



RAYMOND
ENGINEERING

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COA# C-4282

SPECIFICATIONS FOR

ROOF REPLACEMENT AT DIVISION 4 DISTRICT OFFICE

GL: 52199012 COST CENTER: 150538 SCO-ID #: 17-18007-01A

2670 US 70
GOLDSBORO, NC 27530

Prepared For
**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

RAYMOND ENGINEERING PROJECT NO. RAL1004.015

Prepared By
RAYMOND ENGINEERING-GEORGIA, INC.
RALEIGH, NORTH CAROLINA
C.O.A. C-4282

June 11, 2018

CD SET

Adam Cook, RRO

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**STATE OF NORTH CAROLINA
STANDARD FORM OF INFORMAL CONTRACT
AND GENERAL CONDITIONS**

FOR

**ROOF REPLACEMENT
AT
DIVISION 4 DISTRICT OFFICE
2670 US 70, Goldsboro, NC 27530
GL: 52199012 Cost Center: 150538
SCO ID# 17-18007-01A**

SCOPE OF WORK

The project involves the replacement of roof coverings at the referenced location. After removing the existing membrane flashings, sheet metal features, and shingles, a new coverboard, PVC membrane, sheet metal features, and composition shingles will be installed. Approximately 2,680 SF of roof area is included.

NOTICE TO BIDDERS

Sealed bids for this work will be received by:

Mr. Paul Stankiewicz
North Carolina Department of Transportation

Street Address: 1 South Wilmington Street
Raleigh, NC 27601

USPS Mailing Address: 1557 Mail Service Center
Raleigh, NC 27699-1525

Office: 919-707-2929

up to 3:00 PM, on 7/31/2018 and immediately thereafter publicly opened and read aloud.

Complete electronic plans and specification and contract documents can be obtained from

Raymond Engineering-Georgia, Inc.
316 West Millbrook Road; Suite 201
Raleigh, NC 27609
Office: 919-872-7866
Adam.cook@raymondllc.com

Contractors are hereby notified that they must have proper license under the State laws governing their respective trades and that North Carolina General Statute 87 will be observed in receiving and awarding contracts. General Contractors must have general license classification for S-Roofing.

No bid may be withdrawn after the opening of bids for a period of 30 days. The Owner reserves the right to reject any or all bids and waive informalities. Bids shall be made only on the BID/ACCEPTANCE form provided herein with all blank spaces for bids properly filled in and all signatures properly executed.

Please note on the envelope – **Sealed Bid: Attn: Mr. Paul Stankiewicz**

ROOF REPLACEMENT
AT
DIVISION 4 DISTRICT OFFICE
GL: 52199012 Cost Center: 150538
SCO ID# 18-18007-01
Tuesday, July 31st, 2018 at 3:00 PM
(Contractor)
(License Number)

A pre-bid meeting will be held at 2670 US 70, Goldsboro, NC 27530 at **10:00 AM on Thursday, July 12th, 2018**. The meeting will address project specific questions, issues, bidding procedures and bid forms.

Each proposal shall be accompanied by the appropriate Minority Business Forms.

BID/ACCEPTANCE FORM

for

**ROOF REPLACEMENT
AT
DIVISION 4 DISTRICT OFFICE
GL: 52199012 Cost Center: 150538
SCO ID# 18-18007-01**

We are in receipt of Addendum _____1_____2 _____3 _____4

The undersigned, as bidder, proposes and agrees if this bid is accepted to contract with the State of North Carolina through the North Carolina Department of Transportation for the furnishing of all materials, equipment, and labor necessary to complete the construction of the work described in these documents in full and complete accordance with plans, specifications, and contract documents, and to the full and entire satisfaction of the State of North Carolina and the North Carolina Department of Transportation for the sum of:

TOTAL BASE BID _____ Dollars (\$) _____)

UNIT PRICES

This work is being bid based upon the Contractor's lump sum prices, unit prices, and the quantities for unit priced items noted in the specifications. 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.

Should the actual quantities of work be increased or decreased for any of the unit priced items, the Unit Prices shown will be used to adjust the contract price (increase or decrease) throughout the life of the contract.

No. 1 Replace any deteriorated or damaged wood blocking

Base Bid Quantity is 20 b.f. Unit Price (\$) _____ per b.f.

No. 2 Replace any deteriorated or damaged plywood decking

Base Bid Quantity is 16 s.f. Unit Price (\$) _____ per s.f.

No. 3 Repair of lintels above existing windows

Base Bid Quantity is 80 l.f. Unit Price (\$) _____ per l.f.

No. 4 Replace sealant joints at CMU walls

Base Bid Quantity is 150 l.f. Unit Price (\$) _____ per l.f.

SUBMIT THREE (3) ORIGINALS OF THIS DOCUMENT WITH YOUR BID.

Bid Form Page 1 of 3

Respectively submitted this _____ day of _____ 20__

(Contractor's Name)

Federal ID#: _____

By: _____

Witness: _____

Title: _____

(Owner, partner, corp. Pres. Or Vice President)

(Proprietorship or Partnership)

Address: _____

Attest: *(corporation)*

Email Address: _____

(Corporate Seal)

By: _____ License #: _____

Title: _____
(Corporation, Secretary./Ass't Secretary.)

ACCEPTED by the STATE OF NORTH CAROLINA
through the _____ Department of Transportation _____

Total amount accepted by the owner, including base bid and bid alternates: _____

BY: _____ TITLE: _____

SUBMIT THREE (3) ORIGINALS OF THIS DOCUMENT WITH YOUR BID.
Bid Form Page 2 of 3

**ROOF SYSTEM MANUFACTURER'S CERTIFICATE
for**

**Roof Replacement at Division 4 District Office
GL: 52199012 Cost Center: 150538 SCO-ID #: 17-18007-01A**

TO: The State of North Carolina
Through the North Carolina Department of Transportation

The undersigned manufacturer of the specified roof system and related roof system materials, is familiar with local weather and climate; is aware of the environmental conditions to which the roof membrane and related roof system materials will be subjected; has reviewed the plans and technical specifications for this project; and hereby certifies that:

- (1) their roof system(s) and component materials are suitable for the roof of this project,
- (2) their roof membrane and related roof system materials are suitable for use with each other and that the new roof membrane and new roof system materials specified will be included in the membrane manufacturer's warranty as specified (see specification section 01 78 36),
- (3) the roofing contractor named below is an authorized applicator of their roof system and related roof system materials, has been trained by the manufacturer in the installation of the roof system specified and, subject to the Owner's award of construction contract, is authorized to install said system,
- (4) the roof membrane manufacturer will provide inspection upon completion.

Contractor: _____
Name

Address

Manufacturer: _____
Name

Address

Authorized Signature

Date

***SUBMIT THREE (3) ORIGINALS OF THIS DOCUMENT WITH YOUR BID.
Bid Form Page 3 of 3***

GENERAL CONDITIONS

1. GENERAL

It is understood and agreed that by submitting a bid that the Contractor has examined these contract documents, drawings and specifications and has visited the site of the Work and has satisfied himself relative to the Work to be performed.

2. DEFINITIONS

Owner: "Owner" shall mean, The State of North Carolina through the _____ Department of Transportation _____.

Contractor: "Contractor" shall mean the entity that will provide the services for the Owner.

Designer: 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 responsible for preparing the project plans and specifications. They will be referred to hereinafter as if each were of the singular number, masculine gender.

Contract Documents: "Contract Documents" shall consist of the Notice 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 bid; the contract; the performance bond if applicable; and insurance certificates. All of these items together form the contract.

INTENT AND EXECUTION OF DOCUMENTS

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.

In such cases where the nature of the work requires clarification by the Designer/ Owner, the Designer/ Owner shall furnish such clarification. Clarifications and drawings shall be consistent with the intent of the Contract Documents, and shall become a part thereof.

4. AS-BUILT MARKED-UP CONSTRUCTION DOCUMENTS

Contractor shall provide one complete set of legible "as-built" marked-up construction drawings and specifications recording any and all changes made to the original design during the course of construction. In the event no changes occurred, submit construction drawings and specifications set with notation "No Changes." The Designer/Owner must receive "As-built" marked-up construction drawings and specifications before the final pay request can be processed.

5. SUBMITTAL DATA

The Contractor awarded the contract shall submit all specified submittals to the Owner/Designer. A minimum number of copies as specified by the owner, of all required submittal data pertaining to construction, performance and general dimensional criteria of the components listed in the technical specifications shall be submitted. No material or equipment shall be ordered or installed prior to written approval of the submittals by the Designer/Owner. Failure to provide submittal data for review on equipment listed in the technical specifications will result in removal of equipment by the Contractor at his expense if the equipment is not in compliance with the specifications.

6. 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 five (5) days prior to the receipt of bids or by the date specified in the pre bid conference, 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.

7. WORKING DRAWINGS AND SPECIFICATIONS AT THE JOB SITE

The contractor shall maintain, in readable condition at his job site 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 owner, designer or his authorized representative.

The contractor shall maintain at the job site, 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.

8. MATERIALS, EQUIPMENT, EMPLOYEES

- a. The contractor shall, unless otherwise specified, supply and pay for all labor, transportation, materials, tools, apparatus, lights, power, fuel, 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; the designer prior to the opening of bids shall make such approval or disapproval. Alternate materials may be requested after the award if it can clearly be demonstrated that it is an added benefit to the owner and the designer and owner approves.

- e. The designer is the judge of equality for proposed substitution of products, materials or equipment.
- f. If at any time during the construction and completion of the work covered by these contract documents, the language, conduct, or attire 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.
- g. The Contractor shall cooperate with the designer and the owner in coordinating construction activities.
- h. The Contractor shall maintain qualified personnel and effective supervision at the site at all times during the project, and exercise the appropriate quality control program to ensure compliance with the project drawings and specifications. The designer is responsible for determining compliance with the drawings and specifications.

9. CODES, PERMITS AND INSPECTIONS

The Contractor shall obtain the required permits, if required, 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. 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 Owner, he shall bear all cost arising there from.

All work under this contract shall conform to the current North Carolina Building Code and other state and national codes as are applicable.

Projects constructed by the State of North Carolina or by any agency or institution of the State are not subject to county or municipal building codes and may* not be subject to inspection by county or municipal authorities. Where appropriate, the Contractor shall, cooperate with the county or municipal authorities by obtaining building permits. The contractor at no cost may obtain permits to the owner.

All fire alarm work shall be in accordance with the latest State Construction Office (SCO) *Guidelines for Fire Alarm Installation* (NFPA72). Where the contract documents are in conflict with the SCO guidelines, the SCO guidelines shall govern. The Contractor shall be responsible for all the costs for the correction of the work where he installs it in conflict with the latest edition of the SCO *Guidelines for Fire Alarm Installation*.

*Inspection and certification of compliance by local authorities is necessary if an architect or engineer was not employed on the project, or if the plans and specifications were not approved and the construction inspected by the State Construction Office.

10. PROTECTION OF WORK, PROPERTY, THE PUBLIC AND SAFETY

- 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, except as indicated in the Supplemental General Conditions.

- 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 and owner.
- d. The contractor shall protect all trees and shrubs designated to remain in the vicinity of the operations by building substantial boxes around it. 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.
- f. The contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926, published in Volume 39, Number 122, Part II, June 24, 1974, *Federal Register*), and revisions thereto as adopted by General Statutes of North Carolina 95-126 through 155.
- i. 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 13(b).
- j. Any and all costs associated with correcting damage caused to adjacent properties of the construction site or staging area shall be borne by the contractor. These costs shall include but not be limited to flooding, mud, sand, stone, debris, and discharging of waste products.

11. SUBCONTRACTS AND SUBCONTRACTORS

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.

12. CONTRACTOR-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. The Owner reserves the right to limit the amount of portions of work to be subcontracted as hereinafter specified.

13. CHANGES IN THE WORK AND CLAIMS FOR EXTRA COST

- 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 from the designer, countersigned by the owner authorizing such change. No claim for adjustments of the contract price shall be valid unless this procedure is followed. Should a claim for extra compensation by the contractor be denied by the designer or the owner, the contractor may pursue his claim in accordance with G.S. 143-135.3.

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 specified by the designer or owner, 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, or subsequently agreed to by the Contractor, Designer, Owner and State Construction Office 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 c (2) herein. If neither party elects to proceed under c (2), 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 be as follows: all contractors (the single contracting entity (prime), his subcontractors(1st tier subs), or their sub-subcontractors (2nd tier subs, 3rd tier subs, etc.) shall be allowed a maximum of 10% on work they each self-perform; the prime contractor shall be allowed a maximum of 5% on contracted work of his 1st tier sub; 1st tier, 2nd tier, 3rd tier, etc. contractors shall be allowed a maximum of 2.5% on the contracted work of their subs. ; 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 work;
 2. The actual costs of labor expended on the project site; labor expended in coordination, change

order negotiation, record document maintenance, shop drawing revision or other tasks necessary to the administration of the project are considered overhead whether they take place in an office or 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 thirty percent (30%) 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 work;
5. The actual costs of premiums for bonds, insurance, permit fees and sales or use taxes related to the work.

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 unit cost breakdown showing method of arriving at net cost as defined above.
- g. Change orders shall be submitted by the contractor in writing to the owner/designer for review and approval. The contractor will provide such proposal and supporting data in suitable format. The designer shall verify correctness. Delay in the processing of the change order due to lack of proper submittal by the contractor of all required supporting data shall not constitute grounds for a time extension or basis of a claim. Within fourteen (14) days after receipt of the contractor's accepted proposal including all supporting documentation required by the designer, 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, within seven (7) days of receipt.

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."

- h. 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.
- i. If, during the progress of the work, the owner requests a change order and the contractor's terms are unacceptable, the owner, may require the contractor to perform such work on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the Designer or owner, a correct account of cost together with all proper invoices, payrolls and supporting data. Upon completion of the work a change order will be prepared with allowances for overhead and profit per paragraph d. above and "net cost" and "cost" per paragraph

e. 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.

14. 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 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 (if applicable) of such delay, neglect or default, specifying the same, and if the contractor within a period of seven (7) 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 contractor, or the surety (if applicable) shall fail to take over the work to be done under this contract within seven (7) 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 (if applicable). 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 (if applicable) 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 (if applicable) shall be liable and shall pay to the owner the amount of said excess.

15. TERMINATION FOR CONVENIENCE

- a. Owner may at any time and for any reason terminate Contractor's services and work at Owner's convenience, after notification to the contractor in writing via certified mail. Upon receipt of such notice, Contractor shall, unless the notice directs otherwise, immediately discontinue the work and placing of orders for materials, facilities and supplies in connection with the performance of this Agreement.
- b. Upon such termination, Contractor shall be entitled to payment only as follows: (1) the actual cost of the work completed in conformity with this Agreement; plus, (2) such other costs actually incurred by Contractor as approved by Owner; (3) plus ten percent (10%) of the cost of the balance of the work to be completed for overhead and profit. There shall be deducted from such sums as provided in this subparagraph the amount of any payments made to Contractor prior to the date of the termination of this Agreement. Contractor shall not be entitled to any claim or claim of lien against Owner for any additional compensation or damages in the event of such termination and payment.

16. 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 seven (7) 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.

17. REQUESTS FOR PAYMENT

Contractor shall refer to the Supplemental General Conditions for specific directions on payment schedule, procedures and the name and address where to send applications for payments for this project. It is imperative that invoices be sent only to the above address in order to assure proper and timely delivery and handling.

The Designer/Owner will process all Contractor pay requests as the project progresses. The Contractor shall receive payment within thirty (30) consecutive days after Designer/Owner's approval of each pay request. Payment will only be made for work performed as determined by the Designer/Owner.

Retainage:

- a. Retainage withheld will not exceed 5% at any time.
- b. The same terms apply to general contractor and subcontractors alike.
- c. Following 50% completion of the project no further retainage will be withheld if the contractor/subcontractor has performed their work satisfactorily.
- d. Exceptions:
 1. Owner/Contractor can reinstate retainage if the contractor/subcontractor does not continue to perform satisfactorily.
 2. Following 50% completion of the project, the owner is authorized to withhold additional retainage from a subsequent periodic payment if the amount of retainage withheld falls below 2.5%.

Final payment will be made within forty-five (45) consecutive days after acceptance of the work, receipt of marked-up "as-built" drawings and specifications and the submission both of notarized Contractor's affidavit and final pay request. All pay requests shall be submitted to the Designer/Owner for approval.

THE CONTRACTOR'S FINAL PAYMENT AFFIDAVIT SHALL STATE: "THIS IS TO CERTIFY THAT ALL COSTS OF MATERIALS, EQUIPMENT, LABOR, SUBCONTRACTED WORK, AND ALL ELSE ENTERING INTO THE ACCOMPLISHMENT OF THIS CONTRACT, INCLUDING PAYROLLS, HAVE BEEN PAID IN FULL."

18. PAYMENTS WITHHELD

The designer with the approval of the Owner may withhold payment for the following reasons:

- a. Faulty work not corrected.
- b. The unpaid balance on the contract is insufficient to complete the work in the judgment of the designer.
- c. To provide for sufficient contract balance to cover liquidated damages that will be assessed.
- d. The secretary of the Department of Administration may authorize the withholding of payment for the following reasons:
 - i. Claims filed against the contractor or evidence that a claim will be filed.
 - ii. Evidence that subcontractors have not been paid.

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. As provided in G.S. 143-134.1(e), the owner shall not be liable for interest on payments withheld by the owner for unsatisfactory job progress, defective construction not remedied, disputed work, or third-party claims filed against the owner or reasonable evidence that a third-party claim will be filed.

19. 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 document 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. If endorsements are needed to comply with the notification or other requirements of this article copies of the endorsements shall be submitted with the certificates.

a. Worker's Compensation and Employer's Liability

The contractor shall provide and maintain, until final acceptance, 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, until final acceptance, 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 until final acceptance, 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 sub-subcontractors in the work and shall insure against the perils of fire, wind, rain, flood, 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.

20. ASSIGNMENT

No assignment of the Contractor's obligations or the Contractor's right to receive payment hereunder shall be permitted. However, upon written request approved by the Owner and solely as a convenience to the Contractor, the Owner may: (1) forward the Contractor's payment check directly to any person or entity designated by the Contractor, and (2) include any person or entity designated by Contractor as a joint payee on the Contractor's payment check. In no event shall such approval and action obligate the Owner to anyone other than the Contractor, and the Contractor shall remain responsible for fulfillment of all contract obligations.

21. CLEANING UP AND RESTORATION OF SITE

The Contractor shall keep the sites and surrounding area reasonably free from rubbish at all times and shall remove debris from the site from time to time or when directed to do so by the Owner. Before final inspection and acceptance of the project, the Contractor shall thoroughly clean the sites, and completely prepare the project and site for use by the Owner.

At the end of construction, the contractor shall oversee and implement the restoration of the construction site to its original state. Restoration includes but not limited to walks, drives, lawns, trees and shrubs, corridors, stairs and other elements shall be repaired, cleaned or otherwise restored to their original state.

22. GUARANTEE

The contractor shall unconditionally guarantee materials and workmanship against patent defects arising from faulty materials, faulty workmanship or negligence for a period of twenty-four (24) months following the final acceptance of the work and shall replace such defective materials or workmanship without cost to the owner.

Where items of equipment or material carry a manufacturer's warranty for any period in excess of twenty-four (24) 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.

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.

Guarantees for roofing workmanship and materials shall be stipulated in the specifications sections governing such roof, equipment, materials, or supplies.

23. STANDARDS

All manufactured items and/or fabricated assemblies subject to operation under pressure, operation by connection to an electric source, or operation involving a connection to a manufactured, natural, or LP gas source shall be constructed and approved in a manner acceptable to the appropriate State inspector which customarily requires the label or re-examination listing or identification marking of appropriate safety standard organization, such as the

American Society of Mechanical Engineers for pressure vessels; the Underwriters Laboratories and/or National Electrical Manufacturers Association for electrically operated assemblies; or the American Gas Association for gas operated assemblies, where such approvals of listings have been established for the type of device offered and furnished. Further, all items furnished shall meet all requirements of the Occupational Safety and Health Act (OSHA), and State and federal requirements relating to clean air and water pollution.

All equipment and products must be independent third party tested and labeled (UL, FM, or CTS) before final connections to Owner services or utilities.

24. 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.

25. 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.

The contractor(s) agree not to discriminate against any employee or applicant for employment because of physical or mental disabilities 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 individuals with such disabilities without discrimination based upon their physical or mental disability in all employment practices.

26. MINORITY BUSINESS PARTICIPATION

GS 143-128.2 establishes a ten percent (10%) goal for participation by minority business in total value of work for each State building project.

For construction contracts with a value of less than \$300,000, the Owner has the responsibility to make a good faith effort to solicit minority bids and to attain the goal. The contractor shall include with his bid a completed Identification of HUB Certified/Minority Business Participation form. Contractor shall submit completed Appendix E MBE Documentation for Contract Payments form with final payment request.

For construction contracts with a value of \$300,000 or greater, the contractor shall comply with the document *Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts* including Identification of Minority Business Participation, Affidavits A, B, C, and D, and Appendix E. These forms provided herein are hereby incorporated and made a part of this contract.

27. ACCESS TO PERSONS AND RECORDS

The State Auditor shall have access to persons and records as a result of all contracts or grants entered into by the Owner in accordance with General Statute 147-64.7. The Owner's internal auditors shall also have the right to access and copy the Contractor's records relating to the Contract and Project during the term of the Contract and within two years following the completion of the Project/close-out of the Contract to verify accounts, accuracy, information, calculations and/or data affecting and/or relating to Contractor's requests for payment, requests for change orders, change orders, claims for extra work, requests for time extensions and related claims for delay/extended general conditions costs, claims for lost productivity, claims for lost efficiency, claims for idle equipment or labor, claims for price/cost escalation, pass-through claims of subcontractors and/or suppliers, and/or any other type of claim for payment or damages from Owner and/or its project representatives.

28. GOVERNING LAWS

This contract is made under and shall be governed by and construed in accordance with the laws of the State of North Carolina. The Contractor shall comply with all applicable federal, State and local laws, statutes, ordinances and regulations including, but not limited to, the Omnibus Transportation Act of 1991 and its implementing regulations.

29. 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 projects. In addition to final evaluation, an interim evaluation may be prepared during the progress of project. The owner may request the contractor's comments to evaluate the designer.

SUPPLEMENTARY GENERAL CONDITIONS

TIME OF COMPLETION

The Contractor shall commence work to be performed under this Contract on a date to be specified in written order from the Designer/Owner and shall fully complete all work hereunder within (_____ 30 _____) consecutive calendar days from the Notice to Proceed. For each day in excess of the above number of days, the Contractor shall pay the Owner the amount of _____ Two Hundred _____ Dollars (\$ _____ 200.00 _____) as liquidated damages reasonably estimated in advance to cover the losses to be incurred by the Owner should the Contractor fail to complete the Work within the time specified.

If the Contractor is delayed at any time in the progress of his work by any act or negligence of the Owner, his employees or his separate contractor, by changes ordered in the work; by abnormal weather conditions; by any causes beyond the Contractor's control or by other causes deemed justifiable by Owner, then the contract time may be reasonably extended in a written order from the Owner upon written request from the contractor within ten days following the cause for delay. Time extensions for weather delays, acts of God, labor disputes, fire, delays in transportation, unavoidable casualties or other delays which are beyond the control of the Owner do not entitle the Contractor to compensable damages for delays. Any contractor claim for compensable damages for delays is limited to delays caused solely by the owner or its agents.

UTILITIES

Owner may provide certain utilities such as power or water with connections and extensions by the Contractor. Contractor shall provide temporary toilet facilities to be utilized by their own personnel.

SECURITY

At all times the contractor and their employees and/or subcontractors must maintain lawful and appropriate conduct. Concealed weapons, alcohol, and illegal drugs are prohibited. Contractor shall be responsible for maintaining security of project resources and materials.

USE OF SITE

There are restricted areas of the construction site that will be defined by the Owner during the Pre-Bid Meeting. Work hours are limited, but may allow for flexibility.

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 scope of work in accordance with the contract documents. Unit prices are complete for labor, equipment, material, overhead, and profit. The cost of any unused amount will be credited to the Owner by Change Order at the end of the job.

PROPOSAL AND CONTRACT

The Base Bid shall include the cost of all work not specifically listed in the bid breakdown, i.e. all general construction costs.

CONTRACTOR-SUBCONTRACTOR RELATIONSHIPS

The Contractor agrees that the terms of these contract documents shall apply equally to a subcontractor as to the Contractor, and that the subcontractor is bound by those terms as an employee of the Contractor.

No more than 25% of the bid price may be awarded to subcontractors.

The general contractor awarded the contract shall within fourteen (14) days after the award of the contract submit copies of any subcontracts. Roofing subcontractor shall have the contractor license classification for "S-Roofing".

MINORITY BUSINESS PARTICIPATION

Each bidder shall follow the Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts.

**SECTION 01 11 00
SUMMARY OF WORK****PART 1 - GENERAL**

- 1.1 Drawings and general provisions of the contract, including General and Supplementary Conditions, and other Division 1 specification sections apply to work of this section.
- 1.2 Work Covered by Contract Documents
 - 1.2.1 Work under this Contract consists of furnishing all labor, materials and equipment necessary to perform the quality remedial reroofing of the Division 4 District Office at 2670 US 70, Goldsboro, NC 27530, as shown on the Drawings and described herein. The work will include, but is not necessarily limited to, the following:
 - 1.2.1.1 Cut existing membrane along 5ft grid lines. Remove the existing membrane flashings at parapet and penetrations, sheet metal coping covers, scuppers, downspouts, shingles and felt underlayment.
 - 1.2.1.2 Provide and install new coverboard, mechanically attached PVC membrane and associated flashings, coping covers, membrane-clad scupper liners, exterior scupper closures and conductor heads, downspouts, felt underlayment, drip edging at rakes and the eave, and new composition shingles.
 - 1.2.1.3 At lintels above windows on the north, west, and east elevations:
 - (a) Rake out / remove sealant and mortar.
 - (b) Remove tube weeps.
 - (c) Prime and paint the lintels.
 - (d) Install new weeps and tooled mortar.
 - 1.2.1.4 Patch oversized openings at the 8 scupper penetrations (fill voids between scupper liner and CMU).
 - 1.2.1.5 Remove existing sealant joints in CMU walls and replace with new backer rod and sealant.
- 1.1 Description of Existing Conditions
 - 1.1.1 Information in this Section is provided only to establish a general description. The existing roof assembly information is based on observations at test cuts made at selected locations. The Contractor is responsible for visiting the site and satisfying himself as to the existing conditions, size of roof areas, etc., before submitting his Bid.
 - 1.1.2 See the roof plan drawings for test cut locations.
 - 1.1.3 The existing roof assembly is composed of the following
 - 1.1.3.1 Main roof:

- (a) Adhered TPO membrane
- (b) Board insulation - tapered polyisocyanurate
- (c) 3" board insulation – polyisocyanurate (with crickets)
- (d) 3" board insulation – perlite
- (e) Structurally sloped steel roof deck

1.1.3.2 Rear entrance awning:

- (a) 3-tab composition shingles
- (b) Felt underlayment
- (c) Drip edge at rakes and eave
- (d) Plywood deck

1.1.4 The approximate size of the main roof area is 2,570 square feet.

1.1.5 The approximate size of the rear entrance awning (shingles) is 110 square feet.

PART 2 - PRODUCTS

2.1 Not used.

PART 3 - EXECUTION

3.1 The Contractor's crew shall be on site each work day unless work is prevented by weather or the request of the Owner.

END OF SECTION

SECTION 01 22 13
UNIT PRICES AND ALLOWANCES**PART 1 - GENERAL**

- 1.1 Work Included: All unit prices and allowances as listed in Bid Form.
- 1.2 Procedures:
- 1.2.1 Unit prices will be exercised at the option of the Owner.
 - 1.2.2 Modify and coordinate related activities as required to complete the work if, and when, acceptance is designated by the Owner in General Conditions and other Division 1 specifications.
 - 1.2.3 In the event unit prices are exercised, applicable sections of this Specification shall govern. Other sections may be modified as required to address the unit price.
 - 1.2.4 Cost associated with any anomalies identified on plans, on the roof, and/or in the Specification shall be included in the Base Bid.
 - 1.2.5 Cost associated with the repair of decking at removed abandoned penetrations identified on plans and/or marked on the roof shall be included in the Base Bid.
 - 1.2.6 Bidders shall provide a unit price for the items listed below and on the bid form. Bidder shall include a cash allowance in the Base Bid for each unit price in the quantity list below and on the bid form. Payment will be made for unit price work in excess of the cash allowance, which includes all overhead and profit. In the event it is necessary to replace fewer than quantity associated with the cash allowance, the Owner will take a credit at the unit price rate. The Design Professional shall be responsible for verifying the actual quantity and extent of the unit price work.

PART 2 - PRODUCTS

- 2.1 See applicable specification sections.

PART 3 - EXECUTION

- 3.1 **UNIT PRICE No. (1):** Quote a separate unit price (per board foot) for the repair and/or replacement of any damaged or deteriorated wood blocking. This unit price shall include the furnishing and installation of new pressure treated wood blocking to match the wood blocking removed. This unit price shall also reflect any power tools, fasteners, labor, safety harnesses, interior protections, overhead, and profit associated with accomplishing this work. Refer to Section 02 41 13 of the Specification.

Note: The Base Bid shall include an allowance for the removal and replacement of 20 board feet of deteriorated wood blocking in the Base Bid.

- 3.2 **UNIT PRICE No. (2):** Quote a separate unit price (per 16 sq. ft. – half of one 4x8 board) for the removal and replacement of any deteriorated or damaged plywood to match the existing 1/2" exterior grade. This unit price shall also reflect any power tools, fasteners, labor, safety harnesses, interior protections, overhead, and profit associated with accomplishing this work. Refer to Sections 07 22 16 and 02 41 13 of this Specification.

Note: The Base Bid shall include an allowance for the removal and replacement of 16 Sq. Ft. of deteriorated plywood.

- 3.3 **UNIT PRICE No. (3):** Quote a separate unit price (per linear foot) for the repair of lintels above windows and doors as described in Section 04 90 00 of this Specification. This unit price shall also reflect any power tools, fasteners, labor, safety harnesses, interior protections, overhead, and profit associated with accomplishing this work. Refer to Section 04 90 00 of this Specification.

Note: The Base Bid shall include an allowance for the repair of 80 l.f. of lintels.

- 3.4 **UNIT PRICE No. (4):** Quote a separate unit price (per linear foot) for the replacement of sealant joints in CMU walls as described in Section 07 92 00 of this Specification. This unit price shall also reflect any power tools, fasteners, labor, safety harnesses, interior protections, overhead, and profit associated with accomplishing this work. Refer to Section 07 92 00 of this Specification.

Note: The Base Bid shall include an allowance for the replacement of 150 l.f. of sealant joints.

END OF SECTION

**SECTION 01 33 00
SUBMITTALS**

PART 1 - GENERAL

- 1.1 Drawings and general provisions of the contract, including General, Supplemental and Special Conditions and other Division 1 specification sections apply to work of this section.
- 1.2 Procedures
 - 1.2.1 Submit certain items with Bid and within 7 calendar days after receipt of signed Contract.
 - 1.2.2 Each transmitted document shall identify the project name and Contractor. Material submittals shall also identify the type and trade name of materials, material manufacturer, intended use and specification number. The successful bidder shall request an electronic copy of the attached "Submittal Checklist" to complete and include with each submittal. See Paragraph 1.7. Deviations from Contract Documents shall be identified.
 - 1.2.3 Submittals shall bear the Contractor's stamp and indicate approval and date.
 - 1.2.4 After Engineer's review of materials, revise and resubmit, as required, identifying changes made since previous submittal.
 - 1.2.5 Upon approval by Engineer, submittals will be forwarded to the Owner.
- 1.3 Bid Submittals
 - 1.3.1 Refer to Bid Form
 - 1.3.2 Safety Plan (Generic)
- 1.4 Site Specific Safety Plan – Refer to Section 01 66 00.
- 1.5 Construction Schedules – Submit a construction schedule in a gantt or bar chart schedule showing critical path activities with dates for review. Update schedule bi-weekly and at each pay request, submit for review upon each update.
- 1.6 Foreman's Statement
 - 1.6.1 Submit on or before pre-construction conference.
- 1.7 Emergency phone number of principals, superintendent, foreman, project manager.
 - 1.7.1 Submit to Owner and Engineer prior to the Pre-Construction Conference.
- 1.8 Pre-Construction Submittals
 - 1.8.1 Prior to the start of the project, the following items need to be submitted within 7 calendar days after the receipt of signed Contract. The contractor shall fill out the attached Submittal checklist form, ensuring that all items listed in this section, referenced for submittal in the specification, and/or items to be used on

this project are properly submitted. Items submitted must conform to the standards and expectations of that material, detail, and/or procedure expressed in this specification. If not, that item may be rejected for use by the Engineer.

1.8.2 The following literature shall be submitted.

1.8.2.1 Manufacturer's Sample 20 year warranty

1.8.2.2 Manufacturer's Application Instructions

1.8.2.3 Contractor's Foreman's Statement

1.8.2.4 Contractor's Construction Schedule

1.8.2.5 Contractor's Schedule of Values (shall match the bid form)

1.8.2.6 Membrane Manufacturer's Letter of Approval of Product Use on Project

1.8.3 Submit all materials as outlined in Part 2 of the Specification sections. Group and label material submittals by Specification Section.

1.8.4 Submit metal flashing color charts.

1.8.5 Provide SDS or MSDS safety data sheets for all submittals.

1.8.6 Submit shop drawings in accordance to Section 01 33 23 and the submittal log or submittal checklist.

1.9 Close-out Submittals

1.9.1 At the end of the project and prior to final payment, the following documents shall be submitted to the Engineer (see also Specification 01 77 00 Project Closeout Procedures):

1.9.1.1 Copies of all punch lists prepared by the Engineer and documentation of completion.

1.9.1.2 Contractor's Warranty to Owner.

1.9.1.3 Manufacturer's Guarantee

1.9.1.4 Contractor's Final Payment Application

1.9.1.5 Consent of Surety for Final Payment

1.9.1.6 Final Lien Waiver

1.9.1.7 Contractor's Affidavit of Payment of Debts and Claims

1.9.1.8 Contractor's Affidavit of Release of Liens

PART 2- PRODUCTS

2.1 Membrane and associated membrane flashings are to be manufactured and labeled by the membrane materials manufacturer or, if supplied by a different manufacturer, approved for use by membrane manufacturer in compliance with warranty requirements.

PART 3- EXECUTION

3.1 Timing

3.1.1 Make all submittals in accordance with schedules specified herein.

3.1.2 Engineer will be allowed a minimum of 10 calendar days following receipt of submittals for review.

3.1.3 Delays caused by tardiness in receipt of submittals shall not be an acceptable basis for extension of the Contract completion date.

3.2 Review

- 3.2.1 The notations "No Exceptions Taken" or "Exceptions as Noted" shall authorize the Contractor to proceed with fabrication, purchase, or both subject to the revisions, if any, required by the Engineer's review comments.
- 3.2.2 The Contractor shall make all revisions, as required. If the Contractor considers any revisions to constitute a change, he shall notify the Engineer under the provisions of the General Conditions.
- 3.2.3 Only those revisions directed or approved by the Engineer shall be shown on the re-submittal.
- 3.2.4 After a submittal has been approved by the Engineer, substitution of materials, equipment and/or procedures shall not be considered unless accompanied by an acceptable explanation for the substitution.

3.3 Foreman's Statement – (to be signed and submitted by the contractor’s staff member who will be on site full time and have supervisory responsibility to direct the construction, this person shall also be present at the preconstruction meeting).

STATEMENT
North Carolina Department of Transportation
Roof Replacement at Division 4 District Office

I, _____ an employee of _____ hereby state that I
 (Name) (Contractor)
 have my own personal copy of the project specifications and drawings, have thoroughly read them and have visited the work site.

By _____

Date _____

END OF SECTION

SUBMITTAL CHECKLIST

(Submittal Log)

Roof Replacement at Division 4 District Office

Review is for general compliance with the contract documents. No responsibility is assumed for correctness of dimensions or details.

Review Status:

Reviewed: Purchase/fabrication/installation may be undertaken.

Reviewed as Noted: Purchase/fabrication/installation may be undertaken subject to Designer's comments.

Revise and Resubmit: Purchase/fabrication/installation may not be undertaken, revise per Designer's comments and resubmit.

Rejected: Purchase/fabrication/installation may not be undertaken.

ITEM	DATE RECEIVED	REVIEW STATUS & DATE	COMMENTS
General			
1. Subcontractors			
2. Material suppliers			
3. Project Schedule			
4. Schedule of values (match form of proposal)			
Section 01 33 00			
5. Foreman's statement			
6. Emergency telephone numbers			
7. Logistics / Staging Plan			
Section 01 66 00			
8. Site specific safety plan			
Section 01 78 36			
9. Example of membrane manufacturer's twenty (20) year NDL warranty			
10. Example prefinished sheet metal manufacturer's twenty (20) year finish guarantee			
Section 04 90 00			
11. Weeps			
12. Mortar			
Section 06 10 53			
13. Dimensional lumber			
14. Plywood			
15. Nails			
16. Screws			
17. Masonry and Concrete Fasteners			

SUBMITTAL CHECKLIST

(Submittal Log)

Roof Replacement at Division 4 District Office

Review is for general compliance with the contract documents. No responsibility is assumed for correctness of dimensions or details.

Review Status:

Reviewed: Purchase/fabrication/installation may be undertaken.

Reviewed as Noted: Purchase/fabrication/installation may be undertaken subject to Designer's comments.

Revise and Resubmit: Purchase/fabrication/installation may not be undertaken, revise per Designer's comments and resubmit.

Rejected: Purchase/fabrication/installation may not be undertaken.

ITEM	DATE RECEIVED	REVIEW STATUS & DATE	COMMENTS
Section 07 22 16			
18. Cover board			
19. Fasteners			
20. Manufacturer's FM approved attachment pattern for membrane			
Section 07 54 19			
21. Membrane			
22. Flashing membrane			
23. Perimeter enhancement strip			
24. Boot flashings/corners			
25. Adhesive			
26. Cleaner			
27. Membrane clad metal			
28. Termination bar			
29. Caulk			
30. Liquid applied flashing			
31. Cut-off mastic			
32. Liquid flashing			
33. Foam core			
34. Related materials			
Section 07 60 00			
35. Galvalume sheet metal			
36. Kynar coated sheet metal			
37. Color charts for sheet metal			
38. Submit shop drawings for all sheet metal flashings if proposed fabrication deviates from project drawings.			

SUBMITTAL CHECKLIST

(Submittal Log)

Roof Replacement at Division 4 District Office

Review is for general compliance with the contract documents. No responsibility is assumed for correctness of dimensions or details.

Review Status:

Reviewed: Purchase/fabrication/installation may be undertaken.

Reviewed as Noted: Purchase/fabrication/installation may be undertaken subject to Designer's comments.

Revise and Resubmit: Purchase/fabrication/installation may not be undertaken, revise per Designer's comments and resubmit.

Rejected: Purchase/fabrication/installation may not be undertaken.

ITEM	DATE RECEIVED	REVIEW STATUS & DATE	COMMENTS
39. PVC clad metal			
40. Pop rivets			
Section 07 92 00			
41. Color chart for exposed sealants			
42. Joint sealants			
43. Joint sealant backing			
44. Related materials			

SECTION 01 42 19
REFERENCE STANDARDS

PART 1 - GENERAL

- 1.1 Drawings and general provisions of the contract, including General, Supplemental and Special Conditions and other Division 1 specification sections apply to work of this section.
- 1.2 Products specified by association or trade standards, must comply with those standards, except when more rigid requirements are specified herein or are required by applicable codes.
- 1.3 Brand or manufacturer names are used as standards of quality where no other appropriate reference is available. The Engineer will consider substitution of materials of equal quality and properties provided a written request accompanied by substantiating data is received in accordance with the Instructions to Bidders.
- 1.4 The date of the standard is that which is in effect as of the bid date, except when a specific date is stated.
- 1.5 Should there be a discrepancy between the referenced standards and these Contract documents, the more stringent shall govern unless written interpretation is obtained from the Engineer.
- 1.6 Should there be discrepancies among the referenced standards, the more stringent requirements govern.
- 1.7 Definitions:
- 1.7.1 ASTM - American Society for Testing and Materials. A society formed for the development of standards on characteristics and performance of materials, products, systems and services; and the promotion of related knowledge.
- 1.7.2 U. L. - Underwriters' Laboratories. A non-profit, independent organization which tests devices, systems and materials to determine their performance to life, fire, casualty hazards and crime prevention.
- 1.7.3 F. M. - Factory Mutual or Factory Mutual Research Corporation. Has a charter similar to Underwriters' Laboratories.
- 1.7.4 SMACNA - Sheet Metal and Air Conditioning Contractor's National Association Architectural Sheet Metal Manual, 7th edition
- 1.7.5 NCBC – 2012 North Carolina Building Code
- 1.7.6 OSHA – Occupational Safety and Health Administration
- 1.7.7 NFPA – National Fire Protection Association
- 1.7.7.1 Standards
- | | | |
|----|-------|-----------------------------------|
| i | 13-07 | Installation of Sprinkler Systems |
| ii | 72-07 | National Fire Alarm Code |

PART 2 - PRODUCTS

- 2.1 Not Used.

PART 3- PRODUCTS

3.1 Not Used.

END OF SECTION

**SECTION 01 45 00
QUALITY CONTROL****PART 1 - GENERAL**

- 1.1 Drawings and general provisions of the contract, including General, Supplemental and Special Conditions and other Division 1 specification sections apply to work of this section.
- 1.2 Quality Control – General
- 1.2.1 Work found in violation of the Specifications, or not in conformance with acceptable roofing practices/standards, shall be subject to rejection including removal and replacement with new materials at Contractor's expense.
- 1.2.2 Failure of Owner or Engineer to discover or reject defective work, or work not in accordance with the Contract, shall not be deemed an acceptance thereof, nor a waiver of Owner's rights to Contractor's compliance with the Contract or performance of the work, or any part thereof. No partial or final payment, or partial or entire occupancy, by Owner shall be deemed to be an acceptance with the Contract, nor shall it be deemed a waiver by Owner or any of Owner's rights pursuant to this Contract or otherwise.
- 1.2.3 Membrane (of any kind) and base flashings shall be smooth to the substrate, and wrinkles in membrane or base flashings shall be grounds for rejection.
- 1.2.4 The accumulation of debris and foam adhesive beneath new membrane is not acceptable and shall be grounds for rejection.
- 1.2.5 Oil canning in metal shall be grounds for rejection.
- 1.3 Quality Control - Contractor
- 1.3.1 Maintain quality control over products, services, site conditions, and workmanship, to produce work of specified quality.
- 1.3.2 Promptly after the award of the contract, a preconstruction conference will be held at the job site. The contractor shall be represented, as a minimum, by the superintendent or project manager and foreman who will actually perform/supervise the work. Meetings with the designer and owner shall also be attended by the superintendent or project manager and foreman who actually perform/supervise the work. Failure of representation as stated may result in the rescheduling of these meetings. Meetings during the project may be held as often as the designer and owner deem necessary.
- 1.3.3 The contractor's project foreman or superintendent who attended the pre-construction meeting shall be on site at all times that work is being performed.
- 1.3.4 Subcontractor foremen shall be on site at all times that the subcontractor's work is being performed. The foremen shall be at the actual work site to observe workmanship and to be able to direct the work.
- 1.4 Quality Control - Owner
- 1.4.1 The Owner reserves the right to retain the services of an independent construction monitoring representative to provide full-time monitoring of the roof replacement. If the Owner engages this service, the Contractor will be informed. Testing may be performed to determine any deficiencies.

- 1.4.2 The cost of such services as described in paragraph 1.4.1 above, will be borne by the Owner for the contract time. The cost of any monitoring and testing required after this period of time due to the installation being incomplete as a result of Contractor-controlled nonperformance will be borne by the Contractor as stated in time of completion section of the Supplementary General Conditions. Such costs will be deducted from the monies due to the Contractor at the time of final payment, recognizing any extensions of time granted by the Owner.
- 1.4.3 The Owner's project inspector described in paragraph 1.4.1 shall be present during all installation of the roof repair and restoration system. Any work performed without said presence may be rendered unacceptable unless prior arrangement is made otherwise with the Owner.
- 1.4.4 The Contractor shall inform the Owner's project manager two (2) weeks prior to the start of the roofing installation and three (3) days prior to the restart of roofing work following a period of work suspension, except for single days of suspension due to weather.
- 1.4.5 The Contractor shall be required to notify the Owner's project manager prior to cancellation of any operations and subsequent restarts of the project. Any cost resulting from the failure to notify shall be borne by the Contractor.
- 1.4.6 Work found to be in violation of the specifications, or not in conformance with acceptable roofing standards, shall be subject to rejection including removal and replacement with new material at the Contractor's expense.
- 1.4.7 The Owner's project inspector shall document quantities of those materials bid on a unit price basis listed in the Form of Proposal as well as other materials. Contractor shall provide bills of material for unit priced material installed.
- 1.5 Quality Control - Manufacturer - Selected Membrane Manufacturer shall be required to provide a qualified technical representative to inspect the completed work. Manufacturer's representative shall submit a written report to the Contractor and Designer listing observations and recommendations. Roofing Contractor shall be responsible for ensuring site visits by Membrane Manufacturer's Representative.
- 1.6 Inspection of the Work:
- 1.6.1 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.
- 1.6.2 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.
- 1.6.3 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.
- 1.6.4 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, in which event the owner or the separate contractor shall be responsible for the payment of such costs.

- 1.6.5 The contractor shall notify the designer in writing that the project is complete and ready for inspection. The designer shall make an inspection to verify that the project is complete and shall prepare a list (punchlist) of any incomplete work. The contract shall complete all items shown on the punchlist and notify the designer the project is complete and ready for final inspection in writing.
- 1.6.6 Selected manufacturers shall be required to provide qualified personnel to observe field conditions, including suitability of surfaces and material installation at start of field work and completion of field work. Manufacturer's representative shall submit written report(s) to the Designer listing observations and recommendations. Roofing contractor shall be responsible for ensuring site visits by manufacturer's representative.
- 1.6.7 Work found to be in violation of specifications or not in accordance with established workmanship practices and standards will be subject to complete removal and proper replacement with new materials at Contractor's expense.
- 1.6.8 Failure of Owner or Designer to discover or reject defective work, or work not in accordance with the Contract, shall not be deemed an acceptance thereof, nor a waiver of Owner's rights to Contractor's compliance with the Contract or performance of the work, or any part thereof. No partial or final payment, or partial or entire occupancy by Owner shall be deemed to be an acceptance of work or of material which is not strictly in accordance with the Contract, nor shall it be deemed to be a waiver by Owner of any of Owner's rights pursuant to this Contract or otherwise.

PART 2 - PRODUCTS

- 2.1 Not Used.

PART 3 - EXECUTION

- 3.1 Not Used.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

- 1.1 Drawings and general provisions of the contract, including General, Supplemental and Special Conditions and other Division 1 specification sections apply to work of this section.
- 1.2 Description
 - 1.2.1 Contractor shall provide for temporary facilities and controls required for the performance of the project except as otherwise noted. Such items include, but are not necessarily limited to, utilities such as heat, water, electricity and telephone; sanitary facilities; contractor's facilities; and enclosures such as tarpaulins, barricades, and canopies.
 - 1.2.2 All equipment furnished by Contractor shall comply with all pertinent safety requirements.
 - 1.2.3 Ladders, planks, hoists, and all similar items furnished by individual trades in the execution of their own portions of the work are not part of this Section.
 - 1.2.4 All temporary facilities will be subject to the Owner's approval.
- 1.3 Product Handling
 - 1.3.1 The Contractor shall exercise all means necessary to maintain temporary facilities and controls in proper and safe condition throughout the progress of the project.
 - 1.3.2 All required connections to existing utility systems shall be made with minimum disruption. If disruption of existing service is required, notice shall be given to the Owner and connections shall not be made without Owner's approval. If necessary, Contractor shall provide for alternate temporary service.
 - 1.3.3 If the required utility is not available from the Owner, the Contractor shall provide for alternate temporary service for the duration of the project.
- 1.4 Facility Access - The Contractor's workers shall have access to the interior of the building only to travel directly to and from the roof via a path approved by the Owner. Footwear which is worn on the roof by workers shall not be worn inside the building. Workers shall wear different footwear inside the building. Other than for roof access, access to the interior of the building is restricted to the project superintendent to coordinate with the Owner and to check for leaks during the project.

PART 2 - PRODUCTS

- 2.1 Not Used.

PART 3 - EXECUTION

- 3.1 Water
 - 3.1.1 The Owner will furnish water required for construction through available hose bibs. Any additional water requirements by the Contractor shall be provided by the Contractor at no additional cost to the Owner. Contractor shall furnish hoses as needed to transport water to the point of use. Hoses shall be placed in locations approved by the owner.

3.2 Telephone

- 3.2.1 The Project Manager, Superintendent and Foreman will be required to have a working mobile phone during the course of the work. The mobile phone shall be capable of taking, sending and receiving photographs, emails and text messages. Such costs shall be included in the Base Bid.

3.3 Sanitary Facilities

- 3.3.1 Contractor shall provide toilet and washroom facilities at the project site at no additional cost to the Owner. The use of the facility's toilet and/or washroom facilities by the Contractor is not approved.
- 3.3.2 Sanitary facilities shall be located in the ground level contractor staging area within the staging area fencing. They shall be serviced regularly to prevent odor.

3.4 Enclosures

- 3.4.1 Contractor shall furnish, install and maintain for the duration of the project, all scaffolds, ladders, tarpaulins, barricades, warning signs, platforms, bridges, canopies, steps, and other temporary construction required to properly facilitate completion of the project in compliance with all safety and other regulations.
- 3.4.2 Contractor shall provide all necessary safeguards to warn and prevent pedestrians and Owner's personnel from being exposed to dangers or hazards created by this project.
- 3.4.3 Covered Walkways -All covered walkways must provide an accessible pedestrian route in accordance with the requirements of the Americans with Disabilities Act (ADA). This includes, but is not limited to: constructing structural floors when required that have a surface that is firm, stable and slip resistant, and that is compliant in slope, counter slope, vertical clearances, turning radii and surface discontinuities; providing compliant ramps connecting the structural floor to an existing pedestrian accessible route; and implementing sufficient measures to ensure the safety and welfare of the pedestrian(s) traversing the site. All ramps with a rise greater than six inches (6 in) shall be constructed with handrails on both sides of the ramp. All covered walkways and ramps shall be self-supporting and not connected to the adjacent building.

3.5 Signs

- 3.5.1 No signs or advertising of any kind shall be allowed on the project site unless approved in advance by the Owner.

3.6 Construction Aids

- 3.6.1 Contractor shall provide for debris removal services and containers. Placement and servicing of containers shall be coordinated with the Owner.
- 3.6.2 Residue and debris from all operations shall not be allowed to accumulate on the project site. Debris shall be removed and properly disposed of in accordance with all Federal, state and local regulations.
- 3.6.3 Dust, dirt and debris created by project construction shall be properly contained or controlled by the Contractor. Method(s) of control shall be approved by the Engineer.

3.7 Parking

- 3.7.1 Contractor's construction vehicles shall enter the project site and park in areas as directed by the Owner. The Contractor shall be responsible for coordination of traffic by his subcontractors, suppliers, etc., so as not to disrupt ongoing operations of the Owner.

3.8 Field Office

- 3.8.1 The Contractor may provide his own Field Office. The location is subject to the approval of the Owner.

3.9 Ventilation

- 3.9.1 Provide, as required, facilities to maintain specific storage conditions as described within this Specification and as recommended by the material manufacturer(s) for use in construction.
- 3.9.2 Provide adequate ventilation of enclosed areas to prevent the accumulation of fumes, vapors, and gases.
- 3.9.3 Contractor shall take all necessary precautions (such as but not limited to) installing filters and scheduling work to prevent construction fumes from entering the building. Should it be reported to the contractor that fumes are entering the building the contractor shall immediately rectify and correct the condition to restore clean air to the facility.

3.10 Connects and Disconnects

- 3.10.1 In the event it is necessary to disconnect any electrical wiring or connections, plumbing lines or other building services, notify the Owner. Contractor shall not disconnect or connect services unless authorized in writing by Owner.
- 3.10.2 Modification of existing service piping, wiring and duct work required in connection with the lifting, removal or relocation of roof-mounted equipment shall be accomplished by the Contractor as part of his Contract.
- 3.10.3 Any rooftop equipment removed and reinstalled by the Contractor must be tested to ensure it operates properly. If the equipment does not operate properly, notify the Owner and Designer immediately.

3.11 Contractor Staging Area

- 3.11.1 Shall be of a size and in a location as shown on drawings and approved by the Owner.
- 3.11.2 Shall be locked at the end of each day, or when the contractor cannot visually monitor the staging area.
- 3.11.3 Shall be locked with dual locks – one from the Owner and one from the Contractor.

END OF SECTION

**SECTION 01 78 39
PROJECT RECORD DOCUMENTS****PART 1- GENERAL**

- 1.1 Drawings and general provisions of the contract, including General, Supplemental and Special Conditions and other Division 1 specification sections apply to work of this section.
- 1.2 Description
 - 1.2.1 To maintain an accurate record of the project throughout its duration. Items to be noted include, but are not necessarily limited to:
 - 1.2.1.1 Contract Documents (Plans, Specifications, Bid Documents and all other documents related to the Construction Contract).
 - 1.2.1.2 As Built Red Lined Drawings
 - 1.2.1.3 Addenda
 - 1.2.1.4 Minutes of prebid, preconstruction, and construction meetings
 - 1.2.1.5 Change Orders
 - 1.2.1.6 Field Orders and Instructions.
 - 1.2.1.7 Construction Schedule
 - 1.2.1.8 Shop Drawings
 - 1.2.1.9 Product Samples
 - 1.2.1.10 Progress Reports
- 1.3 Quality Assurance
 - 1.3.1 The Contractor shall delegate responsibility for maintenance of the record documents to one person on the Contractor's staff as approved by the Engineer.
 - 1.3.2 All entries shall be made within 24 hours after receipt of information.
- 1.4 Submittals
 - 1.4.1 The Contractor shall submit the final record documents to the Engineer for approval prior to submitting a request for final payment. Submit two copies of "as-built" documents to Engineer with letter of transmittal indicating date, project title, Contractor's name and address, list of documents, and signature of Contractor.
- 1.5 Product Handling - the Contractor shall take all necessary precautions to protect the record documents from deterioration loss and damage until completion of the work and transfer of the recorded data to the final record documents.

PART 2- PRODUCTS

- 2.1 Not Used.

PART 3- EXECUTION

- 3.1 Maintenance of Record Documents – The Contractor shall maintain the record documents at the project site and make all documents available to the Designer during all working hours.
- 3.2 Review and Approval – The Contractor shall submit the completed total set of record documents to the Designer as described.

END OF SECTION

SECTION 02 41 13
SELECTIVE DEMOLITION AND PREPARATIONS

PART 1 - GENERAL

- 1.1 Drawings and general provisions of the contract, including General, Supplemental and Special Conditions and other Division 1 specification sections apply to work of this section.
- 1.2 Work Included
 - 1.2.1 Selective demolition and preparations for the roof replacement project, as specified herein.
 - 1.2.2 Replacement of Wood Blocking - (Unit Price No. 1)
 - 1.2.3 Replacement of Wood Decking – (Unit Price No. 2)
- 1.3 Related Work Specified Elsewhere
 - 1.3.1 Temporary Facilities and Controls - Section 01 50 00
 - 1.3.2 Product Requirements - Section 01 60 00
 - 1.3.3 Storage and Protection - Section 01 66 00
- 1.4 Protection
 - 1.4.1 Refer to Section 01 45 00.

PART 2 - PRODUCTS

- 1.1 Wood Nailers and blocking replacement: Nominal 2" x 4" or 2" x 6" to match existing in the case of replacement, unless otherwise noted, pine, shop pressure-treated for above ground contact. Do not use oil-based preservatives.
- 1.2 Screws: #12 stainless steel self-tapping wood screws that shall be able to resist any galvanic action that may be able to develop between the nail and the pressure treatment. The use of a lesser quality screw will not be approved. Screws shall be of sufficient length to penetrate a minimum of 1-1/2 inches into the substrate.
- 1.3 Masonry Fastener:
 - 1.3.1 Masonry Anchor, minimum 1-1/4 inch into substrate, as manufactured by OMG Roofing Products
 - 1.3.2 Tapcon 1/4" x minimum 1-1/4" in the substrate, as manufactured by Buildex.
 - 1.3.3 Roofing Spike, minimum 1-1/4 inch into substrate, as manufactured by Powers Fasteners.
 - 1.3.4 Approved equal prior to bid.
- 1.4 CD-X Exterior Grade Plywood replacement: Nominal 1/2" thick to match existing, three-ply minimum.

PART 3- EXECUTION

3.1 Demolition

- 3.1.1 Remove all existing membrane flashings and sheet metal flashings and components.
- 3.1.2 Cut existing (field) membrane along 5ft grid lines.
- 3.1.3 Remove all existing scuppers, conductor heads, and downspouts, and discard.
- 3.1.4 Wood Nailer Replacement (Wood Blocking) (20 b.f. included in Base Bid) - **(Unit Price No.1)** Where wood blocking or curbs are damaged or deteriorated, remove existing wood blocking to a point 6 inches beyond the damage and/or deterioration and repair and/or replace with new wood blocking to match existing. Secure new blocking to the substrate using appropriate fasteners that penetrate the substrate a minimum of 1 inch at spacings not to exceed 12 inches on-center, staggered pattern.
- 3.1.5 Remove existing sealant and backer rod at CMU wall joints and grind surfaces in preparation for new.
- 3.1.6 Grind / rake out existing mortar and weeps above steel lintels.
- 3.1.7 The Engineer and Contractor shall document the actual quantities removed for materials bid on a unit price basis.
- 3.1.8 All existing roof mounted equipment shall be lifted or removed so that existing flashings can be totally removed and replaced.
- 3.1.9 Remove only as much material as can be totally replaced in the same day.
- 3.1.10 Demolition shall be performed by personnel familiar with the replacement of materials being used.
- 3.1.11 Demolition adjacent to areas to remain shall be performed in a neat manner with straight lines to facilitate tie-ins of replacement materials. Contractor shall review tie-in methods with the Engineer for approval. Engineer has final approval of such methods.
- 3.1.12 Excessive demolition, as determined by the Owner's representative, shall be replaced with equal materials at the Contractor's expense in accordance with the General Conditions of the Contract.

3.2 Preparations

- 3.2.1 Prior to the installation of any new roofing, flashings, metal flashings, or any other miscellaneous items, the Contractor shall clean surfaces of all dust, dirt, and other foreign materials. This includes the organic growth that covers the existing TPO membrane.
- 3.2.2 Prior to the installation of any new roofing materials, extend all existing soil pipe vents through the roof to a minimum height of 8 inches above the finished roof surface. Modifications shall be performed as follows:
 - 3.2.2.1 Cut off pipe at a point below the deck in a neat manner. Use the same type of pipe as the existing so as to extend a minimum of 8 inches above the finished roof level. Use a 4-band no-hub clamp to secure the new pipe to the existing.

- 3.2.2.2 Where it is not feasible to cut off the pipe below the deck, cut off the existing pipe to a point approximately 2 inches above the surface of the deck. Use the same type of pipe as the existing so as to extend a minimum of 8 inches above the finished roof level. Use a 4-band no-hub clamp to secure the new pipe to the existing.

- 3.2.2.3 An alternative method is to fabricate a PVC extension. Furnish a piece of PVC piping that will fit snugly into the existing soil pipe vent and shall extend into the pipe a minimum of 12 inches. Provide a second PVC pipe that fits snugly around the smaller PVC pipe and shall provide a minimum 8" height above the finished roof surface. The smaller pipe height shall match the outer pipe. Cement the two PVC pipes together with an approved pipe solvent/glue. Insert the extension into the existing soil pipe vent.

3.3 Wood nailers and blocking replacement:

- 3.3.1 Furnish and install new wood nailers or blocking at all roof mounted equipment or atop parapets as deteriorated lumber is found. New wood blocking shall be installed on top of sound lumber and secured with specified fasteners at no less than 12" OC spacing, or a minimum of 4 fasteners per side of curb. Replacement blocking atop parapets shall be secured with specified masonry fasteners at no less than 12" OC spacing.

END OF SECTION

**SECTION 04 90 00
MASONRY RESTORATION**

PART 1 – GENERAL

- 1.1 SUMMARY: Replacement of mortar joints above steel lintels and patching openings in CMU at scuppers.
- 1.2 RELATED WORK: Selective Demolition - Section 02 41 13
- 1.3 SUBMITTALS: Submittals shall be in accordance with Section 01 33 00 of this specification.
- 1.4 ENVIRONMENTAL CONDITIONS: Material installation shall proceed only when weather conditions are in compliance with manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to rejection including removal and replacement.

PART 2 - PRODUCTS

- 2.1 PORTLAND CEMENT: Shall conform to ASTM C150.
- 2.2 HYDRATED LIME: Shall be Type S, meeting ASTM C207.
- 2.3 SAND: Shall conform to ASTM C144, except that the gradation shall comply with the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
No. 4	100
No. 8	95 - 100
No. 16	60 - 100
No. 30	35 - 70
No. 50	15 - 30
No. 100	2 - 15
No. 200	0 - 2

- 2.4 WATER: Shall be clean, potable and free of deleterious amounts of acids, alkalis or organic materials.

2.4.1 Mixing Proportions for Types N and O Mortar

<u>Mortar Type</u>	<u>Portland Cement</u>	<u>Type S Hydrated Lime</u>	<u>Aggregate Damp, Loose Condition</u>
N	1	1	4-1/2 to 6
O	1	2	6-3/4 to 9

- 2.4.2 The use of a pre-mixed concrete mix is acceptable, but must be submitted to the Designer for review and approval.

PART 3- EXECUTION

3.1 GENERAL:

3.1.1 Contractor shall make every effort to match the new mortar with the existing.

3.2 PREPARATION:

3.2.1 Remove all mortar from the horizontal joints above steel lintels. Dust any debris from the joint by brushing, blowing with air, or rinsing with water.

3.2.2 Remove any mortar and any other debris from the cavity which may interfere with the installation of new mortar.

3.2.3 Set cartridge type weeps at vertical joints nearest to either end of the lintels, and at every other joint in between.

3.3 APPLICATION:

3.3.1 Pre-hydrated Type N mortar shall be composed of: One (1) part Portland Cement, One (1) part Type S hydrated lime, and Six (6) parts sand, proportioned by volume. Color of mortar shall match the color of existing mortar joints.

3.3.2 The method of measuring materials for the mortar used in construction shall be by volume and specified proportions of the mortar materials shall be controlled and accurately maintained. Measurement of sand by shovel will not be permitted.

3.3.3 All cementitious materials shall be mixed for at least three minutes and not more than five minutes in a mechanical batch mixer or approved equal, with a minimum amount of water to produce a workable consistency.

3.3.4 Mortar that has stiffened because of evaporation of water from the mortar shall be re-tempered by adding the water as frequently as needed to restore the required consistency. Mortar shall be used within two and one-half hours after initial mixing.

3.3.5 No air-entrained admixtures nor cement material admixtures shall be used in the mortar. No antifreeze compounds or other substances shall be used in the mortar to lower the freezing point. Calcium chloride or admixtures containing calcium chloride shall not be used in mortar.

3.4 MORTAR PRE-HYDRATION:

3.4.1 Thoroughly mix all ingredients dry.

3.4.2 Mix again, adding only enough water to produce a damp, unworkable mix which will retain its form when pressed into a ball.

3.4.3 After keeping mortar in a dampened condition for one to two hours, add sufficient water to bring it to the proper consistency that is somewhat drier than conventional masonry mortar.

3.5 TUCK-POINTING JOINTS:

3.5.1 Tuck-point joints in accordance with The Brick Institute of America's "Technical Notes on Brick

Construction”, Article 7F.

- 3.5.2 Mortar shall be packed tightly into each joint in layers, with each layer not to exceed ¼ inch in thickness.
- 3.5.3 Allow each mortar layer to dry to a “thumb print hard” consistency before applying next layer.
- 3.5.4 After complete mortar application to the joint, each mortar joint shall be tooled to match the existing mortar joints.

END OF SECTION

**SECTION 07 22 16
ROOF BOARD INSULATION****PART 1 - GENERAL**

- 1.1 Drawings and general provisions of the contract, including General Conditions, Supplementary Conditions and other Division 1 specification sections apply to work of this section.
- 1.2 Work Included
 - 1.2.1 Installation of new coverboard, as specified herein.
- 1.3 Related Work
 - 1.3.1 Selective Demolition and Preparations – Section 02 41 13.
 - 1.3.2 Polyvinyl Chloride Roofing – Section 07 54 19.
 - 1.3.3 Flashing and Sheet Metal – Section 07 60 00
- 1.4 Submittals
 - 1.4.1 Refer to Section 01 33 00 of this Specification.
- 1.5 Environmental Conditions
 - 1.5.1 Materials installation shall proceed only when weather conditions are in compliance with the applicable manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to removal and replacement with new materials at no additional cost to Owner.
- 1.6 Warranty
 - 1.6.1 Refer to Section 01 78 36 of this Specification.

PART 2 - PRODUCTS

- 2.1 Cover Board: Gypsum Fiber Board, Nominal 1/4" thick, ASTM C 1177, 0 Flame Spread and 0 Smoke Developed when tested in accordance with ASTM E 84, nominal 900 psi minimum compressive strength, Class A, non-combustible, 4' x 8' board size.

PART 3 - EXECUTION

- 3.1 Coordination and Inspection
 - 3.1.1 The substrate shall be clean, smooth, dry, and free of debris and all foreign matter prior to receiving insulation and cover board. Application of new materials shall constitute approval of the substrate by the Contractor.
 - 3.1.2 Verify proper installation and/or raising of all roof penetrations.
- 3.2 Preparation - Extend all penetrations through roof deck as required to allow 8" minimum flashing height.

3.3 General Installation: Cover Board

- 3.3.1 Install no more coverboard than can be completely dried-in with membrane in the same day.
- 3.3.2 Apply boards with end joints staggered approximately one-half the length of the units.
- 3.3.3 Fit units snugly to each other and to all vertical surfaces.
- 3.3.4 Board-to-board height variations greater than 1/16 inch at top surface shall be shaved to provide a smooth transition between board surfaces.
- 3.3.5 Replace damaged units as required to provide a smooth surface and uniform insulation thickness.

3.4 Installation

- 3.4.1 The existing metal deck is structurally sloped.
- 3.4.2 Remove debris and biological growth (lichens) from existing membrane to be covered, by mechanical or power washing means.
- 3.4.3 Cover Board -Furnish and mechanically attach one layer of cover board over the existing, cleaned membrane. Use whole 4'x8' boards as often as practical. Secure with fasteners to roof deck as required by the membrane manufacturer.

END OF SECTION

**SECTION 07 31 13
ASPHALT SHINGLES****PART 1 - GENERAL**

- 1.1 Work Included: Installation of new asphalt shingles and underlayments, as specified herein.
- 1.2 Related Work
 - 1.2.1 Selective Demolition and Preparations – Section 02 41 13.
 - 1.2.2 Flashing and Sheet Metal – Section 07 60 00.
- 1.3 Submittals: Refer to Section 01 33 00 of this Specification
- 1.4 Environmental Conditions: Materials installation shall proceed only when weather conditions are in compliance with the applicable manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to removal and replacement with new materials at no additional cost to Owner.
- 1.5 Warranty: Refer to Section 01 78 36 of this Specification.

PART 2 - PRODUCTS

- 2.1 Acceptable Manufacturers
 - 2.1.1 GAF Materials Corporation
 - 2.1.2 Tamko Building Products
 - 2.1.3 CertainTeed Corporation
 - 2.1.4 Owens Corning Roofing and Asphalt
- 2.2 Asphalt shingles:
 - 2.2.1 35-year rated, conforming to ASTM D 3018 Type I – Self-Sealing; UL Certification of ASTM D3462, ASTM D 3161/UL 997 80-mph Wind Resistance and UL Class A Fire Resistance; UL 2218 Class IV Impact Resistance glass fiber mat base, Ceramically colored/UV resistant mineral surface granules across entire face of shingle; architectural type. Color to be selected by Owner from Standard Color Chart.
- 2.3 Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- 2.4 Felt Underlayment: Meeting ASTM D226, D4869. As provided or recommended by the shingle manufacturer.
- 2.5 Roofing Nails: ASTM F1667; aluminum, stainless steel, copper, or hot dipped galvanized steel wire shingle nails, minimum 0.120" diameter shank, sharp-pointed, with a minimum 3/8" diameter flat head and of sufficient length to penetrate at least 1/4" through plywood sheathing.

Note: Where nails are in contact with metal flashing, use nails made from same metal as flashing.

PART 3- EXECUTION

- 3.1 Inspection: The deck shall be clean, smooth, dry, free of debris and all foreign matter prior to receiving underlayment. Application of new materials shall constitute approval of the substrate by the Contractor.
- 3.2 Underlayment Installation
- 3.2.1 Furnish and install the felt underlayment, wrinkle free, shingle fashion. Secure to the substrate using approved fasteners and spacing.
- 3.2.2 Cover felt underlayment with shingles the same day of application.
- 3.2.3 Extend felt underlayment vertically up walls above level of deck a minimum of 4 inches.
- 3.3 Asphalt Shingle Installation
- 3.3.1 Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- 3.3.1.1 Shingle coursing shall be straight with consistently maintained exposures.
- 3.3.1.2 Do not install shingles when ambient temperatures are below manufacturer's recommended application temperature.
- 3.3.2 Install starter strip (starter shingle) along lowest roof edge, consisting of an asphalt shingle strip at least 7 inches wide with self-adhering strip face up at roof edge. Fasten the strip in accordance with manufacturer recommendations.
- 3.3.3 Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure. Fasten asphalt shingle strips with a minimum of four (4) or six (6) roofing nails, as recommended by the approved shingle manufacturer for the region of the project, located according to manufacturer's written instructions.
- Note: "Racking" shingles is an unacceptable installation procedure and will be grounds to reject shingle installation. Upon determining that shingles have been installed in a "racked" pattern, the Contractor will be required to remove shingles at the affected areas and discard, replace the underlayment, and re-install shingles in a stair stepping manner, at no additional cost to the Owner.
- 3.3.4 At the rake eave, adhere the bottom of the shingle to the underlayment (and shingle below) using a minimum 4 inch wide application of roofing cement.
- 3.3.4.1 An alternative to this method is to install a pre-manufactured starter strip (starter shingle) along rake edge, consisting of an asphalt shingle strip at least 7 inches wide with self-adhering strip face up at roof edge. Fasten the strip in accordance with manufacturer recommendations.
- 3.3.5 Install metal flashings and other sheet metal to comply with requirements in Section 07 60 00 of this specification.
- 3.3.5.1 Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing

Manual” and asphalt shingle recommendations in NRCA’s “The NRCA Roofing and Waterproofing Manual.

END OF SECTION

SECTION 07 54 19
POLYVINYL CHLORIDE ROOFING**PART 1 - GENERAL**

- 1.1 Drawings and general provisions of the contract, including General Conditions, Supplementary Conditions and other Division 1 specification sections apply to work of this section.
- 1.2 Work Included
 - 1.2.1 Installation of a mechanically attached PVC roof membrane, as specified herein.
- 1.3 Related Work
 - 1.3.1 Selective Demolitions and Preparations – Section 02 41 13.
 - 1.3.2 Roof Board Insulation – Section 07 22 16.
 - 1.3.3 Flashing and Sheet Metal – Section 07 60 00
- 1.4 Submittals
 - 1.4.1 In accordance with Section 01 33 00 of this Specification.
 - 1.4.2 Provide a roof plan showing the membrane sheet layout. Also, note the progression of the reroofing and the locations for discharge of tear off materials to show that the new membrane and adjacent existing roofs will not be subjected to construction traffic.
 - 1.4.3 Provide shop drawings showing the Mechanically Attached System attachment. Provide a copy of the membrane manufacturer's testing. Test data shall show fastener type and spacing for the membrane and insulation. Test data shall show minimum fastener pull out load requirements for the specified uplift requirements to meet FM 1-90 requirements.
- 1.5 Environmental Conditions
 - 1.5.1 Material installation shall proceed only when weather conditions are in compliance with the applicable manufacturer's recommendations for installation and no precipitation is imminent.
 - 1.5.2 Materials installed during adverse weather conditions shall be subject to removal and replacement with new materials at no additional cost to Owner.
- 1.6 Warranty
 - 1.6.1 In accordance with Section 01 78 36 of this Specification.

PART 2 - PRODUCTS

- 2.1 Approved PVC Roofing Manufacturers are manufacturers by which the Contractor may solely furnish materials to perform the work. Materials furnished by the roofing system manufacturer are subject to the standards listed below. Any deviations from standards listed below shall only be considered if the approved system manufacturer does not produce a material to that stated standard, and must be submitted in writing by the approved roofing system manufacturer through a contractor bidding the work 10 days prior

- to receipt of bids. Any substitutions shall not alter the Warranty terms as described in this specification
- 2.2 Membrane manufacturer shall be one of the following, color to be selected by Owner from Manufacturers full standard color range:
- 2.2.1 Fibertite Roofing Products by Seaman Corporation
 - 2.2.2 Carlisle SynTec.
 - 2.2.3 Soprema
- 2.3 PVC Roofing Materials
- 2.3.1 Polyvinyl Chloride Roofing Membrane: Polyester reinforced membrane meeting ASTM D4434 or ASTM D 6754. Thickness shall be as required for specific no dollar limit warranty, but shall not be less than 36 mils.
 - 2.3.2 PVC Unsupported Flashing: Minimum 55 mil thickness as provided by the approved roofing system manufacturer.
 - 2.3.3 Perimeter Enhancement Strip: 10" wide strip fully heat weld. Nominal 10" wide by 100' long strips.
 - 2.3.4 PVC Unsupported Flashing: Minimum 55 mil thickness as provided by the approved roofing system manufacturer.
 - 2.3.5 PVC Universal Pipe Boot Flashings, as manufactured by the approved roofing system manufacturer. Pre-fabricated flashing boot shall include a draw band for securing the top of the flashing boot to the pipe
 - 2.3.6 PVC Inside and Outside Corners, as manufactured by the approved roofing system manufacturer. For use at inside and outside corners of curbs, parapets, and other similar junctures. The use of field-fabricated corner pieces is not acceptable.
 - 2.3.7 PVC Membrane Adhesive: As manufactured by the approved roofing system manufacturer. For use to adhere flashings to the substrate.
 - 2.3.8 PVC Membrane Cleaner: As manufactured by the approved roofing system manufacturer. For use in removing foreign debris from the membrane prior to welding.
 - 2.3.9 PVC Clad Metal: As manufactured by the approved roofing system manufacturer, minimum 24 ga. galvanized steel.
 - 2.3.10 Termination Bar. As manufactured or approved by the approved roofing system manufacturer.
 - 2.3.11 Sealant: As manufactured and/or approved by the roofing system manufacturer. To be applied at those locations identified by the manufacturer.
 - 2.3.12 Polyurethane Caulk: As manufactured and/or approved by the roofing system manufacturer. To be applied at those locations identified by the manufacturer.
 - 2.3.13 Membrane Welding Machines: As approved by the roofing system manufacturer. Contractor shall

provide written documentation that operators have received the roofing system manufacturer's required training to operate equipment. Welders shall be maintained in good working order and shall be operated and maintained in accordance with the welding machine manufacturer's written instructions.

- 2.3.14 Water Cut Off Mastic: Butyl sealant as manufactured and/or approved by the roofing system manufacturer.
 - 2.3.15 Liquid Applied Flashing: Shall be supplied by the membrane manufacturer.
 - 2.3.16 Roofing Nails: With minimum 1" head, such as Simplex nails or approved equal.
 - 2.3.17 Fire Resistance: System components shall be tested, manufactured and installed to result in a roofing system that is UL Class A rated.
- 2.4 Membrane Fasteners
- 2.4.1 Minimum 0.330" thread diameter with 12.5 buttress threads per inch. Head diameter is 0.660" minimum. Steel screw roof fastener for steel decking: As approved by the approved roofing materials manufacturer and FM 1-90 requirements. Minimum pull-out in new Grade C, 22 gauge decking is 640 lbs. Fasteners must pass a minimum of 15 cycles in the Kesternich SFW 2.0s DIN 50018 test with less than 15% red rust.
 - 2.4.2 Seam Plate: Minimum 2-3/8" grooved, galvalume steel plate. As approved by the roofing materials manufacturer to attach thermoplastic membrane which meets FM 1-90 requirements.

PART 3- PROCEDURES

- 3.1 Inspection
- 3.1.1 The substrate shall be clean, smooth, dry, free of debris and all foreign matter prior to installation of the roof membrane, and in a condition to receive the manufacturer's product in accordance with manufacturer's instructions. Application of new materials shall constitute approval of the substrate by the Roofing Contractor.
 - 3.1.2 Cover board joints with gaps greater than 1/4" shall be filled with roof insulation and/or cover board material to provide a smooth surface.
 - 3.1.3 The accumulation of debris and foam adhesive beneath new membrane is not acceptable and shall be grounds for rejection.
 - 3.1.4 Verify proper installation of all roof penetrations, projections, and nailers including but not necessarily limited to dimensions, heights, and locations of curbs, prior to installation of new roof material.
- 3.2 Roof Membrane Installation
- 3.2.1 Sweep the substrate with a stiff broom to remove materials that will interfere with the proper installation of the membrane.

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- 3.2.2 Roll out membrane and allow the membrane to “relax” in accordance with manufacturer written instructions. Back roll the membrane prior to application.
- 3.2.3 Mechanically Attached
- 3.2.3.1 Lap membrane sheets a minimum of 5" unless otherwise specified by the roofing system manufacturer.
- 3.2.3.2 Secure sheets as listed below unless the roofing system manufacturer provides more stringent requirements. Refer to Drawing Detail 2/A-303 for further clarification.
- i At main roof areas, install field sheets perpendicular to the direction of the metal deck flutes. Secure the side laps with the roofing system manufacturer’s approved fasteners at 6” on-center in the lap area in a line centered approximately 3” from the edge of the sheet. Lap sheets so that water runs from the upper sheet onto the lower sheet or parallel to the lap.
 - ii Parallel to the field sheets furnish and install half-sheets that shall extend from the eave to a minimum distance of 12 feet. Utilize the minimum number of half-sheets to extend 12 feet. Secure and lap half-sheets in the same manner as the field sheets.
 - iii Perpendicular to the field sheets, extend the field sheets and/or half sheets to the eave/parapet. In the center of the sheet, furnish and install the roofing system manufacturer’s approved fasteners and plates at 6” on-center. Extend the fasteners to a minimum distance of 12 feet from the parapet. Apply reinforced stripping membrane over the fasteners and extend the membrane a minimum of 3 inches past the fasteners in all directions. Fully weld the stripping membrane to the field membrane in accordance with the membrane manufacturer’s recommendations. Any joints or seams within the stripping membrane shall be fully welded and an unsupported patch shall be applied over the top of the joints/seam.
 - iv At corners, apply additional fasteners at 12” on center and stripping membrane down the center of the half sheets for a distance of 12 feet from the corner.
 - v Sheets shall be installed to insure that side lap fasteners engage the top flat surface of the deck a minimum of 1”, unless otherwise specified by the roofing system manufacturer.
- 3.2.4 Water-based adhesive shall not be used on vertical surfaces. When extending membrane over wood blocking, furnish and install the roofing system manufacturer’s approved flashing adhesive to adhere the membrane to the substrate.
- 3.2.5 Furnish and install the roofing system manufacturer’s termination bar at the base of all tapered edge strips and at transitions, peaks, and valleys as required by the manufacturer in details and application instructions. Strip in the termination bar in accordance with the manufacturer’s approved written instructions.
- 3.2.6 Turn membrane up vertical surfaces a minimum of 2 inches and using the roofing system manufacturer’s fasteners and termination bar in accordance with the roofing system manufacturer’s approved written instructions. Apply water cut-off mastic behind the membrane

prior to fastening and apply sealant at the top of the membrane after securing. Fasteners shall penetrate the substrate at spacings and depths approved by the roofing system manufacturer, however, depth shall be a minimum of 1 inch and spacings shall not exceed 8 inches on center.

- 3.2.7 At roof edges, extend membrane over the parapets and down past the exterior outside face of the blocking a minimum of 1 inch.
- 3.2.8 Hot air weld all membrane seams using either a machine or hand-held hot air welder approved by the roofing system manufacturer. A copy of the operating instructions shall be provided to the Engineer prior to the start of the project.
- 3.2.9 Monitor the temperature of the hot air welder so as to minimize the amount of smoke that should develop and to ensure that the material from the bottom of the sheet begins to soften and flow from the seam. Hand held welders shall insure that membrane welding is immediately followed by a hand roller to press the heated membrane surfaces together with slow, even movements.
- 3.2.10 All seams shall be manually probed using a blunt rounded instrument daily. Any fish mouths or other seam defects where the seam is not fully welded shall be repaired in accordance with the roofing system manufacturer's instructions.
- 3.2.11 After seams have set for approximately 8 hours, the Contractor shall make a minimum of 3, 4" x 12" test cuts across the seam for every day of welding. Test cuts shall be repaired by the Contractor daily and shall be done at no additional cost to the Owner. In lieu of test cuts, the contractor may perform pull test. Pull test shall be performed with two 4" x 12" pieces of membrane that shall be welded together 1-1/2 inch for the machine welder and 2 inches for hand welders. The membrane shall be pulled apart across the seam. Test shall be dated, and one test shall be performed every time a welding device is turned on. An archive of tests shall be available for Engineer inspection.
- 3.2.12 Seams shall be tested in accordance with the roofing system manufacturer's instructions and evaluated for seam integrity. Seams that fail this test shall be subject to additional test cuts, as directed by the Engineer and/or roofing system manufacturer, in order to further quantify the extend of the deficient condition. Repairs to deficient seams and/or test cut locations shall be performed by the Contractor at no additional cost to the Owner.
- 3.2.13 Furnish and install the roofing system manufacturer's patches at all required locations such as intersection field seams. Apply the manufacturer's approved seam caulk, as required, at locations specified by the roofing system manufacturer.
- 3.2.14 Prior to final inspection, the surface of the membrane shall be cleaned of all debris, dust, and foreign material. This may require the use of water, detergents, and other cleaning agents approved by the roofing system manufacturer. Contractor will be responsible for providing the necessary items to perform this task. Do not use any abrasive pads that can score the polymer.
- 3.2.14.1 During the work, the Contractor or subcontractor shall not be allowed to stage materials on newly installed roofing. The Contractor shall phase work and stage necessary materials at existing roofing areas. Any damage to new membrane during construction shall result in repairs to the membrane at no additional cost to the Owner, and large areas shall result in the removal and replacement of new membrane at no additional cost to the Owner.
- 3.3 Where membrane terminates on metal, the metal shall be PVC clad metal and the membrane shall be hot air

welded to the metal.

3.4 Base Flashings Installation

- 3.4.1 Apply the roofing system manufacturer's approved flashing adhesive to the inside face of vertical surfaces, such as parapets, curbs, and/or wood blocking, at the rate specified by the roofing system manufacturer for the substrate using the manufacturer's approved applicator. At locations where membrane flashing will be applied directly to smooth residual asphaltic materials, the Contractor may furnish and install 60 mil thick, white, asphalt resistant membrane flashing furnished by the approved roofing system manufacturer in accordance with this Section of the specification.
- 3.4.2 Roll out the membrane to be used for base flashings and allow to relax in accordance with the roofing system manufacturer's written instructions.
- 3.4.3 Cut flashing pieces to extend onto the roof a minimum of 8 inches and 3 inches past the fastener at the edge of the membrane sheet and up the vertical surface a minimum of 8 inches.
- 3.4.4 Apply the roofing system manufacturer's approved flashing adhesive to the back of the base flashing material and substrate at the rate specified by the roofing system manufacturer for the substrate. At side laps and the edge of the base flashing extending onto the roof, do not apply adhesive at these locations so as to allow hot-air welding. Allow adhesive to dry sufficiently so as to produce strings when touched with a dry, clean finger.
- 3.4.5 Roll the base flashing material onto the previously coated substrate without voids using a hand roller to insure positive contact of the substrate and base flashing material. Overlap all adjacent flashing sheets a minimum of 3 inches. Base flashing shall be smooth to the substrate, and wrinkles in base flashing shall be grounds for rejection.
- 3.4.6 Hot air weld all side laps and the edge of the base flashings that extend onto the roof in accordance with hot-air welding instructions listed in this section and/or the instructions provided with the welding machine. Fully weld all laps, even those extending beneath flashings and units.
- 3.4.7 All seams shall be probed daily using a blunt, rounded instrument. All defects shall be corrected in accordance with the roofing system manufacturer's written instructions.
- 3.4.8 Seal the edges of the base flashings where the reinforcing fabric is cut with the roofing system manufacturer's approved seam sealant, as required by the membrane manufacturer. Such work shall be done on a daily basis.
- 3.4.9 At those locations where the top of the base flashings will not be secured with counter flashings, or as shown on drawings, furnish and install a nominal 1" x 1/4" flat bar or the roofing system manufacturer's termination bar along the top edge of the base flashings. Secure with appropriate fasteners at spacings not to exceed 8 inches on center. Apply a bead of the roofing system manufacturer's water cut-off mastic behind the top edge of the base flashing. Apply a bead of the roofing system manufacturer's approved caulk along the top edge of the base flashings.
- 3.4.10 In the event that base flashings terminate at a corner and edges would be exposed, furnish and install new 4 inch wide PVC-coated metal closures with an exterior edge caulking cove. The closure shall be set in water cut-off mastic and fastened to the substrate using appropriate fasteners at spacings not to exceed 12 inches on center. Completely hot air weld the base flashings to the PVC-coated metal. Apply a non-shrinking sealant, such as NP-1 or approved equal, to the caulking cove at the exterior edge of the closure. Completely remove all residual asphalt from the

substrate prior to installing any sealant or caulking.

- 3.4.11 At inside and outside corners of curbs, Contractor shall use the roofing system manufacturer's pre-fabricated corner pieces. The use of field-fabricated pieces is not acceptable. Pre-fabricated pieces shall be installed in accordance with the roofing system manufacturer's written instructions.
- 3.4.12 Use the roofing system manufacturer's termination bar at base flashing edges at changes in base flashing height. Fastener spacings not to exceed 12 inches on center. Set flashing in water cut-off mastic, set the bar over the edge of the base flashing, and apply caulk at the top of the flashing.
- 3.4.13 At a minimum, extend base flashings up and over the top horizontal surface of curbs and inside the curb a minimum of 1 inch, unless otherwise stated in specification or shown on drawings.

END OF SECTION

SECTION 07 60 00
FLASHING AND SHEET METAL**PART 1- GENERAL**

- 1.1 Drawings and general provisions of the contract, including General Conditions, Supplementary Conditions and other Division 1 specification sections apply to work of this section.
- 1.2 Work Included
 - 1.2.1 Includes the fabrication and installation of sheet metal and related accessories associated with roofing membranes, providing physical protection to membrane, base flashings and membrane terminations, as specified herein.
 - 1.2.2 Includes headwall and drip edge metal for the shingled awning.
- 1.3 Related Work
 - 1.3.1 Selective Demolition and Preparations – Section 02 41 13.
 - 1.3.2 Miscellaneous Rough Carpentry – Section 06 10 53
 - 1.3.3 Asphalt Shingles – Section 07 31 13
 - 1.3.4 Polyvinyl Chloride Roofing – Section 07 54 19
- 1.4 Submittals
 - 1.4.1 In accordance with Section 01 33 00 of this Specification
- 1.5 Environmental Conditions
 - 1.5.1 Material installation shall proceed only when weather conditions are in compliance with the applicable manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to removal and replacement with new materials at no additional cost to Owner.
- 1.6 Warranty
 - 1.6.1 In accordance with Section 01 78 36 of this Specification.

PART 2- PRODUCTS

- 2.1 Galvalume: ASTM A-792, minimum 24 ga. thickness, unless otherwise noted.
- 2.2 Kynar 500-based finish: Shall be factory-applied, oven-finish. Finish and primer shall be applied in strict accordance with the formulator's specifications and shall meet the performance criteria of AAMA 605.2-90 and ASTM A-653 G-90. Finish coat thickness shall be a minimum of 1.0 mil. Primer coat thickness shall be a minimum of 0.3 mil. Color to match the existing color to be selected by owner.
- 2.3 PVC Clad Metal: As provided by the membrane manufacturer for use with selected membrane.

- 2.4 Termination Bar: ¼" x 1" aluminum.
- 2.5 Pop rivets: 1/8" diameter stainless steel pop rivets color to match adjoining metal.
- 2.6 Fasteners: See Specification Section 06 10 53 Miscellaneous Rough Carpentry
- 2.7 Solder: ASTM D32-66T with 50% lead and 50% tin unless otherwise specified. Follow manufacturer's recommended soldering procedures.
- 2.8 Sealant: See Specification Section 07 92 00 Joint Sealants.
- 2.9 MINIMUM ACCEPTABLE METAL WEIGHT:
- | | |
|--|--|
| Coping: | 24 ga. galvalume steel (kynar coated) |
| Cleat: | 22 ga. galvalume steel (mill finish) |
| Counter Flashing: | 24 ga. galvalume steel (kynar coated) |
| Scuppers: | 24 ga. galvalume steel (membrane coated) |
| Scupper Exterior Flange and
Conductor Head: | 24 ga. galvalume steel (kynar coated) |

PART 3 - EXECUTION

- 3.1 General Installation Requirements
- 3.1.1 Inspect all surfaces to which metal is to be applied. Do not install metal unless surfaces are even, sound, clean, dry and free from defects which might affect the application.
- 3.1.2 Follow recommendations of the Sheet Metal and Air Conditioning Contractors National Association Architectural Sheet Metal Manual (7th Edition) for fabricating in-shop and on-site, and for installation, unless otherwise specified herein.
- 3.1.3 Follow published instructions of the product manufacturer for installation of extruded or proprietary metal products, unless otherwise specified herein.
- 3.1.4 Use nails, screws, bolts, cleats or other fasteners of the same material or of material chemically compatible with the contacted metal.
- 3.1.5 Do not place dissimilar metals in direct contact or in positions where water sheds across both metals.
- 3.1.6 Install metal to be water and weather tight with lines, arises and angles sharp and true and with paint surfaces free of waves and buckles.
- 3.1.7 Install shop-formed metal flashings in 10-foot lengths maximum with a minimum number of pieces in each straight run.
- 3.1.8 Shop form all metal shapes, which are to be formed of prefinished metal, with protective plastic film in place. Do not remove plastic film until just prior to (or, if possible, after) installation.
- 3.1.9 At all corners, shop form corner pieces of fascia and drip edge flashing from a single section of metal with minimum 36-inch legs on either side of the corner.

- 3.1.10 Apply a continuous bead of caulk between any lapped metal sections, with the exception of counter flashing lapped joints. The application of caulk after metal components have been lapped is unacceptable and will be grounds for rejection.

3.2 Coping Cap Installation

- 3.2.1 Prior to the installation of the coping cap, the single ply membrane shall be extended across the top of the blocking and extend down past the lowest edge of the exposed wood at least 1”.
- 3.2.2 Any deviations to the design shown in the Drawings shall be submitted to the Engineer for approval along with documentation that the revised detail meets the ANSI/SPRI ES-1 wind uplift requirements.
- 3.2.3 Use maximum 10-foot lengths and a minimum number of pieces in each straight run.
- 3.2.4 Secure both vertical legs of the coping with a continuous cleat nailed to the wood blocking. The coping drip edge shall be folded snugly over the cleat. Cleats shall be secured with nails that penetrate the wood a minimum of 1 inch at spacings not to exceed 6 inches on center.
- 3.2.5 Join sections with flat drive cleats. Refer to the Drawings. Lap vertical sections a minimum of 3 inches, and hem the top of the sections. Apply the flat drive cleat, fold the drive cleat ends down the outside face of the coping, and fold the drive cleat ends under the cleat on both sides of the coping.
- 3.2.6 At locations where coping intersects at corners, the Contractor shall join sections with double lock standing seams as shown in the Drawings.

3.3 Counterflashing Installation

- 3.3.1 Exposed flashing shall be prefinished roll-formed 24 gauge galvalume steel with “Kynar 500” resin fluoropolymer. Color shall be selected by Owner from manufacturer’s standard color selections.
- 3.3.2 Provide flashing in 10 foot long sections shop formed.
- 3.3.3 Anchors shall be provided at 6” o.c. unless otherwise noted or in accordance with the manufacturer’s requirements if more stringent.
- 3.3.4 Notch and lap sections a minimum of 3 inches.
- 3.3.5 Notch and lap joints and inside corners. Notch and seam outside corners. Do not rivet or otherwise secure joints and corner. To the extent possible, form corners from a single piece that extends 5 feet on either side of the corner.

3.4 Scupper Installation

- 3.4.1 Refer to the Drawings.
- 3.4.2 Cover all masonry or concrete surfaces to be in contact with scupper with a minimum 1/8” thick bed of sealant. Set the flange over the roofing membrane and wall in 1/8” thick bed of sealant.
- 3.4.3 Install scupper. Install closure flanges at both sides of wall, lock and seal closure flange seams.

- 3.4.4 Set the exterior flange against the wall in a bead of sealant. Secure the exterior flange to the wall with a row of fasteners located approximately one inch from the edge, at spacings not to exceed 6 inches on center.

END OF SECTION

**SECTION 07 92 00
JOINT SEALANTS****PART 1 - GENERAL**

- 1.1 Summary: Installation of new sealant joints at expansion and control joints of CMU on exterior walls.
- 1.2 Related work:
 - 1.2.1 Selective Demolition and Preparations – Section 02 41 13
 - 1.2.2 Polyvinyl Chloride Roofing – Section 07 54 19
 - 1.2.3 Flashing and Sheet Metal – Section 07 60 00
- 1.3 Submittals:
 - 1.3.1 Submit copies of manufacturer's literature for the following:
 - 1.3.1.1 Product Data consisting of sealant manufacturer's product information for components, materials, accessories, and equipment necessary to perform the work.
 - 1.3.1.2 Applicable detail and shop drawings for the work.
 - 1.3.1.3 Samples for initial selection purposes in form of manufacturer's color charts or chips showing full range of colors and textures.
 - 1.3.1.4 Operation and Maintenance Data as required by the warranty.
 - 1.3.2 Refer to Section 01 33 00 of Specification.
- 1.4 Environmental Conditions:
 - 1.4.1 Material installation shall proceed only when weather conditions comply with manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to rejection including removal and replacement.
 - 1.4.2 Use manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
- 1.5 Quality Assurance:
 - 1.5.1 Contractor shall perform *destructive* adhesion test in accordance with the latest edition of ASTM C1521. Test shall be documented with photographs. Test results and photographs shall be composed into a report that shall be issued to the Owner and Designer within 24 hours of the test. A minimum of 2 tests (1 for control joints and 1 for expansion joint) shall be performed for each building elevation. Each test shall be performed on a minimum of 6 linear inches of sealant. Any repairs to sealant as a result of failure under this paragraph shall be performed by the Contractor at no additional cost to the Owner.
 - 1.5.1.1 Make a V-shaped cut in the new sealant at the joint spanning across the entire width of the joint and sealant.
 - 1.5.1.2 Make parallel cuts down the length of the joint starting at the V-shaped cut on either side of the sealant for a distance of 6 inches.

- 1.5.1.3 Pull the top of the cut sealant out tight to a 90 degree angle to the wall.
 - 1.5.1.4 Make a mark that is 1 inch away from the wall down the length of the pulled out section.
 - 1.5.1.5 Pull the sealant at this angle until the mark made at 1 inch is at 2 inches and no adhesive or cohesive failure has occurred.
 - 1.5.1.6 This represents a 100% elongation and a successful test.
 - 1.5.1.7 Document and record results.
 - 1.5.1.8 All pull tests under this paragraph shall be repaired by the Contractor at no additional cost to the Owner.
- 1.5.2 Manufacturer: Manufacturer shall have a minimum of 10 years of continuous, concurrent experience providing specified materials including the current year. Manufacturer is required, at a minimum, to perform biweekly site inspections to assess the work performed by the Contractor since the previous site inspection and provide written documentation to Owner and Design Professional of findings and resolution of any deficient areas of work or issues.
- 1.6 Warranty: Refer to Section 01 78 36 of this specification.

PART 2- PRODUCTS

2.1 Joint Sealants:

- 2.1.1 Silicone or Polyurethane, non-sagging, non-staining, low modulus sealant; ASTM C 920, Type S or M, Grade NS, Class 100/50, for Use NT, M, A, and O:

- 2.1.1.1 For use in joining concrete, metal, EIFS, and/or composite plastic at joints.
- 2.1.1.2 Products: Subject to compliance with requirements. All listed manufacturers and products are provided as examples of the salient characteristics to be found in the submitted product. Any additional manufacturers not listed must meet the requirements set forth in this specification and be approved prior to bid in accordance with Section 01 60 00. Products that may be incorporated into the Work include, but are not limited to the following:

- i BASF Corporation; ***MasterSeal NP-100***
- ii Dow Corning Corporation; ***790 Silicone Building Sealant***
- iii Pecora Corporation; ***890NST***
- iv Sika Corporation; ***SikaSil 15LM***
- v Tremco; ***Dymonic 100***

2.2 Joint Sealant Backing:

- 2.2.1 General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- 2.2.2 Cylindrical Sealant Backings: ASTM C 1330, type C (closed-cell material with a surface skin) and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance. Approximately 1.25 – 1.33 times larger than the openings, unless manufacturer has more stringent requirements.

- 2.2.3 Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.
- 2.3 Miscellaneous Materials:
- 2.3.1 Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates.
- 2.3.2 Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- 2.3.3 Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3- EXECUTION

- 3.1 Examination:
- 3.1.1 Sealant and backer rod installation shall be performed by a qualified and experienced installer having at least 5 years of experience in this type of work.
- 3.1.2 Contractor shall make every effort to match the new sealant with the existing wall panels.
- 3.2 Preparation:
- 3.2.1 Enlarge expansion joints to a minimum of 1 inch wide by mechanical means prior to applying sealant in accordance with Section 02 41 13 of specification.
- 3.2.2 Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
- 3.2.2.1 Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
- 3.2.2.2 Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Ensure surface roughness inside joints is as necessary for sealant application in accordance with joint sealant manufacturer written instructions.
- 3.2.2.3 Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- 3.2.2.4 Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primer to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- 3.2.2.5 Masking Tape: Use masking tape where required to prevent contact of sealant or primer

with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 Installation of Joint Sealants:

- 3.3.1 General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- 3.3.2 Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- 3.3.3 Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability:
 - 3.3.3.1 Do not leave gaps between ends of sealant backings.
 - 3.3.3.2 Do not stretch, twist, puncture, or tear sealant backings.
 - 3.3.3.3 Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
 - 3.3.3.4 Set depth of backing in accordance with manufacturer written instructions for optimal joint depth.
- 3.3.4 Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 3.3.4.1 Place sealants so they directly contact and fully wet joint substrates.
 - 3.3.4.2 Completely fill recesses in each joint configuration.
 - 3.3.4.3 Tool sealant into place to produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant adhesion and movement capability.
- 3.3.5 Cleaning: Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.
- 3.3.6 Protection: Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Final Acceptance. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

2012 APPENDIX B
BUILDING CODE SUMMARY
FOR ALL COMMERCIAL ROOF PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
 (Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: Roof Replacement at Division 4 District Office

Address: 2670 US 70 Goldsboro, NC

Zip Code 27530

Proposed Use: _____

Owner/Authorized Agent: Paul Stankiewicz – NC Department of Transportation

Phone # (919) 707-2929 E-Mail pstankiewicz@ncdot.gov

Owned By: City/County Private State

Code Enforcement Jurisdiction: City _____ County _____ State

LEAD DESIGN PROFESSIONAL: David Willers, PE

DESIGNER*

FIRM: RAYMOND ENGINEERING GEORGIA, INC.

NAME: DAVID WILLERS, PE

LICENSE #: 032455

TELEPHONE #: 919-872-7866

E-MAIL: DAVID.WILLERS@RAYMONDLLC.COM

2012 EDITION OF NC CODE FOR: New Construction Recover Repair

CONSTRUCTED: (date) 1984 **REPAIR:** (date) _____

RECOVER: (date) _____

BASIC BUILDING DATA

Construction Type: I-A II-A III-A IV V-A
 (check all that apply) I-B II-B III-B V-B

Sprinklers: No Partial Yes NFPA 13 NFPA 13R NFPA 13D

Standpipes: No Yes Class I II III Wet Dry

Fire District: No Yes (Primary)

Building Height: (feet) 16

ALLOWABLE AREA

Occupancy:

- Assembly
- Business
- Educational
- Factory F-1 and F-2
- Hazardous H-1 Detonate H-2 Deflagrate H-3 Combust H-4 Health H-5 HPM
- Institutional
- Mercantile
- Residential R-1 R-2 R-3 R-4
- Storage S-1, S-2, Parking Garage. Repair Garage
- Utility and Miscellaneous

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY
Roof Construction Including supporting beams and joists	The building appears to be Type II-B construction, requiring 0-hour roof rating. Existing CMU walls, bar joists, steel deck, 3" perlite board insulation, 3" polyisocyanurate board insulation. New: gypsum coverboard and single ply PVC membrane.		

STRUCTURAL DESIGN

DESIGN LOADS:

Wind Uplift Resistance (This section to be duplicated for each distinct roof area)

Roof Area "A":

Basic Wind Speed 100 mph (ASCE-7)

Exposure Category C

Design Pressure (psf):

Field 18

Perimeter 30

Perimeter Width 3 ft

Corner 45

Corner Dimension 3 ft

Dead Loads:

Existing Roof Load 2.25 psf

Replacement Roof Load 2.5 psf

Net Load Change .25 psf

Snow Load:

15 psf

ENERGY SUMMARY

ENERGY REQUIREMENTS:

The following data shall be considered minimum and any special attribute required to meet the **North Carolina Energy Conservation Code** shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Climate Zone: 3 4 5

Method of Compliance:

Prescriptive (Energy Code) 2009 NCECC

Performance (Energy Code)

Prescriptive (ASHRAE 90.1)

Performance (ASHRAE 90.1)

THERMAL ENVELOPE

Roof/ceiling Assembly (each assembly)

Description of assembly:	<u>Steel deck, perlite (3 in.), polyisocyanurate (3 in.), ¼" gypsum coverboard, PVC membrane</u>
U-Value of total assembly:	<u>0.039</u>
R-Value of insulation:	<u>25.5</u>

ROOF DRAINAGE SYSTEM DESIGN CALCULATION/SIZING

EXISTING SYSTEM CALCULATION:

Primary Drainage:

4" x 6" scuppers, 4 ea.

Draining capacity for all 4 scuppers = 498 gpm

Max 1 hr rainfall (4") for 2,570 SF roof = 107 gpm

498 > 107

Primary Drainage is adequate

Secondary Drainage:

5" x 5" scuppers, 4 ea

Draining capacity for all 4 scuppers 304 gpm

Max 1hr rainfall (7.2") for 2,570 SF roof = 192 gpm

304 > 192

Secondary Drainage is adequate