutions: See Section 01-60-00 - Product Requirements.
   2. Height: 4 inch.
   3. Thickness: 0.125 inch thick.
   5. Length: 4 foot sections.
   6. Color: To be selected by Architect from manufacturer's full range.
   7. Accessories: Premolded external corners and internal corners.

2.03 ACCESSORIES
A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
C. Filler for Coved Base: Plastic.
D. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for resilient flooring installation by testing for moisture and pH.
   1. Test in accordance with ASTM F710.
   2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION
A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
B. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.
C. Prohibit traffic until filler is fully cured.
D. Clean substrate.
E. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION - GENERAL
A. Starting installation constitutes acceptance of sub-floor conditions.
B. Install in accordance with manufacturer's written instructions.
C. Spread only enough adhesive to permit installation of materials before initial set.
D. Fit joints and butt seams tightly.
E. Set flooring in place, press with heavy roller to attain full adhesion.
F. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
G. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
   1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.
H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
I. Install flooring in recessed floor access covers, maintaining floor pattern.

3.04 INSTALLATION - TILE FLOORING
   A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.
   B. Lay flooring with joints and seams parallel to building lines to produce symmetrical tile pattern.
   C. Install tile to basket weave pattern. Allow minimum 1/2 full size tile width at room or area perimeter.

3.05 INSTALLATION - RESILIENT BASE
   A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
   B. Install base on solid backing. Bond tightly to wall and floor surfaces.
   C. Scribe and fit to door frames and other interruptions.

3.06 CLEANING
   A. Remove excess adhesive from floor, base, and wall surfaces without damage.
   B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION
   A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
A. Carpet tile, loose laid with edges and control grid adhered.

1.02 RELATED REQUIREMENTS
B. Section 03-30-00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.

1.03 REFERENCE STANDARDS
C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.
D. Submit two, 6 inch long samples of edge strip.
E. Manufacturer's Installation Instructions: Indicate special procedures.
F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.
G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-60-00 - Product Requirements, for additional provisions.
   2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.05 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum five years documented experience.
B. Installer Qualifications: Company specializing in installing carpet tile with minimum five years documented experience.

1.06 FIELD CONDITIONS
A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Tile Carpeting:
   1. Interface, Inc; i2 Collection: www.interfaceinc.com.
   5. Substitutions: See Section 01-60-00 - Product Requirements.
2.02 MATERIALS
A. Tile Carpeting: Tufted, manufactured in one color dye lot.
   1. Tile Size: 18 by 18 inch, nominal.
   2. Thickness: 0.28 inch.
   3. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
   4. Surface Flammability Ignition: Pass ASTM D2859 (the "pill test").
   5. VOC Content: Provide CRI (GLP) certified product; in lieu of labeling, independent test report showing compliance is acceptable.
   6. Maximum Electrostatic Charge: 3 Kv. at 20 percent relative humidity.
   7. Stitches: 8.2 per inch.
   9. Light Fastness: (AATCC 16-E) max 4.0 at 60 AFU.
   10. Primary Backing Material: Interface GlasBac or equal.
   11. Total Weight: 18 oz/sq yd.
   12. Recycled Content: Min. 45%

2.03 ACCESSORIES
A. Sub-Floor Filler: White premix latex; type recommended by flooring material manufacturer.
B. Edge Strips: Embossed aluminum, color as selected by Architect.
C. Adhesives:
   1. Compatible with materials being adhered; maximum VOC content of 50 g/L; CRI (GLP) certified; in lieu of labeled product, independent test report showing compliance is acceptable.
   2. In lieu of adhesive, use Interface Tac-Tiles or equal.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.
B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.
C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for flooring installation by testing for moisture and pH.
   1. Test in accordance with ASTM F710.
   2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.
D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION
A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
B. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.
C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
D. Vacuum clean substrate.

3.03 INSTALLATION
A. Starting installation constitutes acceptance of sub-floor conditions.
B. Install carpet tile in accordance with manufacturer's instructions.
C. Blend carpet from different cartons to ensure minimal variation in color match.
D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
E. Lay carpet tile in square pattern, with pile direction alternating to next unit, set parallel to building lines.
F. Adhere carpet tile to substrate along centerline of rooms, at perimeter of rooms, where tiles are cut, and at 15 foot intervals throughout rooms. Lay remainder of tile dry over substrate.
G. Trim carpet tile neatly at walls and around interruptions.
H. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING
A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
B. Clean and vacuum carpet surfaces.

END OF SECTION
SECTION 09-77-33
GLASS FIBER REINFORCED PLASTIC PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Glass fiber reinforced plastic panels.
B. Trim.

1.02 REFERENCE STANDARDS
G. FM 4880 - Class 1 Fire Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings and Exterior Wall Systems; 2010.

1.03 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
C. Samples: Submit two samples 12 by 12 inch in size illustrating material and surface design of panels.
D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-60-00 - Product Requirements, for additional provisions.
   2. Extra Panels: Quantity equal to 5 percent of total installed.

1.04 DELIVERY, STORAGE, AND HANDLING
A. Store panels flat, indoors, on a clean, dry surface. Remove packaging and allow panels to acclimate to room temperature for 48 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Glass Fiber Reinforced Plastic Panels:
   4. Substitutions: See Section 01-60-00 - Product Requirements.

2.02 PANEL SYSTEMS
A. Wall Panels:
   1. Panel Size: 4 by 8 feet.
   2. Panel Thickness: 0.10 inch.
   5. Attachment Method: Adhesive only, with trim and sealant in joints.
2.03 MATERIALS

A. Panels: Glass fiber reinforced plastic (FRP), complying with ASTM D5319.
   1. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.
   2. Class 1 fire rated when tested in accordance with FM 4880.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   4. Scratch Resistance: Barcol hardness score greater than 35, when tested in accordance with ASTM D2583.
   5. Impact Strength: Greater than 6 ft lb force per inch, when tested in accordance with ASTM D256.
   7. Chemical Cleanability: Excellent chemical resistance to common cleaners and detergents when tested in accordance with ISO 2812-1.
   8. Biological Resistance: Rating of 0, when tested in accordance with ISO 846.

B. Trim: Vinyl; color coordinating with panel.

C. Sealant: Type recommended by panel manufacturer; white.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate flatness before starting work.
B. Verify that substrate conditions are ready to receive the work of this section.

3.02 INSTALLATION - WALLS

A. Install panels in accordance with manufacturer's instructions.
B. Cut and drill panels with carbide tipped saw blades, drill bits, or snips.
C. Apply adhesive to the back side of the panel using trowel as recommended by adhesive manufacturer.
D. Apply panels to wall with seams plumb and pattern aligned with adjoining panels.
E. Install panels with manufacturer's recommended gap for panel field and corner joints.
F. Place trim on panel before fastening edges, as required.
G. Fill channels in trim with sealant before attaching to panel.
H. Install trim with adhesive and screws or nails, as required.
I. Seal gaps at floor, ceiling, and between panels with applicable sealant to prevent moisture intrusion.
J. Remove excess sealant after paneling is installed and prior to curing.

END OF SECTION
SECTION 09-90-00
PAINTING AND COATING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints and varnishes.

C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Mechanical and Electrical:
      a. In finished areas, paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
      b. In finished areas, paint shop-primed items.

D. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Marble, granite, slate, and other natural stones.
   6. Floors, unless specifically so indicated.
   7. Ceramic and other tiles.
   9. Glass.
   10. Concealed pipes, ducts, and conduits.

1.02 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.

1.03 REFERENCE STANDARDS


D. GreenSeal GS-11 - Paints and Coatings; 2013.

1.04 SUBMITTALS

A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of all products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, submit each color in each sheen available.
   3. Allow 30 days for approval process, after receipt of complete samples by Architect.
   4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.
D. Samples: Submit two paper chip samples, 8 1/2 x 11 inch in size illustrating range of colors available for each surface finishing product scheduled.

E. Certification: By manufacturer that all paints and coatings comply with VOC limits specified.

F. Certification: By manufacturer that all paints and coatings do not contain any of the prohibited chemicals specified; GreenSeal GS-11 certification is not required but if provided shall constitute acceptable certification.

G. Manufacturer's Instructions: Indicate special surface preparation procedures.

H. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and coated surfaces, and color samples of each color and finish used.

I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-60-00 - Product Requirements, for additional provisions.
   2. Extra Paint and Coatings: 1 gallon of each color; store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum five years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. Paints:

C. Transparent Finishes:
   1. Base Manufacturer: Min-Wax Helmsman Spar Water Based Urethane.

D. Primer Sealers: Same manufacturer as top coats.

E. Block Fillers: Same manufacturer as top coats.

F. Substitutions: See Section 01-60-00 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
   1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly
      dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying
      or curing free of streaks or sags.
   2. Supply each coating material in quantity required to complete entire project's work from a single
      production run.
   3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is
      specifically described in manufacturer's product instructions.

B. Primers: As follows unless other primer is required or recommended by manufacturer of top coats; where
   the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by
   the manufacturer.
   2. Steel -- Shop Primer: Interior/Exterior Quick Dry Alkyd Primer for Metal.

C. Volatile Organic Compound (VOC) Content:
   1. Provide coatings that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for
         Architectural Coatings.
         Coatings; www.otcair.org; specifically:
            1) Opaque, Flat: 0 g/L, maximum.
            2) Opaque, Nonflat: 0 g/L, maximum.
            3) Opaque, High Gloss: 150 g/L, maximum.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D
      (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or
      other method acceptable to authorities having jurisdiction.

D. Chemical Content: The following compounds are prohibited:
   1. Intentionally added methylene chloride or perchloroethylene.
   2. Aromatic Compounds: In excess of 1.0 percent by weight of total aromatic compounds
      (hydrocarbon compounds containing one or more benzene rings).
   3. Acrolein, acrylonitrile, antimony, benzene, butyl benzyl phthalate, cadmium, di (2-ethylhexyl)
      phthalate, di-n-butyl phthalate, di-n-octyl phthalate, 1,2-dichlorobenzene, diethyl phthalate, dimethyl
      phthalate, ethylbenzene, formaldehyde, hexavalent chromium, isophorone, lead, mercury, methyl
      ethyl ketone, methyl isobutyl ketone, methylene chloride, naphthalene, toluene (methylbenzene),
      1,1,1-trichloroethane, vinyl chloride.

E. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by
   Architect from the manufacturer's full line.

F. Colors: To be selected from manufacturer's full range of available colors.
   1. Selection to be made by Architect after award of contract.
   2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional
      cost to Owner.
   3. Extend colors to surface edges; colors may change at any edge as directed by Architect.
   4. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they
      are mounted on/under.

2.03 PAINT SYSTEMS - EXTERIOR

A. All Exterior Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including primed metal.
   1. Preparation as specified by manufacturer.
   2. Two top coats and one coat primer recommended by manufacturer.
   3. Semi-Gloss: MPI gloss level 5; use this sheen at hollow metal doors and frames.

B. Paint ME-OP-2L - Ferrous Metals, Primed, Latex, 2 Coat:
1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
2. Semi-gloss: Two coats of latex enamel.

2.04 PAINT SYSTEMS - INTERIOR
A. All Interior Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including gypsum board and shop primed steel.
   1. Two top coats and one coat primer.
   2. Flat: MPI gloss level 1; use this sheen at all locations except as noted.
   3. Semi-Gloss: MPI gloss level 5; use this sheen at hollow metal doors and frames.
   4. Primer(s): As recommended by manufacturer of top coats.
B. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals:
   1. Medium duty applications include doors and door frames.
   2. Two top coats and one coat primer.
   3. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
   1. Two top coats and one coat primer.
   2. Flat: MPI gloss level 1; use this sheen for ceilings and other overhead surfaces.
   3. Semi-Gloss: MPI gloss level 5; use this sheen for wet area walls and mechanical rooms.
   4. Primer(s): As recommended by manufacturer of top coats.
D. Paint I-TR -W - Transparent Finish on Wood, Unless Otherwise Indicated:
   1. Top Coat(s): Clear Water Based Varnish.

2.05 ACCESSORY MATERIALS
A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.
B. Patching Material: Latex filler.
C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
D. Test shop-applied primer for compatibility with subsequent cover materials.
E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION
A. Clean surfaces thoroughly and correct defects prior to coating application.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
D. Seal surfaces that might cause bleed through or staining of topcoat.
E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
F. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.
G. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

H. Corroded Steel and Iron Surfaces to be Painted: Prepare using at least SSPC-SP 2 (hand tool cleaning) or SSPC-SP 3 (power tool cleaning) followed by SSPC-SP 1 (solvent cleaning).

I. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

J. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

K. Interior Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

3.03 APPLICATION
A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's instructions.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

F. Sand wood and metal surfaces lightly between coats to achieve required finish.

G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

H. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING
A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION
A. Protect finished coatings until completion of project.

B. Touch-up damaged coatings after Substantial Completion.

END OF SECTION
SECTION 10-21-13.19
PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Solid plastic toilet compartments.
B. Urinal screens.

1.02 RELATED REQUIREMENTS
A. Section 06-10-00 - Rough Carpentry: Blocking and supports.
B. Section 10-28-00 - Toilet, Bath, and Laundry Accessories.

1.03 REFERENCE STANDARDS
A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on panel construction, hardware, and accessories.
C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.
D. Samples: Submit two samples of partition panels, 6 by 6 inch in size illustrating panel finish, color, and sheen.
E. Manufacturer's Installation Instructions: Indicate special procedures.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Solid Plastic Toilet Compartments:
   5. Substitutions: Section 01-60-00 - Product Requirements.

2.02 SOLID PLASTIC TOILET COMPARTMENTS
A. Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), tested in accordance with NFPA 286, floor-mounted headrail-braced.
   1. Color: Single color as selected.
B. Doors:
   1. Thickness: 1 inch.
   2. Width: 30 inch.
   4. Height: 55 inch.
C. Panels:
   1. Thickness: 1 inch.
   2. Height: 55 inch.
   3. Depth: As indicated on drawings.
D. Pilasters:
   1. Thickness: 1 inch.
   2. Width: As required to fit space; minimum 3 inch.
E. Screens: Without doors; to match compartments; mounted to wall with two panel brackets.

2.03 ACCESSORIES
A. Pilaster Shoes: Formed ASTM A666, Type 304 stainless steel with No. 4 finish, 3 inch high, concealing floor fastenings.
B. Head Rails: Hollow anodized aluminum, 1 inch by 1-1/2 inch size, with anti-grip profile and cast socket wall brackets.
C. Pilaster Brackets: Satin stainless steel.
D. Wall Brackets: Continuous type, satin stainless steel.
E. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
F. Hardware: Satin stainless steel:
   1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
   2. Door Latch: Slide type with exterior emergency access feature.
   3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
   4. Coat hook with rubber bumper; one per compartment, mounted on door.
   5. Provide door pull for outswinging doors.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that field measurements are as indicated on shop drawings.

3.02 INSTALLATION
   A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer’s instructions.
   B. Maintain 3/8 inch to 1/2 inch space between wall and panels and between wall and end pilasters.
   C. Attach panel brackets securely to walls using anchor devices.
   D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.
   E. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

3.03 TOLERANCES
   A. Maximum Variation From True Position: 1/4 inch.
   B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING
   A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.
   B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.
   C. Adjust adjacent components for consistency of line or plane.

END OF SECTION
SECTION 10-26-01
WALL AND CORNER GUARDS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Corner guards.

1.02 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.
C. Samples: Submit two sections of bumper rail corner guard, 24 inch long, illustrating component design, configuration, color and finish.
D. Manufacturer's Instructions: Indicate special procedures, perimeter conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Wall and Corner Guards:
   6. Bradley Corp. #BR991x48
   7. Substitutions: See Section 01-60-00 - Product Requirements.

2.02 COMPONENTS
A. Corner Guards - Surface Mounted:
   1. Material: Type 304 stainless steel, No. 4 finish, 18 gage, 0.05 inch thick.
   2. Performance: Resist lateral impact force of 100 lbs at any point without damage or permanent set.
   3. Width of Wings: 2 inches.
   5. Length: One piece.
B. Mounting Brackets and Attachment Hardware: Appropriate to component and substrate.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.

3.02 INSTALLATION
A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to wall framing members only.
B. Position corner guard 6 inches above finished floor to 60 inches high.

3.03 TOLERANCES
A. Maximum Variation From Required Height: 1/4 inch.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Commercial toilet accessories.
   B. Commercial shower and bath accessories.
   C. Accessories for toilet rooms, showers, and utility rooms.
   D. Utility room accessories.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS
   A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
   B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
   C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS
   A. Commercial Toilet, Shower, and Bath Accessories:
      5. Substitutions: Section 01-60-00 - Product Requirements.

2.02 MATERIALS
   A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   B. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.
   C. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

2.03 FINISHES
   A. Stainless Steel: Satin finish.

2.04 COMMERCIAL TOILET ACCESSORIES
   A. Waste Receptacle: Stainless steel, freestanding style with swing top.
      1. Liner: Removable, heavy-duty vinyl liner, attached at a minimum of 4 points with stainless steel grommets and hooks.
   B. Mirrors: Stainless steel framed, 1/4 inch thick tempered safety glass; ASTM C1048.
      1. Frame: 0.05 inchangle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
      2. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
   C. Grab Bars: Stainless steel, nonslip grasping surface finish.
      1. Standard Duty Grab Bars:
         a. Push/Pull Point Load: 250 pound-force, minimum.
b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
c. Length and Configuration: As indicated on drawings.

D. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.

2.05 COMMERCIAL SHOWER AND BATH ACCESSORIES

A. Shower Curtain Rod: Stainless steel tube, 1 inch outside diameter, 0.04 inch wall thickness, satin-finished, with 3 inch outside diameter, minimum 0.04 inch thick satin-finished stainless steel flanges, for installation with exposed fasteners.

B. Shower Curtain:
   1. Material: Opaque vinyl/Nylon reinforced vinyl, 0.008 inch thick, matte finish, with antibacterial treatment, flameproof and stain-resistant.

C. Robe Hook: Heavy-duty stainless steel, single-prong, rectangular-shaped bracket and backplate for concealed attachment, satin finish.
   1. Product: 932 manufactured by Bradley.

2.06 UTILITY ROOM ACCESSORIES

A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
   1. Drying rod: Stainless steel, 1/4 inch diameter.
   2. Hooks: 2, 0.06 inch stainless steel rag hooks at shelf front.
   3. Mop/broom holders: 3 spring-loaded rubber cam holders at shelf front.
   4. Length: Manufacturer’s standard length for number of holders/hooks.
   5. Product: 9983 manufactured by Bradley.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.
B. Verify exact location of accessories for installation.
C. See Section 06-10-00 for installation of blocking, reinforcing plates, and concealed anchors in walls and ceilings.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.
B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install accessories in accordance with manufacturers’ instructions in locations indicated on the drawings.
B. Install plumb and level, securely and rigidly anchored to substrate.
C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
   1. Grab Bars: As indicated on the drawings.
   2. Mirrors: 40 inch, measured to bottom of mirrored surface.

3.04 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION
SECTION 10-44-00
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Fire extinguishers.
B. Fire extinguisher cabinets.

1.02 RELATED REQUIREMENTS
A. Section 06-10-00 - Rough Carpentry: Wood blocking product and execution requirements.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide extinguisher operational features.
C. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.
D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.05 FIELD CONDITIONS
A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Fire Extinguishers:
   6. Substitutions: See Section 01-60-00 - Product Requirements.
B. Fire Extinguisher Cabinets and Accessories:
   9. Substitutions: See Section 01-60-00 - Product Requirements.

2.02 FIRE EXTINGUISHERS
A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gage.
   1. Cartridge Operated: Spun shell.
   2. Class: A:B:C type.
   3. Size: 10 pound.
   4. Finish: Baked polyester powder coat, color as selected.
   5. Temperature range: Minus 40 degrees F to 120 degrees F.
C. Carbon Dioxide Type Fire Extinguishers: Carbon steel tank, with pressure gage.
   1. Class: B:C type.
2. Size: 10 pound.
3. Finish: Baked enamel, color as selected.
4. Temperature range: Minus 40 degrees F to 120 degrees F.

2.03 FIRE EXTINGUISHER CABINETS
A. Cabinet Construction: Non-fire rated.
   1. Formed primed steel sheet; 0.036 inch thick base metal.
B. Cabinet Configuration: Recessed type.
   1. Size to accommodate accessories.
   2. Trim: Flat rolled edge, with 1 1/2 inch wide face.
   3. Provide cabinet enclosure with right angle inside corners and seams, and with formed perimeter trim and door stiles.
C. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinge.
D. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape and set in resilient channel glazing gasket.
E. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.
F. Weld, fill, and grind components smooth.
G. Finish of Cabinet Exterior Trim and Door: Red baked enamel.
H. Finish of Cabinet Interior: White colored enamel.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify existing conditions before starting work.
B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Install cabinets plumb and level in wall openings, 36 inches from finished floor to inside bottom of cabinet.
C. Secure rigidly in place.
D. Place extinguishers in cabinets.

3.03 SCHEDULES
A. Mechanical Room: Carbon Dioxide Type Fire Extinguishers.
B. All Other Locations: Multipurpose Dry Chemical Type Fire Extinguishers.

END OF SECTION
SECTION 10-56-17
WALL MOUNTED STANDARDS AND SHELVING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Shelf standards, brackets, and accessories.
B. Shelves.
C. See drawings for locations and configurations.

1.02 RELATED REQUIREMENTS
A. Section 06-10-00 - Rough Carpentry: Wood blocking in walls for attachment of standards.

1.03 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on each product to be used.
C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-60-00 - Product Requirements, for additional provisions.
   2. Extra Brackets: Ten of each size of standard straight bracket.

1.04 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Store products under cover and elevated above grade.
B. Store products in manufacturer's unopened packaging until ready for installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

2.02
A. Shelf Standards and Brackets:
   2. Substitutions: See Section 01-60-00 - Product Requirements.

2.03 MATERIALS
A. Heavy Duty Shelf Standards: Double-slotted channel standards for brackets adjustable in 1 inch increments along entire length of standard, drilled and countersunk for screws.
   2. Load Capacity: Recommended by manufacturer for loading of 300 to 680 pounds per pair of standards.
   4. Lengths: As indicated on drawings.
   6. Brackets: Double tab type, locking into slots; size to suit shelves; same finish as standards.
   7. Bracket Quantity: Provide one bracket for each 12 inches of standard length.

B. Wood Shelves: Hardwood veneer plywood with matching solid wood glued edges on all four edges.
   1. Species and Cut: Birch veneer.
   2. Thickness: 3/4 inch, nominal.
   3. Length: As indicated on drawings.
   5. At slanted shelves, provide lip extending 1 inch above top surface, constructed of same materials; glued and screwed into shelf edge.
   6. Application: Use wood shelves at Storage 111.
   7. Shelf Quantity: Provide one shelf for each 12 inches of length of standard, per pair of standards, unless otherwise indicated.
C. Fasteners: Screws as recommended by manufacturer for intended application or as otherwise required by project conditions.

**PART 3 EXECUTION**

**3.01 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.

**3.02 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.

**3.03 INSTALLATION**

A. Install in accordance with manufacturer's instructions.

B. Mount standards to solid backing capable of supporting intended loads.

C. Install brackets, shelving, and accessories.

**3.04 PROTECTION**

A. Protect installed products until completion of project.

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

**END OF SECTION**
SECTION 31-11-00
CLEARING AND GRUBBING

1. DESCRIPTION:

1.1 The clearing work covered by this section consists of cutting, removing and properly disposing of vegetation and debris. Trees specifically identified on the plans to be preserved shall be adequately delineated and flagged by the Contractor, such that the balance of the work may be performed in a safe and harmless manner in the vicinity of preserved trees. Such tree preservation will be considered part of the work and shall be in conformance with applicable local codes and regulations.

1.2 The grubbing work covered by this section consists of removing and properly disposing of all surface vegetation and debris. Where the material being removed is high in organic matter content, such as root mat and other vegetative matter, it shall be considered vegetation and removed as part of the work of grubbing. Where material being removed consists predominantly of soils, such removal will be considered part of the work covered by Section 31 2000 of these specifications, entitled Unclassified Excavation and Grading.

1.3 The work of clearing and grubbing shall also include the removal and satisfactory disposal of crops, weeds and other annual growth; the removal and satisfactory disposal of fences, steps, walls, chimneys, column footings, other footings, foundation slabs, basements, other foundation components, signs, junked vehicles, and other rubble and debris; and the filling of holes and depressions. This work shall also be performed in all non-wooded areas within the construction limits, shown on the project plans upon which seeding and mulching, sprigging or sodding is to be performed.

As a part of the work of clearing and grubbing, the Contractor will be required to perform the following:

1.3.1 Cut off and plug at the right of way or construction limits, as directed by the Engineer, any private water or sewer line intercepted during the construction of the project.

1.3.2 Cut off and remove from the construction area any septic tank or portion thereof during the construction of the project.

1.4 Clearing and grubbing operations shall be completed sufficiently in advance of grading operations as may be necessary to prevent any of the debris from the clearing and grubbing operations from interfering with the excavation or embankment operations.

1.5 The Contractor shall obtain, at his own expense, all necessary permits pertaining to clearing and grubbing work not already secured by the Engineer. The Contractor shall then provide a copy of any and all required permits to the Engineer.

2. MATERIALS:

2.1 Topsoil shall be considered to mean original surface soil, typical of the area, which is capable of supporting native plant growth, and shall be free of large stones, roots, brush, waste construction debris and other undesirable material.

3. INSTALLATION:

3.1 Clearing and grubbing shall be performed in areas as called for on the plans, the limits of which shall coincide with the construction limits and in general shall extend 5 feet beyond top of cut or toe of fill, not to exceed the limits of the Owner's property. Clearing and grubbing activities shall conform the "Standard Specifications for Roads and Structures" of latest revision, published by the North Carolina Department of Transportation, except that grubbing shall be performed on all cleared excavation and embankment areas and shall include the complete removal of all stumps, roots and embedded debris.

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31-11-00 - CLEARING AND GRUBBING
3.2 Where adjacent areas within the site but outside the limits of construction are disturbed as a result of clearing and grubbing activities, the Contractor shall remove all debris and restore to the original grades and equal or better condition.

3.3 The Contractor shall exercise caution to protect and maintain all existing utilities and underground works which are to remain. Any existing utilities or underground works which are to remain that are disturbed during construction shall be repaired or replaced at the Contractor's expense.

3.4 The Contractor must comply with all local, state and federal laws, ordinances and regulations in the burning, removal and disposal of clearing and grubbing of all vegetation, timber, waste and all surface debris that must be hauled from the Project Site. Burning of materials will be allowed on site as long as permitted by the governing regulatory agencies. If burning is not allowed, the Contractor shall properly dispose of all cleared materials at his expense, in conformance with all applicable local and state laws and ordinances with the exception of any materials to be reused or recycled as directed elsewhere in this contract.

3.5 Stripping and storage of topsoil: All topsoil suitable for reuse, in the opinion of the Engineer, shall be stripped to its full depth, all topsoil to be moved shall be free of large stone, roots, brush, waste construction materials and other undesirable matter.

3.5.1 Topsoil stripping shall be accomplished from all topsoiled areas to be disturbed.

3.5.2 Existing lawn sods may be left to decompose with the topsoil. Heavier stands of weeds and grasses shall be removed as directed by the Engineer prior to the stripping operations.

3.5.3 The topsoil shall be kept separate from other excavated materials and stored in stockpiles, the location of which shall be as directed by the Engineer. Topsoil shall be stockpiled so that it shall not be subject to abnormal erosion and loss, and so that it does not impede the flow of drainage runoff. The directed locations of topsoil stockpiles will, when construction sequence permits, be located in areas that have previously been graded to design rough grade.

3.5.4 Any excess topsoil shall be wasted on site.

4. **METHOD OF MEASUREMENT AND BASIS OF PAYMENT:**

4.1 All work covered by this Section shall not be measured but shall be paid for as part of the lump sum contract price.

**END OF SECTION**
SECTION 31-20-00
UNCLASSIFIED EXCAVATION

1. DESCRIPTION:

1.1 This portion of the project includes the excavation, undercut excavating, grading, earthwork and compaction required as shown on the plans and all other associated miscellaneous items of earthwork construction, as shown on the plans. The Contractor shall furnish all materials, labor, equipment and incidental items necessary to complete this portion of the work as detailed on the plans and as called for in these Specifications.

1.2 All unclassified excavation shall be in accordance with the "Standard Specifications for Roads and Structures" of latest revision, published by the North Carolina Department of Transportation, unless otherwise directed herein.

2. MATERIALS:

2.1 Topsoil shall be considered to mean original surface soil, typical of the area, which is capable of supporting native plant growth, and shall be free of large stones, roots, brush, waste, construction debris and other undesirable material or contamination.

2.2 All fill used for site grading operations should consist of a clean (free of organics and debris) low plasticity soil (plasticity index less than 30).

3. INSTALLATION:

3.1 General Requirements:

3.1.1 In the event a subsurface investigation report has been prepared for this project, all excavation, filling and grading shall be performed in accordance with the recommendations of the subsurface report, and under the direction of the project geotechnical engineer.

3.1.2 Construction stakeout will be by a licensed survey firm provided by the Contractor. Exact locations and grade points are to be staked or fixed by the surveying firm before construction. The Contractor shall not disturb any bench marks, reference stakes or property line monuments. In the event it becomes necessary to remove any bench mark, reference stake or property line monument in the performance of the work, the Contractor shall contact the Owner so he may have the referenced points replaced. If any such points are disturbed or damaged in excess of an agreed-to allowance, they shall be replaced by a North Carolina Registered Land Surveyor at the expense of the Contractor.

3.1.3 Existing utility lines (either overhead or underground), sidewalks, fencing, pavement or other structures shown on the drawings, shown to the Contractor or mentioned in the plans and specifications shall be kept free of damage by the Contractor's operations if they are not to be removed with this project. **It shall be the responsibility of the Contractor to verify the existence and location of all underground utilities within the Project Site.** The omission from or the inclusion of utility locations on the plans is not to be considered as the non-existence of or a definite location of existing underground utilities. Any cost of moving the utility will be the responsibility of the Owner. This is not to be construed as work adjacent to an existing utility that may need to be uncovered during construction, the cost of which is solely the responsibility of the Contractor. Any existing construction damaged by the Contractor shall be restored to an equal condition as that existing at the time prior to damage, at the Contractor's expense. If any existing utility is inadvertently damaged during construction, the Contractor shall notify the utility, the Engineer and the Owner of said damaged utility at once so that emergency repairs may be made at the Contractor's expense and to the satisfaction of the party having jurisdiction of the utility.
3.2 **Unclassified Excavation:**

3.2.1 Upon completion of the stripping operations, and after all excavation of the site has been completed to the lines and grades shown on the drawings, the exposed subgrade in cut areas should be proofrolled as specified herein for areas to receive fill. Any areas which deflect, rut or pump excessively during the proofrolling or fail to "tighten up" after successive passes should be undercut to suitable soils and replaced with compacted fill.

3.2.2 All site excavation shall be unclassified regardless of the nature of the materials encountered with the exception of rock excavation or unsuitable soil. Only that material which in the opinion of the Engineer cannot be removed with a caterpillar D-9 or equal, equipped with a properly fitted single tooth ripper, or removed by a caterpillar 225 backhoe or equal, equipped with rock teeth, will be regarded as rock. The Engineer should be notified immediately if rock is encountered. All excavation materials which are not required for fills shall be considered as waste and shall be wasted on site.

3.2.3 All site excavation of previously stockpiled or buried construction, clearing or demolition debris or any other refuse shall be properly disposed of offsite at the Contractor's expense. The Contractor shall obtain all necessary Federal, State or Local permits for transporting and disposing of such material, at his expense.

3.2.4 Rock in the bottom of roadway cuts shall be excavated to a depth of 1 foot below the roadbed and ditches. Rock in building pad areas shall be excavated to a depth of 1 foot below finished grade or as indicated on the grading plans. Rock in utility trenches shall be excavated six inches below the invert elevation of the pipe, and for a width of the pipe plus one foot on either side of the pipe, or three feet in width, whichever is more.

3.2.5 The Contractor shall provide all sheeting, shoring, underpinning and bracing required to hold the sides of the excavation and for the protection of all adjacent structures. The Contractor shall be held responsible for any damage to any part of the work by failure of excavated sides or bottoms.

3.3 **Blasting:**

3.3.1 Any and all blasting operations shall be conducted in strict accordance with existing ordinances and regulations relative to storage and use of explosives. Blasting shall be done only by experienced men and extreme caution and care shall be exercised to prevent injury to persons or damage to any pipe, mains, wires, drains, buildings, railroad tracks or other property above or below the surface of the ground. The Contractor shall use safety nets or other equivalent measures as approved by the Engineer to reduce the possibility of flying rock as a result of blasting operations. The Contractor shall be held strictly responsible for any injury to persons or damage to public or private property.

3.3.2 The Contractor shall submit blasting plans to the Engineer for review and shall not proceed with blasting operations until approval has been granted. As directed by the Engineer, blasting operations shall be monitored to insure that vibration levels produced by blasting are within tolerable limits.

3.3.3 The Contractor shall obtain at his expense, all Federal, State and Local permits required to perform blasting operations.

3.4 **Dewatering:**

3.4.1 The Contractor shall control the grading in all areas so that the surface of the ground will be properly sloped, diked or ditched to prevent water from entering into excavated areas. The Contractor shall maintain sufficient personnel and equipment to promptly and continuously remove all water, from any source, entering or accumulating in the excavation or other parts of the work. All water pumped or drained from these areas shall be disposed of in a suitable manner without damaging adjacent property or other work under construction.

3.5 **Embankments, Fills and Backfills:**
3.5.1 Upon completion of the stripping operations, the exposed subgrade in areas to receive fill should be proofrolled with a loaded dumptruck or similar pneumatic-tired vehicle with a minimum loaded weight of 20 tons, under the supervision of the geotechnical engineer. The proofrolling procedure should consist of four complete passes of the exposed areas with two of the passes being in a direction perpendicular to the preceding ones. Any areas which deflect, rut or pump excessively during the proofrolling or fail to “tighten up” after successive passes should be undercut to suitable soils and replaced with compacted fill.

3.5.2 Embankments and fills shall be constructed at the locations and to the lines and grades indicated on the drawings. Material shall be placed in horizontal layers not to exceed 8 inches in loose depth and thoroughly compacted prior to placing each following layer. All fill material shall be free from roots or other organic material, trash, and from all stones having any one dimension greater than 6 inches. Stones larger than 4 inches, maximum dimension, shall not be permitted in the upper 6 inches of fill or embankment. Fill areas shall be kept level with graders or other approved devices.

3.5.3 Embankment and fill compaction shall be accomplished by thoroughly compacting each layer with sheep foot rollers, pneumatic rollers, and mechanical tampers in places inaccessible to rollers, or other equipment. When material has too much moisture, grading operations shall be limited to drying soil by spreading and turning for drying by the sun and aeration. When material is dry, moisture shall be added by sprinkling by approved means.

3.5.4 All embankments and fills shall be compacted to the following percentages of the maximum dry density as determined by the Standard Proctor Density Test, ASTM D-698, Method C.

3.5.5 The following table shall be used unless otherwise specified:

<table>
<thead>
<tr>
<th>Type Fill or Embankment</th>
<th>Minimum Zone</th>
<th>Minimum Density %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadway or Parking</td>
<td>Top 12 inches</td>
<td>100</td>
</tr>
<tr>
<td>Building</td>
<td>Top 12 inches</td>
<td>100</td>
</tr>
<tr>
<td>Remainder</td>
<td></td>
<td>95</td>
</tr>
</tbody>
</table>

Embarkment types are defined as follows:

Roadway and Parking - beneath all roads, streets, truck operations, and automobile parking lots.

3.5.6 Where backfilling is required after the completion of drainage structures, all forms, trash, and construction debris shall be removed from excavation before backfilling begins. Backfill shall be placed in horizontal layers of 6 inches in loose depth. Compaction shall conform to requirements in the above table. Heavy rollers, crawler equipment, trucks or other heavy equipment shall not be used for compacting backfill within 5 feet of structure walls or other facilities which may be damaged by their weight or operation. No backfilling shall begin until concrete and masonry walls are properly cured.

3.5.7 The Contractor shall carry the top of embankments, fills, or backfills to the surrounding grade so that upon compaction and subsequent settlement, the grade will be at proper elevation. Should settlement occur during the guarantee period of the contract, the Contractor shall provide sufficient fill to bring area up to finished grade and shall reseed as required.

3.6 PROOFROLLING SCHEDULE:

3.6.1 Proofrolling under the observation of the Soils Engineer will be performed using a loaded dumptruck or similar pneumatic-tired vehicle with a minimum loaded weight of 25 tons as specified herein and as follows:
3.6.2 Immediately following stripping, all areas to receive fill shall be proofrolled as specified herein.

3.6.3 Immediately following the completion of excavation to proposed grades in cut areas, proofrolling shall be performed as specified herein.

3.6.4 Immediately prior to stone base course placement in pavement areas and following final floor slab preparation, all subgrade areas will be proofrolled. Any local areas which deflect, rut or pump under the roller shall be undercut and replaced with compacted fill material as specified herein.

3.7 SOIL INSPECTION AND TESTS:

3.7.1 All excavated and fill material shall be removed, selected, placed and compacted under supervision of a representative of a commercial soils testing laboratory which will be selected by the Owner. A commercial soils testing laboratory shall be any firm properly equipped to perform such compaction tests and who has in their employment a Professional Engineer experienced in testing and soil mechanics. The laboratory representative shall have the authority to approve or disapprove the condition of the subgrade on which fill is to be placed, filled material, placement methods, compaction methods, and shall make compaction density tests as necessary to determine that the specified density is obtained. The Contractor shall notify the laboratory at least three (3) days prior to starting fill operations in order that suitability of material for compaction may be checked and no material shall be used that has not been previously checked and approved by the laboratory. The laboratory shall be notified before any cut is made or fill is placed in order that the laboratory representative may be present during all grading operations. The Contractor shall remove, replace, recompact and retest all fills failing to meet the density requirements at his own expense.

3.7.2 A soils testing laboratory shall be retained by the Owner to supervise fill placement and compaction at no expense to the Contractor. However, extra time and trips caused by excessive delay, failure of the Contractor to properly coordinate with the laboratory, or failure of the Contractor to properly compact fill material shall be backcharged to the Contractor.

3.7.3 Field density tests shall be performed by the Owner's testing agency at the following rate:

<table>
<thead>
<tr>
<th>Type</th>
<th>Test Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Grading</td>
<td>One test per two feet of fill placed over 25,000 square feet</td>
</tr>
<tr>
<td>Backfill</td>
<td>One test per two feet of fill placed over 5,000 square feet</td>
</tr>
<tr>
<td>or Backfill</td>
<td>One test per two feet of vertical thickness per 1000 linear feet</td>
</tr>
</tbody>
</table>

3.7.4 A minimum of one field density test shall be made for each 10,000 square feet of fill placement in all other areas where pavement is to be placed.

3.7.5 Prior to final acceptance, the Soils Engineer shall submit certification specifying that the project compaction criteria and subgrading elevations have been satisfactorily obtained. This certification should be in the form of a letter. The Contractor is responsible for coordination of this certification.

3.8 Borrow and Waste Materials:

3.8.1 Borrow: In the event borrow material is required, the borrow material shall be checked for suitability for compaction and approved by the soils testing laboratory. The Contractor shall notify the laboratory at least three (3) days in advance of beginning borrow operations. Borrow excavation shall be performed in accordance with the NCDOT Standard Specifications for Roads and Structures of latest revision except where modified herein.

3.8.2 Waste: Excavated materials not suited for backfill and excavated material in excess of that needed to complete the work shall be wasted on the project site where directed by the Engineer. The waste area shall be prepared by topsoil stripping and prepared to receive the waste. All materials placed in the waste areas shall be compacted to 95 percentage of the maximum dry density as determined by the Standard Proctor Density Test, ASTM D-698, Method C. Waste areas shall be left in a graded and sloped condition to allow natural drainage of surrounding area.
3.9 Residual Soil Areas:

3.9.1 If proofrolling indicates that on-site virgin soils supporting any roadway, parking, building or other structural areas are not adequate as determined by the Soils Engineer, then these unsuitable areas shall be repaired by the Contractor. The necessary repair procedure shall be determined by the Soils Engineer and may include scarifying, drying and recompaction procedures or undercutting and replacement procedures.

3.10 Final Grading:

3.10.1 On completion of all grading, all graded areas (except building pads and hardscape/pavement areas in rough grading contracts and all cut slopes steeper than 4:1 slope) shall be provided with 4 inches of topsoil and brought to 3 inches below the finished grades shown on the drawings. Areas disturbed by operations of the Contractor shall be properly returned to their original condition with a topsoil covering of 4 inches.

3.10.2 The Contractor shall provide soil tillage and soil amendments for stormwater retention, unless otherwise directed, per section 33-2429 of these specifications where indicated on the plans.

3.10.3 After the entire graded area has been brought to the finished grades shown on drawings, all areas shall be left smooth and free from erosion, ridges, ditches and evidence of ponding. Final grades shall be free from all roots, debris, rock and soil lumps and left in readiness for seeding.

3.10.4 Prior to acceptance of the entire project, the Contractor shall correct all embankments and graded areas of all damages due to washes, settlement, erosion, equipment ruts or any other cause at his expense.

3.10.5 Prior to final acceptance, the Contractor shall provide certification as specified in paragraph 3.7.6 that all grades are ± 0.1 foot of the finished grades shown on project drawings for the pavement areas. In other areas, the Contractor shall certify that all areas are ± 0.2 foot and that the areas drain properly so that no ponding occurs. The certification is not meant to require an as-built survey of the areas; rather, it is meant to require the Contractor to give assurance that the grades are within tolerances required. If, in subsequent work, it is apparent that the subgrade is not as certified, the Owner may require the Contractor to provide all remedial work to ensure the subgrade is within tolerances, including any costs of improvements that may need to be redone.

3.10.6 The Contractor shall stabilize all disturbed areas, unless otherwise directed, by seeding and mulching per section 32 9200 of these specifications or other means of stabilization called for by the contract drawings.

3.11 Clean-Up:

3.11.1 Upon completion or termination of the work, and before final payment is made, the Contractor shall remove from site all equipment, waste materials and rubbish resulting from his operations. In the event of his failure to do so, the same may be done by the Owner at the expense of the Contractor.

4. METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

There is no line item for unclassified grading. Payment for Undercut shall be measured by the Engineer and paid for at the contract unit price for Undercut. Mass rock shall be measured by the Engineer and paid for at the contract unit price for “mass rock”. Trench rock shall be measured by the Engineer and paid for at the contract unit price for “trench rock”. The quantities for payment of rock are defined by the limits required; no additional payment will be made for rock removal in excess of the requirements.

END OF SECTION
SECTION 31-23-00
SUBGRADE

1. DESCRIPTION:

1.1 The work covered by this section consists of the preparation, shaping and compaction of either an unstabilized or stabilized subgrade, suitable for placement of base course, pavement and shoulders or for the placement of structures as called for on the plans. The Contractor shall furnish all equipment, tools, labor and materials necessary to complete the work in accordance with the plans and specifications.

2. MATERIALS:

2.1 Water: Water shall be clean and free from oil, salt, acid, alkali, organic matter or other substances detrimental to the finished product. Water shall not contain more than 100 ppm chlorides nor more than 500 ppm dissolved solids, and shall have a pH in the range of 4.5 to 8.5.

2.1.1 Water from a city water supply may be accepted without being tested. Water from other sources shall be tested in accordance with AASHTO T26, unless the requirement for testing is waived by the Engineer. The cost of testing water shall be paid by the Contractor.

2.2 Stabilizer Aggregate:

2.2.1 Stabilizer Aggregate shall consist of crushed stone or gravel or other similar material having hard, strong, durable particles free of adherent coatings.

| STABILIZER AGGREGATE
| GRADATION ACCEPTANCE CRITERIA |
|-----------------------------|-------------------------------|
| Column A | Column B | % Passing |
| Sieve Size | | |
| 1½" | 98 - 100 |
| 1" | 60 - 100 |
| ½" | 36 - 84 |
| No. 4 | 21 - 61 |
| No. 10 | 10 - 50 |
| No. 40 | 0 - 34 |
| No. 200 | 0 - 13 |

Material Passing No. 40 Sieve

| L.L. | 0 - 30 |
| P.I. | 0 - 6 |

3. INSTALLATION:

3.1 General Requirements: All subgrade preparation shall conform the "Standard Specifications for Roads and Structures" of latest revision, published by the North Carolina Department of Transportation.

3.1.1 The subgrade for roadways and structures shall be shaped to conform to the lines, grades and typical sections shown on the plans or established by the Engineer. All vegetation, organic matter or other deleterious material shall be removed and properly disposed of by the Contractor. Nor shall the soil contain stone or gravel larger than 2 inches for the full depth of the specified subgrade thickness. In areas where the subgrade is to be stabilized with aggregate, the subgrade surface may be left uniformly below grade to provide for the addition of the stabilizer aggregate.
3.1.2 A tolerance of plus or minus 0.1\(\pm\) foot from the established grade will be permitted after the subgrade has been graded and compacted to a uniform surface.

3.2 Proof Rolling: The subgrade for roads, parking areas and other locations designated on the plans or by the Engineer shall be proofrolled in accordance with the "Standard Specifications for Roads and Structures", published by the North Carolina Department of Transportation, to test for stability and uniformity of compaction. The subgrade shall be proof rolled in the presence of the Engineer or his designee using a loaded dumptruck or similar pneumatic-tired vehicle with a minimum loaded weight of 25 tons. Any area of the subgrade which pumps or ruts excessively shall be considered unsatisfactory and shall be windrowed and dried or shall receive lime or aggregate stabilization as directed by the engineer. The subgrade shall then be recompacted and proof rolled at no additional cost to the Owner, repeating the above-outlined process until a stable, unyielding and uniformly compacted subgrade is provided.

3.3 Aggregate Stabilized Subgrade: Where the existing soil is incapable of providing adequate foundation for roadways or structures or where called for on the plans, the subgrade may be stabilized using aggregate. The treatment of subgrade soils with aggregate shall be in conformance with the "Standard Specifications for Roads and Structures" published by the North Carolina Department of Transportation.

4. **METHOD OF MEASUREMENT AND BASIS OF PAYMENT:**

4.1 All work covered by this section shall not be measured and paid for as such but shall be treated as work performed as a part of the lump sum contract except for aggregate stabilized subgrade. This item shall be paid for at the unit price on the bid form.
SECTION 31-25-00

EROSION AND SEDIMENT CONTROL

1. DESCRIPTION:

1.1 Erosion and sedimentation control shall be provided by the Contractor for all areas of the site denuded or otherwise disturbed during construction. The Contractor shall be responsible for all installation, materials, labor, and maintenance of erosion and sediment control devices, as well as removal of temporary erosion and sediment control devices shown on the plans or required to protect all downstream properties, natural waterways, streams, lakes, ponds, catch basins, drainage ditches, roads, gutters, natural buffer zones, and man made structures.

1.2 Erosion and sediment control procedures and facilities shall conform to the "Erosion and Sediment Control Planning and Design Manual" as published by the North Carolina Sedimentation Control Commission and to all applicable local codes or ordinances, whichever is more stringent.

1.3 Related Work: See the following sections for related work.

   1. 32 9200 Seeding and Mulching
   2. 31 2573 Temporary Silt Fence

2. MATERIALS:

2.1 Washed stone to be used in sediment basins shall be of strong, durable nature, resistant to weathering and shall be graded to conform to Standard Size Number 57 as described by the "Standard Specifications for Road and Structures" of latest revision, as published by the North Carolina Department of Transportation.

2.2 Refer to other sections within these specifications as listed in Item 1.3 above for other material specification required in the installation of erosion and sediment control facilities.

3. INSTALLATION:

3.1 General Requirements:

3.1.1 The Contractor shall follow the erosion control construction sequence schedule as shown on the contract drawings, except that should circumstances dictate that extra precaution be taken to prohibit erosion and sedimentation on the project, the Contractor will, at his own expense, take preventative measures as needed.

3.1.2 The Contractor is required to maintain all erosion and sediment control facilities to insure proper performance throughout the construction phase and until such time all disturbed areas are permanently stabilized.

3.1.3 Upon completion of construction or successful permanent stabilization of all areas which were disturbed before or during construction operations or as indicated on the construction drawings, whichever occurs last, the Contractor shall remove all temporary erosion and sediment control devices and facilities from the project site. The Contractor shall retain these items for future use or properly dispose of these items offsite.

3.1.4 The Contractor shall provide temporary or permanent ground cover as called for on the construction plans within fifteen (15) working days after disturbance of any areas on the site.

4. METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

4.1 All work covered by this section shall not be measured but shall be paid for as part of the lump sum contract price for "erosion control"

END OF SECTION
SECTION 31-25-73
TEMPORARY SILT FENCE

1. DESCRIPTION:

1.1 The work covered by this Section consists of the furnishing, installing, maintaining, replacing as needed, and removing of temporary silt fence. The Contractor shall furnish all equipment, tools, labor and materials necessary to complete the work in accordance with the plans and specifications. All materials and procedures shall conform to the "Standard Specifications for Roads and Structures", of latest revision, published by the North Carolina Department of Transportation or Section 6.62 of the "Erosion and Sediment Control Planning and Design Manual", published by the North Carolina Sediment Control Commission and all local codes and ordinances, whichever is more stringent.

2. MATERIALS:

2.1 General Requirements:

2.1.1 Temporary silt fence shall be a water permeable filter type fence for the purposes of removing suspended particles from the water passing through it.

2.2 Posts:

2.2.1 Steel posts must be used. Steel posts shall be at least 5 feet in length, approximately 1-3/8 inches wide measured parallel to the fence, and have a minimum weight of 1.25 lb/ft of length. The post shall be equipped with an anchor plate having a minimum area of 4.0 square inches, and shall have a means of retaining wire and fabric in the desired position without displacement.

2.3 Woven Wire Fence:

2.3.1 Wire fence fabric shall be at least 32 inches high, and shall have at least 6 horizontal wires. Vertical wires shall be spaced 12 inches apart. The top and bottom wires shall be at least I0 gage. All other wires shall be at least 12-1/2 gage.

2.4 Silt Fence Filter Fabric:

2.4.1 Filter fabric shall meet the requirements of Type 3 Engineering Fabric, Class A or B, per the "Standard Specifications for Roads and Structures" of latest revision, published by the North Carolina Department of Transportation.

2.5 Wire Staples:

2.5.1 Wire staples shall be a No. 9 staple and shall be at least 1½ inches long.

3. Installation:

3.1 General Requirements:

3.1.1 The Contractor shall install temporary silt fence as shown on the plans, generally along a consistent contour line. The silt fence shall be constructed at the locations shown on the plans and at all other locations necessary to prevent sediment transport, as directed by the Engineer.

3.1.2 Class A synthetic filter fabric may be used only in conjunction with woven wire fence fabric backing. Filter fabric shall be attached to the wire fence fabric by wire or other acceptable means.
3.1.3 Class B synthetic filter fabric may be used without the woven wire fence fabric backing, subject to the following conditions:

3.1.4 Post spacing is reduced to a maximum of 6 feet.

3.1.5 The proposed fabric has been approved by the Engineer as being suitable for use without the woven wire fence fabric backing.

3.1.6 Fence posts shall be inclined toward the runoff source at an angle of not more than 20° from vertical.

3.1.7 Posts shall be installed so that no more than 3 feet of the post shall protrude above the ground. Where possible, the filter fabric from a continuous roll cut to the length of the barrier shall be used to avoid joints. When joints are necessary, securely fasten the filter cloth only at a support post with overlap to the next post. At the time of installation, the fabric will be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.

3.2 Maintenance and Removal:

3.2.1 The Contractor shall inspect temporary silt fences at least once a week and after each rainfall and shall make any required repairs and remove and dispose of silt accumulation immediately. Should the fabric of the silt fence collapse, tear, decompose or become ineffective, the Contractor will replace it promptly at his own expense. The Contractor shall remove sediment deposits as necessary to provide adequate storage volume for the next rain and to reduce pressure on the fence.

3.2.2 The Contractor shall remove all temporary silt fence and associated appurtenances once all disturbed areas upland of the fence are properly and satisfactorily stabilized as called for on the plans.

4. METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

There will be no separate measurement for payment made for any work covered by these Specifications. Payment for all work in this portion of the project will be made as part of the lump sum contract price for "erosion control".

END OF SECTION
SECTION 31-31-16
TERMITE CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Chemical soil treatment.

1.02 RELATED REQUIREMENTS
A. Section 03-30-00 - Cast-in-Place Concrete: Vapor barrier placement under concrete slab-on-grade.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
B. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.
C. Product Data: Submit manufacturers’ data on manufactured products showing compliance with specified requirements.
D. Test Reports: Indicate regulatory agency approval reports when required.
E. Test Reports: Submit termite-resistant sheet manufacturer's summary of independent laboratory and field testing for effectiveness in subterranean termite exclusion.
F. Manufacturer’s Certificate: Certify that toxicants meet or exceed specified requirements.
G. Certificate of compliance from authority having jurisdiction indicating approval of toxicants.
H. Manufacturer’s Application Instructions: Indicate caution requirement.
I. Record and document moisture content of soil before application.
J. Maintenance Data: Indicate re-treatment schedule.
K. Warranty: Submit warranty and ensure that forms have been completed in Owner’s name.

1.05 QUALITY ASSURANCE
A. Installer Qualifications: Company specializing in performing this type of work and:
   1. Having minimum of five (5) documented experience.
   2. Approved by manufacturer of treatment materials.
   3. Licensed in North Carolina.

1.06 WARRANTY
A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.
B. Provide five year installer's warranty against damage to building caused by termites.
   1. Include coverage for repairs to building and to contents damaged due to building damage. Repair damage and, if required, re-treat.
   2. Inspect annually and report in writing to Owner. Provide inspection service for five years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 CHEMICAL SOIL TREATMENT
A. Toxicant Chemical: EPA (Title 7, United States Code, 136 through 136y) approved; synthetically color dyed to permit visual identification of treated soil.
B. Diluent: Recommended by toxicant manufacturer.
C. Manufacturers:
   4. Substitutions: See Section 01-60-00 - Product Requirements.
D. Mixes: Mix toxicant to manufacturer's instructions.
PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.
   B. Verify final grading is complete.

3.02 APPLICATION - CHEMICAL TREATMENT
   A. Comply with requirements of U.S. EPA and applicable state and local codes.
   B. Spray apply toxicant in accordance with manufacturer's instructions.
   C. Apply toxicant at following locations:
      1. Under Slabs-on-Grade.
      2. At Both Sides of Foundation Surface.
      3. Soil Within 10 feet of Building Perimeter For a Depth of 2 feet.
   D. Under slabs, apply toxicant immediately prior to installation of vapor barrier.
   E. At foundation walls, apply toxicant immediately prior to finish grading work outside foundations.
   F. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.
   G. Re-treat disturbed treated soil with same toxicant as original treatment.
   H. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

3.03 PROTECTION
   A. Do not permit soil grading over treated work.
   B. Protect sheet materials from damage after completed installation. Repair damage with manufacturer's recommended products and according to the manufacturer's written instructions.

END OF SECTION
SECTION 32-58-00
PAVEMENT MARKING

1. DESCRIPTION:

1.1 The pavement marking work covered by this section consists of preparing the pavement surface, developing layout patterns and applying the pavement markings as called for on the plans or as directed by the Engineer. The Contractor shall furnish all equipment, tools, labor and materials necessary to complete the work in accordance with the plans and specifications. All pavement marking material and installation shall conform "Standard Specifications for Roads and Structures" of latest revision, published by the North Carolina Department of Transportation.

2. MATERIALS:

2.1 Material Requirements: Materials shall meet NCDOT "Standard Specifications for Roads and Structures".

3. INSTALLATION:

3.1 Conform to the NCDOT "Standard Specifications for Roads and Structures".

4. METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

4.1 There will be no separate measurement for payment made for any work covered by these specifications as payment for all work in this portion of the project shall be at the lump sum contract price.

END OF SECTION
SECTION 32 9200
SEEDING AND MULCHING

1. DESCRIPTION:

1.1 The work covered by this section consists of furnishing all labor, materials, and equipment to perform all necessary operations to topsoil, fine grade, fertilize, mulch and maintain temporary and permanent seeding of all graded, cleared, or disturbed areas during construction. The work covered by this section shall be in conformance the "Standard Specifications for Roads and Structures" of latest revision, published by the North Carolina Department of Transportation and with Section 6.11 of the "Erosion and Sediment Control Planning and Design Manual" published by the Land Quality Section of the North Carolina Department of Natural Resources and Community Development unless otherwise stated herein.

1.2 Related Work: See following sections for related work:

1. 31 1100 - Clearing and Grubbing.
2. 31 2000 - Unclassified Excavation and Grading.
3. 31 2500 - Erosion and Sediment Control.

2. MATERIALS:

2.1 Topsoil: Topsoil shall be from stockpiles created from stripping and required excavation. Should additional topsoil be required in excess of that obtained from stripping and excavation, the contractor shall obtain material from other sources on the site where authorized by the Owner, or from approved sources off the site. The topsoil shall be natural, friable soil, possessing characteristics of representative soils in the vicinity which produce heavy growths of crops of grass. It shall be obtained from naturally well-drained areas, shall be reasonably free from subsoil, brush, objectionable weeds, and other litter and shall be free from toxic substances, clay lumps, stones, roots and other objects larger than 1 inch in diameter, or any other material which might be harmful to plant growth or be a hindrance to grading, planting, and maintenance operations.

2.2 Fertilizer: Fertilizer shall be the product of an approved commercial fertilizer manufacturer and shall be 5-10-5 grade, uniform in composition, free-flowing material suitable for application with approved standard equipment. The fertilizer shall conform to the applicable State fertilizer laws and shall be delivered to the site in bags or other convenient containers each fully labeled and bearing the name, trademark, and warranty of the producer.

2.3 Lime: Lime shall be ground limestone containing not less than 85% of total carbonates and shall be ground to such fineness that at least 50% will pass through a 100-mesh sieve and at least 90% will pass through a 20-mesh sieve. Coarser materials will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing the 100-mesh sieve, but no additional payment will be made for the increased quantity.

2.4 Mulch: Mulch shall be straw from wheat or oats. Materials for securing mulch may be one of the following:

2.4.1 Mulch Netting: Lightweight plastic, cotton, jute, wire or paper nets shall be used.

2.4.2 Peg and Twine: Bailing twine and soft wood pegs 1/2" x 1" x 12".

2.4.3 Liquid Mulch Binder: RC-2 cut back asphalt conforming to the requirements of Federal Specifications SS-A671A, and asphalt emulsion shall conform to the requirements of Federal Specification SS-A-674, Type V.
2.5 Seed: Seed used shall bear the official "certified seed" label inspected by North Carolina Crop Improvement Association. Seed which has become wet, moldy, or otherwise damaged in transit or storage will not be acceptable. The seed used shall be that shown in seeding schedule specified herein or on the plans.

3. INSTALLATION:

3.1 Seedbed Preparation:

3.1.1 Clearing: Prior to or during grading and tillage operations, the ground surface shall be well drained, cleared of all brush, roots, stones larger than 2 inches in diameter, or any other material which may hinder proper grading, tillage, or subsequent maintenance operations.

3.1.2 Fine Grading: Areas to be seeded shall be graded as shown on the drawings or as directed and all surfaces shall be left in an even and properly compacted condition so as to prevent the formation of depressions where water will stand. Areas to be topsoiled shall be graded to a smooth surface and to a grade that will allow topsoiling to finished grade.

3.1.3 Topsoiling: Immediately prior to placing topsoil, the subgrade, where excessively compacted by traffic or other causes, shall be loosened by scarifying to a depth of at least 2 inches to permit bonding of the topsoil to the subgrade. Topsoil shall be uniformly spread by approved equipment in sufficient quantity to provide a compacted layer of 4 inches in thickness over the designated areas and in such manner that planting can proceed with little additional soil preparation or tillage. Topsoil shall not be placed when the subgrade is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to the proposed planting or to proper grading. Topsoil shall be graded to the lines indicated or as directed and any irregularities in the surface resulting from topsoiling or other operations shall be corrected to prevent formations of depressions where water will stand.

3.1.4 Tillage: After topsoiled areas required to be seeded have been brought to the grades shown on the plans and as specified, they shall be thoroughly tilled to a depth of 3 inches by approved methods, until the condition of the soil is acceptable to the Engineer. Any objectionable undulations or irregularities in the surface resulting from tillage or other operations shall be removed before planting operations are begun. The work shall be performed only during periods when satisfactory results are likely to be obtained. When conditions are such, by reason of drought, excessive moisture or other factors that results are not likely to be satisfactory, the Engineer will stop the work and it shall be resumed only when, in his opinion, the desired results are likely to be obtained.

3.2 Limestone, Fertilizer and Seed:

3.2.1 General: Seasonal limitations for seeding operations; the kinds and grades of fertilizers; the kinds of seed; the rates of application of limestone, fertilizer, and seed shall be as shown in the seeding schedule.

3.2.2 Equipment to be used for the application, covering, or compaction of limestone, fertilizer, and seed shall have been approved by the Engineer before being used on the project. Approval may be revoked at any time if equipment is not maintained in satisfactory working condition, or if the equipment operation damages the seed.

3.2.3 Limestone, fertilizer, and seed shall be applied within 24 hours after completion of seedbed preparation unless otherwise permitted by the Engineer, but no limestone or fertilizer shall be distributed and no seed shall be sown when the Engineer determines that weather and soil conditions are unfavorable for such operations.

3.2.4 During the application of fertilizer, adequate precautions shall be taken to prevent damage to structures or any other appurtenances. The Contractor shall either provide adequate covering or change methods of application as required to avoid such damage. When such damage occurs, the Contractor shall repair it, including any cleaning that may be necessary.

3.2.5 Limestone and Fertilizer: Limestone may be applied as a part of the seedbed preparation, provided it is immediately worked into the soil. If not so applied, limestone and fertilizer shall be distributed uniformly over the prepared seedbed at a specified rate of application and then harrowed, raked, or otherwise thoroughly worked or mixed into the seedbed.
If liquid fertilizer is used, storage containers for the liquid fertilizer shall be located on the project and shall be equipped for agitation of the liquid prior to its use. The storage containers shall be equipped with approved measuring or metering devices which will enable the Engineer to record at any time the amount of liquid that has been removed from the container. Application equipment for liquid fertilizer, other than a hydraulic seeder, shall be calibrated to insure that the required rate of fertilizer is applied uniformly.

**Seeding:**
Seed shall be distributed uniformly over the seedbed at the rate indicated in the seeding schedule, and immediately harrowed, dragged, raked, or otherwise worked so as to cover the seed with a layer of soil. The depth of covering shall be as directed by the Engineer. If two kinds of seed are to be used which require different depths of covering, they shall be sown separately.

When a combination seed and fertilizer drill is used, fertilizer may be drilled in with the seed after limestone has been applied and worked into the soil. If two kinds of seed are being used which require different depths of covering, the seed requiring the lighter covering may be sown broadcast or with a special attachment to the drill, or drilled lightly following the initial drilling operation.

When a hydraulic seeder is used for application of seed and fertilizer, the seed shall not remain in water containing fertilizer for more than 30 minutes prior to application unless otherwise permitted by the Engineer.

Immediately after seed has been properly covered, the seedbed shall be compacted in the manner and degree approved by the Engineer.

Modifications: When adverse seeding conditions are encountered due to steepness of slope, height of slope, or soil conditions, the Engineer may direct or permit that modifications be made in the above requirements which pertain to incorporating limestone into the seedbed; covering limestone, seed, and fertilizer; and compaction of the seedbed.

Such modifications may include but not be limited to the following:

3.2.12.1 The incorporation of limestone into the seedbed may be omitted on (a) cut slopes steeper than 2:1 (b) on 2:1 cut slopes when a seedbed has been prepared during the excavation of the cut and is still in an acceptable condition; or (c) on areas of slopes where the surface of the area is too rocky to permit the incorporation of the limestone.

3.2.12.2 The rates of application of limestone, fertilizer, and seed on slopes 2:1 or steeper or on rocky surfaces may be reduced or eliminated.

3.2.12.3 Compaction after seeding may be reduced or eliminated on slopes 2:1 or steeper, on rocky surfaces, or on other areas where soil conditions would make compaction undesirable.

**Mulch:**

**General:** All seeded areas shall be mulched unless otherwise indicated on the plans or directed by the Engineer. Application rate of mulch shall be indicated in seeding schedule.

**Mulching:** Mulch shall be applied within 36 hours after the completion of seeding unless otherwise permitted by the Engineer. Care shall be exercised to prevent displacement of soil or seed or other damage to the seeded area during the mulching operations.

Mulch shall be uniformly spread by hand or by approved mechanical spreaders or blowers which will provide an acceptable application. An acceptable application will be that which will allow some sunlight to penetrate and air to circulate but also partially shade the ground, reduce erosion, and conserve soil moisture.
3.3.4 Mulch Binding: Mulch shall be held in place using devices approved by the Engineer as per manufacturers recommendations. During application, the Contractor shall take adequate precautions to prevent damage to structures or appurtenances.

3.4 Maintenance:

3.4.1 General: The Contractor shall be responsible for the proper care and maintenance of the seeded areas until the work under the entire contract has been completed and accepted by the Engineer. Maintenance shall consist of repair and replacement of eroded areas, watering, re-fertilizing, re-liming, re-seeding, and remulching as necessary to provide an even, fixed growth of grass. In addition, the Contractor shall provide protection against traffic and shall erect the necessary barricades and warning signs immediately after planting is completed.

3.4.2 Mowing: The seeded areas shall be mowed with approved mowing equipment as per seeding schedule. If weeds or other undesirable vegetation threaten to smother the planted species, such vegetation shall be removed at no cost to the Owner.

3.5 Inspection and Testing:

3.5.1 Fertilizer and Lime: The Engineer shall be furnished with duplicate copies of invoices for all fertilizer and lime used on the project. Invoices for fertilizer shall show the grade furnished. Invoices for lime shall show total minimum carbonates and minimum percentages of the material furnished that pass 100-mesh and 20-mesh sieve. Upon completion of the project, a final check of the total quantities of fertilizer and lime used will be made against the total area topsoiled and seeded, and if the minimum rates of application have not been met, the Engineer may require the distribution of additional quantities of these materials to make up the minimum application specified at no additional cost to the Owner.

3.5.2 Seed: The Engineer shall be furnished duplicate signed copies of a statement from the Vendor, certifying that each container of seed delivered is fully labeled and in full accordance with the specifications in this section and the seeding schedule.

4 METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

4.1 There will be no separate measurement for payment made for any work covered by these Specifications, as payment for all work in this portion of the project shall be made as part of the lump sum contract price.

END OF SECTION
SECTION 33-30-00
GRAVITY SEWERS

1. DESCRIPTION:

1.1 The Contractor shall furnish all labor, materials, equipment and supplies and shall perform all work necessary for the construction of the sewers, complete, tested and ready for use. The sewers shall be constructed to the lines and grades shown and shall be the size shown on the plans. The work shall conform to all requirements of the Town of Boone Public Utilities Department, even though the sewer may not be a public sewer. The most current Town of Boone Public Utility specifications are incorporated by reference.

2. MATERIALS:

2.1 All materials shall conform to the most current Town of Boone Construction Standards and Specifications.

3. INSTALLATION:

3.1 The installation shall conform to the most current Town of Boone Construction Standards and Specifications.

4. METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

4.1 All work except trench rock excavation covered by this section for sewerline work shall not be measured but paid for as part of the lump sum contract price.

4.2 The quantity of rock excavation to be paid for will be the number of cubic yards of rock measured in a rectangular prism along the vertical centerline of the trench. The maximum width of the prism shall be equal to the nominal diameter of the pipe plus two feet. The height of the prism shall be the average height in feet of the rock profile as measured to the nearest 0.1 foot from a point six inches below the pipe barrel to the top of the rock. The length of the prism shall be the number of linear feet of trench rock measured for payment along the vertical centerline of the trench. The quantity of rock excavation will be paid for at the contract unit price per cubic yard for "Rock Excavation in Trench". The above price and payment will be full compensation for all work covered by this Article, including but not limited to drilling; wedging; matting and blasting; excavating the rock; disposing of excavated rock; and any incidentals necessary to satisfactorily complete the work.

END OF SECTION
SECTION 33-11-13
WATER DISTRIBUTION PIPING

1. DESCRIPTION:

1.1 The Contractor shall furnish all labor, materials, equipment and supplies and shall perform all work necessary for the construction of the waterlines, complete, tested and ready for use. The waterlines shall be constructed to the lines and grades shown and shall be the size shown on the plans. The work shall conform to all requirements of the Town of Boone Public Utilities Department, even though the water may not be a public waterline. The most current Town of Boone Public Utility specifications are incorporated by reference.

2. MATERIALS:

2.1 The pipe and fittings shall be Polyvinyl Chloride (CPVC) pressure class 150 conforming to the requirements of AWWA C900 for potable use.

3. INSTALLATION:

3.1 JOINTS: Pipe joints shall be gasket, push-on type. Gaskets shall be part of a complete fitting manufacturer and shall not adversely affect the potable qualities of the water to be transported. The gasketed joint shall meet the laboratory performance requirements specified in ASTM D3139.

3.2 EMBEDMENT REQUIREMENTS: The embedment requirement shall be in accordance with AWWA Standard C605 for “Und Polyvinyl Chloride (CPVC) Pressure Pipe and Fittings for Water”.

3.3 TESTING: A test pressure of 100 psi shall be used for the waterline. The test duration shall be 2 hours for a combined pressure and leakage test. The system should be raised to the specified pressure by means of a pump connected to the pipe using potable water. The test pressure shall be maintained by additional pumping (if necessary) and all fittings and valves are to be examined for leakage. Air tests are forbidden.

3.4 CHLORINATION: All water lines shall be properly chlorinated before being placed in service. Any pipe subjected to contaminating materials shall be treated as directed by the engineer. Should such treatment fail to cleanse the pipe, the Contractor shall replace the pipe at no cost to the Owner.

The Contractor shall perform the chlorination of a completed line in the following manner:

(1) Taps will be made at the control valve located in the upstream end of the line and at all extremities of the line. These taps shall be located in such a manner as to allow high-test hypochlorite (HTH) solution to be introduced into all parts of the line.

(2) A water solution containing HTH (65%) available chlorine shall be introduced into the line by regulated pumping at the control-valve tap. The solution shall contain a concentration of HTH that will produce a uniform concentration of 100 ppm total chlorine immediately after the introduction of the solution into the line has been completed.
The following quantities of 65% HTH compound per 1000 feet of line is required to produce a solution concentration of 100 ppm total chlorine as stated above:

<table>
<thead>
<tr>
<th>Pipe Size (Inches)</th>
<th>65% HTH (Pounds per 1000 feet of line)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.21</td>
</tr>
<tr>
<td>4</td>
<td>0.84</td>
</tr>
<tr>
<td>6</td>
<td>1.88</td>
</tr>
<tr>
<td>8</td>
<td>3.35</td>
</tr>
<tr>
<td>10</td>
<td>5.70</td>
</tr>
<tr>
<td>12</td>
<td>7.53</td>
</tr>
</tbody>
</table>

The HTH solution shall be circulated in the line by opening the control valve and systematically manipulating hydrants and taps at the line extremities. The HTH solution must be pumped into the line at a constant rate for each discharge rate in order that a uniform concentration will be maintained in the line.

Water laterals shall be sterilized by the Contractor using methods acceptable to the Engineer. The Contractor shall bear the same responsibility for water laterals as he bears for water mains and appurtenances, including any costs for corrective measures needed to comply with the bacteriological requirements.

The HTH Solution shall remain in the lines for a minimum of 24 hours. If directed by the Engineer the HTH solution shall remain in the lines longer than 24 hours. At the end of this period the free residual chlorine shall be a minimum of 10 ppm or the lines shall be rechlorinated.

3.5 FLUSHING AND BACTERIOLOGICAL SAMPLING:

The Contractor may proceed with flushing of the lines after the 24-hour or longer period outlined above, provided the free residual chlorine analysis is satisfactory. The flushing shall continue until a check shows that the lines contain only the normal chlorine residual.

The Engineer shall collect water samples for bacteriological analysis 24 hours after flushing of the lines is completed. The Contractor shall furnish any reasonable amount of assistance that may be required by the Engineer to secure these samples.

Bacteriological test results will be available 24 hours after the water samples have been submitted to the State’s Water Testing Laboratories.

If test results are unsatisfactory, the Contractor shall immediately rechlorinate the lines and proceed with such measures as are necessary to secure sterile lines. All laterals shall be rechlorinated during this process.

At the satisfactory completion of the bacteriological requirements, the lines shall be placed into service under the supervision of the Engineer. All valves shall be fully opened.

4. METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

4.1 All work covered by this section for waterline work shall not be measured but paid for as part of the lump sum contract price.

END OF SECTION