

**HARNETT COUNTY
FINANCE/PURCHASING**

**REQUEST FOR BIDS
ROOF REPLACEMENT
FOR**

HARNETT COUNTY PUBLIC UTILITIES

BUILDINGS METRO 1, METRO 2, METRO 4, WEST CENTRAL 1, SOUTH CENTRAL 1

**FIRM BIDS FOR MATERIALS AND INSTALLATION
FOR THE PERIOD ENDING JUNE 30, 2019**

**DUE DATE: NO LATER THAN 4:00 PM September 19, 2018
QUESTIONS: NEILL THOMAS, PUBLIC UTILITIES**

FAXES OR E-MAILS ARE NOT ACCEPTED FOR THIS QUOTE

**THE COUNTY OF HARNETT RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS
RECEIVED, OR
TO SELECT THE BID, WHICH IN OUR OPINION, IS THE BEST OVERALL INTEREST OF THE
COUNTY.**

**MAIL OR DELIVER BIDS IN A SEALED ENVELOPE IDENTIFIED “QUOTE ENCLOSED –
PUWTP-09192018”, YOUR FIRM NAME, CONTRACTOR’S NORTH CAROLINA CLASS A
REGISTRATION**

**NUMBER AND THE DUE DATE ON THE OUTSIDE OF THE ENVELOPE. PLEASE NOTE THE
E-VERIFY AFFIDAVIT AND THE NOTARIAL SEAL PAGE MUST BE INCLUDED IN YOUR
PROPOSAL.**

**TO: Renea Warren-Ford
Finance & Accounting Specialist II
420 McKinney Parkway
P. O. Box 760
Lillington, N. C. 27546**

PROJECT MANUAL

FOR

METRO 1

METRO 2

METRO 4

WEST CENTRAL 1

SOUTH CENTRAL 1

ROOF REPLACEMENT

COUNTY OF HARNETT

Harnett County Utilities

700 McKinney Parkway, Lillington, North Carolina 27546

DATE OF ISSUE:

September 6, 2018

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PROJECT MANUAL

**FOR
METRO 1
METRO 2
METRO 4
WEST CENTRAL 1
SOUTH CENTRAL 1**

**ROOF REPLACEMENT
COUNTY OF HARNETT
Harnett County Utilities
700 McKinney Parkway, Lillington, North Carolina 27546**

You are invited to bid on “**Roof Project - Roof Replacement of METRO 1, METRO 2, METRO 4, WEST CENTRAL 1, SOUTH CENTRAL 1, COUNTY OF HARNETT, 700 MCKINNEY PARKWAY LILLINGTON, NC 27546**” Contract. The COUNTY OF HARNETT (hereafter referred to as Owner) will receive single prime bids for necessary labor and materials providing General Construction tradework. Bidders shall clearly indicate on the outside of the bid envelope their name and license number. It is intended that the general contractor engage a properly qualified roofing trade within the scope of its bid, unless the contractor fulfills the qualification of both classifications.

General Contractors are notified that Chapter 87, Article 1, General Statutes of North Carolina, will be observed in receiving and awarding general contracts. General Contractors submitting bids on this project must have a license classification for Building Contractor or (S)Roofing.

Under GS-87-1, a Contractor that superintends or manages construction of any building, highway, public utility, grading, structure or improvement shall be deemed a General Contractor and shall be so licensed. Therefore, a Single Prime project that involves other trades will require the Single Prime Contractor to hold a proper General Contractor license.

The bidder shall identify on its bid proposal the minority business participation employed on the project, utilizing the Identification of Minority Business Participation form, and shall include either Affidavit A or Affidavit B as applicable. Forms are included within the Project Manual. Failure to submit these documents is grounds for rejection of the bid in accordance with G.S. 143-128.2c.

Pre-Bid conference will be held on site: Wednesday, **September 12, 2018 at 10:00 AM.**

Bids will be received until **WEDNESDAY AT 4:00 PM SEPTEMBER 19, 2018**, at:

**Harnett County Finance
Attn: Renea Warren-Ford
420 McKinney Parkway
PO Box 760
Lillington, NC 27546**

Performance and Payment Bonds are not required for this bid.

COUNTY OF HARNETT reserves the right to reject any or all bids and waive informalities

**SUPPLEMENTARY
INSTRUCTIONS TO BIDDERS
PROJECT MANUAL**

**FOR
METRO 1
METRO 2
METRO 4
WEST CENTRAL 1
SOUTH CENTRAL 1**

ROOF REPLACEMENT

**COUNTY OF HARNETT
Harnett County Utilities
700 McKinney Parkway, Lillington,
North Carolina 27546**

In accordance with the Invitation to Bid, The Bid Form must be submitted in duplicate in accordance with the following:

1. The Owner, through the designated representative, shall receive sealed bids with additional marking indicating the Contractor's North Carolina Class A registration number.

Coordination with the Owner, as specified hereinafter, shall be exclusively through the Owner's Representative: Mr. Neill Thomas

2. Performance & Labor & Material Payment Bonds are required not for this project.
3. Prior to the Contract, the number of consecutive working days necessary for completion shall be established by both parties. The Contractor agrees that failure to complete the scope of work within that stipulated period shall result in the assessment of a Two Hundred and 00/100 Dollars (\$200.00) per day liquidated damages which shall be deducted from the final payment.
4. It is the Owner's intention to remit payment (95%) for materials delivered to and stored at the site. Partial payments for the contracted amount will be accepted by the contractor. The balance of the Contract Sum less liquidated damages shall be remitted no more than (30) days following final acceptance. The Contractor shall submit bills of lading with requests for material payment.
5. The Contractor shall be prepared to submit a Certificate of Insurance with the Owner identified As Insured in accordance with the requirements as outlined in the Supplementary Conditions.
6. Upon request and before contract award, the Contractor shall submit a statement of costs for major items of work and a designation of work to be performed by Contractor and any subcontractors.

BID PROPOSAL FORM

PROJECT: Roof Replacement, of METRO 1, METRO 2, METRO 4, WEST CENTRAL 1, SOUTH CENTRAL 1 for COUNTY OF HARNETT

BID DUE DATE: WEDNESDAY, SEPTEMBER 19, 2018 at 4:00 PM

Send Proposal to:

**Harnett County Finance
Attn: Renea Warren-Ford
Finance & Accounting Specialist II
420 McKinney Parkway
PO Box 760
Lillington, NC 27546**

In compliance with the specifications dated July 19, 2018 relating to the above referenced project, all bids shall include necessary mechanical work to perform the project, the undersigned, hereby proposes and agrees to fully perform the work within the time stated and in strict accordance with the specifications for the following sum of money:

BID ITEM #1: All labor, accessory materials, services and equipment necessary for the completion of the work described in the specifications to replace the roof on METRO 1, METRO 2, METRO 4, WEST CENTRAL 1, SOUTH CENTRAL 1 with a new 30 year, high performance SBS modified roof system with aluminized finish as specified.

_____ DOLLARS(\$ _____)

BID ITEM #2: All US Communities materials, freight and taxes necessary for the completion of the work described in the specifications to replace the roof on on METRO 1, METRO 2, METRO 4, WEST CENTRAL 1, SOUTH CENTRAL 1 with a new 30 year, high performance SBS modified roof system with aluminized finish as specified.

_____ DOLLARS(\$ _____)

UNIT PRICES

The undersigned agrees, in the case of variation of quantities from those shown or specified, the following unit prices will be used in adjusting the Contract Price. If quantities are authorized by the Owner, the following amount will be added to the Contract as required.

- 1) Cost per Linear Foot for wood blocking

2X6	\$ _____
2X8	\$ _____
2X10	\$ _____

- 2) Cost per square foot for concrete deck repair (Pyrofil) \$ _____
- 3) Cost for a replacement roof drain \$ _____

If awarded this Contract, the undersigned will execute a satisfactory Construction Contract, and submit proof of insurance coverage with the Owner for the entire Work as per the Contract Documents within ten (10) Days after Notice of Award. It is agreed that a proposal is subjected to the Owner's acceptance for the period of sixty (60) days from the date of the Bid opening.

The undersigned agrees to the following:

- 1. To furnish all labor and materials as shown and specified.
- 2. To complete the total work in _____ consecutive working days.
- 3. To work _____ days a week.
- 4. To start work _____ days after award of the contract.

Receipt is acknowledged of the following addenda:

No. _____ Dated _____

Bidder agrees that the Owner has the right to accept or reject any or all bids and to waive formalities.

RESPECTFULLY SUBMITTED,

By: _____
Signature

Printed Name

Title

Company

Company Address

Phone Number

SUPPLEMENTARY CONDITIONS

1. Contractor shall not commence work under this contract until it has obtained required insurance and until such insurance has been approved by the Owner. Contractor shall not allow any subcontractor to commence work until all similar required insurance has been obtained and approved. Approval of the insurance by the Owner shall not relieve or decrease the liability of the Contractor hereunder.
 - a. Workman’s Compensation and Occupational Disease.....Statutory
 - b. Employer’s Liability (including Occupational Disease Coverage).....\$100,000/\$500,000
 - c. Comprehensive General Liability, including Operations, Contractual, Contractor’s Protective Liability for Bodily Injury and Completed Operations Coverage Occurrence Basis.....\$2,000,000 for bodily injury; \$2,000,000 for property damage; 3,000,000 aggregate coverage
 - d. Comprehensive Automobile Liability covering Contractor Owned, Non-owned and Hired Vehicles used in the performance of the work.....\$1,000,000 for bodily injury; \$1,000,000 for property damage or as required by law, whichever is greater, and shall include contractual liability insurance as applicable to the contractor’s obligations. Certificates of such insurance shall be filed with the Owner prior to the commencement of the work. The insurance for each separate Contractor, without in any way limiting the generality or beneficiaries of the foregoing, shall specifically mention the Owner.
 - e. Umbrella Excess Liability.....\$1,000,000 per occurrence for bodily injury, property damage, personal and advertising injury over underlying limits.

2. The Contractor shall obtain certificates of insurance identifying the Owner as “additional insured.”

END OF SUPPLEMENTARY CONDITIONS

DIVISION 1

SECTION 01010 – SUMMARY OF WORK

PART I – GENERAL

- 1.1 Related Documents
- 1.2 Project Identification
- 1.3 Contractor Documents
- 1.4 Contractor Use of Premises
- 1.5 Scope of Work

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

Not Applicable

SECTION 01010 – SUMMARY OF WORK

PART I – GENERAL

1.1 Related Documents Sections

The provisions of the Contract, the General Conditions, the Supplementary Conditions and other Division 1 Specification Sections, apply to the work in this section.

1.2 Project Identification

The work name is **“Roof Project – METRO 1, METRO 2, METRO 4, WEST CENTRAL 1, SOUTH CENTRAL 1, County of Harnett”** as shown on Contract Documents.

1.3 Contract Documents

Indicate the Work of Contract, and related provisions of Work which may include but are not necessarily limited to the following:

- A. Existing site conditions and restrictions.
- B. Other Work prior to Work of Contract.
- C. Alterations and coordination with existing Work.

1.4 Contractor Use of Premises

General: This facility will be occupied during the life of this Contract. The work shall be done and temporary facilities furnished so as not to interfere with safe access to the building and shall provide adequate protection for interior and exterior finishes, tenants, employees, visitors, equipment, personal property and vehicles.

The Contractor shall confine its activities to the roof work area, storage areas and assigned routes thereto, provided by the Owner.

Keep driveways, sidewalks, and parking areas cleared of materials and debris at all times.

Isolate areas designated for loading and off loading of materials and debris. Do not use building entranceways or stairs for transporting materials. Access to the roof shall be via assigned routes only.

Dispose of all debris resulting from this work on a regular basis. Do not stockpile debris on the roof or facility grounds. Debris may be stored in a container on site, provided the container is emptied regularly.

Access to this facility is limited. The Contractor shall confine its activities to ground level areas and an access route to the roof. There shall be no unauthorized access to interior hallways or tenant spaces.

Arrange for on-site materials and equipment storage with the Owner’s representative. Damage to the structure, interior and exterior finishes, landscaping and vegetation shall be made good to the Owner’s satisfaction at no cost to the Owner.

1.5 Scope of Work

The roofing work at “**METRO 1, METRO 2, METRO 4, WEST CENTRAL 1, SOUTH CENTRAL 1**” shall consist of but not limited to the following:

ROOF SECTION- METRO 1, METRO 2, METRO 4, WEST CENTRAL 1, SOUTH CENTRAL 1

1. Tear off and properly dispose of all roof material, insulation and metal detailing down to the existing concrete deck.
2. Evaluate concrete deck for damage.
3. Repair deck with Pyrofil as needed or equal.
4. Adhere in insulation adhesive an average R25 ¼” fully tapered insulation system per engineering wind uplift calculations provided by the roof manufacturer.
5. Install a base layer of SBS modified base sheet in cold process asphalt according to specified installation instructions.
6. Install a cap layer of SBS modified cap sheet in cold process asphalt according to specified installation instructions.
7. Install flashings in same configuration and method as the field plies with three course reinforcements on all laps.
8. Coat entire roof surface with Aluminizer.
9. Clean up the work area and restore to a pre-construction state.

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

Not Applicable

END OF SECTION 01010

DIVISION 1

SECTION 01025 –

PAYMENT PART I –

GENERAL

- 1.1 Related Documents
- 1.2 Payment Requests – General
- 1.3 Initial Payment Application
- 1.4 Final Payment
- 1.5 Transmittal

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

Not Applicable

SECTION 01025 – PAYMENT

PART I – GENERAL

1.1 Related Documents

The provisions of the Contract, the General Conditions, the Supplementary Conditions and other Division 1 Specifications Sections, apply to the work in this section.

1.2 Payment Requests – General

Payments to the Contractor shall be progressive and regular and must be consistent with previous applications and payments.

For final payment application, submit lien waivers for every entity (including Contractor) who could lawfully file a lien for this work. The Owner reserves the right to designate which will be required to submit waivers.

The Owner reserves the right to require partial lien waivers with each application for payment, as Work Conditions dictate.

Applications for payment must be completely filled in and follow the same schedule format on each submittal. Each application shall be executed by authorized personnel and duly notarized. Incomplete or incorrect applications shall be returned.

1.3 Initial Payment Application

Submittals which must be provided prior to the processing of the first application for payment are as follows:

- A. Listing of all subcontractors, suppliers and fabricators.
- B. Building permits and other applicable licenses and authorizations.
- C. Schedule of Values.
- D. Performance and payment bonds.
- E. Certificate of Insurance.
- F. Bills of lading, suppliers receipts or other documentation verifying quantities of materials and associated value shall be supplied if requested by the Consultant.
- G. Partial lien waiver, if required.

1.4 Final Payment

Submittals which must be provided prior to the processing of the final applications for payment are as follows:

- A. Verification that punchlist items have been satisfactorily corrected.
- B. Lien waivers, AIA Form 706 A, or similar from applicable entities.
- C. Completion of Work closeout requirements.
- D. Removal of temporary facilities, storage areas, equipment and excess materials.
- E. Settlement of damage claims arising from the work.
- F. Final cleanup of building and grounds.
- G. Receipt of executed Contractor's warranty document and final inspection certificate.
- H. Consent of surety for final payment, AIA Form 707 or similar.
- I. Affidavit of payment of all claims against work, AIA Form 706 or similar.

1.5 Transmittal

Each application shall be prepared in triplicate with applicable addenda attached to the original.

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

Not Applicable

END OF SECTION 01025

SECTION 01040 – COORDINATION

PART I – GENERAL

1.1 Related Documents

The provisions of the contract, the General Conditions, the Supplementary Conditions, and other Division 1 Specification Sections, apply to the work in this section.

1.2 Coordination and Meetings

The Contractor shall submit a listing of subcontractors involved with the Work at the pre-construction meeting. The Contractor shall be responsible for scheduling and coordination of these subcontractors so as to maintain the Work schedule and adherence to the specifications.

The Contractor shall coordinate his work with the Owner regarding disconnecting, movement and reconnecting of HVAC equipment.

The Owner and the Owner's Representative shall inform the Contractor of a time and date for the pre-construction meeting at which time the Contractor shall present representatives of all subcontractors and the materials manufacturer's technical representative.

The Contractor shall be prepared to submit the name(s) of site supervisory personnel at the time of to the pre-construction meeting as well as the telephone numbers to be used in the event of an emergency.

The Contractor shall be prepared to attend meetings at the site as required by the Owner and their representatives.

1.3 Delivery and Storage of Materials

At the pre-construction meeting, sites will be determined and designated for on-site storage of material and equipment.

This site shall be maintained by the Contractor during the life of the Contract and restored to their original condition prior to final payment.

The Contractor shall provide for the acceptance of materials delivered to the site in an efficient manner and in such a way as to prevent exposure to materials to moisture, heat, ultraviolet radiation, as required.

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

3.1 General

The Contractor, subcontractor(s) and manufacturer's representative shall attend a pre-construction meeting to be held prior to Work start up to discuss the Work and Specifications.

3.2 Mold Limitations

A. The Owner makes no representation or warranty, express, implied, or otherwise, regarding

mold, fungi, rust, corrosion or other bacteria or organism. Neither shall manufacturer have any duty to identify, nor accept any responsibility or liability for any claims associated with mold, fungi, rust, corrosion or other bacteria or organismrelated claims.

3.4 Cleaning and Protection

- A. While the work in underway, the new roof membrane shall be kept clean and free of contaminates. Avoid the trafficking of men and materials over the new membrane surface. Provide adequate protection of the new membrane system while storing materials and traversing. Damage to the existing roofing and finishes shall be repaired immediately. Interior damage determined to be the result of the Contractor's damage of the existing roof system shall be repaired by the Contractor to the satisfaction of the Owner at no cost to the Owner.

END OF SECTION 01040

DIVISION 1

SECTION 01090 – STANDARDS

PART I – GENERAL

- 1.1 Related Documents
- 1.2 Industry Standards
- 1.3 Overlapping and Conflicting Requirements

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

Not Applicable

SECTION 01090 – STANDARDS

PART I – GENERAL

1.1 Related Documents

The provisions of the Contract, the General Conditions, the Supplementary Conditions and Division 1 Specifications Sections, apply to the work in this section.

1.2 Industry Standards

Applicable standards of the construction industry have the same force and effect (and are made a part of the contract Documents by reference) as if copied directly or bound herewith.

AIA American Institute of Architects
1735 New York Avenue, N.W.
Washington, DC 29996

ASTM American Society of Testing and Materials
1916 Race Street
Philadelphia, PA 19103

FM Factory Mutual Engineering Corporation
1151 Boston-Providence Turnpike
Norwood, Massachusetts 02062

NRCA National Roofing Contractors Association
8600 Bryn Mawr Avenue
Chicago, IL 60631

SMACNA Sheet Metal and Air Conditioning Contractors National Association
PO Box 70
Merrifield, VA 22116

UL Underwriters Laboratories
333 Pfingsten Rd.
North Brook, IL 60062

1.3 Overlapping and Conflicting Requirements

Where compliance with two (2) or more industry standards, or sets of requirements are specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, the most stringent requirement (which generally recognized to be also most costly) is intended and will be enforced, unless specifically detailed language written into contract documents (not be way of reference to an industry standard) clearly indicates that a less stringent requirement is to be fulfilled. Refer apparently-equal-but-different requirements, and uncertainties as to which level of quality is more stringent, to the Consultant for a decision before proceeding.

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

Not Applicable

END OF SECTION 01090

DIVISION 1

PART I – GENERAL

- 1.1 Related Documents
- 1.2 General
- 1.3 Quality Assurance
- 1.4 Submittals

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

- 3.1 Meeting Schedule
- 3.2 Meeting Location
- 3.3 Pre-Bid Meeting
- 3.4 Pre-Construction Meeting
- 3.5 Pre-Job Conference
- 3.6 Project Meetings

SECTION 01200 – PROJECT MEETINGS

PART I – GENERAL

1.1 Related Documents

The provisions of the Contract, the General Conditions, the Supplementary Conditions and other Division 1 Specifications Sections, apply to the work in this section.

1.2 General

To enable orderly review during progress of the Work, and to provide for systematic discussion of problems, the Contractor shall conduct project meetings at the request of the Owner's Representative. In addition to specific coordination and pre-installment meetings for each element of work, and other regular project meetings for other purposes, hold general progress meetings as required, with time coordinated with preparation of payment request. Require each entity then involved in planning, coordination or performance of work to be properly represented at each meeting. Review each entity's present and future needs including interface requirements, time sequences, deliveries, access, site utilization, temporary facilities and services, hours of work, hazards and risks, housekeeping, change orders and documentation of information of payment requests. Discuss whether each element of current work is ahead of schedule, on time, or behind in relation with updated progress schedule. Determine how far behind schedule work will be expedited.

1.3 Quality Assurance

Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.4 Submittals

- A. Agenda Items: To the maximum extent practical, advise the Owner's representative at least 24 hours in advance of project meetings regarding all items to be added to the agenda.
- B. Minutes: the Contractor will compile minutes of each project meeting and will furnish three copies to the Owner's Representative. The Contractor may make and distribute such other copies as it wishes.

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

3.1 Meeting Schedule

Except as noted below for Pre-Construction Meetings, project meetings will be held at the discretion of the Owner. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 Meeting Location

To the maximum extent practical, meetings will be held at the job site.

3.3 Pre-Bid Meeting

A pre-bid meeting may be conducted to review the work, date, time and location shall be as indicated in the Invitation to Bid.

3.4 Pre-Construction Meeting

- A. A Pre-Construction Meeting will be scheduled within fifteen (15) days after the Owner has issued Notice to Proceed. Provide attendance by authorized representative of the Contractor.
- B. Minimum Agenda: Distribute data on and discuss:
1. Organizations arrangement of Contractor's and personnel, and those of subcontractors, materials suppliers and Consultant.
 2. Channels and procedures for communications.
 3. Construction schedule, including sequence of critical work.
 4. Contract documents, including distribution of required copies of original documents and revisions.
 5. Manufacturer design review and comments.
 6. Processing of Shop Drawings and other data submitted to the Owner's Representative for review.
 7. Processing of field decisions and Change Orders.
 8. Rules and regulations governing performance of the Work.
 9. Procedures for safety and first aid, security, quality control, housekeeping and other related matters.
 10. The area will be toured and proposed installation schedules will be established. Work, storage areas will be designated. Requirements (Contract Documents) and statutes of coordinating work will be reviewed. Roofing systems protection requirements for construction period beyond roofing installation will be discussed. All decisions, agreements, and disagreements will be recorded for the job record. Inspection and testing requirements will be reviewed.
 11. Prerequisite to starting roofing work: the following must be done prior to starting roofing work. The Roof System Manufacturer Representative, Contractor, Owner's Representative and/or a trained serviceman provided by the Owner, are to be present. A formal report will be issued and all parties are to have input/accept the report.
 - a. Inspection of roof top equipment: any air handlers (mechanical or gravity) or other roof top ventilators or similar devices that are to remain in service, are to be verified as to their waterproofing integrity prior to their removal. Without such prior acceptance of an unusable condition, the Owner will not fund any operation necessary to stop water entry. All roof top equipment including but not limited to: HVAC units, mechanical air handlers, venting or intake services or other such devices/ equipment that are to remain in place, are to be inspected to determine their operational status.
 - b. Walk-through of building: all existing water related damaged materials, loose items are to be listed that could be conceived to have been damaged during the roofing operation are to be listed.
 - c. Inspection of grounds: the ground condition, plants, etc., sidewalk conditions,

and other areas of interest to the Owner shall be noted. Prior to close out of the project, these areas will be restored.

3.5 Pre-Job Conference

A pre-job conference shall be held with the Contractor, Owner's Representative and Roofing Manufacturer to review the job prior to commencement of work.

END OF SECTION 01200

DIVISION 1

SECTION 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART I – GENERAL

- 1.1 Related Documents
- 1.2 Requirements
- 1.3 Submittal Procedure

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

Not Applicable

SECTION 01340 – SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART I – GENERAL

1.1 Related Documents

The provisions of the Contract, the General Conditions, the Supplementary Conditions and other Division 1 Specification Sections, apply to the work in this section.

1.2 Requirements

This section refers to non-administrative submittals such as shop drawings, product samples, data and other related items. These submittals are in addition to such administrative items as Permits, Schedule Values, Payment Applications, Performance and Payment Bonds, Insurance Certificates, Listing (Subcontractors, Suppliers, and Fabricators).

1.3 Submittal Procedure

Schedule and coordinate submittals to correspond to the progress of the work and with sufficient time to allow for review and processing by the Owner's Representative. Provide four (4) copies of every submittal, one will be returned.

No extensions of time will be allowed because the Contractor's failure to transmit submittals in a timely fashion.

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

Not Applicable

END OF SECTION 01340

DIVISION 1

SECTION 01600 –

MATERIALS PART I –

GENERAL

- 1.1 Related Documents
- 1.2 Products
- 1.3 General Product Requirements
- 1.4 Transportation and Handling
- 1.5 Storage and Protection
- 1.6 Substitutions
- 1.7 Work Related Submittals
- 1.8 Warranty

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

Not Applicable

SECTION 01600 – MATERIALS

PART I – GENERAL

1.1 Related Documents

The provision of the Contract, the General Conditions, the Supplementary Conditions and other Division 1 Specification Sections, apply to the work in this section.

1.2 Products

A. For products specified only by Reference Standards, select any product meeting standards, by any manufacturer.

1.3 General Product Requirements

Provide products which comply with requirements in new unopened containers, clearly marked from the Manufacturer.

1.4 Transportation and Handling

- A. Deliver products to site with seals and labels intact.
- B. Deliver materials in manufacturer's original containers, dry and undamaged.
- C. Store all materials delivered to the site in enclosed trailers.
- D. Stand roll material on end.

1.5 Storage and Protection

- A. During execution of work covered by these specifications, the Contractor shall provide protection equipment, materials, and personnel inside the building against falling debris, sparks, and water. Protection shall be provided in a manner to minimize interference, interruption, and inconvenience to any ongoing activities.
- B. The Contractor shall protect from damage, all existing mechanical, electrical and plumbing equipment.
- C. Protect building surfaces against damage from roofing work.
- D. All workmen shall wear clean, soft rubber soled shoes for any application work where they may be walking on the in-place roofing membrane. Precautions shall be taken to protect the membrane and to maintain a clean appearance.

1.6 Substitutions

- A. During bidding, Owner's Representative will consider written requests from prime bidders for substitutions. In the event a substitution is accepted, all bidders shall be notified of the acceptable alternate within (3) days to the bid opening

1.7 Work-Related Submittals

Contractor's submittals of shop drawings, product data or samples which relate to work not complying with requirements of Contract Documents, does not constitute an acceptable or valid request for a substitution, no approval thereof.

1.8 Warranty

- A. Provide a 5 year contractor warranty for defects in materials or workmanship and a manufacturer's 30 year warranty for materials and installation at no cost to the Owner.

END OF SECTION

01600

DIVISION 2

SECTION 02070

PART I –GENERAL

- 1.01 Related Documents
- 1.02 Work Included
- 1.03 Coordination
- 1.04 Job Conditions
- 1.05 Permits
- 1.06 Sequence of Operations

PART II – PRODUCTS

Not Applicable

PART III – EXECUTION

- 3.1 Protection
- 3.2 Removal
- 3.3 Pollution Control
- 3.4 On-Site Storage
- 3.5 Repair of Damages
- 3.6 Cleanup

SECTION 02070 – SELECTIVE DEMOLITION

PART I – GENERAL

1.1 Related Documents

The provisions of the Contract, the General Conditions, the Supplementary Conditions and other Division 1 Specification Sections, apply to the work in this section.

1.2 Work Included

Demolition work shall include, but is not limited to the following:

- A. Removal of all existing roof systems, insulation, flashings, and metal.

1.3 Coordination

It is the responsibility of the Contractor to coordinate the work of this section with all other work on the project.

1.4 Job Conditions

- A. The Contractor shall inspect the premises prior to the submittal of its bid for conditions which may affect its work.
- B. Demolition, storage of materials, removal of debris and construction operations shall not interfere with the Owner's use of the property.

1.5 Permits

The Contractor shall obtain, at its expense, all permits required by governing authorities, including any required for disposal of demolition debris or for use or blockage of streets or sidewalks.

1.6 Sequence of Operations

The Contractor shall submit for approval the complete sequence of operations for demolition and show how this Work is coordinated with all other aspects of the Project. Work shall not begin until such a schedule has been approved by the Owner or its authorized representative.

PART II PRODUCTS

Not Applicable

PART III EXECUTION

3.1 Protection

- A. Before starting demolition, the Contractor shall be solely responsible for making the necessary arrangements and for performing the necessary work involved in connection with the discontinuance or interruption of public and private utilities or services or components of said utilities or services under the jurisdiction of the Owner, utility companies or corporations, Police Department, Fire Department and Public Works Department including but not limited to gas, electricity, telephone, police signal, fire alarm, water, sanitary sewer, storm drainage and other systems which will be affected by the work to be performed under this Contract.
- B. The Contractor shall preserve in operating condition active utilities traversing the work site and shall protect manholes, catch basins, valve boxes and other apparatus. He shall repair damage to any such utility, due to work under this Contract, to the satisfaction of the Owner or its authorized representative.
- C. Adequate protection of persons and property shall be provided at all times. The work shall be executed in a manner to avoid interference with the use of adjacent buildings, areas or properties, and to avoid interruption of free passage to or from such buildings, areas or properties.
- D. Investigate and comply with any rules or regulations relative to providing and paying for uniformed Police to regulate or control traffic on existing streets which are affected by the Contractor's operation.
- E. Furnish signs, lights, barricades and other equipment as may be necessary for the safe execution of the work while the building is occupied.

3.2 Removal

- A. Remove the roof membrane, insulation, membrane flashing and sheet metal. Carefully inspect and repair exposed surfaces, utilities, roof penetrations, etc for damage and repair or replace as required.
- B. Removal shall result in a smooth, consistent substrate for application of wood blocking, membrane and membrane flashing.
- C. A thorough inspection of the existing substrate and adjoining materials shall be made to determine if any repairs are required. If conditions are uncovered or created that would be detrimental to the application of specified work, immediately notify the Owner's Representative of such conditions for determination of treatment.

3.3 Pollution Control

- A. The Contractor shall be aware that the facility must remain in use throughout the course of construction and that any disruption or inconvenience sustained by the Owner, employees, visitors and patrons must be kept to an absolute minimum. To this end, the Contractor shall provide, if necessary, a water spray and impermeable barrier to minimize dust and debris infiltration. Also, the Contractor shall select equipment and procedures to mitigate noise discomfort.
- B. Debris shall be considered the property of the Contractor and shall be removed from the site in its entirety on a daily basis and be legally disposed of. On site storage of discarded material will only be permitted when stored in a covered container.

3.4 On-Site Storage

- A. Equipment or materials stored on the roof shall be distributed in such a manner that no structural building components are overstressed.
- B. Ground level storage areas, if available will be provided adjacent to the facility for equipment and new materials. Size and location shall be coordinated with the Owner.
- C. No debris or waste material shall be stored on or within the building, unless otherwise designated.

3.5 Repair of Damages

- A. The Contractor shall provide a list of damaged or deteriorated elements of the building and adjacent areas to the Owner prior to demolition and shall be responsible for repair or replacement of damaged or deteriorated items not on that list when the operations of the Contractor are substantially complete.
- B. Damage to any portion of the building which results in disruption of or inconvenience to the Owner, employees or patrons shall be immediately repaired or replaced by the Contractor. If such restitution is not promptly made, the Owner shall have the necessary work performed by an outside agency at the Contractor's expense. Such work shall be completed to the satisfaction of the Owner prior to the release of final payment.

3.6 Environmental Requirements

- A. Do not apply roofing membrane during inclement weather or when a 30% chance of precipitation is expected.
- B. Do not apply roofing insulation or membrane to damp deck surface.
- C. Do not expose material vulnerable to water or sun damage in quantities greater than can be weatherproofed during the same day.

3.7 Cleanup

- A. The building and adjacent areas shall be left in a broom clean condition at the end of each day.
- B. Upon completion of work of this section and after removal of debris, the site shall be left in a clean and safe condition, satisfactory to the Owner or his authorized representative.

END OF SECTION 02070

DIVISION 6

SECTION 06100 – ROUGH CARPENTRY

PART I – GENERAL

- 1.01 Related Documents
- 1.02 Related Sections
- 1.03 Delivery Storage and Handling
- 1.04 Quality Assurance

PART II – MATERIALS

- 2.01 Dimensional Lumber and Plywood

PART III – EXECUTION

- 3.1 Examination
- 3.2 Protection
- 3.3 Installation

SECTION 06100 –ROUGH CARPENTRY

PART I – GENERAL

1.1 Related Documents

The provisions of the Contract, the General Conditions, the Supplementary Conditions and other Division 1 Specification Sections, apply to the work in this section.

1.2 Related Sections:

- A. Section 07536 – Modified Bitumen Roof Membrane
- B. Section 02070 – Preparation for Re-Roofing
- C. Section 07620 – Flashing and Sheet Metal

1.03 Delivery Storage and Handling

- A. Time delivery and installation of carpentry work to avoid delaying other trades whose work is dependent on or affected by the carpentry work. Keep materials dry during delivery and storage.
- B. Store lumber and plywood in stacks with provisions for air circulation within stacks. Protect the bottom of stacks against contact with damp or wet surfaces.
- C. Protect exposed materials against water and wind. Remove damaged or unsuitable material from the job site.

1.4 Quality Assurance

- A. Comply with governing codes and regulations. Use experienced installers.
- B. Lumber Standards: American Softwood Lumber Standard PS 20-70 by the US Department of Commerce.
- C. Plywood Standards: US Product Standard PSI-74/ ANSI A 199.1 or the latest APA Performance Standards for American Plywood Association.
- D. Factory Marking: Mark each piece of lumber or plywood to indicate type, grade, agency providing the inspection service.
- E. Size and Shape: Dress lumber 4 sides (S4S) and work to shapes and patterns shown. Nominal sizes shown and specified refer to undressed lumber dimensions. Detailed dimensions show actual lumber size required.

PART II – PRODUCTS

2.1 Dimensional Lumber and Plywood

- A. Construction Lumber: Standard Grade Douglas Fir, Western Larch, Western Hemlock (WWPA or WCLB) or No. 2 dimension Southern Pine (SPIB).
- B. Exterior Type Plywood: APA Rated Sheathing, EXT.
- C. Bucks, Nailers, Blocking, Etc.: No. 2 common grade of any WWPA or WCLA species or No. 2 Southern Pine (SPIB).

- D. Anchorage and Fastenings: Proper type, size material and finish for each application.
- E. Quality: Sound, seasoned, well manufactured materials of longest practical lengths and sizes to minimize joints. Free from warp which cannot be easily corrected by anchoring and attachment. Discard material with defects which would impair quality of work.

PART III – EXECUTION

3.1 Examination

- A. Verify measurements and dimensions shown before proceeding with carpentry work.
- B. Examine supporting structure and conditions under which carpentry work is to be installed. Do not proceed with installation until unsatisfactory conditions have been corrected.
- C. Correlate location of nailers, blocking and similar supports for attached work.
- D. Scribe and cope as required for accurate fit of carpentry work to other work.

3.2 Protection

- A. Protect installed work from damage by other trades until acceptance of work.

3.3 Installation

- A. Provide nailers, blocking and sleepers where shown on or required for attachment of other work. Coordinate with location with other work involved; refer to shop specifications of such work.
- B. Attach to substrate securely as required to support applied loading. Countersink bolts and nuts flush with surfaces.
- C. Securely attach wood nailers to substrates in accordance with Factory Mutual Loss Prevention Data Sheet 1-49 and as required by recognized standards.
- D. Provide washers under bolt heads and nuts in contact with wood.
- E. Do not wash or lubricate fasteners that depend on friction for holding power.
- F. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish material.
- G. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required. Do not drive threaded friction type fasteners; turn in place. Tighten bolts and lag screws at installation and retighten bolts as required for tight connections prior to closing in or at completion of work.

END OF SECTION 06100

SECTION 07220 - ROOF DECK AND INSULATION

PART 1 — GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal Roof Deck Repair.
2. Concrete Roof Deck Infill.
3. Gypsum Topping Repair.
4. Roof Insulation.
5. Gypsum Roof Board.
6. Cants.

B. Related Sections:

1. Division 06 Section Miscellaneous Carpentry.
2. Division 07 Section Modified Bituminous Membrane Roofing, Cold-Applied.
3. Division 07 Section Sheet Metal Flashing and Trim.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
- B. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.
- C. Underwriters Laboratories, Inc. (UL): Fire Hazard Classifications.
- E. Warnock Hersey (WH): Fire Hazard Classifications.

1.3 SUBMITTALS

- A. Product Data: Provide manufacturer's product data sheets for each product. Include design mixtures, mixing instructions and application instructions for gypsum topping repair.
- B. Provide approval letters from insulation manufacturer for use of their insulation within this particular roofing system type.
- C. Provide a sample of each insulation type.
- D. Shop Drawings
 1. Submit manufacturer's shop drawings indicating complete installation details of tapered insulation system, including identification of each insulation block, sequence of installation, layout, drain locations, roof slopes, thicknesses, crickets and saddles.
 2. Shop drawing shall include: outline of roof, location of drains, complete board layout of tapered insulation components, thickness and the average "R" value for the completed insulation system.
- E. Certification

1. Submit roof manufacturer's certification that insulation fasteners furnished are acceptable to roof manufacturer.
2. Submit roof manufacturer's certification that insulation furnished is acceptable to roofing manufacturer as a component of roofing system and is eligible for roof manufacturer's system warranty.

1.4 QUALITY ASSURANCE

- A. Fire Classification, ASTM E-108.
- B. Manufacturer's Certificate: Certify that roof system furnished is approved by Underwriters Laboratories, Warnock Hersey or approved third party testing facility in accordance with ASTM E108, Class A for external fire and meets local or nationally recognized building codes.
- C. Manufacturer's Certificate: Certify that the roof system is adhered properly to meet or exceed the wind uplift calculation requirements.
- D. Installer Qualifications: A firm approved by gypsum topping manufacturer for installation of gypsum topping.
- E. Pre-installation Meeting: Refer to Division 07 SBS-Modified Bituminous Membrane Roofing, Cold-Applied Specifications for pre-installation meeting requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.
- B. Store all insulation materials in a manner to protect them from the wind, sun and moisture damage prior to and during installation. Any insulation that has been exposed to any moisture shall be removed from the project site.
- C. Keep materials enclosed in a watertight, ventilated enclosure (i.e. tarpaulins).
- D. Store materials off the ground. Any warped, broken or wet insulation boards shall be removed from the site.

1.6 PROJECT CONDITIONS

- A. Do not place gypsum topping unless ambient temperature is within range acceptable to manufacturer and rising.
- B. Do not place gypsum topping during rain or snow or on surfaces covered with standing water, snow or ice.

PART 2 — PRODUCTS

2.1 PRODUCTS, GENERAL

- A. Basis of Design: Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.
- B. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.

2.2 ROOF DECK REPAIR, ROOF DECK INFILL AND TOPPING REPAIR

- A. Metal Roof Deck Repair: For Areas Found to Have Deteriorated Metal Roof Deck.
 - 1. Profile: Custom metal roof deck to match existing metal roof deck profile.
 - 2. Gage: Minimum 20 gage.
 - 3. Coating: Minimum G-60 galvanized coating.
- B. Concrete Roof Deck Infill: For Areas Indicated to Receive Concrete Deck Infill.
 - 1. Concrete: Normal weight (150 pcf) 3,000 psi (28 day compressive strength).
 - 2. Reinforcing Steel: 60,000 psi (minimum yield strength) in sizes indicated on drawings.
- C. Gypsum Topping Repair: For Areas Found to Have Deteriorated Gypsum Topping:
 - 1. Acceptable Manufacturers and Products:
 - a. USG Securock Gypsum-Concrete Patch (formerly Pyrofill)
 - b. Elastizell Cell-Patch
 - c. Siplast Zono-Patch
 - 2. Description: Site mixed, pourable patching material formulated for repair of lightweight insulating concrete roof decks.

2.3 ROOF INSULATION

- A. Rigid Polyisocyanurate Roof Insulation; ASTM C1289:
 - 1. Qualities: Rigid, closed cell polyisocyanurate foam core bonded to heavy duty glass fiber mat facers.
 - 2. Thicknesses: 1 1/2" and 2" at locations indicated on drawings.
 - 3. R-Value: Minimum 6 per inch.
 - 4. Compression Resistance: Minimum 20 psi.
 - 5. Compliances: UL, WH or FM listed under Roofing Systems; Federal Specification HH-I-1972, Class 1.
 - 6. Acceptable Products:
 - a. ENRGY-3; Johns Manville
 - b. Hytherm; Dow
 - c. GAFTEMP Isotherm R; GAF
 - d. approved equal.
- B. Tapered Polyisocyanurate Roof Insulation; ASTM C1289:
 - 1. Qualities: Factory Tapered, closed cell polyisocyanurate foam core bonded to heavy duty glass fiber mat facers.
 - 2. Thicknesses: 1/2" and 1" at locations indicated on drawings.
 - 3. Average R-Value: Minimum 25.
 - 4. Compression Resistance: Minimum 20 psi.
 - 5. Tapered Slope: 1/8".
 - 6. Compliances: UL, WH or FM listed under Roofing Systems; Federal Specification HH-I-1972, Class 1.
 - 7. Acceptable Products:
 - a. ENRGY-2; Johns Manville
 - b. Ultra Gard Gold, Johns Manville
 - c. GAFTEMP Isotherm R; GAF
 - d. approved equal.

2.4 GYPSUM ROOF BOARD

- A. Qualities: Nonstructural, noncombustible, homogenous composition panel.
- B. Board Size: four feet by four feet.
- C. Thickness: one half inch.
- D. R-Value: 0.5.
- E. Compliances: UL, WH.
- F. Approved Products: USG Securock Gypsum-Fiber Roof Board or architect approved equal.

2.5 RELATED MATERIALS

- A. Wood Fiber Cant and Tapered Edge Strips: environmentally friendly and made from 100% recyclable cellulosic wood fibers material, as per the approved manufacturer.
 - 1. Acceptable Manufacturers:
 - a. Celotex
 - b. Johns Manville
 - c. GAF
 - d. Architect Approved Equal
- B. Roof Board Joint Tape: Six (6) inches wide glass fiber mat with adhesive compatible with insulation board facers.
- C. Roof Deck Insulation Adhesive: Single component, low rise foam adhesive as recommended by insulation manufacturer and approved by FM indicated ratings.
 - 1. Tensile Strength (ASTM D412).....250 psi
 - 2. Density (ASTM D1875).....8.5 lbs./gal.
 - 3. Viscosity (ASTM D2556).....8,000 to 32,000 cP.
 - 4. Peel Strength (ASTM D903).....17 lb/in.
 - 5. Flexibility (ASTM D816).....Pass @ -70°F

PART 3 — EXECUTION

3.1 INSPECTION OF SURFACES

- A. Roofing contractor shall be responsible for preparing an adequate substrate to receive insulation.
 - 1. Verify that work which penetrates roof deck has been completed.
 - 2. Verify that wood nailers are properly and securely installed.
 - 3. Examine surfaces for defects, rough spots, ridges, depressions, foreign material, moisture, and unevenness.
 - 4. Do not proceed until defects are corrected.
 - 5. Do not apply insulation until substrate is sufficiently dry.
 - 6. Broom clean substrate immediately prior to application.

7. Use additional insulation to fill depressions and low spots that would otherwise cause ponding water.

3.2 ROOF DECK REPAIR, ROOF DECK INFILL AND TOPPING REPAIR

A. Concrete Roof Deck Infill: For Areas Indicated to Receive Concrete Deck Infill.

1. Provide temporary plywood formwork under opening to be filled.
2. Install reinforcing steel indicated on drawings.
3. Fill opening with concrete.
4. Remove temporary plywood formwork.

C. Gypsum Topping Repair: For Areas Found to Have Deteriorated Gypsum Topping:

1. Remove loose and deteriorated areas of existing gypsum topping.
2. Mix gypsum topping for repairs according to manufacturer's written instructions.
3. Install gypsum topping according to manufacturer's written instructions to fill all removed areas of topping and match thickness and profile of surrounding gypsum topping.
4. Protect installed gypsum topping from subsequent construction operations.

3.3 INSTALLATION OF INSULATION AND GYPSUM ROOF BOARD

A. Attachment with Insulation Adhesive

1. Ensure all surfaces are clean, dry, free of dirt, debris, oils, loose ore embedded gravel, unadhered coatings, deteriorated membrane and other contaminants that may inhibit adhesion.
2. Apply insulation adhesive directly to the substrate using a ribbon pattern with one half (3/4) inch wide beads, using either the pail or an automatic applicator, at a rate of one gallon per one hundred square feet.
3. Immediately place insulation boards into wet adhesive. Do not slide boards into place. Do not allow the adhesive to skin over before installing insulation boards.
4. Briefly step each board into place to ensure contact with the adhesive. Substrates with irregular surfaces may prevent the insulation board from making positive contact with the adhesive. Relief cuts or temporary weights may be required to ensure proper contact.
5. All boards shall be cut and fitted where the roof deck intersects a vertical surface. The boards shall be cut to fit a minimum of one quarter (1/4) inch away from the vertical surface.

3.4 CLEANING

- #### A. Remove debris and cartons from roof deck. Leave insulation clean and dry, ready to receive roofing membrane.

3.5 CONSTRUCTION WASTE MANAGEMENT

- #### A. Remove and properly dispose of waste products generated during installation. Comply with requirements of authorities having jurisdiction

SECTION 07550
MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cold Applied 2-Ply Asphalt Roofing
- B. Accessories. (2.19)
- C. Edge Treatment and Roof Penetration Flashings. (2.20)(3.9)

1.2 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry.
- B. Section 06114 - Wood Blocking and Curbing: Wood nailers and cant strips.
- C. Section 07220 - Insulation Board: Insulation and fastening.
- D. Section 07620 - Sheet Metal Flashing and Trim: Weather protection for base flashings.

1.3 REFERENCES

- A. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- B. ASTM D 312 - Standard Specification for Asphalt used in Roofing.
- C. ASTM D 451 - Standard Test Method for Sieve Analysis of Granular Mineral Surfacing for Asphalt Roofing Products.
- D. ASTM D 1970 - Specification for Sheet Materials, Self-Adhering Polymer Modified Bituminous, Used as Steep Roofing Underlayment for Ice Dam Protection.
- E. ASTM D 1079 Standard Terminology Relating to Roofing, Waterproofing and Bituminous Materials.
- F. ASTM D 1227 Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing.
- G. ASTM D 1863 Standard Specification for Mineral Aggregate Used as a Protective Coating for Roofing.
- H. ASTM D 2178 Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
- I. ASTM D 2824 Standard Specification for Aluminum-Pigmented Asphalt Roof Coating.
- J. ASTM D 4586 Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- K. ASTM D 4601 Standard Specification for Asphalt Coated Glass Fiber Base Sheet Used in Roofing.
- L. ASTM D 5147 Standard Test Method for Sampling and Testing Modified Bituminous Sheet Materials.
- M. ASTM D 6162 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
- N. ASTM D 6163 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- O. ASTM D 6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.

- P. ASTM D 6754 - Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing.
- Q. ASTM D 6757 - Standard Specification for Underlayment Felt Containing Inorganic Fibers Used in Steep-Slope Roofing.
- R. ASTM E 108 - Standard Test Methods for Fire Test of Roof Coverings
- S. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.
- T. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.
- U. Underwriters Laboratories, Inc. (UL): Fire Hazard Classifications.
- V. Warnock Hersey (WH): Fire Hazard Classifications.
- W. ANSI-SPRI ES-1 Wind Design Standard for Edge Systems used with Low Slope Roofing Systems.
- X. ASCE 7, Minimum Design Loads for Buildings and Other Structures
- Y. UL - Fire Resistance Directory.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Perform work in accordance with all federal, state and local codes.
- B. Exterior Fire Test Exposure: Roof system shall achieve a UL, FM or WH Class rating for roof slopes indicated on the Drawings as follows:
 - 1. Underwriters Laboratory Class A Rating.
 - 2. Warnock Hersey Class A Rating.
- C. Design Requirements:
 - 1. Uniform Wind Uplift Load Capacity
 - a. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria.
 - 1) Design Code: ASCE 7, Method 2 for Components and Cladding.
 - 2) Importance Category:
 - III
 - 3) Importance Factor of:
 - a) 1.15
 - 4) Wind Speed: 124 mph
 - 5) Ultimate Pullout Value: 456 pounds per each of the fastener
 - 6) Exposure Category: C
 - 7) Design Roof Height: 15 feet.
 - 8) Minimum Building Width: 12 feet.
 - 9) Roof Pitch: 0.25 :12.
 - 10) Roof Area Design Uplift Pressure:
 - a) Zone 1 - Field of roof 0.25 psf
 - b) Zone 2 - Eaves, ridges, hips and rakes 41.2 psf
 - c) Zone 3 - Corners 62 psf
 - 2. Snow Load: 20psf.
 - 3. Live Load: 20 psf, or not to exceed original building design.
 - 4. Dead Load:
 - a. Installation of new roofing materials shall not exceed the dead load capacity of the existing roof structure.
- D. Energy Star: Roof System shall comply with the initial and aged reflectivity required by the U.S. Federal Government's Energy Star program.
- E. Roof System membranes containing recycled or bio-based materials shall be third party certified

through UL Environment.

- F. Roof system shall have been tested in compliance with the following codes and test requirements:
 - 1. Warnock Hersey
 - a. ITS Directory of Listed Products

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation instructions.
- C. Shop Drawings: Submit shop drawings including installation details of roofing, flashing, fastening, insulation and vapor barrier, including notation of roof slopes and fastening patterns of insulation and base modified bitumen membrane, prior to job start.
- D. Design Pressure Calculations: Submit design pressure calculations for the roof area in accordance with ASCE 7 and local Building Code requirements. Include a roof system attachment analysis report, certifying the system's compliance with applicable wind load requirements before Work begins. Report shall be signed and sealed by a Professional Engineer registered in the State of the Project who has provided roof system attachment analysis for not less than 5 consecutive years.
- E. Recycled or Bio-Based Materials: Provide third party certification through UL Environment of roof System membranes containing recycled or bio based materials.
- F. Verification Samples: For each modified bituminous membrane ply product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- G. Manufacturer's Certificates: Provide to certify products meet or exceed specified requirements.
- H. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147.
- I. Manufacturer's Fire Compliance Certificate: Certify that the roof system furnished is approved by Factory Mutual (FM), Underwriters Laboratories (UL), Warnock Hersey (WH) or approved third party testing facility in accordance with ASTM E108, Class A for external fire and meets local or nationally recognized building codes.
- J. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic inspection and maintenance of all completed roofing work. Provide product warranty executed by the manufacturer. Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified with documented ISO 9001 certification and minimum of twelve years of documented experience and must not have been in Chapter 11 bankruptcy during the last five years.
- C. Installer Qualifications: Company specializing in performing Work of this section with minimum five years documented experience and a certified Pre-Approved Garland Contractor.
- D. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress.

- E. Product Certification: Provide manufacturer's certification that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- F. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.

1.7 PRE-INSTALLATION MEETINGS

- A. Convene minimum two weeks prior to commencing Work of this section.
- B. Review installation procedures and coordination required with related Work.
- C. Inspect and make notes of job conditions prior to installation:
 - 1. Record minutes of the conference and provide copies to all parties present.
 - 2. Identify all outstanding issues in writing designating the responsible party for follow-up action and the timetable for completion.
 - 3. Installation of roofing system shall not begin until all outstanding issues are resolved to the satisfaction of the Architect.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging with labels intact until ready for installation.
- B. Store all roofing materials in a dry place, on pallets or raised platforms, out of direct exposure to the elements until time of application. Store materials at least 4 inches above ground level and covered with "breathable" tarpaulins.
- C. Stored in accordance with the instructions of the manufacturer prior to their application or installation. Store roll goods on end on a clean flat surface except store KEE-Stone FB 60 rolls flat on a clean flat surface. No wet or damaged materials will be used in the application.
- D. Store at room temperature wherever possible, until immediately prior to installing the roll. During winter, store materials in a heated location with a 50 degree F (10 degree C) minimum temperature, removed only as needed for immediate use. Keep materials away from open flame or welding sparks.
- E. Avoid stockpiling of materials on roofs without first obtaining acceptance from the Architect/Engineer.
- F. Adhesive storage shall be between the range of above 50 degree F (10 degree C) and below 80 degree F (27 degree C). Area of storage shall be constructed for flammable storage.

1.9 COORDINATION

- A. Coordinate Work with installing associated metal flashings as work of this section proceeds.

1.10 PROJECT CONDITIONS

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

1.11 WARRANTY

- A. Upon completion of the work, provide the Manufacturer's written and signed NDL Warranty, warranting that, if a leak develops in the roof during the term of this warranty, due either to defective material or defective workmanship by the installing contractor, the manufacturer shall provide the Owner, at the Manufacturer's expense, with the labor and material necessary to return the defective area to a watertight condition.

1. Warranty Period:
 - a. 30 years from date of acceptance.
 - b. Installer is to guarantee all work against defects in materials and following final acceptance of the work.
2. Warranty Period: 5 years from date of acceptance

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Garland
- B. Ecology
- C. Malarkey
- D. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- E. The Products specified are intended and the Standard of Quality for the products required for this project. If other products are proposed the bidder must disclose in the bid the manufacturer and the products that they intend to use on the Project. If no manufacturer and products are listed, the bid may be accepted only with the use of products specified.
 1. Bidder will not be allowed to change materials after the bid opening date.
 2. If alternate products are included in the bid, the products must be equal to or exceed the products specified. Supporting technical data shall be submitted to the Architect/ Owner for approval prior to acceptance.
 3. In making a request for substitution, the Bidder/Roofing Contractor represents that it has:
 - a. Personally investigated the proposed product or method, and determined that it is equal or superior in all respects to that specified.
 - b. Will provide the same guarantee for substitution as for the product and method specified.
 - c. Will coordinate installation of accepted substitution in work, making such changes as may be required for work to be completed in all respects.
 - d. Will waive all claims for additional cost related to substitution, which consequently become apparent.
 - e. Cost data is complete and includes all related cost under his/her contract or other contracts, which may be affected by the substitution.
 - f. Will reimburse the Owner for all redesign cost by the Architect for accommodation of the substitution.
 4. Owner reserves the right to be the final authority on the acceptance or rejection of any or all bids, proposed alternate roofing systems or materials that has met ALL specified requirement criteria.
 5. Failure to submit substitution package, or any portion thereof requested, will result in immediate disqualification and consideration for that particular contractors request for manufacturer substitution.

2.2 COLD APPLIED 2-PLY ROOF SYSTEM

- A. Base (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive: Fiberglass-reinforced SBS Mod underlayment 80mil
- B. Modified Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive: Eco-responsible, SBS/SIS membrane with high recycled content and reweavable- 115 mil
- C. Interply Adhesive: (1 and 2)
Cold applied rubber modified asphalt interply adhesive
- D. Flashing Base Ply: One ply bonded to the prepared substrate with Interply Adhesive: Fiberglass-reinforced SBS Mod underlayment 80mil
- E. Flashing Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive: Eco-

responsible, SBS/SIS membrane with high recycled content and reweavable- 115 mil

- F. Flashing Ply Adhesive:
 - Brush Grade, cold applied asphalt adhesive for flashings
- G. Surfacing: Requires 30 day wait before applying.
 - 1. Surface Coatings:
 - a. Non-fibered asphalt aluminum roof coating for smooth and mineral surfaces

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Inspect and approve the deck condition, slopes and fastener backing if applicable, parapet walls, expansion joints, roof drains, stack vents, vent outlets, nailers and surfaces and elements.
- C. Verify that work penetrating the roof deck, or which may otherwise affect the roofing, has been properly completed.
- D. If substrate preparation and other conditions are the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. General: Clean surfaces thoroughly prior to installation.
 - 1. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
 - 2. Fill substrate surface voids that are greater than 1/4 inch wide with an acceptable fill material.
 - 3. Roof surface to receive roofing system shall be smooth, clean, free from loose gravel, dirt and debris, dry and structurally sound.
 - 4. Wherever necessary, all surfaces to receive roofing materials shall be power broom and vacuumed to remove debris and loose matter prior to starting work.
 - 5. Do not apply roofing during inclement weather. Do not apply roofing membrane to damp, frozen, dirty, or dusty surfaces.
 - 6. Fasteners and plates for fastening components mechanically to the substrate shall provide a minimum pull-out capacity of 300 lbs. (136 k) per fastener. Base or ply sheets attached with cap nails require a minimum pullout capacity of 40 lb. per nail.
 - 7. Prime decks where required, in accordance with requirements and recommendations of the primer and deck manufacturer.
- B. Poured reinforced concrete
 - 1. Shall be smooth, dry, clean and free of ice/frost, projections and depressions. Concrete shall be fully cured and the surface shall be broom cleaned and free of release/curing agents prior to commencement of work.
 - 2. Prepared concrete surfaces for roofing or insulation by priming with asphalt/concrete primer conforming to ASTM D 41. Apply at a rate of approx. 1 gallon/100 sq. ft. (.4 L/m²). All primed areas shall be fully dried before proceeding with the application of the roof system. Hold back bitumen at the joints approximately 4 inches (102 mm) to prevent bitumen drippage.

3.3 INSTALLATION - GENERAL

- A. Install modified bitumen membranes and flashings in accordance with manufacturer's instructions and with the recommendations provided by the National Roofing Contractors Association's Roofing & Waterproofing Manual, the Asphalt Roofing Manufacturers Association, and applicable codes.
- B. General: Avoid installation of modified bitumen membranes at temperatures lower than 40-45 degrees F. When work at such temperatures unavoidable use the following precautions:
 - 1. Take extra care during cold weather installation and when ambient temperatures are affected

by wind or humidity, to ensure adequate bonding is achieved between the surfaces to be joined. Use extra care at material seam welds and where adhesion of the applied product to the appropriately prepared substrate as the substrate can be affected by such temperature constraints as well.

2. Unrolling of cold materials, under low ambient conditions must be avoided to prevent the likelihood of unnecessary stress cracking. Rolls must be at least 40 degrees F at the time of application. If the membrane roll becomes stiff or difficult to install, it must be replaced with roll from a heated storage area.
- C. Commence installation of the roofing system at the lowest point of the roof (or roof area), working up the slope toward the highest point. Lap sheets shingle fashion so as to constantly shed water
 - D. All slopes greater than 2:12 require back-nailing to prevent slippage of the ply sheets. Use ring or spiral-shank 1 inch cap nails, or screws and plates at a rate of 1 fastener per ply (including the membrane) at each insulation stop. Place insulation stops at 16 ft o.c. for slopes less than 3:12 and 4 feet o.c. for slopes greater than 3:12. On non-insulated systems, nail each ply directly into the deck at the rate specified above. When slope exceeds 2:12, install all plies parallel to the slope (strapping) to facilitate backnailing. Install 4 additional fasteners at the upper edge of the membrane when strapping the plies.

3.4 INSTALLATION COLD APPLIED ROOF SYSTEM

- A. Base Ply: Cut base ply sheets into 18 foot lengths and allow plies to relax before installing. Install base sheet in Interply Adhesive: applied at the rate required by the manufacturer. Shingle base sheets uniformly to achieve one ply throughout over the prepared substrate. Shingle in proper direction to shed water on each large area of roofing.
 1. Lap ply sheet ends 8 inches. Stagger end laps 12 inches minimum.
 2. Solidly bond to the substrate and adjacent ply with specified cold adhesive at the rate of 2 to 2-1/2 gallons per 100 square feet.
 3. Roll must push a puddle of adhesive in front of it with adhesive slightly visible at all side laps. Use care to eliminate air entrapment under the membrane.
 4. Install subsequent rolls of modified across the roof as above with a minimum of 4 inch side laps and 8 inch staggered end laps. Lay modified membrane in the same direction as the underlayers but the laps shall not coincide with the laps of the base layers.
 5. Extend plies 2 inches beyond top edges of cants at wall and projection bases.
 6. Install base flashing ply to all perimeter and projection details.
 7. Allow the one ply of base sheet to cure at least 30 minutes before installing the modified membrane. However, the modified membrane must be installed the same day as the base plies.
- B. Modified Cap Ply(s): Cut cap ply sheets into 18 foot lengths and allow plies to relax before installing. Install in interply adhesive applied at the rate required by the manufacturer. Shingle sheets uniformly over the prepared substrate to achieve the number of plies specified. Shingle in proper direction to shed water on each large area of roofing.
 1. Lap ply sheet ends 8 inches. Stagger end laps 12 inches minimum.
 2. Solidly bond to the base layers with specified cold adhesive at the rate of 2 to 2-1/2 gallons per 100 square feet.
 3. Roll must push a puddle of adhesive in front of it with adhesive slightly visible at all side laps. Care should be taken to eliminate air entrapment under the membrane.
 4. Install subsequent rolls of modified across the roof as above with a minimum of 4 inch side laps and 8 inch staggered end laps. Lay modified membrane in the same direction as the underlayers but the laps shall not coincide with the laps of the base layers.
 5. Allow cold adhesive to set for 5 to 10 minutes before installing the top layer of modified membrane.
 6. Extend membrane 2 inches beyond top edge of all cants in full moppings of the cold adhesive as shown on the Drawings.
- C. Fibrous Cant Strips: Provide non-combustible perlite or glass fiber cant strips at all wall/curb detail treatments where angle changes are greater than 45 degrees. Cant may be set in approved cold adhesives, hot asphalt or mechanically attached with approved plates and fasteners.

- D. Wood Blocking, Nailers and Cant Strips: Provide wood blocking, nailers and cant strips as specified in Section 06114.
1. Provide nailers at all roof perimeters and penetrations for fastening membrane flashings and sheet metal components.
 2. Wood nailers should match the height of any insulation, providing a smooth and even transition between flashing and insulation areas.
 3. Nailer lengths should be spaced with a minimum 1/8 inch gap for expansion and contraction between each length or change of direction.
 4. Nailers and flashings should be fastened in accordance with Factory Mutual "Loss Prevention Data Sheet 1- 49, Perimeter Flashing" and be designed to be capable of resisting a minimum force of 200 lbs/lineal foot in any direction.
- E. Metal Work: Provide metal flashings, counter flashings, parapet coping caps and thru-wall flashings as specified in Section 07620 or Section 07710. Install in accordance with the SMACNA "Architectural Sheet Metal Manual" or the NRCA Roofing Waterproofing manual.
- F. Termination Bar: Provide a metal termination bar or approved top edge securement at the terminus of all flashing sheets at walls and curbs. Fasten the bar a minimum of 8 inches (203 mm) o/c to achieve constant compression. Provide suitable, sealant at the top edge if required.
- G. Flashing Base Ply: Install flashing sheets by the same application method used for the base ply.
1. Seal curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
 2. Prepare all walls, penetrations, expansion joints and where shown on the Drawings to be flashed with required primer at the rate of 100 square feet per gallon. Allow primer to dry tack free.
 3. Adhere to the underlying base ply with specified flashing ply adhesive unless otherwise specified. Nail off at a minimum of 8 inches (203 mm) o.c. from the finished roof at all vertical surfaces.
 4. Solidly adhere the entire flashing ply to the substrate. Secure the tops of all flashings that are not run up and over curb through termination bar fastened at 6 inches (152 mm) O.C. and sealed at top.
 5. Seal all vertical laps of flashing ply with a three-course application of trowel-grade mastic and fiberglass mesh.
 6. Coordinate counter flashing, cap flashings, expansion joints and similar work with modified bitumen roofing work as specified.
 7. Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the roofing system work.
 8. Secure the top edge of the flashing sheet using a termination bar only when the wall surface above is waterproofed, or nailed 4 inches on center and covered with an acceptable counter flashing.
- H. Flashing Cap Ply:
1. Seal curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
 2. Prepare all walls, penetrations, expansion joints and where shown on the Drawings to be flashed with required primer at the rate of 100 square feet per gallon. Allow primer to dry tack free.
 3. Adhere to the underlying base flashing ply with specified flashing ply adhesive unless otherwise specified. Nail off at a minimum of 8 inches (203 mm) o.c. from the finished roof at all vertical surfaces.
 4. Coordinate counter flashing, cap flashings, expansion joints and similar work with modified bitumen roofing work as specified.
 5. Coordinate roof accessories, miscellaneous sheet metal accessory items with the roofing system work.
 6. All stripping shall be installed prior to flashing cap sheet installation.
 7. Heat and scrape granules when welding or adhering at cut areas and seams to granular surfaces at all flashings.

8. Secure the top edge of the flashing sheet using a termination bar only when the wall surface above is waterproofed, or nailed 4 inches on center and covered with an acceptable counter flashing.
- I. Surface Coatings: Apply roof coatings in strict conformance with the manufacturer's recommended procedures.
- J. Roof Walkways: Provide walkways in areas indicated on the Drawings.

3.5 INSTALLATION EDGE TREATMENT AND ROOF PENETRATION FLASHING

- A. Metal Edge:
 1. Inspect the nailers to assure proper attachment and configuration.
 2. Run one ply over the edge. Assure coverage of all wood nailers. Fasten plies with ring shank nails at 8 inches (203 mm) o.c.
 3. Install continuous cleat and fasten at 6 inches (152 mm) o.c.
 4. Install new metal edge hooked to continuous cleat and set in bed of roof cement. Fasten flange to wood nailers every 3 inches (76 mm) o.c. staggered.
 5. Prime metal edge at a rate of 100 square feet per gallon and allow to dry. Do not prime for Green-Lock System lightly sand metal to improve bond.
 6. Strip in flange with base flashing ply covering entire flange in bitumen with 6 inches (152 mm) on to the field of roof. Assure ply laps do not coincide with metal laps.
 7. Install a second ply of modified flashing ply in bitumen over the base flashing ply, 9 inches (228 mm) on to the field of the roof. Seal outside edge with rubberized cement.
- B. Skylight:
 1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical at a rate of 100 square feet per gallon and allow to dry.
 2. Set cant in bitumen. Run all field plies over cant a minimum of 2 inches (50 mm).
 3. Install base flashing ply covering curb set in bitumen with 6 inches (152 mm) on to field of the roof.
 4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, 9 inches (228 mm) on to the field of the roof. Attach top of membrane to top of wood nailer and apply a three-course application of mastic and mesh. Allow to cure and aluminize.
 5. Install pre-manufactured lens and fasten flashing sides at 8 inches (203 mm) o.c. with fasteners and neoprene washers.

3.6 CLEANING

- A. Clean-up and remove daily from the site all wrappings, empty containers, paper, loose particles and other debris resulting from these operations.
- B. Remove asphalt markings from finished surfaces.
- C. Repair or replace defaced or disfigured finishes caused by Work of this section.

3.7 PROTECTION

- A. Provide traffic ways, erect barriers, fences, guards, rails, enclosures, chutes and the like to protect personnel, roofs and structures, vehicles and utilities.
- B. Protect exposed surfaces of finished walls with tarps to prevent damage.
- C. Plywood for traffic ways required for material movement over existing roofs shall be not less than 5/8 inch (16 mm) thick.
- D. In addition to the plywood listed above, an underlayment of minimum 1/2 inch (13 mm) recover board is required on new roofing.
- E. Special permission shall be obtained from the Manufacturer before any traffic shall be permitted over new roofing.

3.8 FIELD QUALITY CONTROL

- A. Inspection: Provide manufacturer's field observations at start-up and at intervals of approximately 30 percent, 60 percent and 90 percent completion. Provide a final inspection upon completion of the Work.
1. Warranty shall be issued upon manufacturer's acceptance of the installation.
 2. Field observations shall be performed by a Sales Representative employed full-time by the manufacturer and whose primary job description is to assist, inspect and approve membrane installations for the manufacturer.
 3. Provide observation reports from the Sales Representative indicating procedures followed, weather conditions and any discrepancies found during inspection.
 4. Provide a final report from the Sales Representative, certifying that the roofing system has been satisfactorily installed according to the project specifications, approved details and good general roofing practice.

3.9 SCHEDULES

- A. Base (Ply) Sheet:
1. 80 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing base sheet reinforced with a fiberglass scrim, performance requirements according to ASTM D 5147.
 - a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 100 lbf/in XD 100 lbf/in
 - 2) 50mm/min. @ -17.78 +/- 2 deg. C MD 17.5 kN/m XD 17.5 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 110 lbf XD 100 lbf
 - 2) 50mm/min. @ 23 +/- 2 deg. C MD 489 N XD 444 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 4 % XD 4 %
 - 2) 50mm/min @ -17.78 +/- 2 deg. C MD 4 % XD 4 %
 - d. Low Temperature Flexibility, ASTM D 5147, Passes -40 deg. F (-40 deg. C)
- B. Modified Cap (Ply) Sheet:
1. 105 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing membrane incorporating recycled rubber and reinforced with a fiberglass and polyester composite scrim. ASTM D 6162, Type III Grade S
 - a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 310 lbf/in XD 310 lbf/in
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 54.25 kN/m XD 54.25 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 500 lbf XD 500 lbf
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 2224 N XD 2224 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6F MD 8% XD 8%
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 8% XD 8%
 - d. Low Temperature Flexibility, ASTM D 5147, Passes -30 deg. F (-34 deg. C)
- C. Interply Adhesive:
1. Rubberized, polymer modified cold process asphalt roofing bitumen V.O.C. compliant ASTM D 3019. Performance Requirements:
 - a. Non-Volatile Content ASTM D 4479 70%
 - b. Density ASTM D1475 8.9 lbs./gal.
 - c. Viscosity Stormer ASTM D562 400-500 grams
 - d. Flash Point ASTM D 93 100 deg. F min. (37 deg. C)
 - e. Slope: up to 3:12
- D. Flashing Base Ply:
1. 80 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing base sheet reinforced with a fiberglass scrim, performance requirements according to ASTM D 5147.
 - a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 100 lbf/in XD 100 lbf/in

- 2) 50 mm/min. @ -17.78 +/- 2 deg. C MD 17.5 kN/m XD 17.5 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 110 lbf XD 100 lbf
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 489 N XD 444 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 4 % XD 4 %
 - 2) 50 mm/min. @ -17.78 +/- 2 deg. C MD 4 % XD 4 %
 - d. Low Temperature Flexibility, ASTM D 5147
 - 1) Passes -40 deg. F (-40 deg. C)
- E. Flashing Ply Adhesive:
- 1. Flashing Adhesive: Brush grade flashing adhesive.
 - a. Non-Volatile Content ASTM D 4479 70 min.
 - b. Density ASTM D 1475 8.6 lbs./gal. (1kg/l)
 - c. Flash Point ASTM D 93 100 deg. F (37 deg. C)
- F. Surfacing:
- 1. Flashing Cap (Ply) Sheet:
 - a. 105 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing membrane incorporating recycled rubber and reinforced with a fiberglass and polyester composite scrim. ASTM D 6162, Type III Grade S
 - 1) Tensile Strength, ASTM D 5147
 - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 310 lbf/in XD 310 lbf/in
 - b) 50 mm/min. @ 23 +/- 2 deg. C MD 54.25 kN/m XD 54.25 kN/m
 - 2) Tear Strength, ASTM D 5147
 - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 500 lbf XD 500 lbf
 - b) 50 mm/min. @ 23 +/- 2 deg. C MD 2224 N XD 2224 N
 - 3) Elongation at Maximum Tensile, ASTM D 5147
 - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 8% XD 8%
 - b) 50 mm/min. @ 23 +/- 2 deg. C MD 8% XD 8%
 - 4) Low Temperature Flexibility, ASTM D 5147, Passes -30 deg. F (-34 deg. C)
 - 2. Surface Coatings:
 - a. Surfacing:
 - 1) : ASTM D 2824 aluminum coating non-fibered aluminum roof coating non-fibered aluminum roof coating having the following characteristics:
 - a) Flash Point 103 deg. F (39 deg. C) min.
 - b) Weight/Gallon 7.9 lbs./gal. (1.0 g/cm³)

END OF SECTION

The total value of minority business contracting will be (\$)_____.

State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of _____

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

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

- 1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- 2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- 3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- 4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- 5 – (10 pts)** Attended prebid meetings scheduled by the publicowner.
- 6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- 7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- 8 – (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- 9 – (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- 10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

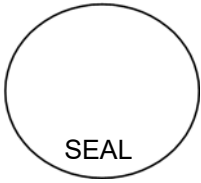
The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure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

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

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____
Subscribed and sworn to before me this _____ day of _____ 20____
Notary Public _____
My commission expires _____

State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract with Own Workforce.

County of _____

Affidavit of _____
(Name of Bidder)

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

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

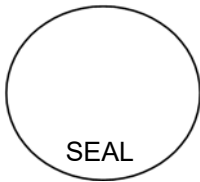
The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement.

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

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20__

Notary Public _____

My commission expires _____

State of North Carolina - AFFIDAVIT C - Portion of the Work to be

Performed by Minority Firms

County of _____

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

If the portion of the work to be executed by minority businesses as defined in GS143-128.2(g) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit. This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

(Project Name)

Project ID# _____ Amount of Bid \$ _____

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

Name and Phone Number	*Minority Category	Work description	Dollar Value

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

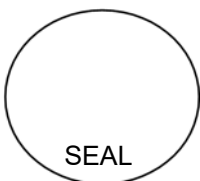
Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

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

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____
Subscribed and sworn to before me this _____ day of _____ 20____
Notary Public _____
My commission expires _____

State of North Carolina AFFIDAVIT D – Good Faith Efforts

County of _____

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

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

Affidavit of _____ I do hereby certify that on the

(Name of Bidder)

(Project Name)

Project ID# _____ Amount of Bid \$ _____

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

Name and Phone Number	*Minority Category	Work description	Dollar Value

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

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

- A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- B. Copies of quotes or responses received from each firm responding to the solicitation.
- C. A telephone log of follow-up calls to each firm sent a solicitation.
- D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
- F. Copy of pre-bid roster.
- G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
- H. Letter detailing reasons for rejection of minority business due to lack of qualification.
- I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

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

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

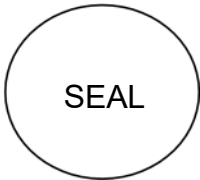
Do not submit with the bid Do not submit with the bid Do not submit with the bid Do not submit with the bid Do not submit with the bid

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

Date: _____ Name of Authorized Officer:

Signature:

Title: _



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20

Notary Public _____

My commission expires _____
