GUIDELINES FOR PROFESSIONAL SERVICES

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

The following items are to be included on the drawings and in the specifications by the Design Professional:

I. GENERAL

A. Kitchen Dry Storage rooms require additional insulation and a vapor barrier. Dry Storage room set point shall be 74 degrees F.

B. All attics shall be of the non-ventilated type.

II. ROOFS

A. It is a requirement of the School Board Roofing committee that the Project Design Professional follow these guidelines.

B. Only Torch Applied Modified Bitumen Roofing membrane system is to be utilized on new construction and on re-roofing projects for low-sloped roofs.

C. Single-ply roof systems, coal tar pitch and asphalt built-up roofing membrane systems with conventional felts shall not be installed on Sarasota County School District projects.

D. The specifications for approved modified bitumen membrane roofing systems follow as Section 07 52 00. This specification lists the particular modified bitumen roofing membrane systems that currently are approved by the School Board Roofing Committee.

E. A sufficient number of manufacturers of modified bitumen membrane roofing systems are approved in Section 07 52 00 to avoid "closed specifications" and to encourage competitive bidding.

F. Substitutions – no substitutions will be approved. Any manufacturer of a similar modified bitumen membrane roofing system may apply to the Roofing Committee for approval. However, any manufacturer waiting until a project is being bid should not expect to become approved for that project

G. The preferred deck system for new construction and for re-roofing projects as applicable is lightweight insulating (cellular) concrete over tapered expanded polystyrene insulation.

H. Sheet metal coping shall be stainless steel (minimum 26 gauge) with corners welded. Joints shall have cover plates. The specifications for sheet metal follow as Section 07 62 00.

III. BASIC DESIGN PRINCIPLES FOR LONG-TERM ROOF SUCCESS

A. The terminal edges of the roofing membrane shall be carried well above (eight inches minimum above the finished roof surface) the level of possible standing water (or wind-driven water) to have access to such edges. This speaks to vertical interruptions to the roofing membrane such as at parapet walls, roof curbs for penetrations of the roof for mechanical equipment, ducts, chimneys, piping, etc. – or for supporting framework on top of roofs.

B. One exception of above paragraph "A" is situations where the roofing membrane terminates at the bottom of a slope spilling water into gutters or onto the ground. There, of course, the edge of the roofing membrane cannot be extended to a point eight inches minimum above the level of the adjoining deck or where water can have access. An exception also is where gravel stop situations occur.

C. The termination of roofing membrane edges at parapets, roof curbs, equipment supports, etc., must be behind and "up and under" the metal counter flashing by a minimum of four inches. That is, four inches of the eight inches of flashing height is to be covered by counter flashing.

D. The counter flashing must be continuous. The final counter flashing ultimately must be made of metal to transition from the "horizontal" roofing membrane into other construction. Metal flashing should always be utilized for the transition. Such metal flashing should meet these requirements:

1. Be in the maximum single piece lengths practical.

2. Be joined by sizeable overlapping cover plates and designed in a manner to allow for adequate thermal movement

3. Should never terminate at the ends in a manner difficult to make watertight. The Design Professional must detail all of these conditions.

4. Must be of long life metal – stainless steel (minimum 26 gauge).

5. Must be of adequate gauge and clearly and properly detailed in accordance with the published guidelines of SMACNA.

6. Must follow the details prepared by the manufacturer of the modified roof system.

E. Drainage – There are two situations: (a) no gutter occurs or where it is not desired for water to be allowed to run over the edge, and (b) a gutter is to be installed.

1. In situations where no gutter occurs and it is not desired for water normally to run over the edge: A few feet inboard from the eave edge, a reverse slope upward should be built-in by sloping the deck or the use of tapered insulation, etc. This raises the edge of the eave and returns the water to the valley between the two slopes.

2. When a gutter occurs and/or it is desired that water run over the edge of the eave in a somewhat uniform distribution, a raised edge is not appropriate. Gutters will be sloped to provide adequate drainage. Downspouts to be sized to provide adequate drainage.

3. The condition of allowing water to run over the edge is generally an unsatisfactory solution. Providing roof drains in the formed valley are the first choice. Installing gutters and downspouts are the second choice. Valleys shall have positive drainage between drain locations.

4. Position roof drains in the valley where most practical to drop directly and vertically into a pipe or conductor to the ground.

5. Vertical conductors should not be built into masonry. Roof drains and connections shall be shown on the plumbing drawings.

F. Other locations of roof drains, as discussed in "E" above, require horizontal runs of piping which have these difficulties:

Locations: internal drain locations must not occur in the position most generally used at or near columns. Positive drainage is required.

a. In-board locations necessitate "horizontal" runs of roof drain piping. These are costly, and frequently need to be quite sizeable (6" to 8" and even larger). Further, code and practicality necessitate maintaining a constant slope, which creates a serious clearance problem.

b. In-board locations requiring "horizontal" runs of roof drain systems necessitate insulation of such piping to eliminate condensate.

G. Gutters and downspouts: When exterior gutters and downspouts are to be used, the Project Design Professional is to design such to meet the following requirements:

1. Gutters: Do not use standard Ogee gutters from "off the shelf" services.

2. Size gutters and downspouts to handle the quantity of water in accord with code. Select gauge, types of metal, support details and finish. Determine support strapping and anchorage clearly detailing and specifying such.

3. Space downspouts to accommodate quantity of water per code. Provide for positive slope during the installation of the gutters to prevent ponding within the gutters.

4. Downspouts and gutters shall be customized in design rather than the common molded lightweight type for residences. Gutters shall be designed to have a higher inner edge to be installed at least two inches up behind gravel stop and the outer edge must be sufficiently lower so water will spill out of the gutter before it reaches the height of the inner edge and thus avoid water entering the overhang or roof deck construction. Gutters shall not be designed as integral with the gravel stop for obvious replacement and maintenance reasons.

5. Gutters and downspouts shall be seamless using 24 gauge galvalume or 26 gauge stainless steel, except downspouts shall be 3/16" manufactured aluminum where the location may allow damage to occur.

H. Roofing slope/tapered insulation: On new construction, "low slope" roofs shall have minimum slopes of ¼" per horizontal foot. It is generally agreed that it is more economical and practical in new construction to achieve the slope by building slopes into the structure instead of by tapering the thickness of roof deck construction or adding tapered insulation on top of flat decks. In re-roofing dead level roof decks, tapered insulation may be the practical solution. When tapered insulation is specified, the Project Design Professional is to provide sufficient detailing and layouts in his drawings.

I. Windloads/Anchorage of Roofing: Design roof uplift anchorage shall be in accordance with ASCE 7-10 or as required current FBC. The Project Design Professional shall be responsible to properly determine required unlift resistance, specify uplift anchorage and to endeavor to insure such is provided during construction. Specifications shall address the application rate of insulation or base sheet fasteners at the corners, perimeters and field of the roof. The size of the corners and perimeter widths shall also be specified.

J. Roofing system manufacturers shall provide minimum 20 year "no dollar limit" warranty using form included in specification 07 52 00, covering both material and labor for repairs or replacing the roof if it should fail.

K. Roofing contractors shall provide minimum 5-year warranty for workmanship and materials to run concurrently with manufacturer warranty, using the form included in specification 07 52 00.

L. The roofing manufacturer's representative shall make at least one inspection per week during construction or more often if problems occur. Such representative shall promptly submit a written report for each inspection to the Project A/E.

M. Manufacturer shall designate a local roofing contractor to make leak repairs within 24 hours or notification or manufacturer shall approve the Sarasota County School Board Facilities Department in-house roof repair crews or designee to make emergency repairs. Manufacturer shall provide training for in-house crews or designee as needed, to qualify as approved repair crew.

SECTION 07 52 00

MODIFIED BITUMEN ROOFING

PART I - GENERAL

1.1 RELATED DOCUMENTS

A. The Bidding Requirements and Contractual Requirements of Division One shall apply to all work hereunder.

1.2 SCOPE

A. This work includes all labor, materials, equipment and administration necessary to integrate the roofing work into the total building systems so that no leakage into the system occurs. Roofing operation shall include removal and disposal of designated existing roofing and installation of a new modified bitumen roof membrane, and application of all flashings and accessories required for a completed watertight system.

1.3 RELATED SECTIONS

A. Section 06 10 00- Rough Carpentry

B. Section 07 22 00 - Roof Insulation

C. Section 07 62 00 - Sheet Metal Flashing and Trim

1.4 REFERENCES

A. Manufacturer's instructions

B. ASTM D41 -Asphalt Primer Used in Roofing, Damp-proofing and Waterproofing.

C. ASTM D312 -Asphalt Used in Roofing.

D. ASTM D2178-Asphalt Impregnated Glass (Felt) Mat Used in Roofing and Waterproofing.

E. ASTM D5147 – Test method for Sampling and Testing Modified Bituminous Sheet Materials.

F. ASTM D1970 – Self adhering Polymer-Modified Bitumen sheet material used as an underlayment.

G. ASTM D6164 – Styrene Butidiene Styrene (SBS) Modified Bituminious Sheet Materials using Polyester Reinforcement.

H. FM - Roof Assembly Classification I-90 or greater.

I. NRCA (National Roofing Contractors Association)- Roofing and Waterproofing Manual.

J. UL - Fire Hazard Classification.

K. Sheet Metal & Air Conditioning Contractors National Association, INC. (SMACNA)

L. Florida Building Code current edition

M. State Requirements for Educational Facilities (SREF).

N. ASCE 7.11 (American Society of Civil Engineers)

1.5 PROJECT/SITE CONDITIONS

A. General requirements and specific recommendations of the materials ' manufacturers are included as part of these specifications.

B. Temporary protection measures shall be provided and maintained by the Contractor to protect the building and its contents from weather and construction related damages during roofing operations.

C. The Contractor shall remove all demolished building material and debris from the site and dispose of it in a legal manner.

D. Protect the existing building, roof and equipment from flying or falling debris during the roofing process. Provide protection so as not to disrupt building operations or cause damage to the building and its contents.

E. The scheduling and sequence of the roofing operations shall be carefully coordinated with the Director of Construction Services' representative and the Project A/E.

F. Work causing interference with school classes or activities is to be halted until acceptable conditions exist. Work may be performed after school or on weekends as long as such activities are coordinated with the Construction Services Department.

G. Immediately notify the Project A/E of any conditions found contrary to the drawings or specifications before proceeding with roofing operations.

H. Approved fire resistant protective coverings shall be installed at all paving and building walls adjacent to hoist, kettles, tankers, hoses and debris chutes prior to starting the work. Protective coverings shall be lapped at least six inches, shall be secured against wind and shall be vented to prevent collection of moisture on covered surfaces. Protective coverings shall remain in place for the duration of the roofing work. Polyethylene shall not be used.

I. Traffic shall be avoided on completed work.

J. Building components and grounds damaged during the handling and installation of roofing shall be restored to original condition or shall be replaced with new materials.

K. Jobsite foreman shall be equipped with a cellular phone with a local phone number and speak English fluently.

1.6 **QUALITY ASSURANCE**

A. Roofing materials shall be obtained from one manufacturer.

B. Application Contractor shall be approved by the manufacturer of the roofing materials.

C. Applicator shall comply, firstly, with these specifications, and secondly, on matters upon which these specifications are silent, with the manufacturer's recommendations and instructions. In no event shall less quality, less weight, or a lesser number of plies or any other lesser requirements be acceptable than at least the minimum of such required by this specification section.

1.7 **WARRANTY**

A. The Contractor shall furnish a written no-dollar limit warranty for all roofing and flashing on the attached Sarasota School District form which shall extend from the Date of Substantial Completion of the roofing installation as certified by the Project A/E for a period of five years, and which shall cover any and all necessary repair or replacement work required to keep and maintain the roofing membrane work in a watertight and first class condition, at no additional cost to the Director of Construction Services. See Exhibit "A".

B. The Manufacturer shall furnish a written no-dollar limit warranty for all roofing and flashing on the attached Sarasota School District form which shall extend from the Date of Substantial Completion of the roofing installation as certified by the Project A/E for a period of twenty years, and which shall cover any and all necessary repair or replacement work required to keep and maintain the roofing membrane work in a watertight and first class condition, at no additional cost to the Director of Construction Services. See Exhibit " B".

C. Damages to the building or to its contents during construction and prior to the date of completion of the roofing work shall be borne by the responsible firms, if caused by defects in workmanship.

D. Damages to the building or to its contents due to defects in workmanship after the date of completion of the roofing work and for a period of five years thereafter shall be severally borne by the responsible firm.

E. The obligations and liabilities under the terms of these warranties shall be extended to the obligations of the Contractor ' s Performance Bond fora period of time not less than the terms of the performance bond nor in any event less than a time period two years following the completion of the roofing, whichever is greater.

F. The above described warranties shall be delivered to the Director of Construction Services (via the Project A/E) by the Contractor prior to any obligation of the Director of Construction Services to reduce the retainage of payments due the Contractor.

G. The requirements of notification and the Director of Construction Services ' right to affect corrective work set forth in the terms of warranty for the membrane roofing and flashing work shall include the right of the Sarasota County School Board to make emergency repairs

without relieving any part of this warranty obligations. This requirement includes reimbursement by the roofing contractor and/or the manufacturer, as may be appropriate to the School Board, for repair and/or replacement expenses incurred during warranty period, upon failure of installing Contractor to adequately respond within a reasonable time.

H. No other warranty, expressed or implied, is given. No lesser terms of the "standard" warranties or guarantees by the manufacturer shall apply to this contract if less stringent than these specifications. These requirements shall be set forth in the signed warranty.

1.8 **WEATHER LIMITATIONS**

A. Proceed with roofing and associated work only when weather conditions will permit unrestricted use of materials and quality control of the work being installed, complying with the requirements and with the recommendations of roofing materials manufacturers.

B. Application of roofing shall not be performed in excessive wind or wet conditions.

C. Application of roofing shall not be performed in rain or impending rain, except for the purposes of protecting work already placed, such as a water cut-off.

1.9 **SAFETY**

A. The operation shall be conducted in a safe manner and suitable protection for the general public and workmen employed thereon shall be provided. Compliance with local building and fire codes is the responsibility of the Contractor.

B. Comply with OSHA requirements for access and protection of workers while on roof or working on site.

C. Provide a minimum of two fully charged, 4A-20BC fire extinguishers on the roof within 30 feet of the work area. A fire extinguisher rated 4A-20BC shall be kept next to the kettle. A five-gallon pail of water must also be placed immediately adjacent to any hot kettle or each torch area.

D. Safety to students, visitors' school personnel and workmen: The contractor shall take all steps necessary to protect the individuals from injury due to construction.

E. Fences, ropes, signs and barricades shall be provided at Contractor's expense to keep individuals away from the construction, staging and kettle sites.

F. No work shall occur in or over areas occupied by faculty or students without prior approval.

G. Exercise caution of roofing activities when working overhead during class period changes, physical education exits, walkways and corridors.

H. The contractor shall leave no unsecured ladders, tools, gasoline, small propane tanks or other chemicals on-site for evenings or weekends. The kettle valve must be locked when leaving the site for evenings or weekends.

I. Fuel-fired kettles are prohibited on rooftops.

J. Toxic substances (enumerated in the Florida Substance List established pursuant to SS 442.103, Florida Statutes) that are to be used in construction, repair or maintenance of educational facilities or facilities for this School District are restricted to usage according to the following provisions:

K. Before any such substances may be used, the contractor shall notify the Construction Services Department, in writing, at least three working days prior to using the substance. The notification shall contain:

a. The name of the substance to be used
b. Where the substance is to be used, and
c. When the substance is to be used

L. There shall be attached to the notification, a copy of a material safety data sheet (MSDS) as defined in SS442. I 02, Florida Statutes, for each such substance.

M. The Construction Services Department shall take all reasonable actions to ensure that the contractor complies with the safety precautions and instruction set forth in the materials safety data sheet for each substance used by the contractor so that usage of the substance poses no threat to the health and safety of the students, school personnel, or the general public.

1.10 DELIVERY, STORAGE AND MATERIALS

A. Deliver only approved materials to the site. Deliver material in original containers with all seals and labels, including UL labels, intact. If bitumen materials are delivered to the site in bulk, each shipment shall be accompanied by a written certificate from the material manufacturer clearly stating the type, quality, softening point, EVT, and other pertinent data. Do not mix different types or grades of bitumen in bulk shipments.

B. Store materials at the site in properly protected and dry storage facilities, until ready for use. Do not use wet, damp or damaged materials. While on the site, stack materials on pallets and completely cover with waterproof tarpaulin. Securely tie covering to the pallets in such a way as to be completely weathertight.

C. Store materials either inside an enclosure or on the roof deck. Weight of material stored on roof deck shall not exceed allowable load.

D. Locate flame-heated equipment so as not to endanger the structure, other materials on the site or adjacent property.

E. Director of Construction Services will not accept delivery of materials at the job site.

1.11 SEQUENCING AND SCHEDULING

A. In re-roofing, coordinate work so that no more existing roof system, flashing and accessories are removed that can be totally replaced to a waterproof condition within the same day's working time or prior to the onset of inclement weather, whichever is less.

B. Each individual roof area shall be substantially completed prior to beginning another roof area. Utilize multiple crews for multiple roof area construction.

C. Organize work so that roof system and flashing can simultaneously proceed in conjunction with other aspects of the work to insure "dry-in" at the end of each workday.

PART II - PRODUCTS

2.1 ROOFING SYSTEMS

A. Use only those components and materials suitable for the roof system over the substrate and for slopes on this project. Materials must be products of or acceptable to the manufacturers of the roofing system. Roof system shall have a UL Class A Fire Rating and an FM 1-90 Rating.

B. Acceptable roofing material manufacturers are:

1. Soprema
2. XtraFlex
3. Johns Manville

C. Manufacturer's details shall be upgraded to equal School Boards incorporated into each project's drawings/de tails. Manufacturer' s specifications for various deck types and insulations shall be followed as long as they are in compliance with or greater than School Board' s standard drawings and specifications.

D. General: Each manufacturer has several different roof systems available. Only the systems specified below are to be provided and installed.

E. The materials of the modified bitumen roofing system shall be:

I. First Ply- Venting-type base sheet (meeting ASTM D-4897, Type II) on nailable-type decks (plus rosin paper on wood decks) or Type IV fiberglass ply sheet on insulation or moppable surface.

2. Middle Ply - Smooth SBS fiberglass reinforced 80 mils (minimum) thick modified bitumen membrane.

3. Cap Ply-SBS modified bitumen, polyester or fiberglass reinforced 150 mils (minimum) thickness with a white granule surfacing. Finished surfacing must meet minimum EnergyStar compliant requirements.

4. Flashings - SBS modified bitumen with a white granule surface or smooth surfacing. Finished surfacing must meet minimum EnergyStar compliant requirements.

F. The Sarasota County School Board modified bitumen roofing system shall consist of the following:

1. Johns Manville's approved Class A Flame Hazard Classification roofing system shall include the following materials and method of installation.

a. Johns Manville Ventsulation on nailable surfaces or Type IV fiberglass on mopped surfaces, 25 lb. Mopping of Type III or IV asphalt, Johns Manville Dyna Weld interply, 25 lb. Mopping of Type Ill or IV asphalt and cap sheet of Johns Manville Dyna Weld CAPCR with white granular surface.

b. Flashings shall be Johns Manville DynaFlex with white reflective surface.

2. Soprema's approved Class A Flame Spread Hazard Classification system shall include the following materials and method of installation.

a. A Soprema-approved venting-type fiberglass base sheet (meeting ASTM D-4897, Type II) on nailable surfaces or Type IV fiberglass felt on mopped surfaces, 25 lb. Mopping of Type IV asphalt, Soprema Sopralene FLAM 180 interply, 25 lb. Mopping of Type IV asphalt, and cap sheet of Soprema Soprastar with white reflective surface.

b. Flashings shall be Soprema Soprastar with Elastophene Flam backer sheet.

3. Siplast 's approved Class A Flame Hazard Classification roofing system shall include the following materials and method of installation:

a. A Siplast approved fiberglass base sheet (meeting ASTM D-4897, Type II) on nailable surfaces or Type IV fiberglass felt on mopped surfaces, 25 lb. Mopping of Type IV asphalt, Siplast Paradiene 20 interplay, 25 lb Mopping of Type III asphalt, and cap sheet of Siplast Paradiene 30 CR with white reflective surface.

b. Flashings shall be Vera! Aluminum.

2.2 BITUMINOUS MATERIALS

A. Asphalt bitumen: ASTM-D-312, Type III or IV.

B. Asphalt primer: ASTM-D-41.

C. Asphalt roof cement: ASTM-D-4586 (Asbestos Free).

2.3 ACCESSORIES

A. All fasteners, lead, primer and wood components necessary to complete the system shall be the system manufacturer's standard and shall be compatible for the work.

B. Plumbing Vent Pipes – one piece lead flange and sleeve, 4-pound minimum. The flange shall be a minimum of 4-inches wide.

C. Roof drain flashing shall be 36-inch square, 4-pound lead.

D. Fabric tape shall be 4-inch wide polyester.

E. Base sheet fasteners for lightweight concrete decks: ES FM-90, Olympic Base Sheet fasteners with roofing disks, manufactured with G-90 galvanized steel with top of fasteners and disk coated to meet FM #4470 standard.

PART III - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secured.

C. Verify deck is clean and smooth, free of depressions, waves or projections.

3.2 SURFACE PREPARATION

A. Apply asphalt primer to all surfaces that are to receive new flashings.

B. Prepare substrates to provide a surface suitable to achieve a uniform, positive and maximum bond between the new materials and the substrate. Follow roofing material manufacturer's technical and workmanship requirements for all deck preparation before beginning roof application.

C. The roofing and flashing shall be applied to a smooth and firm surface free from moisture, dirt, objects and foreign materials. Surfaces shall be inspected and approved immediately prior to application of roofing and flashings.

D. Items penetrating the roof shall be secured in position and properly prepared for flashing. Surfaces shall be inspected and approved immediately prior to application of roofing and flashings.

E. If conditions are uncovered which would be detrimental to the application of specified work immediately notify the Construction Services Department and Project A/E of such conditions for his determination as to treatment, including replacement of deteriorated wood nailers.

F. Approved fire resistant protective coverings shall be installed at all paving and building walls adjacent to hoist, kettles, tankers, hoses, and debris chutes prior to starting the work. Protective coverings shall be lapped at least six inches, shall be secured against wind and shall be vented prevent collection of moisture on covered surfaces. Protective coverings shall remain in place for the duration of the roofing work. Polyethylene shall not be used.

3.3 MEMBRANE APPLICATION

A. Application of the modified bituminous membrane shall be m accordance with the manufacturer's specifications and details.

B. All layers of roofing felts shall be laid free of wrinkles, creases or fish mouths and shall be laid at right angles to the slope of the deck. Sufficient pressure shall be exerted on the roll during application to insure prevention of air pockets.

C. The asphalt kettles and tankers shall be equipped with a fully accurate and fully readable thermometer. Thermometers shall also be available on the roof for used by mopping mechanics. Application temperature shall not be more than 25 degrees F above or 25 degrees F below the EVT as supplied by the asphalt manufacturer. Evidence of the EVT of each load of asphalt shall be made available to the Construction Services Department and Project A/E. All moppings shall be at the manufacturer's recommended quantity and shall be a solid mopping with no breaks or voids.

D. At lightweight concrete roof areas, begin at the low point of the roof areas and install the base sheet directly over the prepared surface and fasten the base sheet as indicated in the drawings. The base sheet shall have side laps of 4-inches and end laps of 6-inches.

E. At all roof areas where insulation is to be installed, install the insulation system as specified in Section 07 22 00.

F. Beginning at the low point of the insulation system, install one ply of Type IV felt into a solid mopping of hot asphalt.

G. Beginning at the low point of the roof, the interply sheet of the modified bituminous membrane shall be fully bonded to the Type IV ply with a solid mopping of asphalt and shall have a minimum of three-inch side laps and six-inch end laps, offset from lap s in the first ply.

H. Beginning at the low point of the roof, the cap sheet of the modified bituminous membrane shall be fully bonded to the interply sheet with a solid mopping of asphalt and shall have a minimum of three-inch side laps and six- inch end laps. Offset end laps a minimum of three feet. Stagger laps between plies.

I. Contractor shall immediately, upon application of roofing membranes, install loose white granules into exposed hot mopped asphalt. Professional workmanship shall be required to keep white cap sheet and flashing looking aesthetically pleasing upon completion of project. Voids, air pockets, ridges and wrinkles are not acceptable as a finished product.

3.4 FLASHING AND ACCESSORIES

A. Prior to application of the flashings, apply a coat of asphalt primer at the rate specified by manufacturer to the vertical surfaces receiving the flashing. Allow primer to sufficiently dry before application of the flashing backer sheet. Lay flashing backer sheet in strip s three feet wide to the vertical surfaces, extending onto the flat surface of the roof a minimum of four inches. Side laps shall be three inches.

B. The top ply flashing side laps shall be a minimum of three inches and shall be staggered a minimum of four inches from the backer sheet side laps in order to avoid excessive thickness. The top ply shall extend a minimum of six inches onto the membrane surface and eight inches up the parapet wall or penetration. Solidly mop or torch weld the top ply flashing layer in accordance with manufacturer recommendation s, directly onto the flashing backer sheet. The top of the flashing and backer sheet shall be nailed at all locations in accordance with the manufacturer’s requirements.

C. At the end of the day's work, or when precipitation is imminent, a water cut-off shall be installed at all open edges. Cut-offs shall be constructed using the same membrane and asphalt as that used in the construction of the new roofing system. The cut-offs shall be able to with stand extended periods of wet weather. Cut-offs shall be completely removed prior to the resumption of roofing.

3.5 PROTECTION

A. Protect building surfaces against damage from roofing work.

B. Where traffic must continue over finished roof membrane, protect surfaces.

EXHIBIT "A"
CONTRACTOR'S FIVE YEAR
ROOFING GUARANTEE

OWNER FILLS IN THIS BOX

School or Center _____

Address _____ Guarantee Starts _____

_____ Guarantee Ends _____

No. Squares _____

School or Center Phone _____

Building Nos. _____

DATE OF SUBSTANTIAL COMPLETION AS CERTIFIED BY ENGINEER: _____

PROJECT NAME: _____

ADDRESS: _____

BUILDING NOS: _____

NO. SQUARES: _____

FROM: _____ Phone for claim or response:

( ) _____

_____

_____
(Contractor's Name and Address)

Manufacturer's Guarantee Number: _____

TO: School Board of Sarasota County (Owner)
c/o Director, Construction Services Department
7895 Fruitville Road
Sarasota, Florida 34240

AND TO: _____

_____

_____
Roofing Manufacturer, Name and Address
Main Office Phone ( )_____
Local Phone ( ) _____

1. The above named Contractor hereby guarantees to Owner, subject to the limits stated herein, that the labor, materials, and workmanship are in accordance with the Contract Documents, best standards of the Industry, and the Manufacturer's requirements, and such are free from defects in material or workmanship.

2. The above named Contractor warrants the work to be and to remain watertight, free of evidence of deterioration and failure (or pending failure). Normal aging of the roofing material s and normal wear and tear will not be considered major deterioration. Excessive patches, ply separations decomposing of membrane, repeated leaks and other obvious failures or defects shall be evidence of major deterioration.

3. This guarantee shall require the Contractor to provide and to pay for materials and labor required to repair the Roofing System to return it to a watertight condition if leaks occur due to: (1) ordinary wear and tear of any or all of the component materials of the Roofing System, or (2) workmanship deficiencies at the time of application of the Roofing System, all without additional cost to the School Board of Sarasota County. Such replacement or repair work shall be equal to the existing system furnished under this Contract, and shall conform with the recognized standards of the National Roofing Contractors' Association, or as otherwise mutually agreed.

4. This Guarantee does not obligate the Contractor to repair the Roofing System, or any part of the Roofing System, for leaks resulting from (a) natural disasters or acts of God; (b) misuse, abuse or negligence; (c) exposure of the Roofing System components to damaging substances such as oil or solvents or to damaging conditions such as vermin; (d) changes to the Roofing System not pre-approved in writing by the manufacturer; (e) failure of the Building substrate (mechanical, structural, or otherwise, and whether resulting from Building movement, design defects or other causes), or (f) damages caused by vandalism, act of the Owner or others.

5. The Contractor shall not be responsible for leaks and damage resulting from water entry from any portion of the Building structure that is not a part of the Roofing System.

6. The time period covered by the requirements above shall be as follows:

    a. During Construction; and

    b. From time of materials manufacturing extending for a time period of five years after the Date of Substantial Completion of the Roofing System set forth above.

7. The above named Contractor agrees to effect emergency temporary repairs or permanent corrective work as quickly as is necessary to fully protect the School Board's best interests, or to otherwise allow the School Board to effect such corrective work with its own crews without adversely affecting the terms of this guarantee, or without affecting any obligations of the above-named Contractor. The Contractor agrees to reimburse the School Board for any documented fair and reasonable costs expended by the School Board to make such repairs. The Contractor agrees to effect permanent repairs within a reasonable period of time.

8. This Guarantee shall also serve as a FLASHING GUARANTEE ENDORSEMENT for all membrane flashing material provided by the Contractor for the same time periods set forth in paragraph Number 6 above.

9. The terms of the Contract Documents (drawings and specifications), which were bid upon and contracted for, are reflected in the terms of this guarantee. Therefore, no exculpatory words or other terms lessening these requirements shall apply. No lesser warranty or guarantee, expressed or implied, shall apply. No less stringent or exculpatory words of any Manufacturers "standard" or printed guarantee and/or warranty shall apply.

_____
Contractor's firm name (Typed)

_____
Signature

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ ,day of _____, 20_____, by

_____
(name of person acknowledging)

_____
(Signature of Notary Public)
(State of Florida)

Print Type or Stamp Commissioned Name of Notary Public

PERSONALLY KNOWN_____ OR PRODUCED IDENTIFICATION _____
TYPE OF IDENTIFICATION PRODUCED_____(ATTACH COPY)

_____
Contractors Firm Name - typed

_____
Signature

_____
Typed Name of Person Signing

_____
Title

_____
Date

EXHIBIT "B"
MANUFACTURER'S TWENTY YEAR
ROOFING GUARANTEE

OWNER FILLS IN THIS BOX

School or Center _____

Address _____ Guarantee Starts _____

_____ Guarantee Ends_____

No. Squares _____

School or Center Phone _____

Building Nos. _____

DATE OF SUBSTANTIAL COMPLETION AS CERTIFIED BY ENGINEER: _____

PROJECT NAME: _____

ADDRESS: _____

BUILDING NOS: _____

NO. SQUARES: _____

FROM: _____ Phone for claim or response:

( ) _____

_____

_____
(Contractor's Name and Address)

Manufacturer's Guarantee Number: _____

TO: School Board of Sarasota County (Owner)
c/o Director, Construction Services Department
7895 Fruitville Road
Sarasota, Florida 34240

AND TO: _____

_____

_____
Roofing Manufacturer, Name and Address
Main Office Phone ( )_____
Local Phone ( ) _____

1. The above named Manufacturer hereby guarantees to Owner, subject to the limits stated herein, that the materials (including its labor and workmanship) provided in the above-named project comply with the Owner's minimum specified properly requirements using the ASTM D-5147 test method, and that the labor and workmanship conform with the recognized standards of the Asphalt Roofing Manufacturing Association, or as otherwise mutually agreed in accordance with the Contract Documents, best standards of the Industry, and such are free from defect in material or workmanship.

2. The time period covered by the requirements of the Guarantee paragraph Number 1 above, for the Manufacturer, shall be as follows:

    a. From time of materials manufacture extending for a time period of twenty years after the Date of Substantial Completion of the Roofing System set forth above; and

    b. For the time limitations of the Florida Statutes of Limitations, whichever is the longer obligation.

3. The above named Manufacturer warrants the work to be and to remain watertight, in normal condition relative to the age of the roof membrane, free of evidence of major deterioration and failure (or pending failure). Normal aging of the roofing materials and normal wear and tear will not be considered major deterioration. Excessive patches, ply separations decomposing of membrane, repeated leaks and other obvious failures or defects shall be evidence of major deterioration.

4. This guarantee shall require the Manufacturer to provide and to pay for materials and labor required to repair the Roofing System to return it to a watertight condition if leaks occur due to: (I) ordinary wear and tear of any or all of the component materials of the Roofing System, or (2) workmanship deficiencies at the time of application of the Roofing System, all without additional cost to the School Board of Sarasota County. Such replacement or repair work shall be equal to the existing system furnished under this Contract, and shall conform with the recognized standards of the National Roofing Contractors' Association, or as otherwise mutually agreed.

5. This Guarantee does not obligate the Manufacturer to repair the Roofing System, or any part of the Roofing System, for leaks resulting from (a) natural disasters or acts of God; (b) misuse , abuse or negligence; (c) exposure of the Roofing System components to damaging substances such as oil or solvents or to damaging conditions such as vermin; (d) changes to the Roofing System not pre-approved in writing by the manufacturer; (e) failure of the Building substrate (mechanical, structural, or otherwise, and whether resulting from Building movement, design defects or other causes), or (f) damages caused by vandalism, act of the Owner or others.

6. The Manufacturer shall not be responsible for leaks and damage resulting from water entry from any portion of the Building structure that is not a part of the Roofing System.

7. This guarantee does not obligate the Manufacturer for any damage to the Building(s) or contents even though caused by defects in material or workmanship, or for loss of time or profits.

8. The above named Manufacturer agrees to effect emergency temporary repairs or permanent corrective work as quickly as is necessary to fully protect the School Board's best interests, or to otherwise allow the School Board to effect such corrective work with its own crews without adversely affecting the terms of this guarantee, or without affecting any obligations of the above-named Contractor. The Contractor agrees to reimburse the School Board for any documented fair and reasonable costs expended by the School Board to make such repairs. The Manufacturer agrees to effect permanent repairs within a reasonable period of time.

9. This Guarantee shall also serve as a FLASHING GUARANTEE ENDORSEMENT for all membrane flashing material provided by the Manufacturer for the same time periods set forth in paragraph Number 2 above.

10. No exculpatory words or other terms lessening the requirements of this Roofing Guarantee shall apply. No lesser warranty or guarantee, expressed or implied, shall apply. No less stringent or exculpatory words of any manufacturer's "standard" or printed guarantee and/o r warranty shall apply. Conversely, liability shall be as exclusively set forth in this document. Any modification to the wording of this document or attachments intending to modify these terms or refusal to execute this Guarantee form shall be unacceptable to the Owner. Any of these changes will cause the Owner to withhold Final Payment to Contractor until this document is executed by Manufacturer as printed.

_____
Manufacturer's firm name (Typed)

_____
Signature

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ ,day of _____, 20_____, by

_____
(name of person acknowledging)

_____
(Signature of Notary Public)
(State of Florida)

Print Type or Stamp Commissioned Name of Notary Public

PERSONALLY KNOWN_____ OR PRODUCED IDENTIFICATION _____
TYPE OF IDENTIFICATION PRODUCED_____(ATTACH COPY)

_____
Contractors Firm Name - typed

_____
Signature

_____
Typed Name of Person Signing

_____
Title

_____
Date

_____
Signature

SECTION 07 62 00
SHEET METAL FLASHING

PART I - GENERAL

1.1 DESCRIPTION OF WORK

A. The Bidding Requirements and Contractual Requirements of Division One shall apply to all work hereunder.

1.2 RELATED REQUIREMENTS

A. Section 06 10 00 -- Rough Carpentry

B. Section 07 52 00 -- Modified Bitumen Roofing

1.3 SUBMITTALS

A. Submit shop drawings, product data and samples under provisions of Section 01300.

B. Describe material thickness and profile, joining pattern, joining details, fastening methods and installation details on shop drawings.

C. Provide a color selection chart for the coatings on sheet metal items.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered and stored to prevent twisting, bending or abrasion.

B. Prevent contact with materials during shipping and storage which may cause discoloration, staining or damage.

1.5 QUALITY ASSURANCE

A. Installer shall specialize in sheet metal flashing work with five-years minimum experience.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIALS

A. The new drip edges, scuppers and conductor heads, gutters, downspouts, coping caps and expansion joint covers shall be 0.050- inch mill finish aluminum.

B. Continuous cleats for drip edge, copings and expansion joint covers shall be 0.050-inch mill finish aluminum.

C. Pitch pans - 16-ounce per square foot copper, with soldered joints. All pieces shall have a minimum 4-inch flange.

D. Pressure bar - extruded aluminum, 1/8-inch thick by I-inch wide with holes pre-punched at 6-inches on center.

E. Two-piece counter flashing shall be by Frye or an approved equal.

2.2 ACCESSORIES

A. Fasteners shall be stainless steel screws with soft neoprene washers at exposed fasteners.

B. Fasteners for concrete masonry shall be zinc fastener with stainless steel expansion anchor ¼-inch by 1 ½-inch such as Rawl Zamac Nailin, Hilti Metal Hit Anchor or an approved equal product.

C. Sealant at sheet metal joints shall be one part, non-sag polyurethane sealant such as Mameco's Vulkem 116 sealant or an approved equal product.

2.3 FABRICATION

A. Formed sections are to be true to shape, accurate in size, square and free from distortion or defects.

B. Form pieces in longest practical lengths.

C. Hem exposed edges on underside ½-inch, miter and seam corners.

D. Fabricate each corner from one piece with minimum 18-inch long legs, weld mitered joint and seal with approved sealant.

E. Fabricate vertical faces with bottom edge formed outward ¼-inch and hemmed to form drip. Kickout of cleat shall be a minimum of one-inch in length. Lip of drip edge shall be a minimum of ½-inch high and long enough to cover the underlying nailers by 1-inch.

F. Fabricate flashings to allow flange to extend a minimum of 4-inches over roofing.

G. Coping joint covers and joint backup plates for drip edge shall be a minimum of 6-inches wide.

H. Fabricate expansion joint cover, and expansion joint terminations and intersections in accordance with SMACNA Figures 5-5, 5-2 and 5-3 respectively.

I. Form new pitch pans to smallest size practical for the application but not less than 4-inches wide with 4-inch upstand and 4-inch flanges with corners and joints welded.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify roof openings, curbs, pipes, sleeves, ducts or vents through roof are solidly set, edge strips and reglets in place and nailing strips located.

8. Verify membrane termination and base flashings are in place, sealed and secure.

3.2 **PREPARATION**

A. Field measure all site conditions.

8. Install starter and edge strips and cleats before starting installation.

C. Seam and seal all joints.

D. Fit flashings tight in place. Make corners square, surfaces true and straight in planes and lines accurate to profiles.

E. Seal metal joints watertight.

F. Determine width required for maximum expansion prior to fabricating expansion joints.

3.3 **INSTALLATION**

A. Conform to installation recommendations included in SMACNA Architectural Sheet Metal Manual, 5th Edition.

8. Repair and make watertight all metal covers, vent base corners and/or seams that are split, cut or otherwise damaged during or prior to construction.

C. Install a backup plate and cover plate at all coping and drip edge joints. Set coping and cover plate into continuous beads of sealant.

D. Replace the existing expansion joint curb nailers with new wood blocking as shown in the plans.

E. Re-secure all power vents on curbs with a minimum of two fasteners per side.

F. All perimeter edge metal shall lap over perimeter nailers a minimum of 2-inches.