

**TECHNICAL SPECIFICATIONS
FOR
ROOF REPLACEMENT AT THE BOBBY BALLARD PUMP STATION**



8 / 26 / 2015

1.0 GENERAL

All provisions of the Contract Documents, including any/all General Conditions and Supplementary Conditions shall govern work under this division.

2.0 SCOPE OF WORK

2.1 GENERAL: Work under this division of the specifications includes all labor, materials, equipment, and all necessary appurtenances and incidental work to provide a complete and serviceable reroofing project.

2.2 DESCRIPTION OF WORK AT STEEP SLOPED ROOF (AREA 1): The Base Bid/Proposal includes all work necessary to provide a complete and serviceable reroofing system, including but not limited to: Completely removing the existing shingle roofing down to the deck; properly preparing the roof deck; repairing or replacing damaged or deteriorated decking; installing new flexible vapor retarder and felt underlayment as specified; installing all new shingles and sheet metal flashings; and providing a 30 Year Material Warranty from the Primary Roofing Material Manufacturer

2.3 DESCRIPTION OF WORK AT LOW SLOPED ROOF (AREA 2): The Base Bid/Proposal includes all work necessary to provide a complete and serviceable reroofing system, including but not limited to: Completely removing all the existing roofing down to the deck; properly preparing the roof deck; repairing or replacing damaged or deteriorated decking; installing rigid board insulation; installing all new membrane and sheet metal flashings; installing a new gravel covered, 4 ply, asphalt, fiberglass built-up roof; and providing a 20-Year NDL Warranty from the Primary Roofing Material Manufacturer.

2.4 WORK INCLUDED (BUT NOT LIMITED TO):

SURFACE PREPARATION/TEAR OFF: Completely remove and lawfully dispose of all existing roofing materials, membrane flashings, and sheet metal flashings down to the structural deck. Clean, dry, and properly prepare the structural deck.

EXISTING ROOFING MATERIALS: The existing roofing materials located on the designed roof areas are as follows (from deck up): *(This information is provided for informational purposes only – Field verify all existing conditions prior to providing a bid/proposal):*

Roof Area 1:

- Wood Deck
- Felt Underlayment
- Laminated Fiberglass Shingles

Roof Area 2:

- Metal Deck
- 1.5” polyisocyanurate insulation
- ¾” perlite insulation
- Multi-ply built up roof with granule surfaced cap sheet

PERFORMANCE REQUIREMENTS FOR NEW ROOF SYSTEM (WIND UPLIFT): Provide a roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE 7.

- Field Uplift Pressure: -55 PSF.
“The uplift pressure includes a safety factor of two (2x).”
- On Wood Decks: Provide prescriptive increases in perimeter fastening of 50%, but not less than 1 fastener per 2 square foot. Provide corner fastening of 1 fastener per 1 square foot.
- On Metal Decks: Provide prescriptive increases in perimeter fastening of 50%. Provide corner fastening of 1 fastener per 1 square foot.
- Roof Perimeter width shall be established as 4’-0” wide. Roof Corner shall be established as 4’-0” in size. .

DECK REPAIRS: Repair any structural damage to the deck. Deck repairs shall be performed as a Change Order to the Contract and in accordance with the Change Order Provisions and Unit Price Provisions of the Contract Documents.

COMPOSITION SHINGLES: Install all new felt underlayment and composition shingles to approximately match the existing shingles. Use 30-year Laminated Fiberglass shingles.

MEMBRANE ROOFING: Install all new gravel covered, four (4)-ply, asphalt, fiberglass built-up roof.

MEMBRANE FLASHINGS: Install all new membrane flashings. All membrane flashings shall be properly terminated and protected by a sheet metal counter flashing.

ROUGH CARPENTRY: Install all new wood blocking and/or wood nailers as shown in the drawings.

SHEET METAL: Install all new sheet metal accessories, vents, and flashings.

INSULATION: Install new rigid board insulation as specified.

CRICKETS: Install crickets where indicated on the drawings and as required to ensure positive drainage. Install crickets behind all roof mounted equipment curbs to ensure positive drainage.

EQUIPMENT: Perform all mechanical, electrical, and other work as may be required to disconnect, remount, and reconnect all roof mounted equipment, ductwork, or piping as required to provide a minimum eight inch (8") curb height for the flashings and to comply with the drawings.

ROOF WALK PADS: Install roof walk pads at the roof access doors as shown on the drawings and at the top of roof access ladder.

ELASTOMERIC COATING: Install an elastomeric coating system on the top of the brick screen walls.

PAINTING: Paint sheet metal work where shown on the drawings.

DOWNSPOUT BOOTS AND CONCRETE SPLASH BLOCKS: Install new downspout boots and splash blocks where indicated on the drawings.

KETTLE REQUIREMENTS: Provide an Afterburner System with Safety Loader for each kettle used on the project.

PRIMARY ROOFING MATERIAL MANUFACTURER'S NDL WARRANTY: Provide a 20-Year NDL (No Dollar Limit) Warranty from the Primary Roofing Material Manufacturer. The Warranty shall cover defects in both materials and workmanship for the membrane roofing, membrane flashings, and insulation (above top of structural deck), and shall have no limit to the penal sum for the coverage period. The warranty shall cover leaks as a result of defects in materials and workmanship.

MATERIAL WARRANTY ON SHINGLES: 30-year Material Warranty

CONTRACTOR'S WARRANTY: A 5-year Contractor's Warranty is required.

PREFINISHED METAL WARRANTY: Provide a 20-year Warranty on the sheet metal finish.

2.5 APPLICABLE STANDARDS

National Roofing Contractors Association (NRCA).

Sheet Metal and Air Conditioning Contractor's National Association (SMACNA).

American Society of Testing and Materials (ASTM).

Factory Mutual (FM).

Underwriters Laboratory (UL), Class A.

3.0 GENERAL REQUIREMENTS:

3.1 **ROOFING CONTRACTOR'S QUALIFICATIONS:** The Roofing Contractor shall be approved by the Primary Roofing Material Manufacturer to apply the designated roofing system qualifying for the specified Primary Roofing Material Manufacturer's NDL

Warranty. The Roofing Contractor shall have had at least 5-years' experience as a Roofing Contractor for the Primary Roofing Material Manufacturer.

3.2 SUBMITTALS: The Contractor shall provide complete submittals in accordance with Section 6.0. Submittals shall be provided to the Architect/Engineer a minimum of 5 working days prior to the Pre-Construction Conference.

3.3 PRECONSTRUCTION CONFERENCE: The contractor and job site superintendent shall attend a Pre-Construction Conference prior to the performance of any roofing work.

3.4 FOREMAN REQUIREMENTS: An English speaking Foreman will be required on site all day. Superintendent must make daily inspections. Site Foreman (point of contact) must attend Preconstruction Conference.

3.5 PHOTOGRAPHS: The contractor must take his or her own of the site at the Preconstruction Conference, note any broken items or dead landscaping, and notify the Project Manager in writing.

3.6 ADDITIONAL SUBMITTAL REVIEW, OBSERVATIONS OR INSPECTIONS BY ARCHITECT:

A. In the event that the Contractor exceeds the completion date for whatever reason it shall be responsible for reimbursing the Owner through authorized change order/for all costs of the Architect's staff and expenses to carry on inspection duties at the rate performed during the project prior to that date.

B. In the event that submittals require review more than once past the initial submittal for each section or item, the Contractor shall be responsible for reimbursing the Architect for all costs of submittal review for the third and all subsequent submittal reviews prior to each. The Architect shall inform the Contractor of the anticipated time required for such review and the Contractor shall provide payment in the form of a check made payable to the Architect for the anticipated time and expenses required prior to the third and/or other subsequent reviews. All submittals, which are found to be unacceptable, shall be returned to the Contractor at the Contractor's expense by common courier.

C. The rate of reimbursement shall be as follows:

Architect	\$150.00 per hour
Registered Roof Consultant	\$150.00 per hour
Project Manager	\$ 94.00 per hour
Contract Administrator	\$ 78.00 per hour
CAD Operator	\$ 75.00 per hour
Construction Observer	\$ 75.00 per hour
Clerical	\$ 50.00 per hour
Mileage	Current Mileage Rate

Travel Expenses (lodging, meals, etc.) Cost plus 10%
Architect's Consultant Expenses Cost plus 10%

D. The above costs, if necessary, may be deducted from any payments remaining due to the Contractor upon completion of the work by duly authorized change order.

3.7 **SUBSTANTIAL COMPLETION:** The Contractor must give the Architect/Engineer written notice that they have substantially completed the project and are ready for an inspection. Within ten (10) calendar days after notification, the Architect/Engineer and the Owner shall inspect the work to verify completion. The Architect/Engineer will generate a punch list including contractor and Owner items and assemble and distribute a Certificate of Substantial Completion for signature. The following items must be complete in order to be considered substantially complete:

- A. Roofing and flashing
- B. Sheet metal and flashing
- C. Operational HVAC
- D. Gas lines tested and certified

3.8 **FINAL INSPECTION:** The Contractor must give the Architect/Engineer written notice that the punch list documented on the Certificate of Substantial Completion has been completed and request an inspection. Within ten (10) calendar days after notification, the Architect/Engineer and the Owner shall inspect the work to determine if the punch list has been completed and the project is complete. The final inspection must take place prior to the scheduled Project Completion date stipulated in the contract.

4.0 **MATERIALS (ALL MATERIALS SHALL BE ASBESTOS FREE)**

4.1 **APPROVED PRIMARY ROOFING MATERIAL MANUFACTURERS FOR STEEP SLOPE ROOFING ARE:**

GAF Building Materials Corporation: 2600 Singleton Blvd., Dallas, Texas 75212.

TAMKO Asphalt Products: P.O. Box 398898, Dallas, Texas 75339.

Elk Premium Building Products: 14911 Quorum Drive, Suite 600, Dallas, Texas 75254, (888) 355-5882

4.2 **APPROVED PRIMARY ROOFING MATERIAL MANUFACTURERS FOR LOW SLOPE ROOFING ARE:**

JOHNS-MANVILLE, Roofing Systems Division, PO Box 5108, Denver, CO 80217.

US PLY, INC, P.O. Box 2505, Port Arthur, Texas 77643.

TAMKO Asphalt Products, 220 West 4th Street, P.O. Box 1404, Joplin, MO 64801.

4.3 PREPARED ROOFING

Shingles shall meet ASTM D 3018, Type I and ASTM D 3161, Type I (color to be selected by Owner) or an approved equal.

Felt shall be 36" wide, un-perforated underlayment felt meeting ASTM D 226 Type II.

Prepared Roofing for the valleys shall be minimum 50 pound roll roofing.

Plastic Cement shall be an asbestos free asphalt cement meeting ASTM D 4586, Type I.

Nails for attaching underlayment and shingles to wood or plywood shall be hot dipped, minimum 3/8" head, sharp pointed conventional roofing nails of sufficient length to penetrate a minimum of 3/4".

Drip Edge Metal shall be fabricated or pre-formed from 24 gauge prefinished sheet metal.

4.4 MEMBRANE ROOFING MATERIALS:

Roofing Felt shall be a premium glass fibered felt meeting ASTM D 2178, Type VI, and qualifying for the specified warranty.

Modified Bitumen for Membrane Flashings shall be a granule surfaced, SBS (Styrene-Butadiene-Styrene), glass fibered and/or polyester mat reinforced flashing sheet as recommended by the Primary Roofing Material Manufacturer for the specified warranty. Granule color shall be white.

Plastic Cement (Roof Cement) shall be an asbestos free asphalt roof cement meeting ASTM D 4586, Type I.

Modified Flashing Cement shall be an asbestos free elastomeric flashing cement specifically formulated for use with Modified Bitumen Flashings.

Fiberglass Membrane shall be a woven glass membrane meeting ASTM D 1668.

Primer shall be an asphalt primer meeting ASTM D 41.

Bitumen (Asphalt) shall be a low-odor, low-fuming asphalt that neutralizes asphalt odor without impacting performance which meets ASTM D 312, Type III, as manufactured by Trumbull, Owens Corning.

Surfacing Aggregate shall be nominal 3/4" to #4's in size, hard, clean, opaque gravel meeting ASTM D 1863 - Type 67A.

Liquid Applied Flashings shall be installed at gravel guard edge per the Roofing Manufacturer's requirements/methods/materials and shall be covered under the Roofing Manufacturers NDW Warranty.

Rigid Board Insulation shall be 2 layers consisting of the following:

The first layer shall be 1 layer of 3.3" polyisocyanurate meeting FS HH-I-1972/2 and be classified for use in UL Class A and FM Class I approved systems and covered under the Primary Roofing Material Manufacturer's Warranty. The maximum board size of Polyisocyanurate shall be 4'-0" x 8'-0".

The second layer shall be 1 layer of 3/4" perlite meeting ASTM C 728.

Combined Insulation R-Value shall be R-20 (Minimum).

4.5 SHEET METAL:

Galvanized Sheet Metal shall be 24-gauge (unless otherwise noted in the drawings) and shall be hot dipped galvanized, meeting ASTM A 653.

Prefinished Sheet Metal shall be 24-gauge (unless otherwise noted in the drawings) G-90 hot dipped galvanized metal (meeting ASTM A525 and ASTM A446) coated on one side with a Kynar 500 Fluoropolymer coating (.95 to 1.25 dry mil thickness including prime coat) and coated on the reverse side with a primer coating (.25 dry mil thickness). Color to be selected from Manufacturer's standard colors. A strippable film shall be applied to the top-side of the Prefinished Sheet Metal to protect the finish during fabrication. Acceptable manufacturers shall be Vincent Metals, Peterson Aluminum, and MBCI, or equal.

Solder for galvanized sheet metal shall be alloy grade 50A meeting ASTM B-32.

Flux for galvanized sheet metal shall be an approved standard brand.

Bituminous Coating shall be an asphaltic coating meeting FS TT-C-494.

Leads for Stack Flashings shall be a seamless 4-pound lead and have a minimum 4" flange.

4.6 FASTENERS

Nails for attaching Roofing to Wood shall be galvanized annular threaded (or) ring shank nails with integrally capped heads (minimum 1" in diameter) or through tin caps.

Nails for attaching Galvanized Sheet Metal to Wood shall be large headed (3/8" - 7/16" diameter) hot dip galvanized roofing nails.

Nails for Wood Blocking and rough carpentry shall be galvanized 16d common nails.

Exposed Sheet Metal Screws (with Weatherproof Gaskets) shall be hex head self-tapping screws (galvanized for galvanized metal, stainless for stainless steel or copper metal, and color matching/coated for prefinished metal). The screws shall have EPDM sealing gaskets. The gaskets shall be protected with a metal jacket (weather guard).

Sheet Metal Screws (Not Exposed to Weathering) shall be hex head or pancake head self-

tapping screws (galvanized for galvanized metal, stainless for stainless steel or copper metal).

Rivets for attaching galvanized sheet metal shall be hot dipped galvanized. Rivets for stainless steel sheet metal shall be stainless. Rivets for copper sheet metal shall be copper. Rivets for the Prefinished Sheet Metal shall be color matching.

Anchors for attaching sheet metal to masonry, concrete, stucco, or other non-wood substances shall be of similar metal and of sufficient strength to securely hold sheet metal. Anchors shall be Hilti "Metal Hit", or an approved equal. No plastic or nylon anchors shall be permitted.

Concrete Anchors for attaching structural steel supports to concrete shall be Hilti "Drop In" or Hilti "Self Drilling" anchors, or an approved equal.

Insulation Fasteners/Plates for Metal Decks shall be a minimum #12 screw type fastener/plate assembly with a minimum 3" diameter metal plate. The screw shall be of appropriate length to penetrate the metal deck a minimum of 3/4". The fastener/plate assembly shall meet the Performance Requirements for Wind Uplift, be approved by the Primary Roofing Material Manufacturer, and shall be coated for protection from corrosion.

Anchors for attaching Wood Blocking/Nailers to Metal Deck shall be minimum #12 screw type fastener (similar to insulation screw) with 5/8" o.d. galvanized steel washers under the screw head. The screw shall be coated for protection from corrosion.

Screws for the attachment of Steel Deck to the steel structure shall be 12-24 x 7/8" hex washer head TEK/4 cadmium plated screws by Building Fasteners Inc., Buildex, or an approved equal.

Screws for stitching ribs of Steel Deck shall be 12-14 x 3/4" TEK/1 cadmium plated screws by Building Fasteners Inc., Buildex, or an approved equal.

Termination Bar shall be a high-density rubber or galvanized steel fastening strip especially designed for the anchorage of the membrane to the base of walls and curbs.

Nails for Plywood Decking shall be 8d common galvanized nails.

4.7 WOOD AND PLYWOOD

Lumber for Nailers, Curbing, and Blocking shall be #2 yellow pine and shall be Fire Treated. Minimum width of 5-1/2" shall be provided.

Plywood shall be nominal 3/4" thick or as shown on the drawings, shall be exterior type with exterior glue grade C-D or better, shall be Fire Treated, and shall bear either APA or TECO trademarks.

4.8 ACCESSORIES

General Sealant for Sheet Metal shall be a one-component gun-grade, moisture-curing

high performance polyurethane sealant, conforming to ASTM C 920, Type S.

Pourable Sealant shall be a one-part self-leveling polyurethane sealant, conforming to ASTM C 920, Type S.

Flexible Vapor Retarder shall be a cold applied, self-adhering 40 mil. Thick membrane (ice and water shield). The membrane shall be composed of high strength polyethylene film coated on one side with adhesive consistency rubberized asphalt with a release sheet as manufactured by W.R. Grace, GAF, or W.R. Meadows.

New Splash Blocks: New splash blocks shall be pre-cast concrete (min 3000 PSI), sized per the project drawings and type as supplied by Stripe-A-Zone, Grand Prairie, Texas, (972) 647-2714 or approved equal.

Roof Walk shall be Manville Dyna-Tred, GAF Rubberoid 20 with Rubberoid Mop Plus, or as recommended by the Primary Manufacturer and approved by the Architect/Engineer.

Cast Iron Downspout Boots shall be Type DS8, size as determined by size of downspout, and manufactured by McKinley Iron Works, 901 N. Throckmorton, Fort Worth, Texas. Phone: (800) 433-2303, or equal.

Kettle Afterburner System and Safety Loader shall be an Afterburner System with Safety Loader as Manufactured by Reeves Roofing Equipment Co. Inc., P.O. Box 720, Helotes, Texas 1-800-383-3063, (or equal).

Elastomeric Coating shall be a colored elastomeric coating (ColorFlex) as manufactured by Sonneborn Building Products. Equivalent elastomeric coatings as manufactured by Thoro System Products (Thorolastic), or Neoguard (Neoflex) shall also be accepted.

4.9 METAL DECK REPAIRS (UNIT PRICING)

Metal Decking shall be 22 gauge, galvanized narrow rib deck (or to match the existing in shape, thickness, and size) in accordance with the Steel Deck Institute.

Screws for the attachment of Metal Deck to the steel structure shall be 12-24 x 7/8" hex washer head TEK/4 cadmium plated screws by Building Fasteners Inc., Buildex, or an approved equal.

Screws for stitching ribs of Metal Deck shall be 12-14 x 3/4" TEK/1 cadmium plated screws by Building Fasteners Inc., Buildex, or an approved equal.

4.10 WOOD DECK REPAIRS (UNIT PRICING)

Lumber for Decking shall match the existing.

Framing Lumber shall be number 2 yellow pine or number 2 Douglas fir of the same dimension as the existing.

Bolts shall conform to ASTM A325.

4.11 PAINT:

Paint shall approximately match the existing, be designed to bond to the surface designated, be manufactured by Glidden, Sherwin Williams, (or equal).

Primer for Wood shall be a wood primer designed for use with the paint selected.

Primer for Metal shall be a metal primer designed for use with the paint selected.

Elastomeric Coating shall be designed to use on the sunroom addition roof and shall be applied with a roller.

5.0 QUALITY CONTROL

- 5.1 OWNER may employ a testing laboratory as deemed necessary to perform specified services and testing. Employment of the laboratory shall in no way relieve the contractor's obligation to perform work and provide materials in accordance with the contract documents.
- 5.2 The testing laboratory, if other than ROOFTECH, is not authorized to approve or accept any portion of the work, perform any of the contractor's duties, or alter the contract documents in any way.
- 5.3 Contractor shall cooperate with the laboratory, provide access to the work, secure and deliver samples, furnish copies of test reports, and provide incidental labor as required to secure samples and make repairs as required.
- 5.4 Should testing reveal any failure of the work performed to comply with the contract documents, the Contractor shall bear the cost of any additional testing required (as deemed necessary by the Architect/Engineer).

6.0 SUBMITTALS

- 6.1 All shop drawings, product data, samples, and re-submittals (if necessary) shall be submitted to the Architect/Engineer in sufficient time (minimum 5-working days from receipt of submittal) for review.
- 6.2 All submittal items shall be properly indexed and numbered. All submittals shall contain the date of submission, project title, name of contractor, and manufacturer, applicable specification section, identification of deviations from Contract Documents, and clearly identified field dimensions where applicable.
- 6.3 Shop Drawings shall be presented in a clear and thorough manner to clearly illustrate the work and that work to be performed will be in conformance to the Contract Documents. Please note that detailed shop drawings are only required if the contractor proposes a change to the Contract Documents.
- 6.4 Samples shall be submitted in sufficient size to clearly illustrate its function and utility.
- 6.5 Product Data shall clearly illustrate compliance with the Contract Documents.

6.6 The Submittals shall include, but not be limited to the following:

- A. **ROOFING CONTRACTOR'S QUALIFICATION LETTER:** Provide a letter from the Primary Roofing Material Manufacturer that states the Roofing Contractor is approved to apply the designated roofing system qualifying for the specified Primary Roofing Material Manufacturer's NDL Warranty. The Roofing Contractor shall have had at least 3-years' experience as a Roofing Contractor for the Primary Roofing Material Manufacturer.
- B. **ROOFING MATERIAL/WARRANTY LETTER:** Provide a letter from the Primary Roofing Material Manufacturer approving the use of all roofing materials (regardless of manufacturer) used in conjunction with the roofing assembly (from deck up). The letter shall specifically approve the use of all materials that are not manufactured by the Primary Roofing Material Manufacturer and shall state that all materials shall be covered under the specified Primary Roofing Material Manufacturer's NDL Warranty.
- C. **ROOFING SYSTEM LETTER – TESTED ASSEMBLY:** Provide a letter from the Primary Roofing Material Manufacturer stating that the roofing system (from deck up) and (as submitted) is a tested roofing assembly meeting the specified Performance Requirements for Wind Uplift. The letter shall specifically include applicable fastener patterns and supporting data clearly illustrating conformance to Performance Requirements for Wind Uplift.
- D. Product Data Sheet for all materials listed in Section 4.0 of this Specification. If a Product Data Sheet is not available for a particular item, the Contractor shall list the item and state, in writing, that the item/material will meet the specifications.
- E. A Product Safety Data Bulletin on each applicable product.
- F. A sample copy of all warranties required on the project, including but not limited to the Primary Roofing Manufacturer NDL Warranty, the Contractor's Warranty, and the Sheet Metal Finish Warranty.
- G. Certificate of Insurance for all insurance listed in the Supplementary Conditions.
- H. Shop Drawings: Detailed shop drawings are only required if the contractor proposes a change to the details as shown in the Contract Documents.

7.0 PERFORMANCE

- 7.1 Any damages resulting from failure of the contractor to maintain the work area, including areas under construction, areas of storage, and areas used for access, in a water tight condition shall be the full responsibility of the contractor. The costs resulting from damage (including the Owner's time/material loss), shall be charged to the Contractor.
- 7.2 Extreme care shall be taken when removing loose gravel (if applicable) and working over the existing roof surface. Consideration shall be made for the potential damage to the existing roof system and decking. Contractor shall use reasonable care in transporting materials across the existing roof surface. Extreme care shall be taken to prevent damage to the existing roof surface. Contractor shall minimize the use of any portion of the

existing roof surface. Contractor shall protect all roof surfaces exposed to any more than casual foot traffic with no less than 1" thick polyisocyanurate insulation installed directly on the roof surface and an overlay of ¾" plywood. Contractor shall make permanent repairs to the existing roof system, if damaged.

- 7.3 There shall be sufficient material, labor, equipment, and any other items required to insure complete and proper reroofing each day.
- 7.4 Extreme care shall be taken to protect the new roofing and insulation. A watertight "Tie-In" shall be installed between the new roof and the existing roof, upon completion of each day's work. Completely remove the "Tie-In" before beginning the next day's work.
- 7.5 Roof Top Storage/Staging (if utilized): If roof top storage/staging is utilized, all material, debris, equipment must be distributed across the roof deck to avoid damage to the structural deck. Contractor assumes full responsibility for loading on the structural deck of roofing materials during the reroofing operations. Architect/Engineer reserves the right to reject any loadings deemed unacceptable.
- 7.6 Contractor shall use reasonable care in transporting materials across the new/finished roof surface. Extreme care shall be taken to prevent damage to the new/finished roof surface. Contractor shall minimize the use of any portion of the new/finished roof surface. Contractor shall protect all roof surfaces exposed to any more than casual foot traffic with no less than 1" thick polyisocyanurate insulation installed directly on the roof surface and an overlay of ¾" plywood. Contractor shall make permanent repairs to the new/finished roof surface if damaged.
- 7.7 Contractor shall note the building will be occupied and operated as an on-going business and will restrict his activities to the areas specified by the Owner.
- 7.8 Contractor shall maintain the job site in a safe, clean, and orderly fashion at all times. All doors and exits shall be made safe and secure from any possibility of falling debris or danger from any work associated with this project. PROPER AND ADEQUATE EGRESS TO AND FROM THE BUILDING SHALL BE MAINTAINED AT ALL TIMES.
- 7.9 Upon completion of the roofing work the contractor shall thoroughly clean the area of all trash, debris, dust, dirt, etc. resulting from the contractor's work. In addition, all Roof Top HVAC units shall be washed off with potable water.
- 7.10 Contractor shall provide latrines and other necessary facilities, as is required. Contractor's employees will not be allowed to use building facilities.
- 7.11 Except for modifications as called for in the details and specifications, the contractor shall return all items attached or affixed to the roof to their approximate original position, and said items shall be in the same condition as they were at commencement of work.
- 7.12 The Contractor shall install and maintain all required storage enclosures and safeguards. The Contractor shall comply with the Owner's safety standards. Storage areas, where hazardous or potentially hazardous products or equipment is stored, shall be restricted to general access. This requirement shall apply to all kettle staging areas, if kettles are to be

utilized for the project.

- 7.13 Rooftop hoisting equipment shall be properly assembled and maintained. Only persons that are thoroughly familiar with hoisting equipment shall operate such equipment. All such equipment shall be erected and supported so that it will not damage the existing structural deck or roofing systems.
- 7.14 Debris shall be removed by appropriate means, and in a safe/orderly manner. All roof debris becomes the property of the Contractor. Contractor shall be responsible for the lawful removal and disposal of all trash and debris.
- 7.15 Contractor shall maintain sufficient equipment, materials, and man power on the job site so as to replace any rotted decking/curbing, or to make deck repairs as required.
- 7.16 Contractor shall employ only orderly and competent workers, skillful in the performance of the type work required.
- 7.17 Contractor shall erect all required roof barriers and safety lines as required by OSHA and comply with OSHA regulations for safety.
- 7.18 Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Work included in the Construction Documents. The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:
 - A. Contractor's Employees and other persons who may be affected thereby;
 - B. The Work and materials and equipment to be incorporated therein; and
 - C. Other property at the site or adjacent thereto.
- 7.19 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on safety of persons and property and their protection from damage, injury, or loss. The Contractor shall promptly remedy damage and loss to property at the site caused in whole or in part by the Contractor, any Subcontractor, or anyone directly or indirectly employed by them, or by anyone for whose acts they may be liable and for which the Contractor is responsible.
- 7.20 Contractor shall comply with the most current (Occupational Safety and Health Administration) OSHA requirements as to the proper implementation of safety equipment as deemed necessary by such requirements for all employees of the Contractor working on the Site, any Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible. In addition, the Contractor shall provide at all times a minimum of three (3) complete additional safety equipment units, i.e. harnesses, rigging gear, hardhats, etc., as deemed necessary by the OSHA requirements for all workers. The three- (3) additional units are for the use by the Owner, Owners' Representatives, Architect, Engineer, and A/E Roof Observers.
- 7.21 Contractor shall verify location of all roof-top fresh air intakes for the building.

Contractor shall cover all fresh air intakes while roof replacement work is being performed in the area around the fresh air intakes. Coordinate this work with the Owner.

- 7.22 Fire Extinguishers – Contractor shall provide one (1) fire extinguisher for each kettle on the project plus one (1) additional fire extinguisher per every 100 squares of roofing area. All fire extinguishers shall be a minimum of 25 lbs.
- 7.23 Landscaping – Upon completion of the project, the Contractor shall repair all damage to the existing landscaping resulting from the Contractor's work. The repair shall include all damaged plants, trees, sod, sprinkler heads/lines, concrete sidewalks/curbs, asphalt pavement, etc. The repair shall restore the damaged area to match the existing condition prior to the commencement of the project.

8.0 ENVIRONMENTAL

- 8.1 No roofing work shall be performed below 40 degrees, when the wind chill factor is below 40 degrees, or when rain is eminent (30% chance or greater). No roofing shall be performed when the average wind is above 25 mph without written permission from the Architect/Engineer. No roofing work shall be performed 30 minutes prior to sundown. The roof deck shall be dry and free from any moisture, ice, or other deleterious materials prior to roofing.
- 8.2 All materials susceptible to moisture shall be protected in dry, above ground, watertight storage. ALL ROLL GOODS, INSULATION, CANT STRIP, AND TAPERED EDGE SHALL BE STORED IN WATER TIGHT, ENCLOSED TRAILERS, and these materials shall be loaded onto the roof on a daily basis. Exterior storage is also acceptable as long as the materials are properly palletted, tarped with breathable tarps, and properly secured against the wind. Plastic “shrink-wrapped” materials are not considered properly protected. All labels shall be intact and legible, clearly showing the product, manufacturer, and other pertinent information.
- 8.3 Any materials that are susceptible to moisture that become wet or damaged will be rejected and shall be immediately removed from the job site. Any materials found to be improperly stored shall be considered wet and removed from the job site.
- 8.4 Asphalt (if applicable for the project) shall not be heated above 500 degrees Fahrenheit. Asphalt, stored in tankers, shall be stored at a maximum of 350 degrees Fahrenheit.
- 8.5 Kettles (if applicable for the project) shall be thermostatically controlled and equipped with a working, readable thermometer. An additional calibrated thermometer shall be maintained at the job site to periodically test the kettle thermometer.
- 8.6 Kettles (if applicable for the project) shall have an Afterburner System with Safety Loader for each kettle on the project.

9.0 DECK REPAIRS:

- 9.1 General: The entire roof deck shall conform to the requirements of the Primary Roofing Material Manufacturer, the National Roofing Contractors Association, the Local Building Code, and these Contract Documents, the most restrictive applying. Any damaged or

deteriorated decking shall be replaced.

9.2 Abandoned Equipment: All abandoned equipment shall be removed. All deck openings shall be closed/repared with appropriate deck repair materials/methods.

9.3 WOOD DECKS:

- A. Loose or void knot holes and cracks less than 3/8" shall be neatly covered with 24-gauge galvanized sheet metal.
- B. Any loose boards or unsupported boards shall be securely nailed. All decking shall be inspected and any rotten or damaged decking shall be removed for a minimum of 2 spans and replaced with new decking matching the existing and securely nailed using a minimum 2 nails at each rafter. Extreme care shall be taken to insure the ends are tightly secured so there is no differential movement between boards. In addition, securely nails all loose decking and verify the decking conforms to the manufacturer's recommendations.
- C. All damaged rafters shall be repaired by securely bolting another rafter of the same dimension onto the existing so the new rafter extends at least 2' in both directions beyond the damaged area and spans across a support (or) replace the damaged rafter.
- D. Holes less than 12" in Diameter: Install 18 gauge galvanized sheet metal plate over the opening and spanning a minimum of 4" beyond the opening in all directions. Secure the sheet metal plate to the deck.

9.4 METAL DECKS:

- A. All damaged or deteriorated metal decking shall be neatly covered with new metal decking matching the existing profile and overlapping onto existing sound metal decking a minimum of 12" and secured by means of appropriate mechanical fasteners. Metal decking shall be attached 6" o.c. at each bar joist and 12" o.c. down each lap.
- B. Holes less than 12" in Diameter: Install 18 gauge galvanized sheet metal plate over the opening and spanning a minimum of 4" beyond the opening in all directions. Secure the sheet metal plate to the deck.

10.0 INSULATION INSTALLATION

10.1 General: Insulation shall be installed in strict accordance with the recommendations and requirements of the Primary Roofing Material Manufacturer, the recommendations of the National Roofing Contractor Association (NRCA), the Performance Requirements for Wind Uplift, and these Contract Documents, the most restrictive applying. All roofing materials shall be as described in Section 4.0 MATERIALS and shall be provided and/or approved by the Primary Roofing Material Manufacturer. Phased application is not acceptable. No more roofing, flashing, or insulation shall be removed than can be completely replaced within the same day.

- 10.2 Metal Decks: Insulation shall be installed in 2 layers, the first layer being mechanically attached to the decking. The second layer of insulation shall be adhered in a continuous and even mopping of asphalt applied at the MINIMUM rate of 30 pounds per 100 square feet (minimum 30 lbs/100 SF). All joints between the first and second layers of insulation shall be staggered a minimum six inches (6"). All end joints shall be staggered a minimum six inches (6"). The insulation pattern shall not vary once it has been established. Tie-ins shall be continuously staggered so there are no continuous joints through the layers of insulation. All joints shall be tight, smooth, and flush, and there shall be no voids or gaps between the insulation boards.
- 10.3 Cricket Installation: Install crickets where indicated on the drawings. Beginning at the low edge of the cricket, solidly adhere tapered insulation to the top layer of insulation in a continuous layer of Type III asphalt applied at the approximate rate of 30 pounds per 100 square feet (30lbs/100sf). Stagger all joints, Cut, and fit pieces tightly and neatly so as to provide a continuous, smooth, and even substrate for the roofing.

11.0 MEMBRANE INSTALLATION:

- 11.1 General: Membrane Roofing shall be installed in strict accordance with the recommendations and requirements of the Primary Roofing Material Manufacturer, the recommendations of the National Roofing Contractor Association (NRCA), the Performance Requirements for Wind Uplift, and these Contract Documents, the most restrictive applying. All roofing materials shall be as described in Section 4.0 MATERIALS and shall be provided and/or approved by the Primary Roofing Material Manufacturer. Phased application is not acceptable. No more roofing, flashing, or insulation shall be removed than can be completely replaced within the same day.
- 11.2 Beginning at the low, downhill edge of the roof install four (4) plies of felt in shingle fashion in a uniform and continuous layer of bitumen applied at the approximate rate of 23 to 25 lbs./square/ply or as required by the Primary Roofing Material Manufacturer. The application temperature shall be approximately 400 degrees Fahrenheit or as required to maintain the proper interply mopping weight. Overlapping shall be such that there is no less than 4 plies in any area, and there is a 2" head lap and an 8 1/2" exposure of the felt.
- 11.3 Care shall be taken to avoid any traffic on the felts until the asphalt has set or chilled sufficiently to support traffic without displacing the asphalt between the plies. Care shall be taken to avoid wrinkles or fish mouths in the membrane during application. Should a fish mouth occur, it should be immediately cut and sealed. Two layers of felt shall be immediately installed extending a minimum 6" beyond the cut.
- 11.4 A watertight "Tie-In" shall be installed between the new roof and the existing roof, upon completion of each day's work. The watertight "Tie-In" shall be installed in accordance with the Primary Roofing Material Manufacturer's requirements, but with no less than two plies of #15 organic felt set in asphalt/plastic cement. Completely remove the "Tie-In" before beginning the next day's work.

12.0 MEMBRANE FLASHINGS:

- 12.1 General: Membrane Flashings shall be installed in strict accordance with the

recommendations and requirements of the Primary Roofing Material Manufacturer, the recommendations of the National Roofing Contractor Association (NRCA), the Performance Requirements for Wind Uplift, and these Contract Documents, the most restrictive applying. All roofing materials shall be as described in Section 4.0 MATERIALS and shall be provided and/or approved by the Primary Roofing Material Manufacturer. Phased application is not acceptable. No more roofing, flashing, or insulation shall be removed than can be completely replaced within the same day.

- 12.2 Preparation: Remove all loose, unattached, and/or deteriorated flashing materials or any other material deleterious to attachment of new flashings.
 - 12.3 Primer: Prime all masonry, metal, mineral board, or concrete surfaces from the top of the roof membrane to the termination of the flashing level with asphalt primer at the rate of 1.0 gallon per 100sf or as recommended by the Primary Roofing Material Manufacturer. Allow the primer to dry thoroughly.
 - 12.4 Membrane Flashings at Gravel Guard Edge and Metal Flanges: All flange type flashings shall be primed, set in mastic (approximately 1/8" thick), and stagger nailed 3 inches on center. The flange shall be stripped in with 1 layer of granular surfaced modified bitumen set in hot asphalt and liquid applied flashings per manufacturer's specifications.
 - 12.5 Flashing Location: Flashings shall be located so as to provide access for maintenance. Flashings shall not be closer than 18 inches from other flashings and be situated so no flashing interferes with another. Any penetration that does not meet the spacing requirement of 18" for proper flashing separation shall be relocated to allow for proper flashing separation.
 - 12.6 All flashings and details shall conform to the Contract Documents. Upon completion of the work, all penetrations, equipment mounts, etc. shall be examined to verify compliance to these documents.
- 13.0 CORRECTIVE ACTION:
- 13.1 All corrective action shall be approved in writing from the Primary Roofing Material Manufacturer.
 - 13.2 A minimum of two (2) plies of felt shall be mopped over all areas found to be deficient unless testing results require complete removal of the roofing membrane. Voids greater than 1 1/2", dry spots greater than 1/4", and interply mopping less than eighteen pounds per 100 square foot (18 lbs/100SF) shall constitute deficiencies. Voids which extend through multiple plies shall be repaired by cutting the void through the multiple plies and mopping the same number of multiple plies over the deficient area. Any areas with less than the required number of plies shall be covered with the number of missing plies plus an additional ply, (e.g. if the sample indicates there are 3 plies on a 4 ply system, then the missing ply plus one (1) ply -- making a total of two (2) plies -- shall be installed). Remove and replace all roofing with more than forty pounds of interply mopping per hundred square feet per ply (40 lbs/100 SF/ply).
 - 13.3 No phased application will be accepted and no roofing installed during inclement weather conditions will be accepted. This will constitute deficiencies, and all roofing will be

removed down to the substrate and replaced.

14.0 SURFACING

- 14.1 The roofing membrane shall be left unsurfaced until test results are completed, and the roof has been approved by the Architect/Engineer for surfacing.
- 14.2 Gravel Surfacing: Upon receipt of written approval by the Architect/Engineer, completely and uniformly embed aggregate to completely and uniformly cover the roof surface (minimum 400 lbs/100 square feet) in a uniform and even pouring of bitumen at the rate of 60 lbs/100 square feet. Aggregate shall be raked smooth so as to completely and uniformly cover the flood coat.

15.0 PREPARED ROOFING

- 15.1 General: Installation shall be in accordance with these specifications, the manufacturer's recommendation, the general recommendations of the National Roofing Contractors Association (NRCA), the Asphalt Roofing Manufacturer's Assoc. (ARMA), and the Sheet Metal and Air Conditioning Contractors' National Assoc. (SMAACNA).
- 15.2 All roofing materials shall be as described in Section 4.0, MATERIALS and shall be provided and/or approved by the Primary Manufacturer of the Prepared Roofing (shingles). Any materials not manufactured or provided by the manufacturer shall have the written approval from the manufacturer stating that the materials are acceptable and are compatible with the other materials and systems required.
- 15.3 Preparation: Completely remove all the existing shingles and felt underlayment down to the roof decking. Decking shall be repaired as described in these construction documents.
- 15.4 Underlayment: Fasten metal edging along the bottom of the edge (eave) prior to installing felt. Beginning at the downhill edge, cover the entire roof with one layer of felt overlapping edges 2" and ends 4". Lap felt a minimum 6" over ridges and hips. Scatter nail felt as required to hold in place until shingles are installed. Fasten metal edging to the rake lapping the metal edging over the underlayment.
- 15.5 Step Flashings: shall be used at all wall roof intersections. For those areas not having step flashings, cut siding back (where applicable) approximately 2 to 3 inches and insert new step flashings as shown in the drawings. Make sure the top of the flashing covers the step flashings a minimum of 2 inches.
- 15.6 Shingle Installation: All shingles shall be installed in strict accordance with the manufacturer's recommendations. All horizontal and vertical lines shall be as straight, even, and true, as the roof surface will allow.

VALLEYS: All valleys shall have a minimum 36-inch wide strip of flexible vapor retarder, with minimum 12-inch laps. Valley shall be a closed cut valley. Extend the shingles along the eaves of one roof area up to and extend a minimum of 12 inches along the adjoining roof. The shingles shall fit tightly into the valley so there are no voids under the shingles. There shall be no nails within 6 inches of the centerline of the valley.

Plastic cement shall be used to seal the lap of the closed cut valleys.

RIDGES: Ridges shall be as furnished by the manufacturer or cut from 12 x 36 Square Butt Shingle Strips of the same color as the field of the roof. Ridge shingles shall be a minimum 9 inch by 12 inch, have a minimum exposure of 5 inches, and shall be nailed with one nail per each side.

- 15.7 Vents and Stacks: All vents and stacks shall have metal or lead flashings with flanges at the proper angle with a minimum 8 inch dimension on the uphill side. Set flanges in plastic cement.

16.0 SHEET METAL

- 16.1 General: All work shall be in accordance with SMACNA (Sheet Metal and Air Conditioning Contractors National Association, Inc.), NRCA (National Roofing Contractors Association), and these Contract Documents, the most restrictive standard applying.
- 16.2 Protection: Exercise extreme care when working on roof surfaces to avoid damaging or puncturing the roof membrane or membrane flashings.
- 16.3 Expansion & Contraction: Provide for expansion and contraction for all sheet metal components/accessories.
- 16.4 Seams & Joints - Sheet Metal Gravel Guards, Fascia, and Edge Metal: Sheet metal shall be installed in maximum 10'-0" sections/lengths with a 1/4" space between each section. The 1/4" space/joint shall be protected with a centered, 6" wide cover plate.
- 16.5 Back Painting: Back paint flashings with bituminous paint where sheet metal is expected to be in contact with cementitious materials or dissimilar metals.
- 16.6 Fabrication: All sections shall be square, true, and accurate to size, and free from distortion. Lines shall be straight, true, and free from distortion. All edges shall be neatly hemmed.
- 16.7 Installation: Sheet metal shall fit tight in place with square corners, surfaces straight in planes, and lines accurate to profiles. Sheet metal shall be fabricated and installed so flashings will properly shed water and protect underlying membranes from physical damage and water penetration.
- 16.8 Soldering: All soldered joints shall be watertight. All soldered joints shall be lapped and riveted prior to soldering. Wipe and wash clean immediately after soldering to remove all traces of flux.
- 16.9 Sealant Installation: Continuously and uniformly apply sealant to all areas vulnerable to water entry.
- 16.10 Dissimilar Metals: No dissimilar metals shall come into contact with each other. Use only fasteners and other metal components that are compatible with the metal type being secured.

- 16.11 All sheet metal flashings shall be continuous at all corners and transitions. Counter flashings shall be extended a minimum of 2" beyond the termination of the membrane flashing, and the exposed end shall be appropriately hemmed and sealed as required. Mitered terminations, transitions, and corners shall be used so as to provide a continuous flashing system including both the sheet metal counter flashing and membrane base flashing. All ends and junctures between flashings of different height, types, etc. shall be neatly finished so as no edges of roofing, insulation, cant strip, blocking, flashing, etc. are exposed.
- 16.12 Prefinished Sheet Metal: Remove all strippable film from the top surface of all prefinished sheet metal before installation. Prefinished metal shall not be soldered.

17.0 ROUGH CARPENTRY

- 17.1 Install miscellaneous blocking, cants, nailing strips, framing and sheathing members true, plumb, and level. Construct members of continuous pieces of longest possible lengths. Rough carpentry shall be securely anchored to the structure so as to resist a force of 100 lbs./LF in any direction. Fasteners shall be spaced no more than 4'-0" apart and not less than 2 fasteners per board shall be used. All nailers/blocking, for attachment of sheet metal flange-type flashings, shall be installed in conjunction with the insulation, prior to the installation of the roofing membrane.
- 17.2 Install plywood sheathing to existing wall construction by anchoring the plywood sheathing top and bottom with anchors 12" o.c. Intermediate rows of anchors shall be installed every 2'-0" horizontally with fasteners spaced 12" o.c.. Plywood should be installed in the longest possible lengths.

18.0 MECHANICAL/ELECTRICAL

- 18.1 General: All work shall conform to the requirements of the Local Building Code, Uniform Mechanical Code, National Electric Code, and Underwriters Laboratory. All equipment shall be installed or reinstalled in accordance with the Manufacturer's Requirements and shall be fully operable and functional upon completion.
- 18.2 Raising Existing Roof Mounted/Supported Mechanical Units/Curbs/Vents: Existing roof mounted units/curbs/vents shall be raised as required to install roofing, flashings, and new curbs (if applicable) in accordance with the Contract Documents. Extreme care shall be taken to prevent damage to the units. All support lines/conduits (gas, electrical, steam, ammonia, Freon, etc.) servicing the units shall be properly disconnected in order to facilitate moving the unit. Coordinate with the Owner, and notify the Owner and Architect/Engineer at least 48-hours before disconnecting any mechanical unit. All units disconnected shall be reconnected and be fully operational at the end of the same working day.
- 18.3 Tolerances (Flashing Location) for Roof Penetrations: Flashings shall be located so as to provide access for maintenance. Flashings shall not be closer than 18 inches from other flashings and be situated so no flashing interferes with another. Any penetration that does not meet the spacing requirement of 18" for proper flashing separation shall be relocated to allow for proper flashing separation.

19.0 PLUMBING

- 19.1 General: all plumbing shall be in strict accordance with the requirements of the Local Building Code, and Uniform Plumbing Code.

20.0 PAINTING:

- 20.1 Paint designated galvanized and/or paint-grip sheet metal surfaces only where indicated in the drawings.
- 20.2 Thoroughly clean all surfaces until free from dirt, oil, and grease. Wash non-treated galvanized surfaces to remove the flux and prepare the galvanized surfaces to receive the primer and paint. Remove all loose paint from existing painted surfaces.
- 20.3 Prime galvanized surfaces in strict accordance with the manufacturer's written recommendations. Primer shall be uniformly and evenly applied to all surfaces to receive paint. Allow primer to thoroughly dry before applying paint.
- 20.4 Uniformly and evenly apply 2 coats of paint in strict accordance with the manufacturer's recommendations. Allow 24 hours between coats of paint. Paint shall be uniform, even, and free of flaws.

21.0 ABANDONED EQUIPMENT:

- 21.1 General: All abandoned equipment, vents, stacks, or other penetrations no longer necessary as shown on the drawings or as determined by the Owner shall be removed. The roof deck shall be repaired, and the area reroofed in accordance with the Contract Documents.

22.0 CLEANING

- 22.1 Clean all soiled areas and remove bituminous markings from finished surfaces. Consult Manufacturers products and services for advice and conform to their instructions.

23.0 WARRANTIES

- 23.1 Primary Shingle Roofing Material Manufacturer's Warranty: Upon completion of the shingle roof, the contractor shall provide the Owner a 30-Year Warranty for Materials from the Primary Roofing Material Manufacturer as published in their latest literature.
- 23.2 Primary Built-up Roofing Material Manufacturer's Warranty: Upon completion of the built-up roof the contractor shall provide the Owner a 20-Year NDL Warranty for both Materials and Labor with no limit to the Penal Sum from the Primary Roofing Material Manufacturer as published in their latest literature.
- 23.3 Contractor's Warranty: In addition, the contractor shall provide a notarized document from an authorized agent on company letterhead stating the following:

The building, roofing membrane, metal panels, sealant work (if applicable) and flashings are in conformance with all the requirements of the primary roofing material

manufacturer and qualify for the _____ guarantee (maximum guarantee available) from the _____

(Primary roofing material manufacturer selected).

In addition, should deficiencies (blisters, splits, etc.) and/or leaks occur within the first five (5) years, the contractor shall make repairs as required to maintain the building in watertight condition, in conformance with the requirements in these contract documents, and the requirements of the primary roofing material manufacturer.

Repairs shall be made in a permanent manner in conformance with the standards provided in this document. Any defect causing a leak shall be corrected.

Damage resulting from hurricane force winds, hail, fire, unusual structural movement, structural failure, and abuse are excluded from this agreement.

This agreement in no way absolves the Contractor or Primary Roofing Material Manufacturer from any implied or expressed warranties or fitness for purpose.

- 23.4 Prefinished Metal Warranty: Upon completion, the Contractor shall provide a 20-Year warranty from the Prefinished Sheet Metal Manufacturer covering the finish on the prefinished sheet metal.

24.0 SPECIFICATION FOR SIGNS

- 24.1 Contractor shall provide 10 inch x 12-inch (minimum) painted signs made of aluminum with a dark color background and letters of contrasting color. Use paints compatible with the aluminum. Permanently post signs at all access points leading to the roofs and prominent points on the roofs. Provide at least one sign on each major roof area with no more than four signs per building. Make the sign to read as follows:

DO NOT MAKE
REPAIRS OR ALTERATIONS
TO THIS ROOF
WITHOUT APPROVAL
FROM THE DIRECTOR OF
OPERATIONS AND MAINTENANCE OFFICE

This roof is guaranteed until (1) by:

PRIMARY ROOFING MATERIAL MANUFACTURER (2)
Address
City, State, Zip Code
Phone: Area Code/Number
Guarantee # (3)

The Roofing Contractor was:

ROOFING CONTRACTOR (4)

Address

City, State, Zip Code

Phone: Area Code/Number

SIGNS TO BE POSTED AS DESIGNATED BY OWNER

- (1) Insert month and year (__ years after final acceptance date)
- (2) Insert the Primary Roofing Material Manufacturer's name, address and phone number.
- (3) Insert the Primary Roofing Material Manufacturer's Guaranty Number
- (4) Insert the Contractor's name, address and phone number.

THIS CONCLUDES THIS SECTION