

**EXISTING CONDITION ASSESSMENT (INFORMATION TO BIDDERS)**  
**SECTION 02 25 29**

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PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Roof Cut Data
  - 2. Thermal Resistance Data
- B. Related Sections:
  - 1. Section 01 11 00 – Summary of Work

1.2 EXISTING PROJECT / SITE CONDITIONS

- A. Field Investigation: An initial field investigation was conducted by A/R/C Associates, Incorporated on October 21, 2016. During which time the exposed conditions were observed and the under-roof conditions were determined to the best extent observable without destructive methods. Limited existing construction record drawings and specifications were available for A/R/C to verify. The details of the project indicated and existing conditions are based on typical construction practice. A/R/C offers no assurance that all varying conditions have been discovered, or that any Owner-furnished information is completely accurate. It shall be the responsibility of each bidder to make additional inspections as they may judge to be a necessity.
- B. Verification of Dimensions: The approximate dimensions shown for each roof area are the result of reconstruction of the building design from field measurements taken by A/R/C Associates. This information is given to assist prospective Bidders in establishing the approximate scope of the project. As a prerequisite for bidding the project, however, all dimensions shall be field verified by each Bidder so that the dimensions and areas utilized in bidding the project will be confirmed or corrected by the Bidder.
- C. Additional Information Available: Various testing and investigative reports may have been performed by the Owner previously and/or in conjunction with the performance of other work which may be available for review through the Owner's Maintenance Department. We believe most pertinent information available from these sources has already been integrated into these bidding and construction documents.
- D. Roof Cut Data: As part of that site investigation, roof cuts were performed at various locations of the existing roof systems to determine the substrate. Data from those roof cuts are attached at the end of this section and are included only for informational purposes.
- E. Thermal Resistance Data is provided for the convenience of the contractor and is attached at the end of this Section.

**EXISTING CONDITION ASSESSMENT (INFORMATION TO BIDDERS)**  
**SECTION 02 25 29**

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- F. Condition of Structure:
1. The Owner assumes no responsibility for actual condition of the structure.
  2. Conditions existing at time of inspection for bidding purposes will be maintained by Owner in so far as practicable. However, variations may occur by Owner's operations.
  3. Prior to bidding, inspect and verify existing conditions of Project, including elements subject to damage or to movement during project scope.
    - a. Conflicts and problems shall be reported to the Architect for resolution prior to bidding.
    - b. Failure to report these conflicts places the responsibility on the Prime Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
  4. During construction, inspect conditions affecting installation of Products, or performance of work.
    - a. Report unsatisfactory or questionable conditions to Architect in writing; do not proceed with work until Architect has provided further instructions.
- G. Photographs
1. A/R/C took numerous photographs of the various conditions for reference during the design process. The photographs are being made accessible through a website link:

<https://www.dropbox.com/sh/a39jksj7x0hx9wg/AAAFvRwIjdDfRnhH03NWTLNa?dl=0>

**PART 2 PRODUCTS**

(Not Applicable)

**PART 3 EXECUTION**

(Not Applicable)

END OF SECTION



Architecture  
Roof Consulting  
Construction Technology

A/R/C  
Associates  
Incorporated

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# ROOF CUT DATA

PROJECT NAME: \_\_\_\_\_  
CITY HALL AT CRESCENT CITY  
PROJECT # 16001.01 DATE: 10/21/16

ROOF CUT NO. 4

ROOF AREA: A

MEMBRANE:

MODIFIED BITUMEN (HOT ASPHALT)

FIBERGLASS BASE SHEET

INSULATION:

1/2" PERLITE

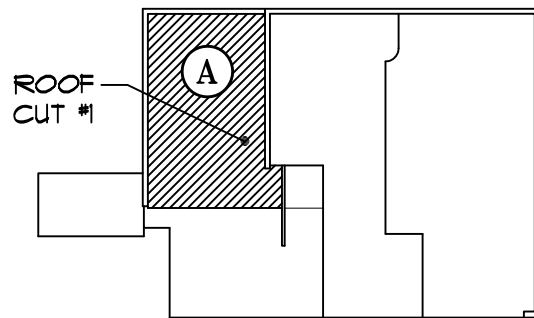
L.W.I.C. - 2" THICKNESS

DECK:

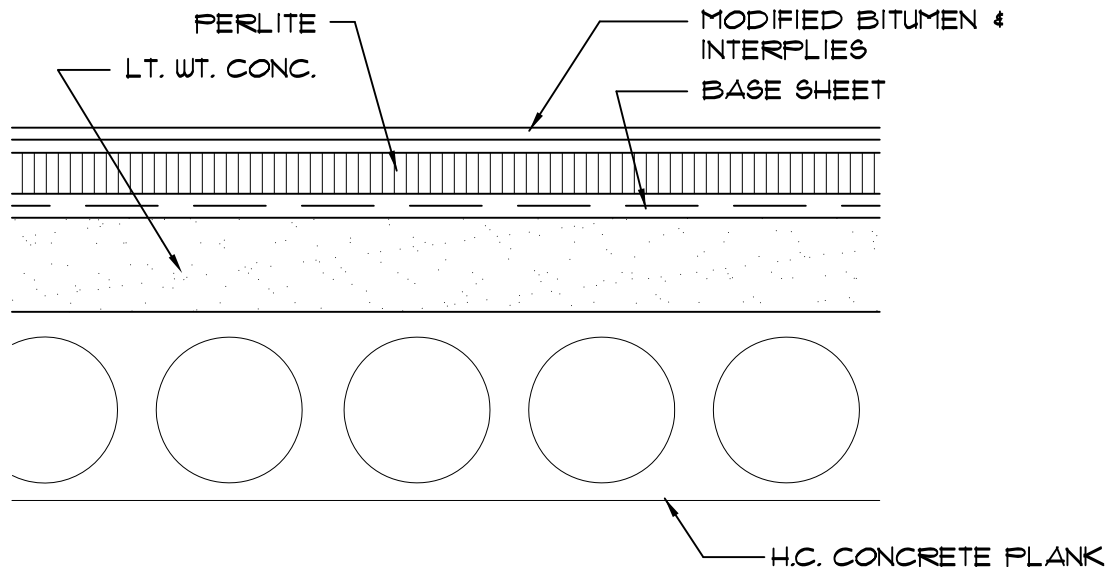
8" HOLLOW CORE DECK

REMARKS :

SLOPE IN DECK ±1/16"



SITE PLAN/ROOF PLAN  
NOT TO SCALE





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# ROOF CUT DATA

PROJECT NAME:

CITY HALL AT CRESCENT CITY

PROJECT # 16001.01 DATE: 10/21/16

ROOF CUT NO. 2

ROOF AREA: B

MEMBRANE:

MODIFIED BITUMEN (HOT ASPHALT)

FIBERGLASS BASE SHEET

INSULATION:

PLYWOOD SHEATHING

PERLITE COVER BOARD

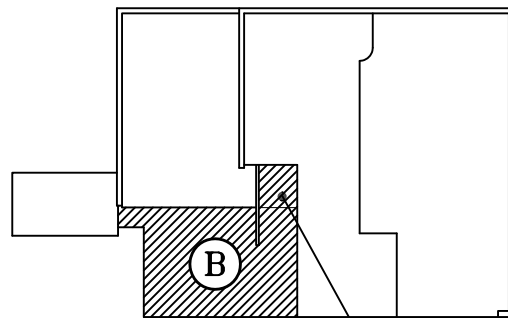
L.W.I.C. - 2½" THICKNESS

DECK:

8" HOLLOW CORE DECK

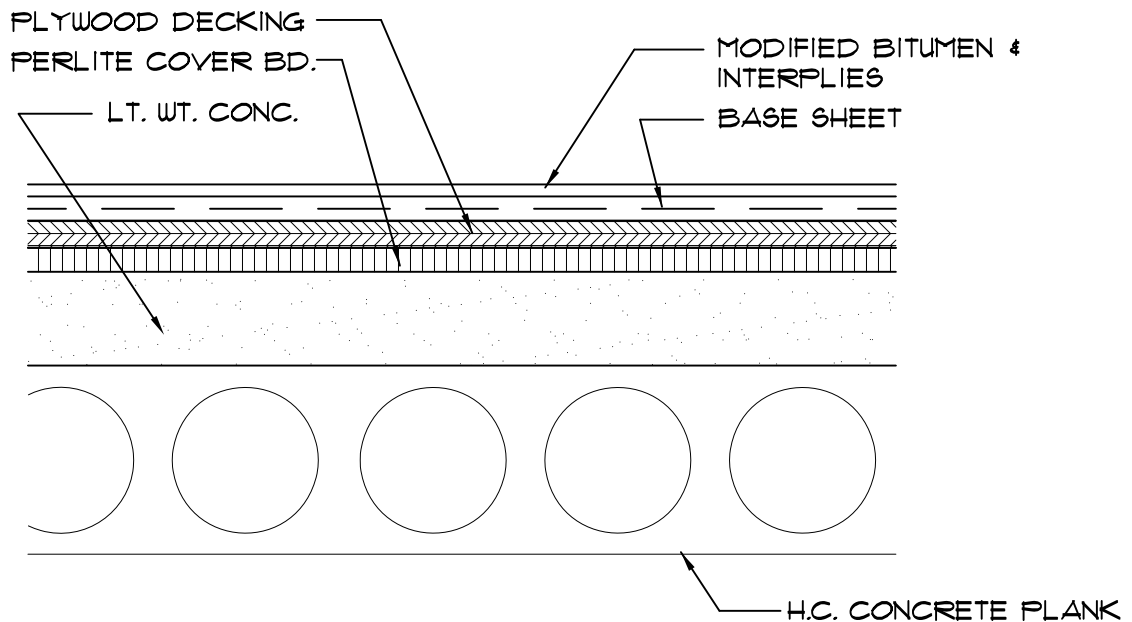
REMARKS :

SLOPE IN DECK ½" OR BELOW



ROOF  
CUT #2

SITE PLAN/ROOF PLAN  
NOT TO SCALE





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# ROOF CUT DATA

PROJECT NAME:

CITY HALL AT CRESCENT CITY

PROJECT # 16001.01 DATE: 10/21/16

ROOF CUT NO. 1 & 3

ROOF AREA: A

MEMBRANE:

MODIFIED BITUMEN (HOT ASPHALT)

FIBERGLASS BASE SHEET

INSULATION:

1/2" PERLITE

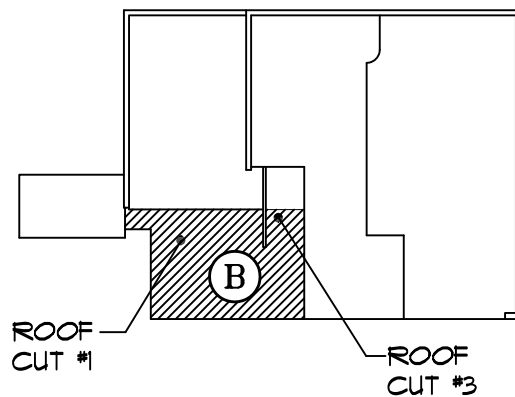
L.W.I.C. - 2 1/2" THICKNESS

DECK:

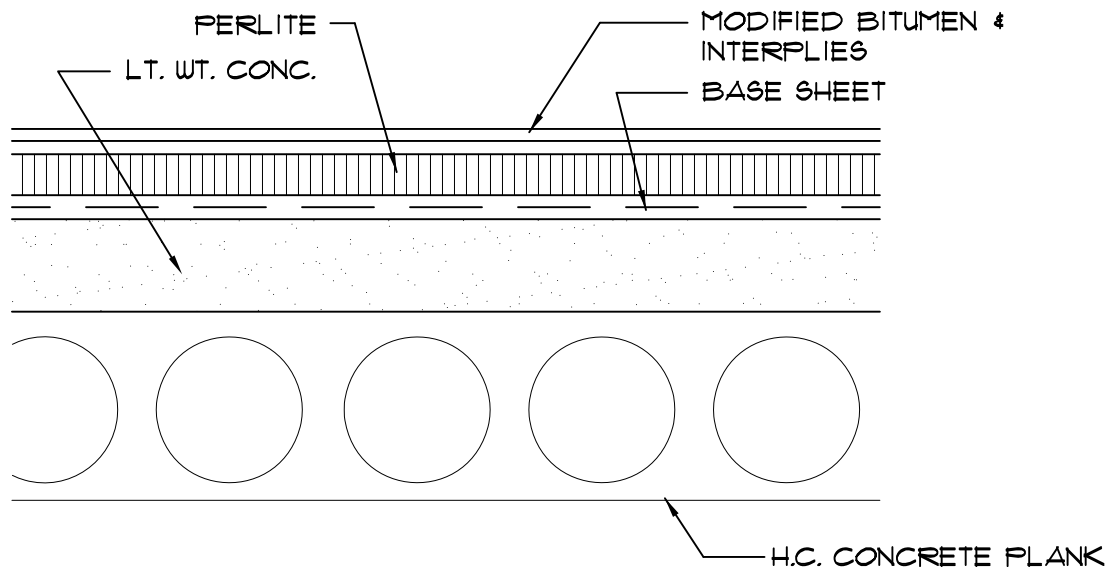
8" HOLLOW CORE DECK

REMARKS :

SLOPE IN DECK ±1/16"



SITE PLAN/ROOF PLAN  
NOT TO SCALE





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# ROOF CUT DATA

PROJECT NAME:

CITY HALL AT CRESCENT CITY

PROJECT # 16001.01 DATE: 10/21/16

ROOF CUT NO. 5 & 6

ROOF AREA: C & D

MEMBRANE:

MODIFIED BITUMEN (HOT ASPHALT)

FIBERGLASS BASE SHEET

INSULATION:

1/2" PERLITE

DECK:

PLYWOOD SHEATHING OVER

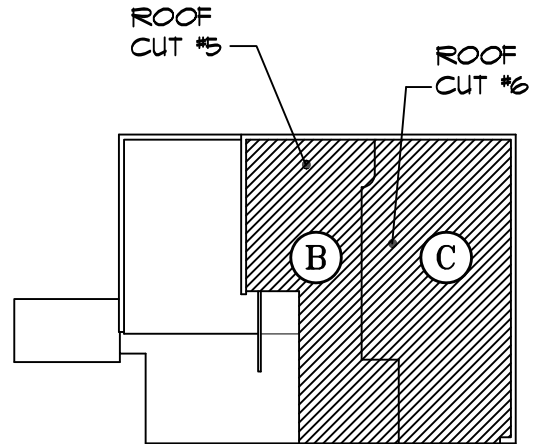
2X6 WOOD JOIST FRAMING

REMARKS :

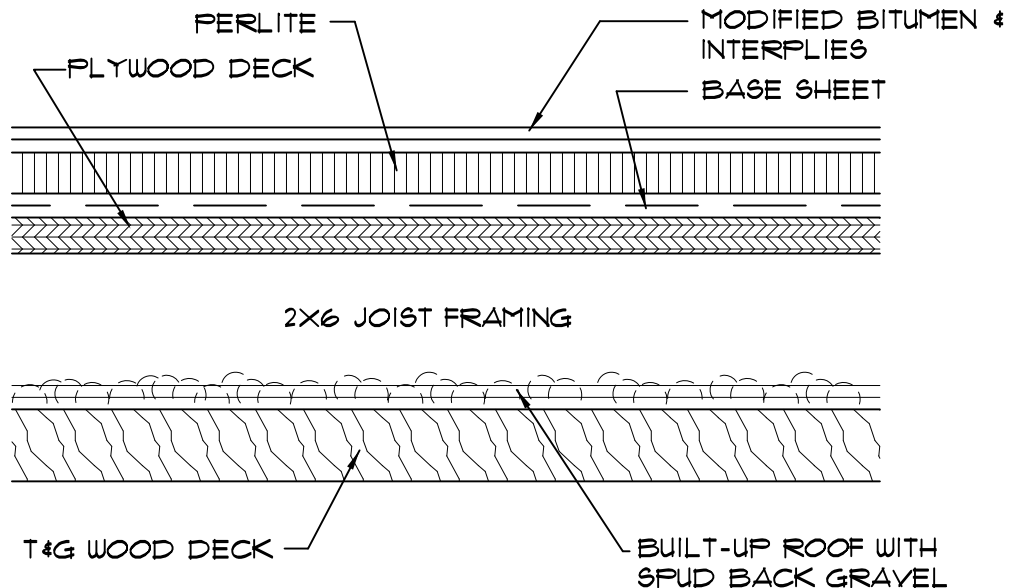
EXISTING B.U.R. OVER T&G WOOD

STRUCTURAL DECK

SLOPE IN DECK ±1/16"



SITE PLAN/ROOF PLAN  
NOT TO SCALE





Project Name: City Hall of Crescent City

Project No.: 16001.01

Roof Area B

	Material	Resistance	Existing	Proposed
<b>1. Outside Surface (air film)</b>				
	Winter-Heat Flow Up-Wind 15 mph	<b>0.17</b>		
	Summer-Heat Flow Down-Wind 7 1/2 mph	<b>0.25</b>	<u>0.25</u>	<u>0.25</u>
<b>2. Mod. Bit. Roofing ( 3/4 " ) 3 ply</b>		<b>0.33</b>	<u>0.33</u>	<u>0.33</u>
<b>3. Roof Insulation</b>				
a.	Perlite: 1/2" x 2.8 R/Inch		<b>1.40</b>	
b.	Isocyanurate: (P) 4" AVG. x 5.56 R/Inch		<b>0</b>	<b>22.24</b>
c.	Other: (Add) 1/4" Gypsum cover Board	<b>0.45</b>		<b>0.45*</b>
<b>4. Preliminary Roof – Two mopped No. 15 felt</b>		<b>0.12</b>		
	One Layer No. 43 coated base sheet	<b>0.06</b>	<u>0.06</u>	
<b>5. Roof Deck/Materials</b>				
a.	Structural 8" Hollow Core Concrete:	<b>1.08</b>	<b>1.08</b>	<b>1.08</b>
b.	Gypsum Concrete: x .60 R/Inch			
	Gypsum Form Board: " x .90 R/Inch			
	Fiberglass Form Board: x 4.0 R/Inch			
c.	Lightweight Insulating Concrete:			
	1:4 mix: 2.5" x 1.11 R/Inch		<b>2.78</b>	
	1:6 mix: x 1.315 R/Inch			
	Styrofoam: x 4.0 R/Inch			
d.	Wood Decks			
	2" Nominal Plank (1 1/2 " )	<b>1.89</b>		
	1" Nominal Plank ( 3/4 " )	<b>0.94</b>		
	3/4" Plywood	<b>0.93</b>		
	1/2" Plywood	<b>0.62</b>		
f.	Steel	<b>0.00</b>		
<b>6. Dead Air Space-Not Vented</b>		<b>0.85</b>	<u>0.85</u>	<u>0.85</u>
<b>7. Ceiling</b>				
a.	Suspended Acoustical Lay-in	<b>1.50</b>	<u>1.50</u>	<u>1.50</u>
b.	Plaster Board – 3/4"	<b>0.68</b>		
c.	Plaster Board – 1/2"	<b>0.45</b>		
d.	Plaster/Metal Lath – 3/4"	<b>0.47</b>		
<b>8. Inside Surface – Still Air (air film)</b>				
	Winter-Heat Flow Up	<b>0.61</b>		
	Summer-Heat Flow Down	<b>0.92</b>	<u>0.92</u>	<u>0.92</u>
		<b>R<sub>T</sub></b>	<b>5.38*</b>	<b>23.77*</b>

\* In the new 2014 Florida Building Code (Energy Conservation), Chapter 4 limits insulation R-Value calculations to above deck materials only and requires that the new minimum insulation thickness be calculated to be R-20 minimum for new construction. Other R-Value information is shown, but to be code compliant, only relevant R-Value information is added together to demonstrate code compliance to the new standards.



Project Name: City Hall of Crescent City

Project No.: 16001.01

Roof Area D

	Material	Resistance	Existing	Proposed
<b>1. Outside Surface (air film)</b>				
	Winter-Heat Flow Up-Wind 15 mph	<b>0.17</b>		
	Summer-Heat Flow Down-Wind 7 1/2 mph	<b>0.25</b>	<u>0.25</u>	<u>0.25</u>
<b>2. Mod. Bit. Roofing ( 3/4 " ) 3 ply</b>		<b>0.33</b>	<u>0.33</u>	<u>0.33</u>
<b>3. Roof Insulation</b>				
a.	Perlite: 1/2" x 2.8 R/Inch		<b>1.40</b>	
b.	Isocyanurate: (P) 8.25" AVG. x 5.56 R/Inch		<b>0</b>	<b>45.87</b>
c.	Other: (Add) 1/4" Gypsum cover Board	<b>0.45</b>		<b>0.45*</b>
<b>4. Preliminary Roof – Two mopped No. 15 felt</b>		<b>0.12</b>		
	One Layer No. 43 coated base sheet	<b>0.06</b>	<u>0.06</u>	
<b>5. Roof Deck/Materials</b>				
a.	Structural 8" Hollow Core Concrete:	<b>1.08</b>	<u>1.08</u>	<u>1.08</u>
b.	Gypsum Concrete: x .60 R/Inch			
	Gypsum Form Board: " x .90 R/Inch			
	Fiberglass Form Board: x 4.0 R/Inch			
c.	Lightweight Insulating Concrete:			
	1:4 mix: 2.5" x 1.11 R/Inch		<u>2.78</u>	
	1:6 mix: x 1.315 R/Inch			
	Styrofoam: x 4.0 R/Inch			
d.	Wood Decks			
	2" Nominal Plank (1 1/2 " )	<b>1.89</b>		
	1" Nominal Plank ( 3/4 " )	<b>0.94</b>		
	3/4" Plywood	<b>0.93</b>		
	1/2" Plywood	<b>0.62</b>		
f.	Steel	<b>0.00</b>		
<b>6. Dead Air Space-Not Vented</b>		<b>0.85</b>	<u>0.85</u>	<u>0.85</u>
<b>7. Ceiling</b>				
a.	Suspended Acoustical Lay-in	<b>1.50</b>	<u>1.50</u>	<u>1.50</u>
b.	Plaster Board – 3/4"	<b>0.68</b>		
c.	Plaster Board – 1/2"	<b>0.45</b>		
d.	Plaster/Metal Lath – 3/4"	<b>0.47</b>		
<b>8. Inside Surface – Still Air (air film)</b>				
	Winter-Heat Flow Up	<b>0.61</b>		
	Summer-Heat Flow Down	<b>0.92</b>	<u>0.92</u>	<u>0.92</u>
		<b>R<sub>T</sub></b>	<b>5.38*</b>	<b>47.4*</b>

\* In the new 2014 Florida Building Code (Energy Conservation), Chapter 4 limits insulation R-Value calculations to above deck materials only and requires that the new minimum insulation thickness be calculated to be R-20 minimum for new construction. Other R-Value information is shown, but to be code compliant, only relevant R-Value information is added together to demonstrate code compliance to the new standards.



**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Description of Areas to be Demolished.
  - 2. Demolition Contractor Qualifications
  - 3. Regulatory Requirements
  - 4. Scheduling
  - 5. Project Conditions
  - 6. Preparation
  - 7. Demolition Requirements
  
- B. Related Sections:
  - 1. Section 01 11 00 – Summary of Work

**1.2 DESCRIPTION OF AREAS TO BE DEMOLISHED**

- A. All Roof Areas:
  - 1. Material to be reused shall be maintained in undamaged condition.
  
- B. Roof Areas 1/A & 1/B
  - 1. Remove existing roof membrane, perlite and L.W.I.C. down to existing structural concrete deck.
  - 2. Remove all existing reglet, coping, edge metal, flashings metals, gutters and downspouts.
  - 3. Remove existing sleeper curbs for new pipe stands.
  - 4. Remove access door and wood sill blocking.
  - 5. Remove any out of service conduit and equipment as directed by the owner.
  
- C. Roof Areas 1/C & 1/D
  - 1. Remove existing roof membrane and perlite down to existing structural plywood deck, repair damage to deck per unit cost allowances as directed by Architect's representative.
  - 2. Remove all existing edge metal, flashings metals, gutters and downspouts.
  - 3. Remove existing internal roof drain including piping below.
  - 4. Remove existing gravity vent without curb support in preparation for new curb and fabrication vent.

**1.3 QUALIFICATIONS**

- A. Demolition Contractor: Contractor having minimum of five (5) years documented experience in performing the Work of this Section.

1.4 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition of roofing, safety of adjacent structures, dust control and disposal. Conform to applicable regulatory procedures when hazardous or contaminated materials are present
- B. Notify affected utility companies before starting work and comply with their requirements.
- C. Do not close or obstruct roadways, sidewalks, and hydrants without permits.

1.5 SCHEDULING

- A. Schedule work under the provisions of Division 1.
- B. Describe demolition removal procedures and schedule.

1.6 PROJECT CONDITIONS

- A. Existing Conditions:
  - 1. Report conflicts or problems to the Architect for resolution prior to Bidding. Failure to report these conflicts and problems places the responsibility on the Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 PREPARATION

- A. Provide, erect, and maintain temporary barriers and security devices.
- B. Protect existing landscaping materials, appurtenances, structures and adjacent roofs which are not to be demolished.

3.2 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent structures and occupants.
- B. Any materials damaged by the demolition process that are out of the scope of work, as specified by the contract documents, must be replaced at no additional cost to the owner.
- C. Cease operations immediately if adjacent structures appear to be in danger. Notify Architect. Do not resume operations until directed.

**SELECTIVE DEMOLITION  
SECTION 02 41 16**

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- D. Conduct operations with minimum interference to public or private accesses. Maintain egress and access at all times.
- E. Remove demolished materials from site.
- F. Do not burn or bury materials on site. Leave site in clean condition.
- G. Upon completion, remove all temporary work.
- H. Remove materials to be re-installed or retained in manner to prevent damage. Store and protect in accordance with requirements of Division 1.

END OF SECTION

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Shop fabricated aluminum exterior wall ladders and related items.
  2. Gratings.
  3. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division - 1 Specification sections, apply to work of this section.

**1.2 REFERENCES**

- A. ASTM– American Society for Testing and Materials
1. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  2. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  3. ASTM B 241 - Standard Specification for Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube.
  4. ASTM E 985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings.
- B. AAMA - American Architectural Manufacturers Association
1. 611 - Voluntary Specification for Anodized Architectural Aluminum.
  2. 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Architectural Extrusions and Panels.
  3. 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Architectural Extrusions and Panels.
  4. 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Architectural Extrusions and Panels.
- C. ANSI – American National Standards Institute
1. ANSI A14.3 - Ladders, Fixed, Safety Requirements
- D. AWS - American Welding Society
1. AWS D1.2 - Structural Welding Code - Aluminum.
- E. SSPC - Society for Protective Coatings
1. SSPC Painting Manual

1.3 DESCRIPTION OF WORK

- A. Definition: Metal fabrications include items made from aluminum and/or steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of other structural metal systems specified elsewhere.
- B. Types of work in this section include metal fabrications for:
  - 1. Wall mounted ladders (aluminum).
  - 2. Roof and wall mounted guardrails (aluminum).
  - 3. Miscellaneous aluminum and/or fabrications.

1.4 SUBMITTALS

- A. Submittals in accordance with Division 1 provisions.
- B. Shop Drawings:
  - 1. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
  - 2. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible. Do not delay job progress; allow for trimming and fitting where taking field measurements before fabrication might delay work.
  - 3. Submit shop drawings for fabrication and erection of miscellaneous metal fabrications. Include plans, elevations and details of sections and connections. Show anchorage and accessory items. Provide templates for anchor and bolt installation by others.
  - 4. Indicate welded connections using standard AWS A2.0 welding symbols. Indicate net weld lengths.
- C. Welder Certificates
  - 1. Submit Welder Certificates certifying welders employed on the Work, have been AWS qualified within the previous 12 months.
- D. Shop Assembly:
  - 1. Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- E. Samples: Typical Joint Sample finished in accordance with NOMMA Guideline #

1.5 QUALITY ASSURANCE

- A. Finish joints in accordance with NOMMA Guideline 1.
- B. Perform Work in accordance with good industry standards and the current Florida Building Code.

1.6 QUALIFICATIONS

- A. Fabricator Qualifications: Minimum 10 years documented experience in work of this Section
- B. Design ladders and railings under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State of Florida.
- C. Mockup:
  - 1. Provide a mock-up of requested metal fabrications. Locate where directed.
  - 2. Approved mockup may remain as part of the Work.

1.7 JOB CONDITIONS

- A. Existing Conditions
  - 1. This project involves metal fabrication work on existing building(s). Verify existing conditions and other fabrications visible conditions prior to bidding.
  - 2. Report conflicts and problems to the Architect prior to bidding for resolution. Failure to report these conflicts and problems places the responsibility on the Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
  - 3. Failure to install the work in strict accordance with provisions of this Section is subject to total rejection of work specified herein.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Store and handle products in accordance with the provisions of Division 1.
- B. Accept metal fabrications on site in labeled shipments. Inspect for damage.
- C. Protect metal fabrications from damage by exposure to weather.

1.9 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on approved shop drawings.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers (fabricators)
  - 1. ACL Industries, Inc – Aluminum Access Ladders
  - 2. Superior Aluminum Products – Aluminum Pipe Railing
  - 3. The Wagner Companies – Aluminum Pipe Railing
- B. Substitutions are permitted under the provisions of Division 1

2.2 MATERIALS – GENERAL

- A. Metal Surfaces, General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.

2.3 MATERIALS – ALUMINUM

- A. Extrusions: ASTM B221, 6063-T5 alloy and temper.
- B. Sheet: ASTM B209, alloy and temper best suited to application.
- C. Pipe: ASTM B241, extruded, anodizing quality, Schedule 40, 6063 aluminum pipe, temper T4
- D. Base Flanges, anchors and railing accessories: ASTM B 247.
  - 1. Manufacturer's standard 713 aluminum alloy cast bases or solid aluminum 6063 stock.
- E. Fasteners: Provide concrete anchorage for fastening and complying with applicable codes and standards. All fasteners used in the system shall be aluminum or stainless steel.
- F. Anchoring Grout: Non-shrink Portland cement-based hydraulic grout mixed and applied in accordance with manufacturer's instructions; gypsum based material is not acceptable.
  - 1. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.4 MATERIALS – STEEL

- A. Steel Plates, Shapes and Bars: ASTM A 36
- B. Galvanized Structural Steel Sheet: ASTM A 446, of grade required for design loading. Coating designation shall be G90.
- C. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails.
- D. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers and shims as required, hot-dip galvanized, ASTM A 153
- E. Galvanizing Repair Paint: High zinc dust content paint for re-galvanizing welds in galvanized steel, complying with the Military Specifications MIL-P-21035 (Ships) or SSPC-Paint-20

2.5 ACCESSORIES AND FASTENERS (ALL METALS)

- A. General: Provide fasteners of the same material as the metal being fastened zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required.
- B. Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.
- C. Lag Bolts: Square head type, FS FF-B-561.
- D. Machine Screws: Cadmium plated steel, FS FF-S-92.
- E. Wood Screws: Flat head carbon steel, FS FF-S-111.
- F. Plain Washers: Round, carbon steel, FS FF-W-92.
- G. Masonry Anchorage Devices: Expansion shields, FS FF-S-325.
- H. Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class and style as required.
- I. Anchoring Cement – Non-shrink cementitious, non-metallic; Pre-mixed, factory packaged, non-staining, non-corrosive, non-gaseous grout. Provide grout specifically recommended by manufacturer for interior and exterior applications of type specified in this section.

2.6 FABRICATION

- A. General:
  - 1. Workmanship: Use materials of size and thickness indicated or, if not indicated, as required to produce strength and durability in finished product for use intended. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.
  - 2. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown. Form bent metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
  - 3. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush to match and blend with adjoining surfaces.
  - 4. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, Phillips flat-head (countersunk) screws or bolts.
  - 5. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.



6. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
7. Fabricate joints which will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.

**B. Ladders: Aluminum.**

1. Fabricate ladders for the locations shown, with dimensions, spacing, details and anchorages as indicated. Comply with the requirements of ANSI A 14.3 except as otherwise indicated.
2. Vertical ladder: provide 1/2" x 3" continuous aluminum flat bar side rails with eased edges, spaced 24" apart.
3. Provide 3/4" diameter solid aluminum rungs, spaced 12" o.c.
4. Fit rungs in centerline of side rails, plug weld and grind smooth on outer rail faces.
5. Provide ladder platform of welded aluminum grating with pattern openings size of 2" x 2" on center maximum.
6. Support each ladder at top and bottom and at intermediate points spaced not more than 5'-0" o.c. Use welded or bolted aluminum brackets, designed for adequate support and anchorage, and to hold the ladder clear of the wall surface with a minimum of 7" clearance from wall to centerline of rungs. Extend rails 42" above top rung, and return rails to wall or structure unless other secure handrails are provided. If the adjacent structure does not extend above the top rung, goose neck the extended rails back to the structure to provide secure ladder access.
7. Provide non-slip surface on the top of each rung, either by coating the rung with aluminum oxide granules set in epoxy resin adhesive, or by using a type of manufactured rung which is filled with aluminum oxide grout.

**2.7 FINISHES**

**A. Aluminum:**

1. Exterior aluminum surfaces: Exterior anodized clear finish
2. Apply two (2) coats of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.
3. Apply non-slip abrasive coating to aluminum grate platform and rungs (aluminum oxide granules set in epoxy resin adhesive).

**B. Steel-**

1. Prepare surfaces to be primed in accordance with SSPC SP 2.1
2. Galvanizing for fabrications: Hot Dip - ASTM A 123, after fabrication.
3. Galvanizing for fasteners, connectors and anchors: Hot Dip – ASTM A 153.

**PART 3 EXECUTION**

**3.1 EXAMINATION AND PREPARATION**

- A. Verify that field conditions are acceptable and are ready to receive the work of this Section.
- B. Field Measurement: Take field measurements prior to preparation of shop drawings and fabrication where possible. Do not delay job progress; allow for trimming and fitting where taking field measurements before fabrication might delay work.
- C. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

**3.2 INSTALLATION**

- A. Fastening to In-place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction: including, threaded fasteners for concrete and masonry inserts, toggle bolts, thru-bolts with plate washers, lag bolts, wood screws and other connectors as required. Verify existing conditions for determining proper anchorage.
- B. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.
- C. For hollow masonry anchorage, use toggle bolts having square heads.

**3.3 ERECTION TOLERANCES**

- A. Section 01 40 00 - Quality Requirements: Tolerances

**3.4 SCHEDULES**

- A. The following Schedule is a list of principal items only. Refer to Project Details for items not specifically scheduled.
- B. Ladders: Locations shown on plans
  1. Miter and cope intersections within 2 degrees, fit to within 1/8 inch.
  2. Continuously weld connections.
  3. Where length exceeds that suitable for shipping and handling, fabricate in sections with concealed internal sleeves forming slip joints. Extend sleeves minimum 4 inches on both sides of joint; field weld and grind smooth.

- C. Grating
1. NAAMM MBG 531, welded type.
  2. Fabricate supporting frame for opening size and configuration.
  3. 1 1/4" deep x 1 1/4" spaced aluminum grate platform.
  4. Top surface: Non slip. Aluminum oxide granules set in epoxy resin adhesive.

END OF SECTION

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section includes:
  - 1. Miscellaneous framing and sheathing;
  - 2. Nailers and blocking,
  - 3. Field fabricated expansion joint curbs and curb extensions,
  - 4. Preservative treatment of wood where indicated.
  
- B. Related Sections:
  - 1. Section 07 51 00 – Preparation for Re-roofing
  - 2. Section 07 52 16 – Modified Bitumen Roofing System – Torched Application
  - 3. Section 07 62 00 – Sheet Metal Flashing and Trim
  - 4. Section 09 90 00 – Painting and Coatings

**1.2 REFERENCES**

- A. American National Standards Institute:
  - 1. ANSI A208.1 - Mat-Formed Wood Particleboard.
  
- B. American Wood-Preservers' Association:
  - 1. AWWPA Standard U1, UC 1-4 - All Timber Products - Preservative Treatment by Pressure Process.
  - 2. AWWPA Standard U1, UCF A and B - Structural Lumber - Fire-Retardant Treatment by Pressure Processes.
  
- C. ASTM International:
  - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
  
- D. National Fire Protection Association:
  - 1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.
  
- E. Southern Pine Inspection Bureau:
  - 1. SPIB - Standard Grading Rules for Southern Pine Lumber.
  
- F. Underwriters Laboratories Inc.:
  - 1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
  
- G. U. S Department of Commerce National Institute of Standards and Technology:
  - 1. DOC PS 1 - Construction and Industrial Plywood.
  - 2. DOC PS 2 - Performance Standard for Wood-Based Structural-Use Panels.
  - 3. DOC PS 20 - American Softwood Lumber Standard.

**MISCELLANEOUS ROUGH CARPENTRY**  
**SECTION 06 10 53**

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1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures
- B. Product Data: Submit technical data on
  - 1. Wood /Plywood
  - 2. Fasteners and Anchors
  - 3. Wood preservative and fire retardant treatment materials and application instructions.
  - 4. MSDS of treatment materials.
- C. Samples:
  - 1. Fastener types : Two (2) of each type
  - 2. Material Samples, if requested by the Architect.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
  - 1. Lumber Grading Agency: Certified by DOC PS 20.
  - 2. Lumber: DOC PS 20.
- B. Surface Burning Characteristics:
  - 1. Fire Retardant Treated Materials: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- C. Apply label from agency approved by authority having jurisdiction to identify each preservative treated and fire retardant treated material.
- D. Perform Work in accordance with current Florida Building Code requirements.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Lumber Grading Rules: SPIB.
- B. Blocking, Battens, Studding, Nailers, Curb Extensions (within roof system) and Fascia Replacement: Stress Group D, 1x and 2x (as noted in drawings), No. 2 Grade Southern Yellow Pine species, 19 percent maximum moisture content, pressure preservative treated where noted by project details.
  - 1. Nominal sizes are shown or specified within the project documents, except as shown by actual dimensions.
- C. Plywood Sheathing/Decking:
  - 1. Protected location within roof system or as noted on drawings (under membrane): APA Rated, Structural I, Span Rating – 40/20, 5/8” nominal

## MISCELLANEOUS ROUGH CARPENTRY SECTION 06 10 53

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- thickness (unless otherwise noted on plans or details), Grade: CDX; pressure preservative treated (and fire retardant treated) where noted on project details.
2. Exposed locations within roof system or as noted on drawings: APA Rated Sheathing, Span rating 40/20, Thickness: nominal 5/8", (or as noted otherwise on drawings), CDX Grade; pressure preservative treated at locations in contact with concrete, masonry, or other materials capable of retaining moisture. (and fire retardant treated where noted).

### 2.2 ACCESSORIES

#### A. Fasteners and Anchors:

1. All fasteners: For high humidity and treated wood locations shall be stainless steel, coated hot dip galvanized steel at other locations.
  - a. Wood (Framing): 1/4" screw x 2" penetration.
  - b. Wood (Framing): 12d pneumatically driven nail with heat activated adhesive.
  - c. Plywood (Curbs): #12 screw x 2" length.
  - d. Sheathing: 8d and 12d pneumatically driven, annular "ring" shank nail with heat activated adhesive.
  - e. Concrete/Masonry: 1/4" "tapcon" or "Zamac Nail-in" x 1-1/2" minimum penetration into concrete or masonry.
2. Nails: ASTM F1667; ring-shanked, except as otherwise directed.
3. Anchors:
  - a. Toggle bolt or self-threading type for anchorage to hollow masonry.
  - b. Expansion shield and lag bolt/drive pin or self-threading type for anchorage to solid masonry or concrete.
  - c. Bolt or ballistic fastener for anchorages to steel.
4. Construction adhesive:
  - a. Cartridge "gun" dispensed structural construction adhesive, such as "Liquid Nails" or approved equal.
  - b. Compliance with ASTM D 3498 (latest edition)
5. Sheathing Joint Tape:
  - a. Three (3) inch wide polyethylene coated cloth tape with rubber resin adhesive, Scotch 3M Product #6969 or equal.

### 2.3 FACTORY WOOD TREATMENT "USE CATEGORY SYSTEM" (AWPA Standard U1)

- #### A. Use Category UC1 – Interior/Dry Conditions: Wood and wood based materials used in interior construction not in contact with the ground or foundations or any sources of moisture including roof and plumbing leaks.
1. Wood Preservative (Pressure Treatment): AWPA Standard U1, Use Category 2 (UC2) or 3 (UC3); minimum of 0.25 pounds of ACQ-C (Alkaline Copper Quaternary) water borne preservative per cubic foot of wood product.
- #### B. Use Category UC2 – Interior/Damp Conditions: Wood and wood based materials used in interior construction not in contact with the ground protected from direct exposure to

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the weather but may be subject to dampness (e.g., roof/curb blocking or plywood sheathing).

1. Wood Preservative (Pressure Treatment): AWPA Standard U1, Use Category 2 (UC2) or 3 (UC3); minimum of 0.25 pounds of ACQ-C (Alkaline Copper Quaternary) water borne preservative per cubic foot of wood product.
- C. Use Category UC4A - General Use Conditions: Wood and wood-based materials used in contact with the ground, fresh water or other situations favorable to deterioration.
1. Wood Preservative (Pressure Treatment): AWPA Standard U1, Use Category 4A (UC4A); minimum of 0.40 pounds of ACQ-C (Alkaline Copper Quaternary) water borne preservative per cubic foot of wood product.
- D. Fire Retardant Treatment for Wood/Plywood (FRTW): FRT plywood shall be impregnated with chemicals by a pressure process. Fire retardant chemical shall provide protection against termites and fungal decay, shall be registered for use as a wood preservative by the U.S. Environmental Protection Agency (EPA), shall comply with formulation FR-1 of the current edition of AWPA Standard P49, and shall be free of halogens, sulfates and ammonium phosphate. Treated wood shall have a flamespread of less than 25 when tested in an extended 30 minute tunnel test in accordance with ASTM E 84, NFPA 255 or UL 723.
- E. Wood preservatives shall not contain arsenic, chromium other EPA classified hazardous preservatives.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify substrate conditions are ready to receive blocking, curbing, sheathing and framing.
- C. Any use of the unit price allowances must be field verified and approved by the Owner and/or Architect prior to work being performed if possible. Any use of unit price allowances must be properly documented in order for payment to be authorized.

#### 3.2 PREPARATION

- A. Coordinate placement of blocking, curbing, sheathing and framing items.

#### 3.3 INSTALLATION

- A. General:

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1. Discard material with defects which might impair quality of work and units which are too small to fabricate work with minimum joints or optimum joint arrangement.
  2. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.
  3. Securely attach carpentry work to substrate by anchoring and fastening as shown or as required by recognized standards. Countersink fastener heads on exposed carpentry work.
  4. Use fasteners and anchorages as indicated. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required. Holes drilled oversized or wallered out, shall be re-drilled.
  5. Place horizontal members, crown side up.
  6. Construct curb members of solid wood sections.
  7. Do not install wood nailers or sheathing more than one day in advance from installation of roofing. Install dry-in felt over any wood nailers and sheathing.
- B. Nailers, Blocking and Curb Extensions:
1. Coordinate curb extensions and installation of wood nailers with roof construction work.
  2. Provide blocking and edging wherever shown and where required for screeding or attachment of other work.
  3. Set members level and plumb, in correct position.
  4. Construct curb members of single pieces.
  5. Curb roof openings [except where prefabricated curbs are provided]. Form corners by alternating lapping side members.
  6. Attach to substrates as required to support applied loading. Countersink bolts and nuts with washers flush with surfaces, unless otherwise shown.
  7. Where new members are doubled, ends shall be lapped and thoroughly spiked to each other and to bearing members.
  8. Where new members bear on concrete, securely fasten to same by bolts or lag screws on centers as called for on drawings, staggered. Provide heads of all bolts or lag screws with large-head washers.
  9. Round edges and corners of wood plates where flashing occurs.
- C. Plywood Sheathing (wall, curbs, parapets and roof, as applicable):
1. Install sheathing properly framed to required lines, level and rigidly secured in place.
  2. Cut sheathing sections to fit. Leave 1/8" clearance between panels at side laps. Cover sheathing with dry-in felt and seal top horizontal edge.

### 3.4 SCHEDULES

- A. Roof Perimeter Nailers, Curbs and Curb Extensions: See project manual details and plans for sizes and locations.
- B. General Framing Lumber (as applicable): See project manual details and plans for sizes.



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SECTION 06 10 53**

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- C. Plywood Sheathing (as applicable): See project manual details and plans for locations.

END OF SECTION

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Removal of existing roof system in preparation for the installation of a new modified bitumen membrane fastened to the concrete and wood deck.
- B. Related Sections
  - 1. Section 02 41 16 – Selective Demolition
  - 2. Section 06 10 53 – Rough Carpentry
  - 3. Section 07 52 16 – Modified Bitumen Roofing System – Torched Application

**1.2 DESCRIPTION OF WORK**

- A. All Roof Areas where indicated: Remove existing perimeter flashings, base flashing, reglet, copings, counter flashings, edge metal, sleeper curbs, gutters, vent stack flashing down to the existing substrate to remain.
- B. Remove and replace any damaged or deteriorated blocking, nailers, deck, or sheathing.

**1.3 QUALIFICATIONS**

Materials Removal Firm: Company specializing in performing the work of this Section with minimum 3 years documented experience.

**1.4 SUBMITTALS**

- A. Submit under provisions of Division 01.
- B. Product Data: Provide product description and specification information of roof materials and accessories as may be specified elsewhere.

**1.5 PRE-INSTALLATION CONFERENCE**

- A. Attend conference specified in Division 01.

**1.6 PROJECT CONDITIONS**

- A. Existing Conditions
  - 1. The roof applicator shall verify existing conditions, such as soundness of perimeter conditions, varying deck and other visible conditions prior to bidding.
  - 2. Report conflicts and problems to the Purchasing and Contracts Division for resolution prior to bidding. Failure to report these conflicts and problems places

**PREPARATION FOR RE-ROOFING**  
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the responsibility on the Prime Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.

3. Replace or restore to original condition any materials or work damaged during construction.
4. Surfaces not designated to receive the system shall be properly masked or otherwise protected against accidental spillage or application of the material to those areas.
5. Failure to install the work in strict accordance with provisions of this Section, is subject to total rejection of work specified herein.

1.7 ENVIRONMENTAL REQUIERMENTS

- A. Do not remove existing roofing membrane when weather conditions threaten the integrity of the building contents or intended continued occupancy.
- B. Maintain continuous protection prior to and during installation of new roofing system.

1.8 SCHEDULING AND COORDINATION

- A. Schedule and coordinate work under the provisions of Division 01.
- B. Schedule work to coincide with commencement of installation of new roofing system.
- C. Coordinate the work with other affected mechanical and electrical work associated with roof penetrations.
- D. Remove only existing roofing materials that can be replaced with new materials the same day or as the weather will permit.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Temporary Protection: Sheet polyethylene; provide weights to retain sheeting in position.
- B. Protection Board (as may be required): ASTM C208, Roof Insulating Board type, cellulose fiber board, with the following characteristics:
  1. Board Size 48x96 inches.
  2. Board Thickness 1/2 inch
  3. Board Edges square

**PART 3 EXECUTION**

**3.1 EXAMINATION**

- A. Verify existing site conditions under provisions of Division 01.
- B. Verify that existing roof surface is clear and ready for work of this section.

**3.2 PREPARATION**

- A. Sweep roof surface clean of loose matter. Remove loose refuse and dispose off site.
- B. Inspect deck and substrate for damage and repair per unit cost allowances.

**3.3 MATERIAL REMOVAL**

- A. Remove metal counter flashings
- B. Remove perimeter base flashings, coping, flashings around roof protrusions, pitch pans and pockets
- C. Remove damaged fasteners, cant strips and blocking.

**3.4 TEMPORARY PROTECTION**

- A. Protect finished Work under provisions of Division 01.
- B. Provide temporary protective sheeting over uncovered deck surfaces.
- C. Turn sheeting up and over parapets and curbing. Retain sheeting in position with temporary fasteners.
- D. Provide for surface drainage from sheeting to existing drainage facilities.
- E. Do not permit traffic over unprotected or repaired deck surfaces.

**3.5 FIELD QUALITY CONTROL**

- A. Field inspection and testing will be performed under provisions of Division 01.
- B. Inspection will identify the exact limits of material removal.
- C. Testing will identify the exact condition of existing materials and their reuse, repair or removal.

END OF SECTION

**MODIFIED BITUMEN ROOFING - TORCHED APPLICATION**  
**SECTION 07 52 16**

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**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Three ply SBS modified bitumen membrane system torch applied to a gypsum roof coverboard over rigid insulation on existing structural deck type (varies).
- B. Related Sections:
1. Section 06 10 53 – Rough Carpentry
  2. Section 07 51 00 – Preparation for Re-Roofing
  3. Section 07 62 00 – Sheet Metal Flashing and Trim

**1.2 REFERENCES**

- A. American Society for Testing and Materials (ASTM)
1. ASTM C 177 - Test Method for Steady-State Thermal Transmission Properties by Means of the Guarded Hot Plate.
  2. ASTM C 1002 - Steel Drill Screws for the Application of Gypsum Board.
  3. ASTM C1013 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Roof Insulation.
  4. ASTM C 1177 - Glass Mat Gypsum Substrate for Use as Sheathing.
  5. ASTM C 1396 - Standard Specification for Water-Resistant Gypsum Backing Board
  6. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
  7. ASTM D 41 - Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
  8. ASTM D312 - Standard Specification for Asphalt used in Roofing
  9. ASTM D 2178 - Asphalt Impregnated Glass (Felt) Mat Used in Roofing and Waterproofing.
  10. ASTM D6162 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements
  11. ASTM D6163 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
  12. ASTM D6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements
  13. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
  14. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings.
- B. FM Global
1. FM DS 1-28 - Wind Loads to Roof Systems and Roof Deck Securement
  2. FM 4450 - Approval Standard for Class 1 Insulated Steel Deck Roofs.

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- C. National Fire Protection Association (NFPA)
  - 1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials
- D. National Roofing Contractors Association (NRCA)
  - 1. NRCA - The NRCA Roofing and Waterproofing Manual.
- E. Underwriters Laboratories Inc
  - 1. UL - Fire Resistance Directory.
  - 2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
  - 3. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
  - 4. UL 1256 - Fire Test of Roof Deck Construction
  - 5. UL 1897 - Uplift Tests for Roof Covering Systems

1.3 SYSTEM DESCRIPTION AND WORK SUMMARY

- A. Roof Area A and B:
  - 1. Preliminary Roof: Torched application of a single smooth surfaced SBS modified bitumen interply sheet to concrete deck.
  - 2. Insulation:
    - a. Fully adhered polyisocyanurate insulation board (tapered – 3/16"/foot slope) with a base layer 1¼" thick applied to the preliminary roof.
    - b. Fully adhered 1/4" gypsum roof coverboard applied to rigid insulation.
  - 3. Multi-ply Roofing System:
    - a. Torched application of two (2) SBS modified bitumen smooth surfaced polyester reinforced interply membranes to the gypsum roof cover board.
    - b. Torched application of an SBS modified bitumen, mineral surfaced cap sheet.
- B. Roof Area C and D:
  - 1. Preliminary Roof: Mechanically fasten base sheet to plywood deck followed by a torched application of a single smooth surfaced SBS modified bitumen interply sheet to the base sheet.
  - 2. Insulation:
    - a. Fully adhered polyisocyanurate insulation board (tapered – 3/16"/foot slope) with a base layer 1¼" thick applied to the preliminary roof.
    - b. Fully adhered 1/4" gypsum roof coverboard applied to rigid insulation.
  - 3. Multi-ply Roofing System:
    - a. Torched application of two (2) SBS modified bitumen smooth surfaced polyester reinforced interply membranes to the gypsum roof cover board.
    - b. Torched application of an SBS modified bitumen, mineral surfaced cap sheet.

1.4 SUBMITTALS

- A. Submit under provisions of Division 1.

**MODIFIED BITUMEN ROOFING - TORCHED APPLICATION**  
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- B. Product Data: (Roof Materials and Accessories) Provide membrane materials, base flashing materials, insulation, fasteners and accessories. Submit for all products proposed for use, describing physical characteristics and method of installation.
- C. Shop Drawings: (for rigid insulation) 1/8" Scale; indicate setting plan for tapered insulation, layout of seams, direction of laps, base flashing details.
  - 1. Taper Insulation layout.
- D. Shop Drawings: (pipe, duct, cable and equipment support systems) 1/8" Scale drawings Showing installation layout, sizes of units, and details of installation.
- E. Manufacturer's Installation Instructions: Indicate special precautions required for seaming the membrane.
- F. Samples: Manufacturer to provide upon request; sized to represent material adequately.
- G. Manufacturer's Field Reports: Submit under provisions of this section.
  - 1. Reports: Indicate procedures followed, ambient temperatures and wind velocity during application.
  - 2. Results of the fastener "pull-out" resistance testing and calculations performed prior to roof system application per Florida Building Code TAS 105.
- H. Contract Closeout: Manufacturer shall provide the manufacturer's Warranty prior to the contract closeout.
- I. All products used shall be asbestos free.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with Contract Documents and NRCA Roofing and Waterproofing Manual except where NRCA details differ from the project manual details the most stringent shall apply.
- B. Work closely associated with flexible sheet roofing, including vapor barriers, insulation, flashing and counterflashing, and joint sealers, to be performed by the installing applicator of the primary roofing system.
- C. Manufacturer of the roofing materials shall provide qualified technical representatives to observe field conditions of surfaces and installation, quality of workmanship as applicable, and to make appropriate recommendations.
- D. Manufacturer's Certificate of Compliance: Roof membrane manufacturer's certification that materials are chemically and physically compatible with each other and suitable for inclusion in the roof system and are acceptable for the warranty specified. Materials will not be approved without the manufacturer's written certification.

**MODIFIED BITUMEN ROOFING - TORCHED APPLICATION**  
**SECTION 07 52 16**

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- E. Manufacturer's representative shall visit the project throughout progress of the Work as follows:
1. Pre-construction meeting.
  2. Once every two weeks, coordinated with the weekly scheduled meetings.
  3. Final "zero punch list" inspection.
  4. Called meetings by the Architect.
  5. 11<sup>th</sup> month inspection prior to Owner's 12 month inspection.
  6. 23<sup>rd</sup> Month inspection prior to Owner's 24 month inspection.
  7. Manufacturer's Representative shall make a written report of his observations and recommendations, if any within three (3) days of the visit, however, significant discrepancies between the quantity or quality of the installation and the requirements of the Contract Documents shall be brought to the Architect's attention immediately
  8. The Architect shall be entitled to rely upon such observations and recommendations to establish the materials and systems will meet the requirements of the Contract Documents.
- F. Manufacturer's Field Reports: Submit under provisions of Section 01 40 00.
1. Reports: Indicate procedures followed during application. Record the ambient temperatures and wind velocity.
- G. A manufacturer's letter shall be required certifying that the Contractor is an approved and recommended applicator in good standing.
- H. The Contractor shall not deliver to site or install a material system that has not been approved.
- I. The Contractor shall be required to remove materials installed without prior approval upon Owner's request.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with five (5) years current documented experience.
- B. Applicator: A single installer specializing in performing the work of this section with three (3) years current documented experience and approved by system manufacturer.
- C. Supervisor: Maintain a full-time non-working supervisor, on the job site during roofing work in progress. Supervisor shall have five current years minimum documented experience of roofing work similar in scope to specified roofing.
- D. Manufacturer's Field Inspection and Services:
1. Manufacturer of the roofing materials shall provide qualified personnel to observe field conditions of surfaces and installation, quality of workmanship as applicable, and to make appropriate recommendations.
  2. Representative shall visit the Project throughout progress of the work, per Article 1.5, E of this section.



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3. Representative shall submit written reports, within three days of each visit to Architect listing observations, recommendations and related comments.

1.7 REGULATORY REQUIREMENTS

- A. Conform to applicable code for roof assembly fire hazard requirements.
- B. Underwriters Laboratories (UL): Class A Fire Hazard Classification.
- C. FM: Roof Assembly Classification, Class 1 Construction.
- D. Wind Uplift Resistance: Provide wind load calculations and submit engineering calculations and substantiating data to validate wind resistance of any non-rated roof system. Wind uplift calculations shall be based on a design wind speed of 138 mph ultimate / 107 mph nominal in accordance with ASCE 7 and applicable building code requirements. Calculations shall be certified by a professional engineer registered in the State of Florida.
- E. Material Safety Data Sheets: Submit MSDS for all roofing products.
- F. Building Permit: The contractor will be responsible for obtaining a Building Permit, and any required submittals and inspections thereafter. Signed and sealed copies of the construction documents will be provided by the design professional, all other required documentation is to be provided by the contractor.
  1. Contractor is to provide any required Florida Product Approval information to the Building Official based on the specific project conditions and actual manufacturers and products used for this work.

1.8 CERTIFICATION

- A. Materials: For each material specified with a standard or reference material designation, certification labels shall appear on each package of bulk-shipments to project with certificate of compliance.
  1. The contractor shall provide all required product approval documentation on products and systems being installed on this project.
- B. Installer: Provide two copies of all certification to Architect prior to beginning roofing work.
- C. Pull Testing: The Contractor shall have pull tests conducted on the job site in compliance with the Florida Building Code TAS 105 with the specified fasteners to determine the pull-out resistance of the existing deck. Submit the data to the Architect for review and approval before installation of any roofing materials.

1.9 MOCK-UP

- A. Provide mockup of roof membrane system and associated components and accessories under provisions of Section 01 40 00.

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- B. Mockup Size: 10 x 10 feet, including insulation and typical base and counterflashing specified; at location designated.
- C. Mockup may remain as part of the Work.

1.10 PRE-INSTALLATION CONFERENCE

- A. Convene one week prior to commencing work of this section at project site with Contractor, Roofer, and Subcontractors, governing authorities, product manufacturers, Architect and Owner.
- B. Review requirements, Contract Documents, submittals, sequencing, availability of materials and installation facilities, proposed installation schedule, requirements for inspections and testing or certifications, forecasted weather conditions, governing regulations, insurance requirements, and proposed installation procedures.
- C. Record discussion on matters of significance; furnish copy of recorded discussions to each participant. Discuss roofing system protection requirements for construction period extending beyond roofing installation.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver to site, store, protect, and handle products under provisions of Contract Documents (Division 1).
- B. Deliver material in manufacturer's original, unopened containers with manufacturer's labels intact and legible.
- C. Deliver material requiring fire resistance classification to the job with labels attached and packaged as required by labeling service.
- D. Store rolls, cans and drums of cements, primers, and coatings, on end and over clean raised platforms.
- E. Store and handle materials to protect them from.
  - 1. Moisture, whether due to precipitation, or condensation.
  - 2. Damage by construction traffic.
  - 3. Temperatures over 110 degrees or below 40 degrees F.
  - 4. Direct sunlight.
  - 5. Mud, dust, sand, oil and grease.
- F. Select and operate material handling equipment and store materials to keep from damaging existing construction or applied roofing. Immediately remove and dispose of wet materials.
- G. Comply with fire, safety, and environmental protection regulations.

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- H. Do not store materials on roof decks, nor position roofing installation equipment on roof decks, in concentrations exceeding design live loads
- I. Deliver enough material to allow continuous work.

**1.12 ENVIRONMENTAL REQUIREMENTS**

- A. Do not apply roofing membrane during inclement weather ambient temperatures below 40 degrees F.
- B. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.
- C. Proceed with roofing work when existing and forecasted weather conditions permit work to be performed in accordance with requirements of this section and warranty compliance requirements.

**1.13 SAFETY REQUIREMENTS**

- A. All work shall be in compliance with OSHA safety standards and regulations with emphasis on Section 29 CFR 1910, including but not limited to the following requirements:
  - 1. Provide facility administrator one day prior notice before commencing with work or moving to new areas.
  - 2. Proper identification and clothing, to work at all times.
  - 3. The Contractor shall provide sufficient temporary barricades in order to contain passage ways around tankers, trash chutes, hoisting areas and areas below roof edges where work is conducted.
  - 4. Fire extinguishers are required, one on the ground and one on the roof deck.
  - 5. Seal all possible seepage areas, before using bituminous materials.
  - 6. Power driven shot fasteners are not permitted.
  - 7. All pumps shall use rigid pipes.
  - 8. No flammable or explosive substance or equipment for repairs or alterations shall be introduced in a building of normally low or ordinary hazard classification while the building is occupied unless the condition of use and safeguards provided are such as not to create any additional hazard or handicap to egress beyond the normally permissible conditions in the building.
  - 9. Protect building and adjacent surfaces from bitumen spillage and repair or replace damaged materials at no cost to Owner.
  - 10. All toxic substances enumerated in the Florida Substance List established pursuant to S.442.103 that are to be used in the construction, repair or maintenance of facilities are restricted to usage according to the following provisions:
    - a. Before any such substance may be used, the Contractor shall notify the Owner in writing at least three working days prior to using the substance. The notification shall contain:
      - 1) The name of the substance to be used;
      - 2) Where the substance is to be used; and

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- 3) When the substance is to be used.
  - b. The Owner shall take all reasonable actions to ensure that the Contractor complied with the safety precautions and handling instructions set forth in the material 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 building occupants and the general public.
11. **Contractor shall maintain a daily "fire watch" for a minimum of two (2) hours after torch down shift has been completed.**

1.14 COORDINATION

- A. Coordinate work under provisions of Section 01 11 00 – Summary of Work.
- B. Coordinate the work with installing associated wood blocking and nailers, roofing, Scuppers, and metal flashing as the work of this section proceeds.

1.15 SEQUENCING

- A. Organize operations so work can simultaneously proceed on the various aspects including roofing, cants and flashing so at the end of each day the work done that day will be substantially complete.
- B. Roof area shall be substantially complete prior to beginning another roof area; utilize multiple crews for multiple roof area construction. Phasing of roof construction by area is not permitted.
- C. Sequence equipment removal with covering of deck openings with plywood strong enough to prevent injuries from falling through. Contractor shall install waterproof covering over plywood and tie-in to existing membrane to achieve complete watertightness.

1.16 SUBSTITUTIONS

- A. Proposals for substitution products shall be accepted only from bidding contractors and not less than (10) working days before bid due date. Contractor guarantees that proposed substitution shall meet the performance and quality standards of this specification.

1.17 PROJECT CONDITIONS

- A. Existing Conditions:
  - 1. The roofing applicator and sheet metal installer shall verify existing conditions, such as soundness of perimeter conditions, and varying deck and wall thickness for length of anchoring services required and other visible conditions prior to Bidding.
  - 2. Report conflicts and problems to the Architect for resolution prior to Bidding. Failure to report these conflicts and problems places the responsibility on the

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Prime Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.

- B. Replace or restore to original condition any materials or work damaged during construction.
- C. Surfaces not designated to receive the system shall be properly masked or otherwise protected against accidental spillage or application of the material to those areas.
- D. Observe all appropriate OSHA safety guidelines for this work.

1.18 WARRANTIES

- A. Applicators Warranty: A **Three Year** applicator guarantee is to include a 24 hour maximum response time requirement, to cover entire roof assembly, not just the membrane, (Furnish on executed form included at the end of this section).
- B. Manufacturer's Warranty: **20 year "No Dollar Limit"** total roof system warranty inclusive of roofing materials, included products and accessories from deck to finish membrane (Refer to "Manufacturer's Notice of Intent to Issue Roof Warranty" form at end of this Section).
- C. A Manufacturer's Notice of Intent to Issue Roof Warranty Form shall be executed by the Manufacturer that acknowledges project design, warranty requirements, lists primary/secondary material approvals, and the initial manufacturer approval (or certification) for the named roofing contractor as an application. **Attach to Bid Form.**
- D. A Project Acknowledgment Form shall be executed by the Manufacturer that acknowledges project design, lists primary/secondary material approvals, and pre-approved for roofing contractor.
- E. A non-prorated, non-penal sum manufacturer's roof warranty is required.
- F. Manufacturer's roof warranty will cover the cost of removal and replacement of damaged or wet insulation that is the result of leaks from poor workmanship or failed material.
- G. The Contractor is responsible to submit and provide components required by the roofing system manufacturer for the specific warranty.
- H. Warranty will not exclude from coverage damage to the roof system for wind gusts as defined in the Manufacturer's Notice of Intent to Issue Roof Warranty at end of this Section. Warranty may exclude damage for wind launched debris or projectiles which are not part of this system.
- I. A Contractor's Final Statement of Compliance shall be issued by the roofing contractor.

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PART 2 PRODUCTS

2.1 MATERIALS, GENERAL

- A. Insurance and Code Requirements: Provide materials complying with governing regulations, installed to comply with Underwriters Laboratories Class A; ASCE 7-10 and the Florida Building Code 5<sup>th</sup> Edition (2014), as calculated for nominal (unfactored) wind speed and associated wind up-lift pressure requirements as indicated on the project drawings.
- B. Obtain primary modified bitumen sheet roofing from a single manufacturer. Provide secondary materials only as recommended by the manufacturer of the primary material, and additionally as specified.

2.2 MODIFIED BITUMEN ROOFING AND FLASHING MEMBRANE MATERIALS

- A. Modified Bitumen (Roofing and Flashing) Cap Sheet: Granular surfaced SBS modified bitumen membrane sheet intended for heat welded (torched) application, membrane shall be a minimum of 155 mils, and weight not less than 100 lbs. per 100 square feet. SBS membrane ply shall be reinforced with a 170 gram/square meter minimum non-woven polyester mat(s), shall conform to the requirements of ASTM D 6164, Type I, Grade G, and be a Class A material as tested in compliance with ASTM E 108. Acceptable manufacturer's and products are as follows **(Substitutions are not permitted)**:
  - 1. Soprema                                      Sopralene Flam 180FR Granules
  - 2. GAF    Ruberoid SBS Heat-Weld FR
  - 3. MB Technology                              Fastorch SBS FT 160 CWH
  - 4. Firestone                                      SBS FR Torch
  - 5. Polyglass                                      Elastoshield TS
  - 6. Johns Manville                              DynaWeld Cap 180 FR
- B. Modified Bitumen Interply (Field and Flashing) Sheet: Smooth surfaced SBS modified bitumen membrane "interply" sheet intended for heat welded (torched) application, membrane shall be a minimum of 90 mils thick, and weigh not less than 70 lbs. per 100 square feet. SBS membrane ply shall be reinforced with a 170 gram/square meter minimum non-woven polyester mat(s), shall conform to the requirements of ASTM D 6164, Type I, Grade S, and be a component within a Class A roofing system as tested in compliance with ASTM E 108. Acceptable manufacturer's and products are as follows **(Substitutions are not permitted)**:
  - 1. Soprema                                      Sopralene Flam 180
  - 2. GAF    Ruberoid SBS Heat-weld Smooth
  - 3. MB Technology                              Fastorch SBS FT 120 PSA
  - 4. Firestone                                      SBS Poly Torch Base
  - 5. Polyglass                                      Elastoflex S6
  - 6. Johns Manville                              DynaWeld Cap 180 Smooth
- C. CAP SHEET GRANULES

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1. Ceramic-coated roofing granules matching specified cap sheet, provided by roofing system manufacturer.

### 2.3 SHEET MATERIALS

- A. Strip-In Flashing: Smooth surfaced SBS modified bitumen flashing sheet for torch or cold process application.
- B. Base Sheet: ASTM D-4601, Type II coated glass fiber base sheet, nominal weight of 23 pounds per roofing square.
- C. Preliminary Roof Membrane: Any modified bitumen interply sheet listed in Article 2.2/B.
- D. Modified Bitumen Preliminary Roof and "Dry-in" Membrane material: 40 mil (1 mm) minimum total thickness, polyester reinforced, SBS modified asphalt waterproofing and underlayment membrane sheet, single-sided, self-adhesive, with a strippable treated release paper. Factory or field cut if necessary to the size required by the details.
  1. Approved Products:
    - a. Interwrap – Titanium PSU 30
    - b. Protecto-Wrap "Rainproof-40"
    - c. Soprema "Sopralene Stick"
    - d. Tamko "TW Metal and Tile" underlayment.
    - e. Architect approved (prior to bidding) equivalent product.
- E. Venting Base Sheet: ASTM D-4897, Type II asphalt coated fiber glass nailable base sheet with course granular surfacing and venting channels.
  1. Approved Products:
    - a. GAF                                 Stratavent
    - b. Johns Manville                 Ventsulation
    - c. Soprema                           4897 Sheet
    - d. Architect approved (prior to bidding) equivalent product.
- F. Modified Bitumen "Dry-in" Membrane material: 40 mil (1 mm) minimum total thickness, polyester reinforced, SBS modified asphalt waterproofing and underlayment membrane sheet, single-sided, self-adhesive, with a strippable treated release paper. Factory or field cut if necessary to the size required by the details.
  1. Approved Products:
    - a. Protecto-Wrap "Rainproof-40"
    - b. Soprema "Sopralene Stick"
    - c. Tamko "TW Metal and Tile" underlayment.
    - d. Architect approved (prior to bidding) equivalent product.

### 2.4 BITUMINOUS MATERIALS

- A. Asphalt Primer: ASTM D41.
- B. Plastic Cement: ASTM D4586, Type II, cutback asphalt type (non-asbestos).

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- C. Modified Bitumen Adhesive: SBS modified asphalt adhesive; such as; "Matrix SB" by US Intec, or manufacturer-approved equivalent.

2.5 INSULATION

- A. Polyisocyanurate Insulation: Closed cell glass fiber reinforced type (tapered and non-tapered), conforming to the following:
1. Board Density: 2.0 lb/cu ft.
  2. Board Size: 4x4 feet.
  3. Board Thickness: As required to provide an average R value of 20 (minimum)
  4. Non-Tapered Board: 4" thick at field.
  5. Tapered Board:
    - a. 3/16" per foot (all roof areas)
    - b. 1/2" per foot at crickets.
  6. Compressive Strength: 25 psi per ASTM D 1621
  7. Facing: Factory applied skin of glass fiber facing on both faces.
  8. Board Edges: Square.
  9. Water Absorption: In accordance with ASTM C209, 1 percent by volume maximum.
  10. Foam Core Flame Spread: 25 Max. - ASTM E-84 (Tunnel Test).
  11. ULI Fire Rating: Conform to the current ULI, Class A, Roof/Ceiling fire rated assemblies (see current ULI "Fire Resistance Directory").
- B. Tapered Edge Strips For Use With Tapered Insulation: 12" wide, 1/2" per foot tapered preformed units of material matching insulation.

2.6 GYPSUM ROOF BOARD

- A. Gypsum Roof Board (Glass fiber reinforced with no face layer) : as approved for use within a 20 year warranted roof system by the roofing manufacturer, with the following characteristics:
1. Board Type: manufacturer standard product for use over polyisocyanurate insulation and over metal decks.
  2. Manufacturer and Product: United States Gypsum Company, Securock Roof Board or approved equal.
  3. Board Size: 4 feet x 4 feet (for adhered application) x 1/4" thick.
  4. Compressive Strength: Minimum 1800 psi
  5. Water Absorption: 10 In accordance with ASTM C 473
  6. Board Edges: Square.
  7. UL Fire Rating: Conform to the current UL, Class A, Roof/Ceiling fire rated assemblies(see current UL "Fire Resistance Directory")
  - 8.
- B. Contractor's Option: Gypsum Roof Board (Glass fiber reinforced/faced gypsum): as approved for use within a 20 year warranted roof system by the roofing manufacturer, with the following characteristics:
1. Board Type: manufacturer standard product for use over polyisocyanurate insulation and over metal decks.



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2. Manufacturer and Product: Georgia-Pacific Corporation, Gypsum Division, Dens-Deck Prime Roof Board or approved equal.
3. Board Size: 4 feet x 4 feet (for adhered application) x 1/4" thick.
4. Compressive Strength: Minimum 900 psi.
5. Water Absorption: In accordance with ASTM C 1177-91
6. Board Edges: Square.
7. UL Fire Rating: Conform to the current UL, Class A, Roof/Ceiling fire rated assemblies(see current UL "Fire Resistance Directory").

#### 2.7 FASTENERS

##### A. Mechanical Fasteners:

1. Refer to Details 8.01 thru 8.03 for Fastener Schedule and requirements. (verify) For locations not indicated in the referenced schedule, provide size, type, material and finish as required, matching material being fastened.
2. For Fastening Base Flashing to Wood Nailers: Roofing nails: galvanized, hot dipped or non-ferrous type, size as required to suit application.
3. For Fastening Venting Base Sheet to Lightweight Insulating Concrete Deck: Lightweight concrete base ply fastener with FM 1-90 discs. Comply with Factory Mutual Approval Standard #4470.
4. Insulation Fasteners: Appropriate for purpose intended and approved by Factory Mutual and system manufacturer; length required for thickness of material with plastic washers.
5. For All Other Locations: Provide size, type, material and finish as required, matching material being fastened.

##### B. Insulation Adhesives:

1. OLY BOND Adhesive Fastener, Olympic Manufacturing Group, Inc. 153 Bowels Road, Agawam, MA 01001, 800-633-3800 and (FAX: 413-821-0417).
2. INSTA-STIK Professional Roofing Adhesive, Insta-Foam Products, Inc., 1500 Cedarwood Drive, Joliet, IL 60435-3187, 800-800-3626, (FAX: 815-741-6822).
3. ROOF ASSEMBLY ADHESIVE, CHEM-LINK Advanced Architectural Products, Inc., 416 Ransom Street, Kalamazoo, MI 49007, 800-826-1681. May be obtained through ASR Associates, Inc., 800-683-0221.
4. Other acceptable adhesives: Any FM Listed Foam Adhesives or Adhesives approved by the roofing system manufacturers may be submitted for review and acceptance by the Architect no later than eight (8) calendar days prior to bidding.
  - a. Contractor to submit certification based on pull tests showing adhesive meets ASCE 7 uplift requirements.

#### 2.8 ACCESSORIES

- ##### A. Metal Cant Strip (and Contractors Options): Basis of design is a continuous strip of 16 gauge, G90 galvanized steel, with the material formed to a 140 degree angle top and bottom, with a 3 inch minimum face width. Due to combustibility concerns, the contractor has the following options:
1. Formed sheet metal cant (basis of design).

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2. Perlite cant, treated by the manufacturer for torch application
  3. Mineral fiber cant (non-combustible).
  4. Wood or Fiber cant with self-adhering modified bitumen membrane attached to face.
  5. Wood or Fiber cant with gypsum roof board laminated to face.
  6. Modified bitumen cant (Derbicant by Performance Roof Systems, Inc.)
- B. Vent Pipe Flashing: Prefabricated pipe flashing of 4 lb. per square foot common pig lead having a 4 inch deck flange
- C. Joint Tape: Modified Bitumen, Self Adhering Building Tape:
1. Utilize joint tape to seal joints of rigid insulation and/or gypsum roof board.
  2. 20 mil thick by 4 inches to 6 inches wide as manufactured by Protecto Wrap Company of Denver, Colorado (800-759-9727), or approved equal.
- D. Flashing Tape: Double sided, grey extruded or preformed, 99% solids, crosslinked polyisobutylene compound, non-sag, non-toxic, non-staining, permanently elastic self adhesive tape. 1/8" minimum thickness, 3/4" minimum width unless noted otherwise on the drawings.
1. Pecora Corporation Extru-Seal Glazing Tape
  2. Tremco Construction Products 440 II Tape
  3. Equivalent products as approved by the Owner and Architect.
- E. Prefabricated Metal Curbs
1. Approved Products:
    - a. The Pate Company: 245 Eisenhower Lane South, Lombard, IL 60148, PH (800) 243- 3018, FAX (630) 705-1930. [www.patecurbs.com](http://www.patecurbs.com)
    - b. Aladdin Metal Products, Inc.: 82 Kennedy Drive, Forest Park, GA 30297, PH (404) 366-2215 FAX (404) 366-9480. [www.aladdinmetalproducts.com](http://www.aladdinmetalproducts.com)
    - c. Custom Solution Roof and Metal Products: 2224 16<sup>th</sup> Avenue SW, Cedar Rapids, IA 52404. PH 800-757-2872 FAX 877-299-2875 [www.csroofmetalproducts.com](http://www.csroofmetalproducts.com)
- F. Prefabricated Equipment and Piping Supports
1. Approved Products:
    - a. PHP Systems/Design: 5534 Harvey Wilson Dr., Houston, TX 77020. PH (800) 797-6585 FAX (713) 672-1170. [www.phpsd.com](http://www.phpsd.com)
      - 1) Engineered, portable support systems specifically designed for installation without the need for roof penetrations, or flashings, and without causing damage to the roofing membrane.
    - b. Chem Link Products LLC: 353 East Lyons, Schoolcraft, MI 49087, PH (800) 826-1681 FAX (269) 679-4448 [www.chemlink.com](http://www.chemlink.com)
      - 1) KnuckleHeads – non-penetrating condensate piping and conduit support system
- G. Sealants:
1. As specified in Section 07 90 00 – Joint Protection

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2. Sealant Primer: Recommended by sealant manufacturer to suit application.
3. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
4. Backer Rod: Extruded polyolefin foam made of a non-absorbing outer skin and a highly resilient interior network of open and closed cells which will not out-gas when ruptured.

H. Tapered Scupper Sumps:

1. Form sump area using 1/2" per foot slope rigid insulation as shown in the details and plans provided.

I. Fluid Applied Flashing:

1. Material Description:
  - a. Membrane: Cold liquid applied polyurethane reinforced waterproofing membrane with a polyester reinforced fleece.
  - b. Polyester Fleece: Reinforcement fleece shall consist of manufacturer's supplied non-woven polyester fleece.
  - c. Top Coat: Fire retardant single component coating as supplied by the manufacturer.
2. Manufacturers and Products:
  - a. Soprema: Alsan RS Flashing
  - b. Siplast: Parapro 123 Flashing System
  - c. Kemper Systems: Kemperol Membrane BR/200 System
  - d. Johns Manville PermaFlash System
  - e. Firestone Ultraflash
  - f. GAF Topcoat Matrix Majorseal
  - g. DERBIGUM DerbiFlash System
  - h. Equivalent systems as approved by and included within their **20 year weathertightness warranty** by the roof membrane manufacturer.

2.9 MISCELLANEOUS MATERIALS

- A. All other material and accessories, not specifically described, but required for a complete and proper installation of roofing, shall be products of, or recommend by the manufacturer of the primary material and subject to the approval of the Architect.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

- A. Total Installation Concept:
1. The specified system is a total roofing system, not a patched up, chopped up, spliced or added to or on roofing system. Therefore, this type of application will not be acceptable.
  2. If a section of roof requires reworking and/or patching, the entire area or section of roofing shall be replaced. This shall mean from vertical surface to vertical surface, or roof perimeter to roof perimeter in all directions.

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- B. Watertightness Imperative:
1. The work specified herein will not preclude the use of procedures that will maintain the buildings watertight. Therefore, the Contractor, while conforming to these Contract Documents, must utilize necessary procedures to keep water out of the buildings while construction is in progress.
  2. At end of each day's roofing installation and prior to the onset of all inclement weather, new section of roofing shall be temporarily sealed with cut-offs to the unfinished substrates. Seal projections through the roof and to the surrounding intersections so that no moisture may enter roofing or into structure before work resumes. Remove cut-offs before work resumes.
  3. Cut-offs: 1 plies of roofing, fully adhered by torching, or set in full bed of modified bitumen adhesive/mastic; remove at beginning of next days' work.
- C. In areas where there is a chance of debris falling into the occupied space, work will be performed after hours, on weekends or on holidays.
- D. Environmental Impact: Ensure that fresh air intakes in the area of new roofing construction are properly sealed or filtered. Coordinate user requirements for temporary equipment shutdown as needed. Also, take care to prevent lightweight concrete or asphalt from entering through voids in the deck.
- E. Interior Work: Coordinate installation of associated ceiling repairs with user schedules and peak-use times.
- F. Off Hour Work: The following roof construction activities must be coordinated and scheduled to occur while those spaces immediately below the required work are not occupied.
1. Asbestos abatement (if applicable)
  2. Roof tear-off.
  3. Removal or installation of heavy roof top equipment.
  4. Structural and/or deck repairs.
  5. Application of hot asphalt to structural deck.
  6. Loading or unloading of materials.
  7. Any interior (below structural roof deck) work
- G. Building Safety
1. **Contractor shall maintain a daily "fire watch" for a minimum of two (2) hours after torch down shift has been completed.**

3.2 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, properly sloped to drains, valleys, or eaves.

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- D. Verify deck surfaces are dry. Confirm dry deck by moisture meter with 12 percent moisture maximum
- E. Verify roof openings, curbs, pipes, conduit, sleeves, ducts, roof drains and vents through roof are solidly set, and cant strips and reglets are in place.
- F. Roof membrane manufacturer's technical representative is to inspect the roof deck / substrate conditions prior to application of roofing materials to verify the substrate is acceptable to receive the proposed roofing system in compliance with the appropriate Florida Product Approval Installation Instructions. A written report stating such is to be submitted to the Owner and Architect for their review and records.

**3.3 INSTALLATION REQUIREMENTS**

- A. Protect other work from spillage of modified bitumen roofing materials and prevent liquid materials from entering or clogging drains and conductors. Replace/restore other work damaged by installation of roofing system work.
- B. Insurance/Code Compliance: Install system for (and test where required to show) compliance with governing regulations and with the following requirements:
  - 1. Underwriters Laboratories "Fire Classified" and "Class A";
  - 2. The Florida Building Code, 5<sup>th</sup> edition (2014) and ASCE 7- 10 for nominal wind speed of 107 mph and ultimate wind speed of 138 mph and associated up-lift resistance.

**3.4 PRELIMINARY ROOF MEMBRANE APPLICATION TO CONCRETE DECK**

- A. Check and prime deck, Install a SBS modified bitumen interply sheet, lapped, with torch-adhered application.
- B. Overlap ends of connecting plies (end lap) minimum of 10 inches. Remove all factory splices from rolls.
- C. Apply membrane smooth, free from air pockets, wrinkles, or tears. Ensure full bond of membrane to substrate.
- D. Seal membrane around roof protrusions and penetrations
- E. Allow sufficient "bleed out" at membrane edges to ensure proper bonding.
- F. Contractor shall maintain a daily "fire watch" for a minimum of two (2) hours after torch down shift has been completed.

**3.5 APPLICATION OF BASE SHEET & PRELIMINARY ROOF TO PLYWOOD DECK**

- A. Examine plywood deck and replace damaged or deteriorated sheathing per unit cost.

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1. Re-secure plywood sheathing deck to framing below as required to comply with FBC.
- B. Venting Base Sheet:
1. Start with 18" width at the low edge, followed by full width sheets.
  2. Lap the venting base sheet 4 inches at edges and ends.
  3. Mechanically fasten base sheet in accordance with the prescribed attachment requirements as detailed within the project documents, or as determined by the roof system manufacturer due to the project wind uplift criteria (most stringent to govern).
  4. At parapet walls, extend the venting base sheet up and over the wall covering and wood blocking where necessary for venting.
    - a. Nail venting base sheet to the wall at 8" on center in each direction.
    - b. Apply flashing adhesive at side laps (or end laps) and over nail heads to keep wall flashing watertight until the multiple ply flashing and modified bitumen flashing is installed.
- C. Preliminary Roof Application (After venting base sheet application):
1. Install a SBS modified bitumen interply sheet, lapped, shingled in proper direction to drain water to roof drain locations), with torch-adhered application.
  2. Overlap ends of connecting plies (end lap) minimum of 10 inches. Remove all factory splices from rolls.
  3. Apply membrane smooth, free from air pockets, wrinkles, or tears. Ensure full bond of membrane to substrate.
  4. Seal membrane around all roof protrusions and penetrations.
  5. Allow sufficient "bleed out" at membrane edges to ensure proper bonding.
  6. **Contractor shall maintain a daily "fire watch" for a minimum of two (2) hours after torch down shift has been completed.**
- 3.6 PREPARATION FOR INSULATION APPLICATION (CRICKETS)
- A. Rigid insulation drainage crickets are to be installed over the vented base sheet prior to the installation of the first interply membrane.
  - B. The Contractor shall verify field dimensions for determining a positive drainage slope.
  - C. Install only as much insulation board in any one day as can be covered by the completed membrane in the same day.
  - D. Prior to insulation board application, remove excess dust, loose granules and foreign materials from surface of the substrate by brooming and powered blowers or vacuums.
  - E. Contractor shall insure that slopes indicated on the drawings are "finish" slopes, regardless of irregularities and deviations in the roof deck or substrate.

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3.7 ADHERED INSULATION AND ROOF BOARD APPLICATION

- A. Solidly adhere (at the manufacturer's recommended rate and spacing) using an insulation board adhesive, a precut polyisocyanurate insulation board system to the existing roof system.
- B. Adhere 1/2" per foot tapered rigid insulation crickets at "high" side of mechanical equipment and curbs, and as indicated by the project drawings.
- C. Butt board edges tightly. Smooth surfaces irregularities and unevenness between boards in top layer and apply joint tape to gypsum roof boards before priming. Fully prime finished surface of gypsum roof board.
- D. Cant Strips/Tapered Edge Strips: Except as otherwise shown, install preformed 45 degrees metal cant strips at junctures of membrane with vertical surface after installation of the gypsum roof board.
- E. Tapered Edge Strips: Install taper edge strips as necessary to provide a smooth transition between slight elevation changes prior to installation of the gypsum roof board.
- F. Install a SBS modified bitumen interply sheet, lapped, shingled in proper direction to drain water to roof drain locations, with torch-adhered application.

3.8 MEMBRANE APPLICATION

- A. Interply Sheet Application: (Roof Areas A thru D)
  - 1. Install a SBS modified bitumen interply sheet, lapped, shingled in proper direction to drain water to roof drain locations), with torch-adhered application.
    - a. Apply flame to bottom side of interply as it is being rolled out to achieve adhesion to gypsum roof board and/or preceding interply sheet.
  - 2. Overlap ends of connecting plies (endlap) minimum of 10 inches. Remove all factory splices from rolls.
  - 3. Apply membrane; lap and seal edges and ends permanently waterproof.
  - 4. Apply membrane smooth, free from air pockets, wrinkles, or tears. Ensure full bond of membrane to substrate.
  - 5. Extend membrane up to top of cant strip.
  - 6. Extend membrane over vapor barrier of wall construction and seal.
  - 7. Seal membrane around roof protrusions and penetrations.
  - 8. Allow sufficient "bleed out" at membrane edges to ensure proper bonding.
  - 9. **Contractor shall maintain a daily "fire watch" for a minimum of two (2) hours after torch down shift has been completed.**
- B. Granular Surfaced Cap Sheet: (Roof Areas A thru D)
  - 1. Roll out cap sheet and cut each roll in two equal lengths. Allow cap sheet to relax 30 minutes before installation.
  - 2. Laying Cap Sheet: Lay out cap sheet in the direction of the roof slope.

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3. Apply flame to bottom side of cap sheet as it is being rolled out to achieve adhesion to interplies. Lap end of sheets 10 inches, and side laps 3 inches. Remove all factory splices from rolls.
  4. Apply membrane; lap and seal edges and ends permanently waterproof.
  5. Apply membrane smooth, free from air pockets, wrinkles, or tears.
  6. Allow sufficient "bleed out" at membrane edges to ensure proper bonding.
    - a. Apply granules to "bleed out" areas (matching color of new cap sheet) in a timely manner so as to ensure embedment into asphalt. Apply pressure over granules as may be required.
  7. **Contractor shall maintain a daily "fire watch" for a minimum of two (2) hours after torch down shift has been completed.**
- C. Membrane Flashing (Torch Applied)
1. Install SBS modified bitumen, polyester reinforced flashing system using a roofing torch on vertical surfaces of wall and curbs over a mechanically fastened base ply felt or solid substrate.
    - a. Apply flexible sheet base flashing using a "torch" application over initial modified bitumen interply flashing.
    - b. Hand rub to ensure complete embedment and adhesion of flashing.
    - c. Three course outside corners and side laps using reinforcing membrane and flashing adhesive. Coat exposed asphalt with fibrated aluminum coating.
  2. Secure top of flashing to nailers or solid substrate at 4 inches on center.
  3. Coordinate installation of roof drains, curbs and related flashing.
  4. **Contractor shall maintain a daily "fire watch" for a minimum of two (2) hours after torch down shift has been completed.**
- D. Membrane Flashing (Cold Process Application)
1. Install SBS modified bitumen, polyester reinforced flashing system in trowelable flashing adhesive on vertical surfaces of wall and curbs over a mechanically fastened base ply felt or solid substrate.
    - a. Apply flexible sheet base flashing using cold process application methods over modified bitumen interply flashing.
    - b. Hand rub to ensure complete embedment and adhesion of flashing.
    - c. Three course outside corners and side laps using reinforcing membrane and flashing adhesive. Coat exposed asphalt with fibrated aluminum coating.
  2. Secure top of flashing to nailers or solid substrate at 4 inches on center
  3. Coordinate installation of roof drains, curbs and related flashing.
- E. Liquid Applied Flashing System:
1. Refer to manufacturer's details drawings, product data sheets and published general requirements for application rates and specific installation instructions.
  2. Pre-cut polyester reinforcing fleece to conform to roof terminations, transitions and penetrations being flashed. Ensure a minimum 2 in overlap of fleece at side and end-laps. Ensure the completed liquid-applied flashing membrane is fully reinforced.



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3. Apply the base coat of catalyzed resin onto the substrate using a brush or roller, working the material into the surface for complete coverage and full adhesion.
  4. Immediately apply the reinforcing into the wet base coat of resin. Using a brush or roller, work the reinforcing fabric into the wet resin while applying the second coat of catalyzed resin to completely encapsulate the fleece.
  5. Allow the liquid membrane to sufficiently cure for 24 to 48 hours, then apply the finish coat of resin.
  6. Broadcast mineral granules into the wet finish coat as required to match the adjacent cap sheet.
- F. Set-on Accessories:
1. Coordinate installation of set-on accessories.
  2. Review details for special installation requirements.
  3. Where small roof accessories are set on the membrane, set primed metal flanges in a 1/4" thick bed of flashing adhesive, and seal penetration of membrane with bead of flashing adhesive.
- G. Metal Flashing:
1. Strip metal flanges using manufacturer's granular-surfaced flashing, set in modified bitumen adhesive, extending minimum 4" beyond flange
- H. Vent Pipe Flashing (lead sheeting):
1. Set flange of lead boot in a 1/4" thick flashing adhesive.
  2. Top of sleeve shall be bent over and extended down into the vent pipe a minimum of 1 inch. Obstruction of opening is not permitted.
  3. Strip-in as specified for set-on accessories.
- I. Mechanical Supports (condensate pipes and conduit)
1. Lay out adjustable pipe supports minimum 4 feet o.c. maximum 6 feet o.c.
  2. Condensate piping – Maintain 1/4" slope (minimum) to nearest drain.
- J. Mechanical Support Systems (Pipe, Duct, Cable, and Equipment)
1. Locate bases and support framing as indicated on drawings and as specified herein. Provide complete and adequate support of all piping, ducting, and conduit; whether or not all required devices are shown.
  2. The use of wood for supporting piping is not permitted.
  3. Provide support spacing so deflection of piping does not exceed 1/240 of span. (Maximum 6 feet o.c.)
  4. Accurately locate and align bases. Install isolation pads as required by membrane manufacturer (set in approved adhesive). Set bases on isolation pads.
  5. Adhere or mechanically attach if required by code.
  6. Set framing posts into bases and assemble framing structure as indicated. Use stainless steel fasteners for framing assembly.

### 3.9 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions Division 1 of the Contract Documents.
- B. Correct identified defects or irregularities.

- C. Require site attendance of roofing and insulation materials manufacturers during installation of the Work.

### 3.10 CLEANING

- A. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.
- B. Repair or replace defaced or disfigured finishes caused by work of this section.
  - 1. Trash and scraps are a hazard and shall be collected and disposed of immediately.
  - 2. The applicator shall remove all masking protection equipment, materials and debris from the work and storage areas and leave those areas in an undamaged and acceptable condition.
  - 3. Damaged landscaping shall be replaced. New sod shall be placed in an acceptable manner blending edges of new sod to existing surrounding sod in damaged areas.
    - a. Match new sod with existing sod type
    - b. Do not place new sod over existing sod. Excavate so that top plane of new sod will conform to adjacent plane of existing sod..

### 3.11 PROTECTION

- A. Protect building surfaces against damage from roofing work.
- B. Where traffic must continue over finished roof membrane, protect surfaces.
- C. Upon completion of roofing work (including associated work) advise Owner of recommended procedures for surveillance and protection of roofing during remainder of construction period. At the end of the construction period, or at a time when remaining construction work will in no way affect or endanger roofing, make a final inspection of roofing and prepare a written report to Owner and Architect describing nature and extent of deterioration or damage, if any, found in the work.
- D. Repair or replace deteriorated or defective work found at time of substantial completion inspection. Repair damages to roofing which occurred subsequent to roofing installation and prior to final completion inspection. Repair or replace the roofing and associated work to a condition free of damage and deterioration at time of final completion.

END OF SECTION

**MANUFACTURER'S NOTICE OF INTENT TO ISSUE ROOF WARRANTY**

---

**Whereas** \_\_\_\_\_

herein called the "Roofing System Manufacturer" hereby gives notice to:

Owner: \_\_\_\_\_

Address: \_\_\_\_\_  
of its Notice of Intent to issue its Roof Warranty, to the Owner for the Project,

Project: \_\_\_\_\_

Address: \_\_\_\_\_  
incorporating the Manufacturer's \_\_\_\_\_

\_\_\_\_\_ roofing system or product is installed in accordance with the Contract Documents.

A. Manufacturers' Notice of Intent to Issue Roof Warranty in conformance with the Contract Documents shall be executed by the manufacturer and attached to the bid form. Each Bidder shall submit a single form, only from the specified manufacturer, and shall include items 1 and 2 as follows:

1. A detailed description of the components of the manufacturer's system proposed and a list of any other component and accessories, proposed for use in the system that is provided by other manufacturers or suppliers.
  - a) A statement that the Manufacturer's Representative has visited this site prior to the bid date, or thoroughly reviewed the job conditions and project manual (plans, specifications & details). Having reviewed the above items and project requirements in detail, the Representative will provide a written response to the Design Professional ten days prior to the bid date, if conflicts between the Manufacturer's requirements occur with the above listed documents.
  
2. A sample of the Manufacturer's Roof Warranty shall be attached to and submitted with this form and the bid package. The manufacturer shall delete all exceptions relative to system failure from high winds uplift pressures due to gale force winds and windstorms below 116 mph (nominal wind speed) and below the following "Unfactored / (Nominal) Wind Uplift Pressures as calculated per the Florida Building Code and ASCE 7:
  - a. Interior of Roof (Zone 1): - 32.0 PSF
  - b. Perimeter of Roof (Zone 2): - 48.0 PSF
  - c. Corners of Roof (Zone 3): - 69.0 PSF
  
3. **Twenty (20)** year total roof system warranty inclusive of roofing materials, all included products and accessories, including all metal flashings, from roof deck to finish membrane, whether supplied by the membrane manufacturer or by others. Provide a "No Dollar Limit", single source responsibility, non-deductible roofing warranty inclusive of all material and labor in full compliance with all the requirements of the project specifications.

MANUFACTURER'S NOTICE OF INTENT  
TO ISSUE ROOF WARRANTY - page 2

- a) The manufacturer shall modify the roof warranty to include total labor coverage for the warranty period and to Cover damage to roof materials and insulation down to the roof deck resulting from water penetration.
  - b) The manufacturer shall modify the roof warranty to state that the Owner has the right to make emergency repairs without voiding the warranty if the manufacturer or applicator do not respond within 24 hours to notification by the Owner of a defect or leak.
  - c) The manufacturer shall modify the roof warranty to state that annual inspections with written reports by the Owner, and resulting maintenance, are sufficient to fulfill the periodic inspection requirements of the manufacturer's warranty.
4. The manufacturer's Representative shall conduct a Post-Construction field inspection no earlier than **eleven (11) months**, and no later than **twelve (12) months** after the Date of Substantial Completion. Submit a written report within seven (7) days of this visit to the Owner's Maintenance Dept. listing observations, conditions and any recommended repairs or remedial action.
5. The manufacturer will, during the **second (2<sup>nd</sup>)**, and **fifth (5<sup>th</sup>)**, year of this warranty, inspect the roof system and provide a written Executive Summary of the Roof Condition to the Owner.

Further, the manufacturer acknowledges that the applicator:

Roof Applicator's Name: \_\_\_\_\_

Address: \_\_\_\_\_

has been approved to install this roof system since \_\_\_\_\_, \_\_\_\_\_ and meets the criteria for an approved applicator listed in the Project Manual.

By signing the above, the Authorized Representative of said Manufacturer certifies and represents the Roofing System Manufacturer with the authority to contract and make the above representations to the Owner.

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Signature of Authorized Representative

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Witness: \_\_\_\_\_

Date: \_\_\_\_\_

**APPLICATOR'S WARRANTY FOR ROOFING**

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Whereas \_\_\_\_\_

of (Address) \_\_\_\_\_

herein called the "Roofing Contractor", has performed roofing, flashing and sheet metal and associated ("work") on following project:

Owner: \_\_\_\_\_

Address: \_\_\_\_\_

Name and Type of Building: \_\_\_\_\_

Address: \_\_\_\_\_

Area of Work: \_\_\_\_\_

Date of Acceptance: \_\_\_\_\_

Warranty Period: **Three Years** Date of Expiration: \_\_\_\_\_

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The Roofing Contractor hereby certifies to the Owner as a "Final Statement of Compliance" that the finished roof membrane (and insulation) system was installed in compliance with the approved contract documents.

AND WHEREAS Roofing Contractor has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks, faulty or defective materials, roofing components deemed faulty or in disrepair, and workmanship for designated the Warranty Period.

NOW THEREFORE Roofing Contractor hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work, and as are necessary to maintain said work in watertight condition.

This Warranty is made subject to the following terms and conditions.

1. Specifically excluded from this Warranty are damages to roofing work and other parts of the building, and to building contents, caused by: a) lightning, windstorm; b) fire; c) failure of roofing system substrate or structure (including cracking, settlement, excessive deflection, deterioration, and decomposition). When work has been damaged by any of the foregoing causes, Warranty shall be null and void until such damage has been repaired and until cost or repairs has been paid by the Owner or by another responsible party as so designated.
2. The Roofing Contractor is responsible for damage to work covered by this Warranty, and is not liable for consequential damages to building or building contents, resulting from leaks or faults or defects of work.
3. The Owner shall promptly notify Roofing Contractor of observed, known or suspected leaks, defect, disrepair or deterioration. The Contractor shall guarantee to respond to all notifications within **twenty-four (24) hours** and to make all such repairs as deemed necessary to correct said leaks or defects to a satisfactory condition to the Owner. Repairs shall be made by workman in the current employment of the Contractor. Subcontracting of repair work is not permitted.

APPLICATOR'S WARRANTY - PAGE 2

4. The definition of faulty roofing components or roofing in disrepair includes, but is not limited to the following:
- A. Blisters in roofing.
  - B. Cracks or ridging in roofing membranes.
  - C. Delamination, shears or tears in membrane.
  - D. Defects in the quality of work or materials.
  - E. Leaks of any kind.
5. This Warranty is recognized to be the only warranty of the Roofing Contractor on said work, and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to him in cases of roofing failures. Specifically, this Warranty shall not operate to relieve Roofing Contractor of responsibility for performance of original work in accordance with requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

IN WITNESS THEREOF, this instrument has been duly executed this

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Roofing Contractor Firm

\_\_\_\_\_  
Signature of Authorized Person

\_\_\_\_\_  
Title

\_\_\_\_\_  
Witness

(SEAL)

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
1. Flashings, Reglets and Counterflashings
  2. Gutters and Downspouts
  3. Miscellaneous Sheet Metal at all Roof Areas
  4. Accessories
- B. Related Sections:
1. Section 06 10 53 – Miscellaneous Rough Carpentry
  2. Section 07 52 00 – Modified Bitumen Roofing System – Torched Application
  3. Section 07 92 00 – Joint Sealers
  4. Section 09 83 00 – Elastomeric Roof Coatings
- C. References:
1. ASTM International:
    - a. ASTM A 167 – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip
    - b. ASTM A 480/A480M – Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip
    - c. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
    - d. ASTM A 755/A 755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products
    - e. ASTM A 792/A 792M – Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
    - f. ASTM A 924/A 924M – Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
    - g. ASTM B 29 – Standard Specification for Refined Lead.
    - h. ASTM B 32 - Standard Specification for Solder Metal.
    - i. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
    - j. ASTM B 306 – Standard Specification for Copper Drainage Tube (DWV).
    - k. ASTM B 370 – Standard Specification for Copper Sheet and Strip for Building Construction.
    - l. ASTM B 749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
    - m. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

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- n. ASTM D 1187 – Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.
- o. ASTM D 4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
- p. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- 2. National Roofing Contractors' Association:
  - a. NRCA – National Roofing Contractors' Association Manual.
- 3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
  - a. SMACNA - Architectural Sheet Metal Manual..

### 1.2 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Submit shop drawings for any condition not shown on plans and details.
- C. Product Data: Submit data on manufactured components metal types, finishes, and characteristics.
- D. Samples:
  - 1. Submit two samples 12 x 12 inch in size illustrating a typical external corner, internal corner, material and finish.
  - 2. Submit two samples 12 x 12 inch in size illustrating metal finish color.

### 1.3 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA and standard details and requirements.
- B. Failure to install work in strict accordance with provisions of this Section is subject to total rejection of the work specified herein.
- C. Maintain copy of documents on site.

### 1.4 MOCK-UPS

- A. Construct "in-place" sheet metal mock-ups demonstrating the following conditions as applicable and detailed in the project documents:
  - 1. Perimeter edge metal, splice and termination conditions.
  - 2. Edge metal exterior and interior corner conditions
  - 3. Gutter conditions: Attachment; expansion joint; splice; termination; downspout connections, etc.
  - 4. Typical interior wall counterflashing conditions.
  - 5. Parapet coping conditions and splice, etc.
  - 6. Roof expansion joint coping conditions:



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- 7. Additional conditions as may be determined by the Architect.
  - B. Mock-ups are to be constructed and located where designated. Upon approval mock-ups may remain as part of the work.
- 1.5 QUALIFICATIONS
- A. Fabricator and Installer: Company specializing in sheet metal work with minimum three years documented experience.
- 1.6 PRE-INSTALLATION MEETINGS
- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
  - B. Convene minimum one week prior to commencing work of this section.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
  - B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
  - C. Prevent contact with materials causing discoloration or staining.
- 1.8 COORDINATION
- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
  - B. Coordinate application of flashings with application of roofing, protruding material, and roof accessories to provide a complete weathertight installation according to the specified warranty requirements.

**PART 2 PRODUCTS**

**2.1 SHEET MATERIALS**

- A. Stainless Steel: ASTM A 240, ASTM A 480 and ASTM A 666; Type 304, soft temper (annealed), 22 ga. or 24 ga. thickness unless otherwise specified; smooth 2B finish.
- B. Aluminum: ASTM B 209, alloy 3003, temper H14, AA-C22A41 mill finish; 0.040" thick; Coping 0.050" thick.
- C. Sheet Lead: Standard 0.063 inch thick lead sheet weighing 4 pounds per square foot, arsenical-antimonial and pig lead alloy meeting the requirements of ASTM B29. Use sheet lead or tubing for flashing of vent pipes, roof drain sumps and other roof penetrations noted.

## 2.2 ACCESSORIES

- A. Termination Bar: Aluminum ASTM B-209, Alloy 6061, Temper T-6, mill finish; sizes 1/8" thick by 1-1/2" with rounded edges.
- B. Sheet Metal Fasteners:
1. Fasteners: Stainless steel
  2. Exposed fasteners are prohibited, and may only be used where specifically permitted by the project details or the Architect.
  3. Fasteners being on weather side of metal are to be a minimum #10 size "Scots" type screw with metal-backed neoprene washer integral with the head of the screw, or 3/16" diameter minimum stainless steel rivet.
    - a. Locate and space fastenings for true vertical and horizontal alignment. Use proper type fastening tools to obtain controlled uniform compression for positive seal without rupture of neoprene washer.
  4. Use stainless steel fasteners for exterior application and cadmium plated fasteners for interior applications. Use painted fasteners where fastening into painted panel or trim.
- C. Fasteners: Stainless steel: Fastener size and penetrations into various substrates should be as follows:
1. Wood: 1/4 inch screw x 2 inch penetration or 1 1/2 inch annular ring stainless steel roofing nail.
  2. Concrete: 1/4 inch "zamac" nail-in x 1 1/2 inch penetration.
  3. Concrete Block: 1/4 inch "zamac" nail-in x 1 1/2 inch penetration.
- D. Fastener Schedule: Anchorage for below assumed to be into wood blocking, See details for other specifics.
1. Continuous Cleats: 1 1/2 inch annular ring stainless steel roofing nails at 6 inches on center maximum.
  2. See Fastener Schedule sheets included as part of the project documents.
  3. For all conditions not covered, refer to fastener specifications above or consult with Architect.
- E. Dry-in Membrane: Forty (40) mils thick, polyester reinforced, SBS modified asphalt waterproofing and underlayment membrane sheet.
1. Protecto-Wrap "Rainproof 40"
  2. Soprema "Sopralene Stick"
  3. Tamko "TW Metal and Tile" underlayment
  4. Architect approved (prior to bidding) equivalent product.
- F. Primer: Asphaltic based primer for flanges set in adhesive.
- G. Protective Backing Paint (bituminous coating): ASTM D1187, 'Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.'; SSPC-Paint 12, Cold-Applied Asphalt Mastic (Extra Thick Film – 15 mil dft) [Society for Protective Coatings].

**SHEET METAL FLASHING AND TRIM**  
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- H. Sealant: Sealant specified in Section 07 90 00.
- I. Plastic Cement: ASTM D 4586, Type I.
- J. Flashing Tape (concealed application): Double sided, gray extruded or preformed, 99% solids, cross linked polyisobutylene compound, non-sag, non-toxic, non-staining, permanently elastic self adhesive tape. One eighth (1/8) inch minimum thickness, 3/4" minimum width unless otherwise noted on the drawings.
1. Pecora Corporation Extru-Seal Glazing Tape
  2. Tremco Construction Products 440 II Tape
  3. Equivalent products as approved by the Owner or Architect.
- K. Splash Pads: Precast concrete type, of size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.
- L. Solder/Flux/Cleaner: ASTM B 32;
1. Solder: type suitable for application and material being soldered. ASTM B-32; 50/50 lead/tin type or ASTM B-32: 90/10 tin/silver type
  2. Flux: Acid - Chloride type
  3. Flux Cleaner: Washing Soda Solution - 5% to 10%
- M. Sheet Metal Adhesive: Aluminum adhesive: SciGrip SG5000 Series adhesive, 2 component system as manufactured by SCIGRIP Americas, 600 Ellis Road, Durham, NC 27703. Contact: (887) 477-4583, ([www.scigrip.com](http://www.scigrip.com)) or Architect approved equal.

2.3 FABRICATION

- A. Form sections shape indicated on Drawings, accurate in size, square, and free from distortion or defects.
- B. Fabricate cleats of same material as sheet metal, interlocking with sheet.
- C. Form pieces in longest possible lengths.
- D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- E. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- F. Fabricate corners from one piece with minimum 18 inch long legs; solder for rigidity, seal with sealant.
- G. Pretin edges of stainless steel sheet. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal joints. (Heliarc shop formed aluminum joints).

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- H. Perform soldering work slowly, with properly heated irons to thoroughly heat seam material and sweat solder through full width of seam that shall show not less than 1 inch of evenly flowed solder.
  - 1. Start soldering immediately after application of flux.
  - 2. Solder flat locked seams.
- I. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- J. Fabricate flashings to allow toe to extend 1 1/2" over wood nailers. Return and brake edges.
- K. Fabricate accessories in profile and size to suit gutters and downspouts.
  - 1. Anchorage Devices: In accordance with SMACNA requirements.
  - 2. Downspout Supports: Brackets.
- L. Solder metal joints.

### 2.4 FINISH

- A. Dissimilar Metal Isolation: Where applicable, back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mils when dissimilar metals are in contact.
- B. Prepare stainless steel surfaces in accordance with Section 09 90 00 – Painting and Coating.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- C. Verify roofing termination and base flashings are in place, sealed, and secure.
- D. Do not proceed with work of this section until conditions detrimental to the proper and timely completion of the work have been corrected in an acceptable manner.

### 3.2 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Install surface mounted counterflashing (reglets) to lines and levels indicated on Drawings. Seal top of counterflashing (reglets) with sealant.

**SHEET METAL FLASHING AND TRIM**  
**SECTION 07 62 00**

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- C. Paint concealed metal surfaces with protective backing paint to minimum dry film thickness of 15 mils where applicable.

**3.3 INSTALLATION**

- A. Where applicable, insert flashings into reglets to form tight fit. Secure in place with lead wedges. Seal flashings into reglets with sealant.
- B. Secure flashing in place using concealed fasteners. Use exposed fasteners only where permitted.
- C. Apply plastic cement compound between metal flashings and felt flashings.
- D. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- E. Solder / weld per metal type metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.
- F. Apply modified bitumen cement compound between metal flashing and bituminous underlayment and/or flashing membrane. At other locations utilize self-adhesive butyl flashing tape as specified above.
- G. Secure gutters and downspouts in place using specified fasteners.
- H. Connect downspouts to downspout boot system. Seal connection watertight.
- I. Seal metal joints watertight.

**3.4 FIELD QUALITY CONTROL**

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspection will involve surveillance of Work during installation to ascertain compliance with specified requirements.

**3.5 SCHEDULE**

Location	Metal Type	Thickness	Finish
A. Coping Cap	stainless steel	24 gage	mill
B. Coping Joint Covers	stainless steel	26 gage	mill
C. Edge Metal	stainless steel	24 gage	mill
D. Continuous Cleat	stainless steel	22 gage	mill

**SHEET METAL FLASHING AND TRIM  
SECTION 07 62 00**

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E.	Splice Joint Cleats	stainless steel	24 gage	mill
F.	Reglet/receiver	stainless steel	24 gage	mill
G.	Counterflashing	stainless steel	24 gage	mill
H.	Counterflashing Retainer Cleats	stainless steel	26 gage	mill
I.	Gooseneck Vent Hood	stainless steel	24 gage	mill
J.	Gutters	stainless steel	22 gage	mill
K.	Downspouts	extruded alum.	0.125"	mill
L.	Downspout & Gutter Brackets	stainless steel	1/8" x 1"	mill
M.	Miscellaneous metal flashing; 24 gage stainless steel, mill finish as required by the Architect unless noted otherwise.			

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
  - 1. Building sealants
  - 2. Joint backing, and accessories.
  
- B. Related Sections:
  - 1. Section 07 52 16 – Modified Bitumen Roofing System – Torched Application
  - 2. Section 07 62 00 – Sheet Metal Flashing and Trim
  - 3. Section 09 83 00 – Elastomeric Roof Coating

1.2 REFERENCES

- A. ASTM International:
  - 1. ASTM C 834 - Standard Specification for Latex Sealants.
  - 2. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
  - 3. ASTM C 1193 - Standard Guide for Use of Joint Sealants.
  - 4. ASTM D 1056 - Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
  - 5. ASTM D1667 - Standard Specification for Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
  - 6. ASTM D2628 - Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
  
- B. Product Data: Provide product data for each sealant type to be used. Data shall indicate sealant chemical characteristics, performance criteria, substrate preparation, limitations, color availability
  
- C. Samples: Submit two samples, **1/4 x 6 inches** in size illustrating sealant colors for selection.
  
- D. Manufacturer's Installation Instructions: Submit special procedures, surface preparation, and perimeter conditions requiring special attention.
  
- E. Warranty: Include coverage for installed sealants and accessories failing to achieve watertight seal, exhibit loss of adhesion or cohesion, and sealants which do not cure.

1.4 QUALITY ASSURANCE

- A. Perform work in strict accordance with sealant manufacturer's requirements for preparation of surfaces and material installations instructions.
- B. Maintain one copy of each document covering installation requirements on site.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Applicator: Company specializing in performing Work of this section with minimum three years documented experience, and approved by manufacturer.

1.6 MOCKUP

- A. Section 01 40 00 - Quality Requirements: Requirements for mockup.
- B. Construct mockup of sealant joints in conjunction with window, wall and roof mockups specified in other sections.
- C. Construct mockup with specified sealant types and with other components noted.
  - 1. Determine preparation and priming requirements based on manufacturers recommendations; take action necessary for correction of failure of sealant tests on mock-up.
  - 2. Verify sealants, primers, and other components do not stain adjacent materials.
- D. Locate where directed by Architect/Engineer.
- E. Incorporate accepted mockup as part of Work.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements.
- B. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.
- C. Existing Conditions:
  - 1. Verify existing conditions, such as soundness of perimeter conditions, and varying deck and wall thickness for length of anchoring services required and other visible conditions prior to Bidding.
  - 2. Report conflicts and problems to the Architect for resolution prior to Bidding. Failure to report these conflicts and problems places the responsibility on the Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.



3. Replace or restore to original condition any materials or work damaged during construction.
4. Surfaces not designated to receive the system shall be properly masked or otherwise protected against accidental spillage or application of the material to those areas.
5. Failure to install the work in strict accordance with provisions of this Section, is subject to total rejection of work specified herein.

#### 1.8 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate Work with sections referencing this section.

#### 1.9 WARRANTY

- A. Provide a **five (5) year** warranty under provisions of Section 01 70 00 –Execution and Closeout Requirements
- B. Warranty shall include coverage for installed sealants and accessories which fail to achieve water tight seal and exhibit loss of adhesion or cohesion, or do not cure.

### PART 2 PRODUCTS

#### 2.1 JOINT SEALERS

- A. Manufacturers:
  1. Dow Corning Corp.
  2. GE Silicones
  3. Pecora Corp.
  4. Sika Corp.
  5. Tremco
  6. Sonneborn
  7. ChemLink
  8. Substitutions: Section 01 60 00 - Product Requirements
- B. Products Description:
  1. Silicone Sealant (Type S): ASTM C 920, Grade NS, Class 25. Use single component, moisture curing, non-staining, non-bleeding, non-sagging type and capable of continuous water immersion; color as selected or match adjacent finish materials. Acceptable Manufacturers:
    - a. Dow Corning                      Product: 795 (primer req'd) 790 (no primer req'd)
    - b. GE                                      Product: Silpruf
    - c. Pecora Corporation              Product: 860 / 863 / 864
    - d. Tremco                                Product: Spectrem 2

2. Polyurethane Sealant: ASTM C 920 Type S, Grade NS, Class 35. Use single component, moisture curing, non-staining, non-bleeding, non-sagging type and capable of continuous water immersion; color as selected or match adjacent finish materials. Acceptable Manufacturers:
  - a. Sika Product: Sikaflex-1a
  - b. Sonneborn Product: Sonolastic NP 1
  
3. Ethicone Sealant (Type S): ASTM C 920, Grade NS, Class 25. Use single component, moisture curing, solvent-free, non-staining, non-non bleeding, capable of continuous water immersion, non-sagging type; color as selected or match adjacent finish materials. Acceptable Manufacturers:
  - a. ChemLink Product: M-1 Structural Adhesive/Sealant
  - b. Architect approved equal

## 2.2 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: Backer Rod of extruded polyolefin foam made of non-absorbing outer skin and a highly resilient interior network of open and closed cells which will not out-gas when ruptured. Oversize backer rod 30 to 50 percent larger than joint width.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify substrate surfaces and joint openings are ready to receive work.
- C. Verify joint backing and release tapes are compatible with sealant.

### 3.2 PREPARATION

- A. Remove loose materials and foreign matter impairing adhesion of sealant.
- B. Clean and prime joints.
- C. Perform preparation in accordance with ASTM C1193.
- D. Protect elements surrounding Work of this section from damage or disfiguration.

**3.3 INSTALLATION**

- A. Perform installation in accordance with ASTM C1193 and manufacturer's instructions.
- B. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
  - 1. Minimum joint width: 1/4"; use 1:1 width/depth ratio
  - 2. Width/depth ratio of 2: 1.
  - 3. Neck dimension no greater than 1/2 of joint width.
  - 4. Surface bond area on each side not less than 75 percent of joint width.
- C. Install bond breaker where joint backing is not used.
- D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Tool joints concave. channel shaped. as detailed.

**3.4 CLEANING**

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Clean adjacent soiled surfaces.

**3.5 PROTECTION OF INSTALLED CONSTRUCTION**

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Protect sealants until cured.

**3.6 SCHEDULE (JOINT TYPES)**

- |    |                                |                |                           |
|----|--------------------------------|----------------|---------------------------|
| A. | Metal to Metal (to be exposed) | Type: Silicone | Color to match metal      |
| B. | Metal to CMU                   | Type: Silicone | Color to match CMU/Stucco |
| C. | Metal to Bitumen Materials     | Type: Ethicone | Color to match metal      |
| D. | Roof Membrane to CMU           | Type: Ethicone | Color to match Membrane   |

END OF SECTION

## PART 1 GENERAL

### 1.1 SUMMARY

- A. Section includes steel door and frame; non-rated, insulated, and galvanized for use at exterior openings for roof access only.
- B. This door and frame systems are intended to replace existing door and frame system within existing masonry openings with a sill elevation being raised by the work of this project. The installing contractor is responsible for verification of all conditions and dimensions in the field

### 1.2 SUBMITTALS

- A. Shop Drawings: Indicate door and frame elevations, internal reinforcement, and finishes.
- B. Product Data: Submit door and frame configurations, location of cut-outs for hardware reinforcement.
- C. Samples: Submit two samples of metal door frame and door face, 4 X 4 in size illustrating shop finish colors and surface texture.

### 1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
  - 1. ANSI 250.8 - Recommended Specifications for Standard Steel Doors and Frames.
  - 2. DHI - Door Hardware Institute - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.

## PART 2 PRODUCTS

### 2.1 STEEL DOORS AND FRAMES

- A. Manufacturers:
  - 1. Amweld Building Products, Inc.
  - 2. Ceco Door Products] Model
  - 3. SW Fleming Limited] Model
  - 4. Habersham Metal Products
  - 5. Kewanee Corp.] Model
  - 6. Pioneer Industries] Model
  - 7. Republic Builders Products
  - 8. Steelcraft
  - 9. Substitutions: Permitted

- B. Product Description: Standard shop fabricated steel doors, and frames; non-rated type and flush face.

## 2.2 COMPONENTS

- A. Exterior Doors (Insulated): [ANSI A250.8,] [SDI 108,] 1-3/4 inch thick.
  - 1. Level 2 - Heavy Duty, Model 1, full flush design.
- B. Exterior Frames:
  - 1. Level 2, nominal 16 gage/0.053 inch thick material, base metal thickness.
- C. Door Core: polyurethane or polystyrene foam.
- D. End Closure: Channel, 0.04 inch thick, flush.
- E. Thermal Insulated Door: Total insulation R-Value of 4, measured in accordance with ASTM C1363.

## 2.3 ACCESSORIES

- A. Astragals for Double Doors: Steel, Z or T shaped, specifically for double doors.
- B. Primer: ANSI A250.10 rust inhibitive type.
- C. Weatherstripping: Resilient rubber set in aluminum retainer.
- D. Hardware: Provide and install hardware devices equal to existing in function and grade.

## 2.4 FABRICATION

- A. Fabricate doors and frames with hardware reinforcement welded in place.
- B. Attach astragal to one leaf of pairs of doors.
- C. Fabricate frames as a four sided unit with all joints fully welded.
- D. Fabricate frames to suit and fit existing masonry opening with 2 inches head member.

## 2.5 SHOP FINISHING

- A. Steel Sheet: Galvanized to ASTM A653 G90.
- B. Primer: Baked.
- C. Shop Finish: Baked enamel of neutral color as selected by the Owner.

- D. Coat inside of frame profile with bituminous coating.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify opening sizes and tolerances are acceptable.

#### 3.2 INSTALLATION

- A. Install doors and frames in accordance with ANSI A250.8.
- B. Coordinate installation of doors and frames with installation of hardware. Install hardware per industry and manufacturer's recommendations.
- C. Coordinate door frames with existing masonry and concrete wall construction for frame anchor placement.
- D. Install door plumb and level.
- E. Adjust door for smooth and balanced door movement.
- F. Tolerances:
  - 1. Maximum Diagonal Distortion: 1/8 inch measured with straight edge, corner to corner.

END OF SECTION

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Surface preparation and field application of elastomeric roof coatings for use over existing structural concrete roof decks as indicated on the drawings.
  - 2. Drawings and general provisions of contract, including the General Conditions and Division-1 sections.
  
- B. Related Sections:
  - 1. Section 07 51 00 - Preparation for Reroofing
  - 2. Section 07 62 00 - Sheet Metal Flashing and Trim.

**1.2 QUALITY ASSURANCE**

- A. Applicator:
  - 1. Obtain written certification from manufacturer of the coating certifying that Applicator is approved by manufacturer for installation of specified system.
  - 2. Applicator must maintain full-time supervisor (not a working foreman), on job site during all times that work is in progress. Supervisor must have a minimum of three years experience in coating work similar to nature and scope of specified work.
  
- B. Manufacturer's Field Inspection and Services
  - 1. Manufacturer of the coating materials shall provide qualified personnel to observe field conditions of surfaces and installation, quality of workmanship as applicable, and to make appropriate recommendations.
  - 2. Representative shall submit written reports to the Architect and Applicator listing their observations and recommendations, including any concerns which may affect their ability to warrant the application.
  - 3. Manufacturer shall inspect finished work, including any necessary corrections, prior to their final acceptance of the work for warranty coverage

**1.3 SYSTEM DESCRIPTION**

- A. Work to be accomplished consists of coating existing concrete deck roof surfaces where indicated by the drawings and details.
  
- B. Roof coating system design shall be adjusted by the manufacturer as appropriate for the specific project conditions and requirements.

**1.4 SUBMITTALS**

- A. Product Data: Submit product specifications, data sheets, installation instructions and general recommendations from coating manufacturer, including data that each material intended for use on this project complies with requirements.

- B. Installer's Certifications: Provide copy of written certification to the Architect from the coating system manufacturer prior to beginning coating work.
- C. Material Certification: For each material specified with a standard or reference material designation, certification label shall appear on each package of bulk shipped to project with certification of compliance.
- D. Submit samples of the manufacturer's ten (10) year product and weathertightness warranty (including labor and material), and the Applicator's five (5) year workmanship warranty prior to beginning coating work
- E. Applicator shall submit a physical sample of the completed system that shows all the products proposed for use, in the proper sequence, and their representative dry film thickness (mils) to accurately illustrate the system to be installed.

1.5 DELIVERY, STORAGE, HANDLING:

- A. Delivery:
  - 1. Deliver material in manufacturer's original, unopened containers with manufacturer's labels intact and legible.
  - 2. Deliver enough material to allow continuous work.
- B. Storage:
  - 1. Store materials on clean, raised platforms in an interior location.
  - 2. Store and handle materials to protect them from:
    - a. Moisture, whether due to precipitation or condensation.
    - b. Damage by construction traffic.
    - c. Temperatures over 110 degrees F. or below 65 degrees F.
    - d. Direct sunlight.

1.6 PROJECT CONDITIONS

- A. Existing Conditions
  - 1. This project involves coating of existing concrete roof deck surfaces. Verify existing surface conditions are acceptable.
  - 2. Report conflicts or problems to the Architect prior to bidding for resolution. Failure to report these conflicts or problems places the responsibility on the Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
  - 3. Failure to install the work in strict accordance with provisions of this Section, is subject to total rejection of work specified herein.
  - 4. Verify the proposed methods, processes and materials are appropriate for use with the actual project conditions.
- B. Weather Conditions:
  - 1. Do not apply materials when the temperature of surfaces to be coated and the surrounding air temperatures are below 45 degrees F, (7 degrees C) unless otherwise permitted by coating manufacturer's printed instructions.



2. Do not apply coating material in rain, fog, or mist; or when relative humidity exceeds 85%; or to damp or wet surfaces, or if these conditions are imminent within 24 hours.

#### 1.7 WARRANTY

- A. Provide a Ten (10) year manufacturer's weathertightness warranty upon completion of this work.

### PART 2 PRODUCTS

#### 2.1 ACCEPTABLE MANUFACTURER'S AND PRODUCTS

- A. Manufacturers:
  1. ER Systems. - EraKote Coating System.
  2. Republic Powered Metals (RPM) - GeoGard coating System
  3. PPG - Perma-Crete
  4. Architect approved (prior to bidding) equivalent product.
- B. Description:
  1. The roof coating system shall be a cold process, fluid applied system consisting of aliphatic polyurethane based material intended to be applied in a minimum of two (2) coats. complete assembly using compatible materials from a single manufacturer.
  2. The complete assembly, including accessories and compatible materials shall be furnished from a single manufacturer.

#### 2.2 ACCESSORIES

- A. Flashing Compound: An acrylic latex flashing compound consisting of a highly concentrated, acrylic resinous plastic emulsion with inert mineral pigments capable of trowel or brush consistency intended for repairs and patching as approved by the primary coating manufacturer.
- B. Reinforcement Fabric: A stitchbonded polyester textile fabric manufactured for cold process repairs and reinforcement of areas of excessive cyclic movement, and existing cracks and/or crazing. 2.5 oz./sq. yd. minimum weight as approved by the primary coating manufacturer.
- C. Related Products: Cleaning agents, modifying compounds, rust inhibitors, rust converters, stain blockers, sealants, and other related products; and procedures for their use shall be as recommended by the primary coating manufacturer

## PART 3 EXECUTION

### 3.1 GENERAL

- A. Manufacturer's Installation Requirements:
  - 1. In addition to the specified procedures, the installer shall be responsible for the installation of the elastomeric coating materials in accordance with the procedures required by the coating material manufacturer for the proper execution of the work and the issuance of the specified weathertightness warranty.
  - 2. The coating installer shall review the specified procedures for possible conflicts, for resolution, prior to bidding.

### 3.2 EXAMINATION

- A. Verify that all surfaces are properly prepared to accept the work of this section. Confirm that all concrete deck repairs have been completed.
- B. Remove existing failed joint sealants and replace with new urethane sealant and/or the acrylic patching compound as recommended by the primary coating manufacturer.

### 3.3 PREPARING SURFACES

- A. Clean surfaces by pressure washing with clean water (use an admixture of surface cleaner as necessary), passed through a high pressure (2,400 psi min.) sprayer/washer to remove all oils, grease, foreign and loose materials, or surface contaminates that could adversely effect adhesion of the new coatings. Mildew, mold or algae should be treated with bleach during the pressure washing process. Allow surface to dry completely.
- B. Mask off windows, louvers, vents, equipment, weep holes, and other surfaces that are not to receive the applied coating system. Protect adjacent and downwind surfaces as necessary to protect from coating application and overspray.

### 3.4 COATING SYSTEM APPLICATION

- A. Ensure surface is free of all surface contaminates, and all surface preparation is complete.
- B. Apply the specified polyurethane base coat by brush, roller, or spray techniques depending on surface texture as directed by the coating manufacturer. Apply at a rate of no less than two (2) gallons per 100 square feet, depending on surface porosity and the manufacturer's requirements for issuance of the specified warranty. Allow to properly cure prior to application of subsequent coats.
- C. Inspect base coat application, correct any application defects as necessary prior to application of finished coating products.

**ELASTOMERIC ROOF COATING**  
**SECTION 09 83 00**

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- D. Apply the specified roof membrane finish coating by brush, roller, or spray techniques depending on surface texture as directed by the coating manufacturer. Apply at a minimum rate of one (1) gallon per 100 square feet, depending on surface porosity and the manufacturer's requirements for issuance of the specified warranty.
- E. Inspect finished coating application, correct any application defects, such as uncoated cracks, pinholes, fissures, or holidays.
- F. Manufacturer's Field Services: (Article 1.2, B)
  - 1. Provide observations of application
  - 2. Final inspection of finished work.
  - 3. Submit written reports to Architect for review

**3.5 CLEAN-UP AND INSPECTION**

- A. Clean-up:
  - 1. During progress of work remove from project site discarded materials, rubbish, cans and rags resulting from work.
  - 2. Upon completion of work, clean all spattered surfaces. Remove spattered materials by proper methods of washing and scraping, using care not to damage finished surfaces.
- B. Inspection:
  - 1. Prior to Owner inspection and acceptance of the coating application, the coating manufacturer's technical representative shall inspect the finished work, and issue written confirmation to the Owner and Architect that the finished application is acceptable, and the specified warranty will be issued for the project.

**3.6 PROTECTION**

- A. Protect work of other trades. Correct damage by cleaning, repairing or replacing, as directed by Architect. Leave work in undamaged condition.

END OF SECTION

**BASIC MECHANICAL EQUIPMENT REQUIREMENTS**  
**SECTION 23 00 00**

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PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Basic Mechanical Requirements specifically applicable to Division 23 Sections, in addition to Division 1 - General Requirements
  - 2. Performance Data Log Sheets for existing roof top mounted exhaust fans and air conditioning equipment.

1.2 DESCRIPTION OF WORK

- A. The extent and location of work is described by provisions of this section and includes the following
  - 1. Removal and reinstallation of roof top equipment.
  - 2. Removal of all cables, conduits, pipes, fixtures, and such items related to this trade as governed and required by the specified roof installation; raising of curbs and supports; reinstallation and re-connection of all said equipment.

1.3 WORK SEQUENCE

- A. Install work in stages to accommodate Owner's occupancy requirements during the construction period coordinate mechanical schedule and operations with Owner and Architect.

1.4 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories in a single submittal.
- C. Mark dimensions and values in units to match those specified.

1.5 REGULATORY REQUIREMENTS

- A. Conform to the **Florida Building Code, Fifth Edition (2014)**.

1.6 PROJECT/SITE CONDITIONS

- A. Existing Conditions:
  - 1. This project involves mechanical work on existing building(s). Verify existing conditions and other visible conditions prior to bidding.
  - 2. Report conflicts and problems to the Architect prior to bidding for resolution. Failure to report these conflicts and problems places the responsibility on the

**BASIC MECHANICAL EQUIPMENT REQUIREMENTS**  
**SECTION 23 00 00**

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- Prime Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
- 3. Failure to install the work in strict accordance with provisions of this Section is subject to total rejection of work specified herein.

B. Utility Services:

- 1. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by Owner and authorities having jurisdiction.
- 2. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.

- C. Install Work in locations shown on Drawings, unless prevented by Project conditions.

1.7 SEQUENCING AND SCHEDULING

- A. Construct Work in sequence under provisions of Section 01 11 00.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 ROOF-TOP EQUIPMENT PROCEDURE

A. Operation and Evaluation:

- 1. Operate mechanical equipment in the presence of representatives of the Contractor and representatives of the Owner prior to any demolition, or prior to disconnecting any mechanical equipment or wiring in order to establish that all these systems are in proper working order at the start of the project. This would establish the degree of responsibility that this Contractor will have when he is required to place these mechanical/electrical systems back in working order at the end of the project.

B. Removal:

- 1. Prior to disconnection of any mechanical equipment, prepare a performance log (attached at end of this Section) for each item of equipment. Submit log sheet with any comments as to existing problems to the Architect or Architect's representative.
- 2. Temporarily remove existing roof top equipment as required to perform work. Use all means necessary to protect equipment during removal.
- 3. Store equipment in a secure place for reinstallation.

C. Reinstallation

- 1. Reinstall mechanical equipment in accordance with the manufacturer's instructions.

**BASIC MECHANICAL EQUIPMENT REQUIREMENTS**  
**SECTION 23 00 00**

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2. Reconnect electrical and control wiring to equipment and comply with equipment manufacturer's instructions.
  3. Reinstallation and reconnection of equipment shall comply with governing mechanical codes.
  4. Start up equipment after reinstallation. Prepare performance log for each unit at start-up and submit to the Architect.
- D. Coordination with Roofing
1. Cables, conduits, pipes, fixtures, and such related items shall not be in direct contact with roof membrane, roofing sheet metal, and related roofing accessory items, except as shown on drawings and as specified.

END OF SECTION



**BASIC MECHANICAL EQUIPMENT REQUIREMENTS  
SECTION 23 00 00**

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**PERFORMANCE LOG DATA SHEET: AIR CONDITIONING EQUIPMENT**

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Project: \_\_\_\_\_

Prime Contractor: \_\_\_\_\_

Mechanical Subcontractor: \_\_\_\_\_

Air Conditioning Equipment: \_\_\_\_\_

Equipment Manufacturer: \_\_\_\_\_

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Location: \_\_\_\_\_

Description of Control System: \_\_\_\_\_

Operating Voltage: \_\_\_\_\_

Fan Amperage: Rated \_\_\_\_\_ Actual: \_\_\_\_\_

Fan R.P.M.: Rated \_\_\_\_\_ Actual: \_\_\_\_\_

Compressor Amperage: Rated: \_\_\_\_\_ Actual: \_\_\_\_\_

Evaporator Motor Amperage: Rated: \_\_\_\_\_ Actual: \_\_\_\_\_

Pressure: Suction: \_\_\_\_\_ Oil: \_\_\_\_\_ Discharge: \_\_\_\_\_

Evap. Air Temp. F: Entering: \_\_\_\_\_ Leaving: \_\_\_\_\_

Coil Condition - Evaporation: \_\_\_\_\_

Coil Condition - Condenser: \_\_\_\_\_

General description and physical appearance of units: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**BASIC ELECTRICAL REQUIREMENTS**  
**SECTION 26 05 00**

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PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Basic Electrical Requirements specifically applicable to Division 23 and 26 Sections, in addition to Division 1 - General Requirements.

1.2 SCOPE OF WORK

- A. Electrical Contract work includes:
  - 1. Disconnection and reconnection of roof top equipment.
  - 2. Removal of all abandoned cables, conduits, pipes, fixtures, and such items related to this trade as governed and required by the specified roof installation.
  - 3. Extension of branch circuit and equipment connections due to the raising of curbs and supports.
  - 4. Reinstallation and reconnection of all said equipment to be retained.
  - 5. Relocation of roof top cables and conduit to below deck and/or to within curbs.

1.3 WORK SEQUENCE

- A. Install work to accommodate Owner's occupancy requirements during the construction period. Coordinate electrical schedule and operations with Owner and Architect/Engineer and other Trades.

1.4 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code

1.5 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Electrical work to be done by a licensed electrical contractor. The electrical supervisor shall be present while work is being performed.
- C. Submit shop drawings and product data grouped to include complete submittals of related systems, products and accessories in a single submittal.
- D. Mark dimensions and values in units to match those specified.

1.6 REGULATORY REQUIREMENTS

- A. Electrical: Conform to NFPA 70, National Electrical Code, (N.E.C.), - 2014 Edition.

**BASIC ELECTRICAL REQUIREMENTS**  
**SECTION 26 05 00**

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- B. Life Safety: NFPA 101 Life Safety Code, 2012 Edition.
- C. Electrical work to be done by a licensed electrical contractor. The electrical supervisor shall be present while work is being performed.
- D. Install all work in accordance with the latest edition of all applicable regulations and governing building codes including the Florida State Requirements for Educational Facilities (SREF) and the current edition of the Florida Building Code (FBC), Section 423.

1.7 PROJECT CONDITIONS

- A. Existing Conditions
  - 1. Verify existing conditions, such as soundness of perimeter conditions, and varying deck and wall thickness for length of anchoring surfaces required and other visible conditions prior to bidding. Nailer height indicated on the details may vary from actual requirements; coordinate nailer height with lightweight concrete supplier prior to bidding.
  - 2. Report conflicts or problems to the Architect for resolution prior to Bidding. Failure to report these conflicts and problems places the responsibility on the Contractor to complete the work in accordance with the Documents at no additional cost to the Owner.
  - 3. Replace or restore to original condition any materials or work damaged during construction.
- B. Install Work in locations shown on Drawings, unless prevented by Project conditions.
- C. All dimensions indicated on the drawings are based on project record drawings and field measurements. Make necessary reasonable adjustments to quantities in field in order to provide a complete project.
- D. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Owner and Architect/Engineer before proceeding.

1.8 SEQUENCING AND SCHEDULING

- A. Construct Work in sequence under provisions of Division 1.
- B. Coordinate all work with Roofing Contractor.
- C. Notify Owner, in writing, at least 48 hours in advance of any service interruptions

## PART 2 PRODUCTS

### 2.1 GENERAL REQUIREMENTS THAT WORK BE COMPLETE

- A. Provide same products or type of construction as that in existing equipment.
  - 1. Generally, Contract Documents do not define products or standards of workmanship present in existing installation. The Contractor shall determine products by inspection/testing and workmanship by use of the existing as a sample for comparison.
- B. Presence of a product, finish, or type of equipment requires that reinstallation shall be performed as necessary to make work complete and consistent with identical standards of quality of existing product.

### 2.2 Anchors and Fasteners:

- 1. Use anchors and fasteners of a type designed for use intended in the base material to which the material or support is to be attached.
- 2. The anchor or fastener shall be capable of supporting the intended load and withstanding any associated stresses and vibrations.
- 3. Do not use wooden plugs for fastening

## PART 3 EXECUTION

### 3.1 INSPECTION AND PREPARATION

- A. Inspection:
  - 1. Examine conditions under which electrical work is to be performed and notify Prime Contractor and Architect in writing of unsatisfactory conditions.
  - 2. Do not proceed with electrical work until unsatisfactory conditions have been corrected.
  - 3. All electrical equipment and systems should be operated in the presence of representatives of the Contractor and representatives of the Owner prior to any demolition, or prior to disconnecting any electrical wiring in order to establish that all these systems are in proper working order at the start of the project.
  - 4. This will establish the degree of responsibility that this Contractor will have when he is required to place these electrical systems back in working order at the end of the project.
- B. Disconnection:
  - 1. List and disconnect existing roof top conduits as may be shown on the drawings.
    - a. Prior to disconnection of any electrical system, prepare a checklist of existing system conditions.
    - b. Submit the checklist with any comments to the Architect.

3.2 INSTALLATION

A. General:

1. Use good workmanship in the installation of all electrical materials and equipment.
2. Install equipment level, plumb and true with the structure and other equipment.
3. Firmly secure all materials in place.
4. Materials embedded in concrete or masonry or other parts of the structure are considered sufficiently supported.
5. Use hardware and accessory fittings of a type designed, intended and appropriate for the use and complement the items with which they are used.

B. Relocation of power supply wiring:

1. Unless otherwise noted all power supply wiring to existing and new roof top equipment shall be fed from below the roof deck up through the supporting curb.
2. Existing conduit roof penetrations shall be removed and properly infilled by roofing contractor.

C. Wiring Methods:

1. Install all wiring in conduit or approved raceways unless otherwise indicated.
2. Firmly and securely fasten conduits to or support from the building or structural member. Use changes and supports that are standard catalog items of a type compatible with the suitable for the intended use. Twisted wire hangers and supports are not acceptable.
3. Do not pull conductors into conduits until all work which may cause damage to the wires is completed. Install wire and cables so as not to damage the insulation or cable sheath. Pull all conductors to be installed in a raceway together.
4. Keep conductor splices to a minimum. Provide splices and taps with at least the equivalent mechanical strength and insulation as the conductors. Provide splice and tap devices of the proper size and type for the use and compatible with the conductor material.

D. Reconnection:

1. Reconnect electrical systems as specified above, and test for proper operation.
2. Reinstallation and reconnection of equipment and systems shall comply with governing electrical codes.
3. Prepare a checklist of system conditions after reconnections.
4. Submit the checklist with any comments to the Architect.

- E. Electrical conduits, pipes, wires, cables, fixtures, and such related items shall not be in contact with roof membrane, roofing sheet metal, and related roofing accessory items, except as shown on drawings and as specified.

END OF SECTION