

# PROJECT MANUAL

## ROOF REPLACEMENT OF:

## FULLER WARREN BUILDING

**215 Market St.  
Jacksonville, FL 32202**

for

**Florida Department of Economic Opportunity (DEO)**  
107 E. Madison St.  
MSC B047  
Tallahassee, FL 32399-4102  
Orlando, FL 32801

PREPARED BY:

**A/R/C ASSOCIATES, INCORPORATED**  
601 North Fern Creek Avenue - Suite 100  
Orlando, Florida 32803  
(407) 896-7875 FAX # (407) 898-6043

Date: March 15, 2019  
**A/R/C Project No: 18052.00**

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James W. Ripley  
AR 0012758

# PROJECT MANUAL INDEX

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### Division 1 - General Requirements

Section 01 09 00	Reference Standards	1 (only)
Section 01 11 00	Summary of Work	1 thru 5
	Project Rain Day Form	1 (only)
	Interior Inspection Form	1 (only)
	Exterior Inspection Form	1 (only)
Section 01 23 00	Alternates	1 thru 2
Section 01 26 13	Request for Information	1 thru 2
	Request for Information Form	1 (only)
Section 01 29 00	Payment Application Procedures	1 thru 2
	Schedule of Values	1 (only)
Section 01 30 00	Project Management and Coordination	1 thru 4
Section 01 33 00	Submittal Procedures	1 thru 5
	Submittal Cover Form	1 (only)
	Submittal Record	1 thru 4
Section 01 40 00	Quality Requirements	1 thru 6
Section 01 45 00	Cutting and Patching	1 thru 3
Section 01 50 00	Temporary Facilities and Controls	1 thru 6
Section 01 63 00	Product Requirements/Options/Substitutions	1 thru 3
	Product Substitution Request Form	1 (only)

	Product Substitution Information	1 (only)
Section 01 70 00	Project Closeout Requirements	1 thru 4
	Project Closeout Checklist/Log	1 (only)

## Divisions 2 - 26

Section 02 25 29	Existing Condition Assessment	1 thru 2
	Roof Cut Data	1 thru 6
	Thermal Resistance Work Sheet	1 thru 3
Section 02 41 19	Selective Demolition	1 thru 2
Section 06 10 00	Rough Carpentry	1 thru 4
Section 07 51 00	Preparation for Re-Roofing	1 thru 3
Section 07 54 16	Thermoplastic Single-ply Membrane	1 thru 18
	Manufacturer's Notice of Intent to Issue	
	Roof Warranty Form	19 thru 20
	Applicator Warranty for Roofing Form	21 thru 22
Section 07 62 00	Sheet Metal Flashing and Trim	1 thru 7
Section 07 90 00	Joint Sealers	1 thru 5
Section 22 07 19	Piping Insulation	1 thru 4
Section 22 14 13	Plumbing Piping	1 thru 4
Section 22 14 26	Roof Drains	1 thru 3
Section 23 00 00	Mechanical Equipment	1 thru 3
	Performance Log Data Sheet: Exhaust Fan	1 (only)
	Performance Log Data Sheet: Air	
	Conditioning Equipment	1 (only)
Section 23 05 00	Basic Mechanical Materials and Methods	1 thru 8
Section 26 41 13	Lightning Protection	1 thru 8

## Drawings and Details

### Plans

CS	Cover Sheet, Site Plan, Vicinity Map and Drawing Index
A01	Overall Roof Plan, Roof Schedule, wind up-lift map and Code Data
A02	Roof Plan, Symbol Legend and Specific Notes
B01	Fastening Schedule, General Roofing Notes, and Abbreviations
B02	Edge and Base Flashing Details
B03	Flashing Transitions and Fabrication Details
B04	Base and Curb Flashing
B05	Roof Penetration Flashing & Deck In-fill
B06	Roof Drainage and Fabrication
B07	Miscellaneous Fabrication

# PROJECT DRAWING INDEX

ROOF REPLACEMENT OF:

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**DETAILS (8-1/2 x 11 Format)**

**1. Perimeter Edge Details**

B02.1	Typical Parapet Flashing at Roof Area A
B02.2	Typical Parapet Flashing at Roof Area B
B02.3	Edge Flashing Condition at Roof Area B
B02.4	Typical Base Flashing at Roof Area A
B02.5	Base Flashing at Enclosure Wall/Columns
B02.6	New Area Divider Curb Flashing Detail

**2. Metal Fabrications & Transitions**

B03.1	Coping Fabrication & Splice Joint Detail
B03.2	Typical Outside Corner Coping Fabrication
B03.3	Coping Cap Termination Fabrication Detail
B03.4	Outside Corner, Edge Metal Fabrication and Splice Joint Detail
B03.5	Edge Metal Termination and fabrication at wall
B03.6	Typical Termination Bar

## **DETAILS (8-1/2 x 11 Format) – continued**

### **3. Metal Fabrications & Transitions**

B04.1	Typical Sill Flashing at Opening Detail
B04.2	Typical Conduit pipe support detail
B04.3	Elevator penthouse Base Flashing detail
B04.4	Elevator penthouse Edge Flashing detail
B04.5	Small mechanical/gravity vent curb flashing detail
B04.6	New Gooseneck curb and vent flashing detail

### **4. Lightning Protection & Penetrations Details**

B05.1	Typical deck in-fill at upper roof area
B05.2	Typical vent pipe flashing
B05.3	Typical flat air terminal details
B05.4	Lightning protection and downlead flashing at upper roof
B05.5	Lightning protection and downlead flashing at lower roof
B05.6	Typical Downlead Fabrication Detail

### **5. Plumbing Penetrations & Lightning Protection**

B06.1	Lightning Protection Terminal base attachment detail
B06.2	New roof drain flashing at roof Area B
B06.3	New roof drain flashing at roof Area A
B06.4	New overflow scupper flashing detail at lower roof
B06.5	Overflow Scupper scupper fabrication detail
B06.6	Typical Roof drain support framing detail

### **6. Miscellaneous Details**

B07.1	Typical equipment curb and anchorage detail
B07.2	New Wall Mounted Ladder Access Detail
B07.3	Typical 2-Piece Counterflashing Fabrication Detail

### **Plans (24 x 36 format)**

CS	Cover Sheet, Site Plan, Vicinity Map and Drawing Index
A01	Overall Roof Plan, Roof Schedule, wind up-lift map and Code Data
A02	Roof Plan, Symbol Legend and Specific Notes
B01	Fastening Schedule, General Roofing Notes, and Abbreviations
B02	Edge and Base Flashing Details
B03	Flashing Transitions and Fabrication Details
B04	Base and Curb Flashing
B05	Roof Penetration Flashing & Deck In-fill
B06	Roof Drainage and Fabrication
B07	Miscellaneous Fabrication

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance.

1.2 RELATED SECTIONS

- A. General Conditions: Reference standards.

1.3 QUALITY ASSURANCE

- A. For Products or workmanship specified by association, trades, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard (latest edition) concurrent with the date of the Contract Documents.
- C. Obtain copies of standards when required by the Contract Documents.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.
- F. The contractual relationship, duties, and responsibilities of the parties in Contract nor those of the Architect shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project Description and Location
2. Description of Work.
3. Contractor use of Site and Premises.
4. Owner Occupancy.
5. Work Sequence/Schedule
6. Rain Days, Interior Inspection and Exterior Inspection, Procedures and Forms

1.2 PROJECT DESCRIPTION AND LOCATION

A. Project Scope:

1. Project Scope consists of roof removal and replacement at the Florida Department of Economic Opportunity (DEO) Fuller Warren Building located at 215 Market St., Jacksonville, FL 32202
  - a. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Specification Sections, apply to work on this contract.
  - b. The Contractor's Duties include:
    - 1) Provide and pay for all labor, materials, and equipment and installation costs of items described within these documents. Provide and pay for all costs associated for all necessary tools, construction equipment, and protection of Existing Work.
    - 2) Comply with all listed and applicable Codes, Standards and Specifications.

1.3 DESCRIPTION OF WORK: The scope of work is considered to be as follows:

A. Existing Conditions:

1. Lower Roof Deck (1/A) – Existing multi-ply Modified Bitumen hot asphalt applied membrane. Membrane system is applied over perlite board on tapered rigid insulation to a preliminary roof on existing structural concrete deck.
2. Upper Roof Deck (1/B) - Existing multi-ply Modified Bitumen hot asphalt applied membrane. Membrane system is applied over perlite board on tapered rigid insulation adhered to light weight insulating concrete (LWIC) over a light gage metal deck.
3. Elevator Curb (1/C) - Existing multi-ply Modified Bitumen hot asphalt applied membrane. Membrane system is applied over perlite board on rigid insulation to a preliminary roof on existing structural concrete deck.

B. Demolition Work - (1/A thru 1/C) :

1. Remove existing roof top lightning protection system. Undamaged and non-deteriorated conductors and air terminals to be re-installed. Damaged components to be replaced with "as-kind".
2. Remove all associated copings, edge metal, skirt flashings, metal flashings, termination bars and counterflashings.
  - a. Roof area 1/C – Metal louver panels to remain. Partially remove as required and reinstall per details.
3. Replace damaged or deteriorated pressure treated wood blocking along parapet and perimeter edge conditions per unit cost.
4. Existing small mechanical equipment to remain. Remove at existing curbs and raise as required. Coordinate with owner to identify abandoned units for removal and deck in-fill.
  - a. Roof Area 1/A – Abandoned Conduit along wall at mechanical enclosure to be removed. Infill openings.
  - b. Roof Area 1/A – Existing small outlet boxes to be raised min. 2' above finished roof system.
  - c. Roof Area 1/A – Existing Chiller conduit to be raised rooftop supports
  - d. Roof Area 1/B – Abandoned concrete stack to be saw-cut below deck and deck in-filled per documents.
  - e. Roof Area 1/B – Gooseneck to be replaced with new curb and fabrication at existing location.
  - f. Roof area 1/B - Remove wall mounted access ladder at platform and replace with new per details.
5. Concrete screen wall enclosure panel joints (Mechanical Penthouse) – Remove deteriorated sealant at joints and apply one-part silicone sealant. Remove abandoned conduit cable at joints and fill.

C. New Roof System Lower Area (1/A) :

1. Remove existing modified bitumen system & insulation down to existing structural concrete deck. Prep and clean concrete deck, columns and wall conditions as required per manufacture.
2. Replace existing roof drains with new in existing locations, create a new 4/0 x 4/0 x 3/4" per foot slope sump at each drain. Install new overflow drains at existing locations. Connect to existing leader pipe and rod, blow &/or snake all drain leader lines to ensure they are fully functional.
3. Construct area divider wall as indicated per documents to enclose the existing 3" diameter roof drain at the chiller units tributary drainage area.
4. Create four (4) new secondary emergency overflow scuppers along parapet wall condition. Locate as indicated per plans and fabricate per details.
5. Fully adhere a tapered rigid insulation system from the sumps, starting thickness to be 3.5"



- a. Apply 1/4" per foot slope rigid insulation along exterior of perimeter and 1/8" per foot slope rigid insulation along interior (see sheet A02)
6. Apply a 1/4" gypsum roof cover board over the rigid insulation, and secure with an approved insulation adhesive.
7. Raise vent stacks to a minimum of 8" above finished roof as necessary.
8. Fully adhere a single ply thermoplastic roof system to the gypsum roof board per the manufacturer's recommendations, heat weld all seams and edges. Provide supplemental mechanical fastening as may be required by the roof membrane manufacturer.
9. Install new PVC coated aluminum edge metal, skirt and cap system along parapet perimeter per details. Fully adhere a thermoplastic flashing strip along the roof edge and mechanically fasten edge metal, skirt and cap system, (PVC coated aluminum), per the project details. Apply flashing strip and heat weld along perimeter.
10. Apply termination bars below screen wall. Secure surface mounted counter-flashing along concrete base conditions and column as indicated.
11. Install the set on accessories and flash in accordance with project details. Install pre-formed "boot" flashings at all pipe penetrations and enclosure support posts.

D. New Roof System Upper Roof (1/B) :

1. Remove existing modified bitumen system down to existing LWIC over metal deck. Replace damaged or deteriorated LWIC and metal deck per unit cost.
2. Replace existing roof drains with new in existing locations, create a new 4/0 x 4/0 x 3/4" per foot slope sump at each drain. Install new overflow drains at existing locations. Connect to existing leader pipe and rod, blow &/or snake all drain leader lines to ensure they are fully functional.
  - a. Roof Area 1/B – Relocate one (1) drain along the North side as indicated per plans. Connect to existing drainage line below deck. Field verify path. Repair/replace hard ceiling at underside to match existing.
3. **(Basis of design)** Mechanically fasten a new 1/4" per foot tapered rigid ISO insulation system to structural joist system supporting metal deck (Contractor shall have the option to attach to the metal deck, but will be required to provide testing and engineering to light gage metal deck).
4. Apply a 1/4" gypsum roof cover board over the rigid insulation, and secure with an approved insulation adhesive.
5. Raise vent stacks to a minimum of 8" above finished roof as necessary.
6. Raise and reinstall existing mechanical units.
7. Cut existing louver panels at elevator curb to install new two-piece counter-flashing receiver.
8. Fully adhere a single ply thermoplastic roof system to the gypsum roof board per the manufacturer's recommendations, heat weld all seams and edges. Provide supplemental mechanical fastening as may be required by the roof membrane manufacturer. Heat weld along perimeter drip edge at North side.
9. Install the set on accessories and flash in accordance with project details.

10. Install coping cap around perimeter of parapet wall extending to chiller unit enclosure.

E. New Roof System Elevator (1/C) :

1. Remove existing modified bitumen system & insulation down to existing structural concrete deck. Prep and clean concrete deck, columns and wall conditions as required per manufacture.
2. Fully adhere a tapered ¼" per foot four-way slope tapered rigid insulation system to structural concrete.
3. Apply a 1/4" gypsum roof cover board over the rigid insulation, and secure with an approved insulation adhesive.
4. Install new PVC coated aluminum drip edge at perimeter.
5. Fully adhere a single ply thermoplastic roof system to the gypsum roof board per the manufacturer's recommendations, heat weld all seams and edges. Provide supplemental mechanical fastening as may be required by the roof membrane manufacturer. Heat weld along perimeter drip edge.

F. Miscellaneous – All Roof Areas :

1. Re-install and inspect rooftop lightning protection system per project specifications, provide U.L. "Letter of Findings".
2. Roof system manufacturer to provide a 20 year, no dollar limit (NDL) weather tightness warranty with a wind uplift rider for (actual) 121 mph and (ultimate) 156 mph winds.

1.4 CONTRACTOR USE OF SITE AND PREMISES

- A. Limit use of site and premises to allow
  1. Owner Occupancy.
  2. Work by Others (if still in progress)
  3. Use of site and premises by the public.
- B. Access to Site: Limited to agreed-upon staging areas and access route.
- C. Emergency Building Exits During Construction: Maintain at all times.
- D. Time Restrictions for Performing Interior Work: As Required.
- E. Utility Outages and Shutdown: Allowed only upon coordination with and notification of the Owner. Limit to after-hours.
- F. Be responsible for items of work and material stored on premise.

1.5 OWNER OCCUPANCY AND ACCESS

- A. The Owner will occupy the premises during the entire period of construction. Allow for the conduct of normal operations.
- B. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.
- C. Schedule the Work to accommodate this requirement.
- D. Comply with established Owner Policies regarding safety requirements (Assurant Contractor Safety Manual guidelines).
- E. Maintain "Good Housekeeping" on site as directed by Owner and Architect.
- F. Access for ongoing inspections to the premises and work underway by the Owner and Architect shall not be restricted.

1.6 WORK SEQUENCE/SCHEDULE

- A. A progress schedule shall be made to include:
  - 1. A start date.
  - 2. A reasonable progression of work by Phase, Building, Task, etc.
  - 3. A start and finish date for construction materials and components listed in Divisions 2 thru 26 as defined by Section 01 30 00 of these Specifications.
- B. Sequence work on the various roof areas to minimize construction traffic over completed roof areas.

1.7 PROJECT RAIN DAY INSPECTION AND FORM

- A. Maintain on a daily basis and submit with each Application for Payment, the "Project Rain Day Form" attached at the end of this Section. The "Project Rain Day Form" shall be signed by the Owner's Representative or Architect daily. **Rain days will only be allowed for the period of work of the current Application for Payment. Requests for approval of rain days within prior Application for Payment periods will not be considered.**

1.8 INTERIOR INSPECTION AND FORM

- A. Prior to beginning work, inspect with Owner's Representative or Architect, building interior(s). Log conditions of ceiling tiles, lights, walls and flooring materials using the Interior Inspection Form attached at the end of this Section. Confirmation of existing conditions shall be made with video camera recordings.
- B. Submit two copies of form signed by the Contractor, Owner's Representative or Architect and one copy of video disc.

1.9 EXTERIOR INSPECTION AND FORM

- A. Prior to beginning work, inspect with Owner's Representative or Architect, existing building exterior(s) and site conditions. Log, as required, conditions of exterior walls, building attachments, sidewalks, miscellaneous paving and landscaping using the Exterior Inspection Form attached at the end of this Section. Confirmation of existing conditions shall be made with video camera recordings.
- B. Submit two copies of form signed by the Contractor, Owner's Representative or Architect and one copy of video disc.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

# PROJECT RAIN DAY FORM

Month:

Project Name:

Project No:

Contractor:

Owner's Authorized Rep.:

DAY	MORNING COND./TIME	AFTERNOON COND./TIME	SUPERINTENDENT SIGNATURE	AUTH. OWNER'S REP. SIGNATURE
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PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Request for Information Procedures
  - 2. Request for Information (RFI) Form
- B. Related Sections
  - 1. Section 01 11 00 – Summary of Work

1.2 PROJECT / SITE CONDITIONS

- A. The Owner assumes no responsibility for actual conditions on the structure.
- B. Conditions existing at time of inspection for cost proposal purpose will be maintained by the Owner in so far as practicable. However, variations may occur by Owner's Operations.
- C. Prior to Proposal Submittal: The Contractor shall inspect and verify visible existing conditions of the Project, including elements subject to damage or to movement during the work.
  - 1. Conflicts and problems shall be reported to the Architect, in writing, for resolution prior to bidding. Failure to report these conflicts places the responsibility on the Contractor to complete the Work in accordance with the Documents at no additional cost to the Owner.
- D. During Construction: The Contractor shall inspect conditions affecting installation of Products, or performance of Work.
  - 1. Report unsatisfactory or questionable conditions to the Architect, in writing. Do not proceed with the Work until the Architect has provided further instructions.

1.3 REQUEST FOR INFORMATION (RFI) FORMAT

- A. When questions and/or conflicts arise the Contractor shall submit a copy of the attached Request for Information (RFI) Form. The form is to be prepared by the Contractor or Subcontractor and shall include all relevant information to facilitate a prompt response by the Architect/Engineer. Include a suggested solution when applicable.
- B. It is recommended that the RFI be submitted electronically via e-mail. All RFI's shall be submitted through the Contractor to the Architect/Engineer.
- C. An electronic copy of the RFI form is available from the Architect upon request.



**REQUEST FOR INFORMATION PROCEDURES  
SECTION 01 26 13**

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PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 REQUEST FOR INFORMATION PROCEDURES

- A. Submit completed copy of the attached RFI form. Include:
  - 1. RFI No. (Consecutive until Project Completion)
  - 2. A/E Project No.
  - 3. Owner's Project No.
  - 4. Name of Project
  - 5. Issue Date
  - 6. Subject
  - 7. Required Response Date (allow three (3) to five (5) days after receipt by Architect)
  - 8. Reference Specification Section and/or Drawing No. and any attachments.
  - 9. State Question
  - 10. Provide suggested solution when appropriate. Include cost or schedule implications, if applicable.
  
- B. Contractor shall allow three (3) to five (5) days after receipt by Architect for response.
  
- C. If suggestion is included and a substitution is indicated, follow procedures of Section 01 63 00 – Product Requirements (Substitutions). Include information as attachments to RFI.

END OF SECTION

# REQUEST FOR INFORMATION (RFI)



TO: A/R/C Associates, Incorporated  
601 N. Fern Creek Avenue, Suite 100  
Orlando, Florida 32803

FROM: \_\_\_\_\_  
\_\_\_\_\_

RFI NO. _____	A/R/C PROJECT NO: <u>18052.00</u> OWNER'S PROJECT NO: _____
PROJECT: <b><u>Fuller Warren Building (DEO)</u></b>	ISSUE: _____ DATE: _____
SUBJECT:	

REQUIRED RESPONSE DATE: \_\_\_\_\_  
DWG NO: \_\_\_\_\_

REF: SPEC SECTION: \_\_\_\_\_  
ATTACHMENTS: \_\_\_\_\_

QUESTION:

SUGGESTION: (Include cost or schedule considerations, if any)

---

RESPONSE DATE:

RESPONSE:

\_\_\_\_\_  
BY  
Copies:

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Procedures for preparation and submittal of applications for payment.
- B. Related Sections
  - 1. Agreement: Contract Sum and unit prices, amounts of progress payments and retainages and time schedule for submittals.
  - 2. General Conditions: Progress payments and final payment.
  - 3. Section 01 26 00 – Contract Modification Procedures – Change Orders: Procedures for changes in the Work.
  - 4. Section 01 33 00 – Submittal Procedures
  - 5. Section 01 70 00 – Project Closeout Requirements: Final Payment

1.2 FORMAT

- A. **AIA G702 – Application and Certificate for Payment** (Current Edition)
- B. **AIA G703 – Continuation Sheet** (Current Edition)
- C. Contractors may purchase Application Forms on-line directly from the AIA. Link to the following: <https://documentsondemand.aia.org/>.

1.3 PREPARATION OF APPLICATIONS

- A. Present required information in handwritten form for field verification by the Architect. Once approved, supply in typewritten form.
- B. Each Application and Certificate for Payment must have authentic signatures and seals of all parties signing the document. Photocopies of signatures or seals will not be accepted.
- C. Application Form:
  - 1. Printed Application for Payment: One of the **AIA G702** and **AIA G703** forms must be an original printed document with a red label. The completed original application may be copied as required prior to signing and sealing.
  - 2. Electronic Documents: Electronic documents must be produced under license from The American Institute of Architects and may be photocopied as required prior to signing and sealing. Include registration number on submitted document.
  - 3. Electronic copies, computer reproductions, or photocopies of authentic documents will not be accepted.
- D. Execute certification by signature of authorized officer.

**PAYMENT APPLICATION PROCEDURES**  
**SECTION 01 29 00**

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- E. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products. Refer to the Schedule format at the end of this section.
- F. List each authorized Change Order as an extension on **AIA G703 – Continuation Sheet**, listing Change Order number and dollar amount as an original item of work.
- G. Retainage: Unless otherwise stipulated, an amount equal to ten (10) per cent of the total completed work and stored materials shall be retained by the Owner until the project has been completed.
- H. Final Payment: Prepare Application for Final Payment as specified above and in Section 01 70 00 – Project Closeout Requirements. Final payment shall include completed work value plus retainage.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 SUBMITTAL PROCEDURES

- A. Submit five copies of each Application for Payment to the Architect for Certification.
- B. Submit an updated construction schedule with each Application for Payment.
- C. Submit a fully completed Project Rain Day Form and revised Project schedule with each Application for Payment. Each full or partial Rain Day claimed must be certified by the designated on-site representative for the Owner, as well as the Contractor. **Rain days will only be allowed for the period of work of the current Application for Payment, requests for approval of rain days of prior Application for Payment periods will not be considered.**
- D. Payment Period: Submit on the 25<sup>th</sup> of each month.
- E. Submit with transmittal letter as specified in Section 01 33 00 – Submittals.
- F. Submit waivers and release of liens.

3.2 SUBSTANTIATING DATA

- A. When Architect requires substantiating information, submit data justifying dollar amounts in question.
- B. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

END OF SECTION

## SCHEDULE OF VALUES FORMAT

A	B	C
Item No.	Work Description	Scheduled Value
1	Mobilization	\$0.00
2	Demolition	\$0.00
3	Preliminary Roof Material	\$0.00
4	Preliminary Roof Labor	\$0.00
5	Insulation Material	\$0.00
6	Insulation Labor	\$0.00
7	Roofing Material	\$0.00
8	Roofing Labor	\$0.00
9	Sheet Metal Material	\$0.00
10	Sheet Metal Labor	\$0.00
11	Painting	\$0.00
12	Mechanical (Plumbing) - Labor and Material	\$0.00
13	Electrical (Misc)	\$0.00
14	Electrical (Lightning Protection)	\$0.00
15	Unit Costs	
15A	2x (blocking/nailers) - cost/lf	\$0.00
15B	Decking (wood, metal or concrete) - cost/sf	\$0.00
15C	LWIC - cost/sf	\$0.00
15D	Etc.	\$0.00
16	Alternate No. 1	\$0.00
17	Alternate No. 2	\$0.00
TOTALS		\$0.00

The above table is included as a suggested format for the development a Schedule of Values. The Schedule of Values is to be submitted for approval using the standard **AIA Document G703 - Continuation Sheet**.  
Submit in accordance with Section 01 33 00 - SUBMITTALS.

Upon approval, the continuation sheet is to be attached to **AIA Document G702 - Application and Certificate for Payment**, in accordance with Section 01 27 00 - APPLICATION FOR PAYMENT.

**PROJECT MANAGEMENT AND COORDINATION**  
**SECTION 01 30 00**

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Section Includes:
  - 1. Coordination
  - 2. Coordination with Owner Requirements
  - 3. Pre-Construction Meeting
  - 4. Progress Meetings.
  
- B. Related Sections:
  - 1. Section 01 45 00 – Cutting and Patching

1.2 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
  
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
  
- C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
  
- D. In finished areas [except as otherwise indicated], conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
  
- E. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's occupancy.
  
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.3 COORDINATION WITH OWNER REQUIREMENTS :

- A. All existing exits and any existing fire protection requirements shall be continuously maintained unless other measures are taken which provide equivalent safety per The Florida Building Code. The Contractor is to submit a Safety Plan depicting how they will keep Exit ways protected and in a safe condition while the buildings are occupied. Stipulate how the fresh air and exhaust fans will be kept in continued use while the buildings are occupied.
  
- B. The Contractor shall insure that all existing Exit Code Requirements and fire protection / life

**PROJECT MANAGEMENT AND COORDINATION**  
**SECTION 01 30 00**

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safety systems remain continuously operational during construction. Safety systems include, but are not limited to: existing, safety rescue, fire rating, fire protection, means of egress, master valves, eye wash and dousing shower in science labs; emergency disconnects in shops, fume and dust collection systems; heat and smoke detectors; working stage protection including curtain operation, smoke vent, sprinklers, etc.; kitchen hood; fire sprinklers; smoke venting; illumination of means of egress; emergency lighting, emergency power; exit lights; fire alarm systems with required ventilation, toilet facilities; kitchen hot water supply; water supply; and sewage disposal as they apply to this project.

- C. Roof loading or overhead crane operations shall be scheduled such that the facilities are not occupied or previous arrangements are scheduled with the Owner.
- D. Contractor and contractor's personnel shall follow all rules and regulations of the Owner in regards to working with this project.
  - 1. Workmen are not to traverse any walkway between buildings or buildings that are not included in this contract as well as new work that has been completed.
  - 2. All general contractors and subcontractors vehicles are to be parked in the designated construction site staging area. No vehicle parking is allowed on existing grass areas without permission from the Owner.
  - 3. No smoking is permitted on project site.
  - 4. AM/FM radios, tape or CD players are not to be utilized on the project site.
  - 5. No firearms or other weapons shall be brought onto the site.
  - 6. Contractor shall coordinate access, parking and egress of all contractor personnel and tradesmen with the Owner and the Owner's administrative personnel.
- E. HVAC exhaust and fresh air units are not to be shut down while buildings are occupied without permission from the Owner.
- F. Contractor to verify hours for construction operations regarding noise abatement requirements with the local governing authorities having jurisdiction, if applicable.
- G. A copy of all required city, county and state licenses that are applicable shall be supplied to the Owner's Project Representative prior to the appropriate work commencing.
- H. The Contractor will perform any trimming, pruning or relocation of trees or significant landscape materials (excluding sod and annuals) as needed for this project. Failure to adequately protect the existing landscaping material will require replacement of these materials at no additional cost to the Owner

1.4 PRECONSTRUCTION MEETING

- A. Owner, Architect/Engineer will schedule a meeting after Notice of Award.
- B. Attendance Required: Owner, Architect/Engineer, and Contractor.
- C. Agenda :

**PROJECT MANAGEMENT AND COORDINATION**  
**SECTION 01 30 00**

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1. Execution of Owner-Contractor Agreement.
  2. Submission of executed bonds and insurance certificates.
  3. Distribution of Contract Documents.
  4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
  5. Designation of personnel representing the parties in Contract, and the Architect/Engineer.
  6. Procedures and processing of field decisions, submittals, substitutions, applications for payment, proposal requests, Change Orders, and Contract closeout procedures.
  7. Scheduling.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect/Engineer, Owner, participants, and those affected by decisions made.
- 1.5 PROGRESS MEETINGS
- A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Architect/Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to agenda topics for each meeting.
- D. Agenda :
1. Review minutes of previous meetings.
  2. Review of Work progress.
  3. Field observations, problems, and decisions.
  4. Identification of problems which impede planned progress.
  5. Review of submittals schedule and status of submittals.
  6. Review of off-site fabrication and delivery schedules.
  7. Maintenance of progress schedule.
  8. Corrective measures to regain projected schedules.
  9. Planned progress during succeeding work period.
  10. Coordination of projected progress.
  11. Maintenance of quality and work standards.
  12. Effect of proposed changes on progress schedule and coordination.
  13. Other business relating to Work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect/Engineer, Owner, & participants, and those affected by decisions made.

PART 2 PRODUCTS                      Not Used

PART 3 EXECUTION                      Not Used



**PROJECT MANAGEMENT AND COORDINATION**  
**SECTION 01 30 00**

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END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Product data.
- D. Shop drawings.
- E. Samples.
- F. Manufacturer's Certificates.
- G. Manufacturer's instructions.
- H. Manufacturer's field reports.
- I. Schedule of Values.

1.2 RELATED SECTIONS

- A. Section - Application for Payment – Schedule of Values associated with application for payment.
- B. Section - Quality Control: Manufacturer's Field Services and Test Reports.
- C. Section 01 70 00 – Contract Closeout: Contract warranties, bonds, manufacturers' certificates and closeout submittals.

1.3 SUBMITTAL PROCEDURES

- A. The following submittals shall be received and approved by the Architect/Engineer prior to the commencement of any project work:
  - 1. Construction Progress Schedule
  - 2. Product Data
  - 3. Shop Drawings
  - 4. Samples
  - 5. Manufacturers' Installation Instructions
  - 6. Manufacturers' Certification
  - 7. Schedule of Values
- B. Transmit each individual submittal copy with a fully completed “**Submittal Cover Form**” attached at the end of this section.
  - 1. Submittal number

2. Identify project, Project number
  3. Contractor
  4. Subcontractor/Supplier/Manufacturer
  5. Pertinent drawing and detail number
  6. Specification section
  7. Signature or initial of contractor certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and contract documents.
- C. Sequentially number transmittal forms as indicated by the “**Submittal Record (checklist/log)**” also attached at the end of this section. Revised submittals shall be re-submitted with original number and sequential alphabetic suffix.
- D. For each submittal for review, allow **15 days** excluding delivery time to and from Contractor.
- E. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.
- F. Reviewed submittals shall be returned with the attached “**Submittal Cover Form**” indicating review action. Comments, if applicable, shall be provided in the appropriate spaces on the “**Submittal Cover Form**”. A copy of the “**Submittal Record (checklist/log)**” will accompany the reviewed submittals indicating current status of all submittals and include additional comments as appropriate. Review Action Codes are as follows:
1. **APP** – Approved (as submitted) – No variance permitted.
  2. **A/C** – Approved with Comments or Corrections – Contractor accepts the noted revisions if work proceeds – No variance permitted.
  3. **R/R** – Revise and Resubmit – No work may proceed until data is revised as noted or discussed, reviewed and approved.
  4. **REJ** – Rejected, Not Approved – No work may proceed, revise and resubmit as appropriate.
- G. When submittals are revised for resubmission, identify changes made since previous submission. Resubmit as described above.
- H. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- I. Submittals not requested will not be recognized or processed.

#### 1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedules within 15 days after date established in Notice to Proceed. After review, resubmit required revised data within ten days.

- B. Submit revised Progress Schedules with each Application for Payment.
- C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.
- D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
- E. Submit computer generated horizontal bar chart with separate line for each major portion of Work or operation, identifying first work day of each week.
- F. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.
- G. Indicate estimated percentage of completion for each item of Work at each submission.
- H. Submit separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished products and products identified under Allowances.

#### 1.5 PRODUCT DATA

- A. Product Data: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Submit number of copies Contractor requires, plus two copies Architect/Engineer will retain.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

#### 1.6 SHOP DRAWINGS

- A. Shop Drawings: Submit 1/8" scale plans for review. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

- B. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.
  - 1. Include signed and sealed calculations to support design.
  - 2. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
  - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- C. Submit number of opaque reproductions Contractor requires, plus two copies Architect/Engineer will retain.
- D. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

#### 1.7 SAMPLES

- A. Samples: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- C. Include identification on each sample, with full Project information.
- D. Submit number of samples specified in individual specification sections; Architect/Engineer will retain sample.
- E. Reviewed samples which may be used in the Work are indicated in individual specification sections.

#### 1.8 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Architect/Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.

1.9 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Architect/Engineer for delivery to Owner in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.10 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for Architect/Engineer's benefit as contract administrator or for Owner.
- B. Submit report in duplicate within 5 days of observation to Architect/Engineer for information.
- C. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.11 SCHEDULE OF VALUES

- A. Submit typed schedule on **AIA Form G703**.
- B. Format: Refer to Schedule of Values format attached to Section - Application for Payment
- C. Submit for approval prior to submitting first Application for Payment.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

Attachments to Section 01 33 00

**SUBMITTAL COVER FORM**

The "Submittal Cover Form" shall be attached to each copy of each submittal.

**SUBMITTAL RECORD**  
**(checklist/log)**

The attached "Submittal Record (checklist/log)" is intended to assist the contractor in organizing and referencing submittal documents. The attempt has been made to make the list as complete as possible, however, additional submittals not included on the list may be required.

# SUBMITTAL COVER FORM



**A/R/C**  
Associates  
Incorporated

SUBMITTAL NO.	A/R/C PROJECT NO: <b>18052.00</b>
---------------	--------------------------------------

PROJECT: <b>Fuller Warren Building (DEO)</b>	OWNER'S PROJECT NO:
--	---------------------

ITEM:	DATE:
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SPEC. SECTION: \_\_\_\_\_ PARAGRAPH NO: \_\_\_\_\_

PRIME CONTRACTOR: _____	CHECKED AND APPROVED FOR SUBMISSION BY: _____ DATE: _____
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SUB-CONTRACTOR: \_\_\_\_\_ MANUFACTURER: \_\_\_\_\_

(RESERVE THE SPACE BELOW FOR COMMENTS OR DATE & SHOP DRAWING REVIEW STAMPS)

COMMENTS / REVIEW STAMPS	SUBMITTAL REVIEW BY A/R/C ASSOCIATES, INCORPORATED
	<p>Date: _____ By: _____</p> <p>Approved <b>APP</b> ( ) Approved as Corrected <b>A/C</b> ( )</p> <p>If checked above, fabrication MAY be undertaken. Approval does not authorize changes in contract Sum unless stated in separate letter or Change Order.</p> <p>If checked below, fabrication MAY NOT be undertaken. Resubmit corrected copies for final approval. Correction shall be limited to items marked.</p> <p>Revise and resubmit <b>R/R</b> ( ) Not Approved <b>REJ</b> ( )</p> <p>_____</p> <p>Reviewing is only for conformance with the design concept of the Project and compliance with the information given in the Contract Documents. The contractor is responsible for dimensions to be confirmed and correlated at the site; for information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; and for coordination of the Work of all trades.</p>

If Substitution, submittal shall include information required by the General Conditions and Section 01 60 00. Attach sufficient pages to this form to fully respond to the requirements of Article 1.6.

**THIS PAGE SHALL BE ATTACHED TO EACH COPY OF EACH SUBMITTAL**

# A/R/C Associates, Incorporated

601 North Fern Creek Avenue  
 Suite 100  
 Orlando, Florida 32803  
 (407) 896-7875 FAX (407) 898-6043

## SUBMITTAL RECORD (checklist / log)

<b>Action Code</b>	<b>APP</b> - Approved	<b>A/C</b> - Approved with Comments
	<b>R/R</b> - Revise and Re-submit	<b>REJ</b> - Not Approved

The Submittal Checklist/Log represents the minimum submittal requirements for this project. The Contractor may submit any additional information beyond what is requested for review. If there is an item on the Checklist that does not apply to the project do not submit it.

PROJECT:	<b>Fuller Warren Bldg. (DEO)</b>	ARCHITECT'S PROJECT NO:	<b>18052.00</b>
CONTRACTOR:		<b>Notice to proceed issued:</b>	<b>Substantial Completion Date:</b>

Spec. Section	Submittal No.	Title/Description	Date Rec'vd	No. of Copies Rec'vd	ACTION	Date Returned	Comments
<b>00 61 00</b>		<b>Bonds and Certificates</b>					
	<b>001</b>	Bonds:					
	-1	Bid Bond					
	-2	Performance Bond					
	-3	Labor and Materials Payment Bond					
	-4	Certificate of Liability Insurance					
<b>01 11 00</b>		<b>Summary of Work</b>					
	<b>001</b>	Reports:					
	-1	Rain Day Report (Required for Project Closeout)					
	-2	Interior Inspection Report (Photo/Video Record Supplement)					
	-3	Exterior Inspection Report (Photo/Video Record Supplement)					
<b>01 33 00</b>		<b>Submittals</b>					
	<b>001</b>	Schedules:					
	-1	Construction Progress Schedule					
	-2	Schedule of Values					
<b>01 63 00</b>		<b>Substitutions</b>					
	<b>001</b>	Product Substitution					
	-1	Product Substitution Request Form/Product Information Form					
<b>01 77 00</b>		<b>Project Closeout</b>					
	<b>001</b>	Substantial Completion					
	-1	Request for Substantial Inspection					
	-2	Certificate of Substantial Completion - AIA Document G704					
	-3	Contractor's Certification of Project Completion					
	<b>002</b>	Final Submittals					
	-1	Record Documents					
		Drawings (As-builts)					
		Specifications					
		Addenda					
		Change Orders and Other Modifications					
		Submittals (Shop Drawings, Product Data and Samples)					
		Manufactures instruction for Assembly, Installation and Adjusting					
	-2	Operation and Maintenance Documents					
	-3	Warranties					
	-4	Spare Parts and Maintenance Materials					
	<b>003</b>	Final Application for Payment					



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<b>Action Code</b>	<b>APP</b> - Approved	<b>A/C</b> - Approved with Comments
	<b>R/R</b> - Revise and Re-submit	<b>REJ</b> - Not Approved

The Submittal Checklist/Log represents the minimum submittal requirements for this project. The Contractor may submit any additional information beyond what is requested for review. If there is an item on the Checklist that does not apply to the project do not submit it.

PROJECT:	<b>Fuller Warren Bldg. (DEO)</b>	ARCHITECT'S PROJECT NO:	<b>18052.00</b>
CONTRACTOR:		<b>Notice to proceed issued:</b>	<b>Substantial Completion Date:</b>

Spec. Section	Submittal No.	Title/Description	Date Rec'vd	No. of Copies Rec'vd	ACTION	Date Returned	Comments
	-1	Application for Payment - AIA G702 and G703					
	-2	Contractor's Affidavit of Payment of Debts and Claims - AIA Document G706					
	-3	Consent of Surety to Final Payment - AIA Document G707					
	-4	Contractor's Affidavit of Release of Liens - AIA Document B706A					
<b>06 10 00</b>		<b>Rough Carpentry</b>					
	<b>001</b>	Product Data:					
	-1	Wood Preservative Materials, Application Instructions					
	-2	Fasteners/Anchors					
<b>07 54 16</b>		<b>Thermoplastic Single Ply Roofing</b>					
	<b>001</b>	Product Data (Sheet Materials)					
	-1	PVC					
	-2	Elvaloy					
	<b>002</b>	Fastening System					
	-1	Mechanical Fasteners					
	-2	Adhesive					
	<b>003</b>	Insulation System					
	-1	Polyisocyanurate					
	-2	EPS					
	-3	Roof Coverboard					
	-4	Tapered Layout					
	-5	Insulation Fasteners/Adhesives					
	<b>004</b>	Accessories:					
	-1	Prefabricated curbs					
	-2	Prefabricated supports					
	-3	Sealants					
	<b>005</b>	Engineering Certifications / Product Approvals					
	<b>006</b>	Samples:					
	-1	Only as directed by the Architect					
	<b>007</b>	Qualifications:					
	-1	Applicator's Experience					
	<b>008</b>	Warranties:					
	-1	Manufacturer's Notice of Intent to Issue Warranty					
	-2	Applicator's Warranty					
<b>07 62 00</b>		<b>Sheet Metal Flashing and Trim</b>					
	<b>001</b>	Product Data:					
	-1	Sheet Materials:					
	-2	Accessories: Fasteners, Primer, Plastic Cement, Solder/Flux/Cleaner					
	<b>002</b>	Shop Drawings:					
	-1	Any Condition Not Shown on the Drawings					

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## SUBMITTAL RECORD (checklist / log)

<b>Action Code</b>	<b>APP</b> - Approved	<b>A/C</b> - Approved with Comments
	<b>R/R</b> - Revise and Re-submit	<b>REJ</b> - Not Approved

The Submittal Checklist/Log represents the minimum submittal requirements for this project. The Contractor may submit any additional information beyond what is requested for review. If there is an item on the Checklist that does not apply to the project do not submit it.

PROJECT:	<b>Fuller Warren Bldg. (DEO)</b>	ARCHITECT'S PROJECT NO:	<b>18052.00</b>
CONTRACTOR:		<b>Notice to proceed issued:</b>	<b>Substantial Completion Date:</b>

Spec. Section	Submittal No.	Title/Description	Date Rec'vd	No. of Copies Rec'vd	ACTION	Date Returned	Comments
	<b>003</b>	Samples/Mock-ups					
	-1	Only as Directed by the Architect. (Mock-ups will be in-place, typically)					
<b>07 63 00</b>		<b>Roof Penetration Flashing</b>					
	<b>001</b>	Product Data					
	-1	Roof Penetration Flashing Product Information					
	-2	Manufacturer's Installation Instructions					
	<b>002</b>	Samples					
	-1	Field Samples as may be directed by the Architect					
<b>07 90 00</b>		<b>Joint Sealers</b>					
	<b>001</b>	Product Data:					
	-1	Joint Sealer Information, Color Charts, Installation Instructions, warranty, etc.					
	<b>002</b>	Accessories-					
	-1	Primer, Joint Cleaner, Backer Rod, etc.					
<b>09 90 00</b>		<b>Minor Painting</b>					
	<b>001</b>	Product Data:					
	-1	Information on All Finishing Products, Application Instructions, Surface Preparation, etc.					
	-2	Manufacturer's Color Chart for Each Product Required					
	<b>002</b>	Samples:					
	-1	Field Samples as May be Directed by the Architect					
	<b>003</b>	Qualifications					
	-1	Applicator's Experience					
<b>22 07 19</b>		<b>Piping Insulation</b>					
	<b>001</b>	Product Data:					
	-1	Material Characteristics, Thermal Properties. List of materials and thickness for each service, and locations					
	<b>002</b>	Samples:					
	-1	Only as May be Directed by the Architect					
<b>22 14 13</b>		<b>Plumbing Piping</b>					
	<b>001</b>	Product Data: Pipe Materials, Pipe Fittings, and Accessories (Manufacturer's Catalog Information).					
	-1	Product Information: PVC Piping					
	-2	Accessories: Clevis Hangars, C-clamps, Theraded Rods, Condensate Pipe, No-Hub Couplings.					
<b>22 14 26</b>		<b>Roof Drains</b>					
	<b>001</b>	Product Data:					

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## SUBMITTAL RECORD (checklist / log)

<b>Action Code</b>	<b>APP</b> - Approved	<b>A/C</b> - Approved with Comments
	<b>R/R</b> - Revise and Re-submit	<b>REJ</b> - Not Approved

The Submittal Checklist/Log represents the minimum submittal requirements for this project. The Contractor may submit any additional information beyond what is requested for review. If there is an item on the Checklist that does not apply to the project do not submit it.

<b>PROJECT:</b>	<b>Fuller Warren Bldg. (DEO)</b>	<b>ARCHITECT'S PROJECT NO:</b>	<b>18052.00</b>
<b>CONTRACTOR:</b>		<b>Notice to proceed issued:</b>	<b>Substantial Completion Date:</b>

Spec. Section	Submittal No.	Title/Description	Date Rec'vd	No. of Copies Rec'vd	ACTION	Date Returned	Comments
	-1	Roof Drain Information, Component Sizes, Rough-in Requirements, Service Sizes, and Finishes					
	<b>002</b>	Shop Drawings:					
	-1	Assembly and Support Requirements (As Required)					
<b>23 00 00</b>		<b>Mechanical Equipment</b>					
	<b>001</b>	Equipment Data:					
	-1	Exhaust Fan Performance Log Data Sheet					
	-2	Air Conditioning Equipment Performance Log Data Sheet					
<b>26 05 00</b>		<b>Basic Electrical Requirements</b>					
	<b>001</b>	As May Be Directed by the Architect/Engineer					
<b>26 41 13</b>		<b>Lightning Protection</b>					
	<b>001</b>	Product Data:					
	-1	Product Information: Dimensions and Materials of each Component. Indicate UL 96 listing					
	<b>002</b>	Shop Drawings:					
	-1	Air Terminal and Cable Layout; Grounding Electrodes, Typical Bonding Connections to Structure and Equipment. Terminal, Electrode, Conductor Sizes and Connection and Termination Details.					
	<b>003</b>	Quality Control					
	-1	Certificates of Compliance: UL, Lightning Protection Institute and Jurisdictional Authority.					

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality control and control of installation.
- B. Tolerances.
- C. References.
- D. Mock-up requirements.
- E. Testing and inspection services.
- F. Manufacturers' field services.
- G. Examination.
- H. Preparation.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

- B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

#### 1.4 REFERENCES

- A. For products or workmanship specified by associations, trades, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on [date of Contract Documents,] except where specific date is established by code.
- C. The roof system shall include all affiliated electrical, mechanical, architectural and structural work, meeting the following Building Codes:
  - 1. The **Florida Building Code – 2017 (Sixth) Edition**
  - 2. The **Florida Fire Prevention Code**
  - 3. Any local amendments to these codes which can be obtained from the **Florida Department of Community Affairs**, the **Florida Department of Insurance**, and/or the **State Fire Marshall**, respectively.
  - 4. The following Building Codes are hereby incorporated by reference and made a part of this rule. If there should be conflicting requirements between these codes the more or most stringent requirement shall apply.
    - a. **AHERA** Asbestos Hazard Emergency Response Act, 40 CFR, Part 763, October 30, 1987.
    - b. **ANSI** American National Standards Institute. References shall be the latest edition of the ANSI Standards
    - c. **ASCE** American Society of Civil Engineers. References shall be the latest edition listed in the "Florida Building Code"
    - d. **ASHRAE** American Society of Heating, Refrigeration, and Air Conditioning Engineers.
    - e. **ASTM** American Society for Testing Materials. References shall be the latest edition of the ASTM Standards.
    - f. **FEMA** Federal Emergency Management Agency. Rules and Regulations 44 CFR, Parts 59 and 60, dated October 1, 1989, for flood plain criteria governing insurability of facilities constructed in flood plain.
    - g. **NEC** National Electrical Code
    - h. **NFPA** National Fire Protection Association. References shall be the latest edition of the NFPA code.
    - i. **NRCA** National Roofing Contractors Association. References shall be to the latest edition of the NRCA Roofing and Waterproofing Manual.

- j.     **SMACNA**     Sheet Metal and Air Conditioning Contractors National Association. References shall be made to the latest edition of the SMACNA Architectural Sheet Metal Manual.
  - k.     **TMS**         The Masonry Society
- D.     Obtain copies of standards where required by product specification sections or as necessary to complete the work properly. Maintain copies at project site during submittals, planning and progress of the specific work, until Substantial Completion.
- E.     When specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- F.     Neither contractual relationships, duties, nor responsibilities of parties in Contract nor those of Architect/Engineer shall be altered from Contract Documents by mention or inference otherwise in reference documents.

#### 1.5     **MOCK-UP REQUIREMENTS**

- A.     Tests will be performed under provisions identified in this section and identified in respective product specification sections.
- B.     Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C.     Accepted mock-ups shall be comparison standard for remaining Work.
- D.     Where mock-up has been accepted by Architect/Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Architect/Engineer.

#### 1.6     **TESTING AND INSPECTION SERVICES**

- A.     Owner will employ and pay for specified services of an independent firm to perform testing and inspection.
- B.     The independent firm will perform tests, inspections and other services specified in individual specification sections and as required by Owner.
  - 1.     Laboratory: Authorized to operate at Project location.
  - 2.     Laboratory Staff: Maintain full time specialist on staff to review services.
  - 3.     Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- C.     Testing, inspections and source quality control may occur on or off project site. Perform off-site testing as required by Architect/Engineer or Owner.

**QUALITY REQUIREMENTS**  
**SECTION 01 40 00**

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- D. Reports will be submitted by independent firm to Architect/Engineer, Contractor, and authority having jurisdiction, in [duplicate], indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
  - 1. Submit final report indicating correction of Work previously reported as non-compliant.
  
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
  - 1. Notify Architect/Engineer and independent firm 48 hours prior to expected time for operations requiring services.
  - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
  
- F. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
  
- G. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Architect/Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
  
- H. Agency Responsibilities:
  - 1. Test samples of mixes submitted by Contractor.
  - 2. Provide qualified personnel at site. Cooperate with Architect/Engineer and Contractor in performance of services.
  - 3. Perform specified sampling and testing of products in accordance with specified standards.
  - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  - 5. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-conformance of Work or products.
  - 6. Perform additional tests required by Architect/Engineer.
  - 7. Attend preconstruction meetings and progress meetings.
  
- I. Agency Reports: After each test, promptly submit [two] copies of report to Architect/Engineer, Contractor, and authority having jurisdiction. When requested by Architect/Engineer, provide interpretation of test results. Include the following:
  - 1. Date issued.
  - 2. Project title and number.
  - 3. Name of inspector.
  - 4. Date and time of sampling or inspection.
  - 5. Identification of product and specifications section.
  - 6. Location in Project.
  - 7. Type of inspection or test.
  - 8. Date of test.
  - 9. Results of tests.
  - 10. Conformance with Contract Documents.

- J. Limits On Testing Authority:
  - 1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
  - 2. Agency or laboratory may not approve or accept any portion of the Work.
  - 3. Agency or laboratory may not assume duties of Contractor.
  - 4. Agency or laboratory has no authority to stop the Work.

#### 1.7 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect/Engineer [30] days in advance of required observations.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Refer to Section 01 33 00 - Submittal Procedures, MANUFACTURERS' FIELD REPORTS article.

#### PART 2 PRODUCTS (Not Used)

#### PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify utility services are available, of correct characteristics, and in correct locations.

##### 3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.



**QUALITY REQUIREMENTS**  
**SECTION 01 40 00**

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- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Requirements and limitations for cutting and patching of Work.

1.2 RELATED SECTIONS

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 33 00 - Submittals.
- C. Section 01 63 00 - Materials and Equipment: Product options and substitutions.
- D. Individual Product Specification Sections:
  - 1. Cutting and patching incidental to work of the section.
  - 2. Advance notification to other sections of openings required in work of those sections.
  - 3. Limitations on cutting structural members.

1.3 SUBMITTALS

- A. Submit written request in advance of cutting or alteration which affects:
  - 1. Structural integrity of any element of Project.
  - 2. Integrity of weather exposed or moisture resistant element.
  - 3. Efficiency, maintenance, or safety of any operational element.
  - 4. Visual qualities of sight exposed elements.
  - 5. Work of Owner or separate contractor.
- B. Include in request :
  - 1. Identification of Project.
  - 2. Location and description of affected Work.
  - 3. Necessity for cutting or alteration.
  - 4. Description of proposed Work and Products to be used.
  - 5. Alternatives to cutting and patching.
  - 6. Effect on work of Owner or separate contractor.
  - 7. Written permission of affected separate contractor.
  - 8. Date and time work will be executed.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Primary Products: Those required for original installation.
- B. Substitution Procedures: For any proposed change in materials, submit request for substitution described in Section 01 63 00.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
- B. After uncovering existing Work, assess conditions affecting performance of work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

- A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- B. Provide protection from elements for areas which may be exposed by uncovering work.
- C. Maintain excavations free of water.

3.3 CUTTING

- A. Execute cutting and fitting including excavation and fill to complete the Work.
- B. Uncover work to install improperly sequenced work.
- C. Remove and replace defective or non-conforming work.
- D. Remove samples of installed work for testing when requested.
- E. Provide openings in the Work for penetration of mechanical and electrical work.
- F. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight-exposed surfaces.

**CUTTING AND PATCHING**  
**SECTION 01 45 00**

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- G. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

3.4 PATCHING

- A. Execute patching to complement adjacent Work.
- B. Fit Products together to integrate with other Work.
- C. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- D. Employ original installer to perform patching for weather exposed and moisture resistant elements, and sight-exposed surfaces.
- E. Restore work with new Products in accordance with requirements of Contract Documents.
- F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated to full thickness of the penetrated element.
- H. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities:
  - 1. Temporary electricity.
  - 2. Temporary lighting for construction purposes.
  - 3. Temporary heating and cooling.
  - 4. Temporary ventilation.
  - 5. Telephone service.
  - 6. Temporary water service.
  - 7. Temporary sanitary facilities.
  
- B. Construction Facilities:
  - 1. Field offices and sheds.
  - 2. Vehicular access.
  - 3. Parking.
  - 4. Progress cleaning and waste removal.
  - 5. Project identification.
  - 6. Fire prevention facilities.
  
- C. Temporary Controls:
  - 1. Barriers.
  - 2. Enclosures and fencing.
  - 3. Security.
  - 4. Water control.
  - 5. Noise control.
  
- D. Removal of utilities, facilities, and controls.

1.2 TEMPORARY ELECTRICITY

- A. Owner will pay cost of energy used. Exercise measures to conserve energy. Utilize Owner's existing power service.
  
- B. Provide temporary electric feeder from existing building or electrical service at location as directed by Owner. Do not disrupt Owner's use of service.
  
- C. Complement existing power service capacity and characteristics as required for construction operations.
  
- D. Provide power outlets, with branch wiring and distribution boxes located as required for construction operations. Provide GFI protected flexible power cords as required for portable construction tools and equipment.
  
- E. Provide main service disconnect and over-current protection at convenient location.

**TEMPORARY FACILITIES AND CONTROLS**  
**SECTION 01 50 00**

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- F. Permanent convenience receptacles may be utilized during construction.
- G. Provide distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.
  - 1. Provide 20 ampere duplex outlets, single phase circuits for power tools for every active work area.
  - 2. Provide 20 ampere, single phase branch circuits for lighting.

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain adequate lighting for construction operations.
- B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- C. Maintain lighting and provide routine repairs.
- D. Permanent building lighting may not be utilized during construction.

1.4 TEMPORARY HEATING AND COOLING

- A. When required by the Owner, provide heating and cooling devices needed to maintain existing conditions in buildings. The Owner will pay cost of energy used. Exercise measures to conserve energy.
- B. Prior to operation of permanent equipment for temporary heating and cooling purposes, verify installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.5 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.6 TELEPHONE SERVICE

- A. If a field office is required provide, maintain, and pay for telephone service to contractor's field office at time of project mobilization.
- B. If a field office is not required establish a continuous cellular phone connection with site personnel during construction operations.

**TEMPORARY FACILITIES AND CONTROLS**  
**SECTION 01 50 00**

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1.7 TEMPORARY WATER SERVICE

- A. Owner will pay cost of temporary water used except for water required for use in mixing of construction materials (LWIC) or flushing of equipment and systems. Exercise measures to conserve water.
- B. Contractor shall provide metering device acceptable to the Owner at the Owner's designated location.
- C. Extend branch piping with outlets located so water is available by hoses with threaded connections.

1.8 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of project mobilization.

1.9 FIELD OFFICES AND SHEDS

- A. When separate construction Office facilities are required provide: Weather tight facility, with lighting, electrical outlets, heating/cooling/ and ventilating equipment, and equipped with sturdy furniture drawing rack, and drawing display table.
- B. Location of offices and sheds shall be coordinated with the Owner at the Pre-Construction meeting. When possible maintain a minimum distance of minimum distance of **30 feet** from existing structures.
- C. When permanent facilities are enclosed with operable utilities, relocate offices and storage into building, with written agreement of Owner, and remove temporary buildings.
- D. Storage Areas and Sheds (when required): Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and for inspection of products to requirements of Section 01 60 00 - Product Requirements.
- E. Removal: At completion of Work remove temporary buildings, utility services, and debris. Restore areas.

1.10 VEHICULAR ACCESS

- A. Extend and relocate vehicular access as Work progress requires, provide detours as necessary for unimpeded traffic flow.
- B. Provide unimpeded access for emergency vehicles.
- C. Provide and maintain access to fire hydrants and control valves free of obstructions.

1.11 PARKING

- A. Arrange with Owner for temporary parking areas to accommodate construction personnel.
- B. Locate as approved by Owner.
- C. When site space is not adequate, provide additional off-site parking.

1.12 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site and roof areas in clean and orderly condition.
- B. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site.
- C. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.
- D. Contractor shall provide portable trash containers for construction debris. Use of Owner's on-site containers is prohibited.

1.13 PROJECT IDENTIFICATION

- A. No additional or temporary construction site signage will be allowed on the site by the Owner for this project.

1.14 FIRE PREVENTION FACILITIES

- A. Prohibit smoking within construction areas.
- B. If allowed by Owner, a designated smoking area on site where smoking is permitted may be established. Provide approved ashtrays in designated smoking areas.
- C. Establish fire watch for cutting and welding and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- D. Standpipes: Maintain existing standpipes in usable condition in all active construction areas.
- E. Portable Fire Extinguishers: NFPA 10; 10 pound capacity, 4A-60B: C UL rating.
  - 1. Provide one fire extinguisher for each active construction area.
  - 2. Provide minimum one fire extinguisher in every construction trailer and storage shed.
  - 3. Provide minimum one fire extinguisher on roof during roofing operations using heat producing equipment.



1.15 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way and for public access to existing buildings.
- C. Provide protection for trees and landscaping designated to remain. Replace damaged trees and landscaping.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.16 ENCLOSURES AND FENCING

- A. Provide 6 feet high security fence around construction staging areas and storage locations; equip the fence enclosure with vehicular and pedestrian gates with locks.
- B. Construction: Nine (9) gage galvanized commercial grade 2" chain link fabric, knuckle down, top and bottom. Provide tension bars and 1 5/8" top rails, 2" line posts and 3" corner and gate posts.

1.17 SECURITY

- A. Security Program:
  - 1. Protect Work premises and Owner's operations from theft, vandalism, and unauthorized entry.
  - 2. Initiate program in coordination with Owner's existing security system at project mobilization.
  - 3. Maintain program throughout construction period until Owner acceptance precludes need for Contractor security.
- B. Entry Control:
  - 1. Restrict entrance of persons and vehicles into Project site.
  - 2. Allow entrance only to authorized persons with proper identification.
  - 3. Maintain a daily log of workers and visitors; make available to Owner upon their request.
  - 4. Coordinate access of Owner's personnel to site in coordination with Owner's security forces.
- C. Personnel Identification:
  - 1. Provide identification badge to each person authorized to enter premises.
  - 2. Badge to Include: Personal photograph, name expiration date and employer.
  - 3. Maintain list of accredited persons, submit copy to Owner on request.
  - 4. Require return of badges at expiration of their employment on the Work.

**TEMPORARY FACILITIES AND CONTROLS**  
**SECTION 01 50 00**

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1.18 WATER CONTROL

- A. Maintain site drainage affected by construction operations. Grade site to drain as required.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.19 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by construction operations.

1.20 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

**PRODUCT REQUIREMENTS / OPTIONS /SUBSTITUTIONS**  
**SECTION 01 63 00**

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**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Products.
- B. Transportation and Handling.
- C. Storage and Protection.
- D. Product Options.
- E. Substitutions.
- F. Product Substitution Request Form and Product Substitution Information Form

**1.2 PRODUCTS**

- A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- C. Provide interchangeable components of the same manufacture, for components being replaced.

**1.3 TRANSPORTATION AND HANDLING**

- A. Transport and handle Products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.
- C. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

**1.4 STORAGE AND PROTECTION**

- A. Store and protect Products in accordance with manufacturers' instructions, with seals and labels intact and legible.
- B. Store sensitive Products in weather tight, climate controlled enclosures.
- C. For exterior storage of fabricated Products, place on sloped supports, above ground.

**PRODUCT REQUIREMENTS / OPTIONS /SUBSTITUTIONS**  
**SECTION 01 63 00**

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- D. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of Product.
- E. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- F. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- G. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

1.6 SUBSTITUTIONS

- A. Architect/Engineer will consider requests for Substitutions only within **15 days** after date established in Notice to Proceed.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that the Contractor or Bidder:
  - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
  - 2. Will provide the same warranty for the Substitution as for the specified Product.
  - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
  - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
  - 5. Will reimburse Owner and Architect for review or redesign services associated with substitution.

**PRODUCT REQUIREMENTS / OPTIONS /SUBSTITUTIONS**  
**SECTION 01 63 00**

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- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
  
- F. Substitution Submittal Procedure:
  - 1. Submit three (3) copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
  - 2. Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.
  - 3. The Architect will notify Contractor in writing of decision to accept or reject request.
  - 4. See "Substitution Request Forms" attached to this section

PART 2      PRODUCTS                      (Not Used)

PART 3      EXECUTION

3.1      SUBSTITUTION REQUEST FORMS (ATTACHED)

- A.      Product Substitution Request Form
  
- B.      Product Substitution Information Form

END OF SECTION

## Product Substitution Request

To: \_\_\_\_\_

We hereby submit for your consideration the following product in lieu of that specified for this project:

DRAWING NO. \_\_\_\_\_ DRAWING NAME \_\_\_\_\_

SPEC. SECTION      SPEC NAME                      PARAGRAPH                      SPECIFIED ITEM

\_\_\_\_\_

Proposed Substitution: \_\_\_\_\_

Why Substitution Requested: \_\_\_\_\_

Attach complete information on changes to Drawings or Specifications which proposed substitution will require for its proper installation.

Submit with request necessary samples and substantiating data to prove equal quality and performance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance.

The undersigned certifies that the function, appearance and quality are of equal performance and assumes liability for equal performance, equal design and compatibility with adjacent materials.

Submitted by: _____ Signature (Contractor)	_____ Title
_____ Firm	_____ Telephone
_____ Address	_____ Fax Number
_____ Telephone	_____ Date

Signature shall be by person having authority to legally bind the Contractor to the above terms, failure to provide legally binding signature will result in retraction of approval.

For use by the Architect: <input type="checkbox"/> Recommended <input type="checkbox"/> Recommended as Noted <input type="checkbox"/> Not Recommended <input type="checkbox"/> Received too late <input type="checkbox"/> Insufficient data received By _____ Date _____	For use by the Owner: <input type="checkbox"/> Approved <input type="checkbox"/> Not Approved <input type="checkbox"/> Approved as noted By _____ Date _____
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## Product Substitution Information

Fill in blanks below:

A. Does the substitution affect dimensions shown on Drawings?

Yes \_\_\_\_\_ No \_\_\_\_\_ If yes, clearly indicate changes.

\_\_\_\_\_

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitutions?

Yes \_\_\_\_\_ No \_\_\_\_\_ If no, fully explain:

\_\_\_\_\_

C. What effect does substitution have on other Contracts or other trades?

\_\_\_\_\_

D. What effect does substitution have on the construction schedule?

\_\_\_\_\_

E. Manufacturer's warranties of the proposed and specified items are:

\_\_\_\_\_ Same \_\_\_\_\_ Different. If different, fully explain:

\_\_\_\_\_

F. Reason for Request:

\_\_\_\_\_

G. Itemized comparison of specified item(s) with the proposed substitution; list significant variations:

\_\_\_\_\_

\_\_\_\_\_

H. This substitution will amount to a credit to the Owner of:

\_\_\_\_\_ dollars (\$\_\_\_\_\_)

I. Designation of maintenance services and sources:

\_\_\_\_\_

J. Attachments: (Attach additional sheets if required.)

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures.
  - 1. Substantial Completion
  - 2. Final Cleaning
  - 3. Adjusting
  - 4. Final Completion
- B. Project Record Documents
- C. Closeout Submittal
- D. Final Change Order
- E. Final Application for Payment

1.2 CLOSEOUT PROCEDURES

- A. Substantial Completion
  - 1. At such time that the project is considered substantially complete the Contractor shall request, in writing, that a substantial completion inspection be scheduled.
  - 2. If the contract work is deemed to be substantially complete the contractor shall receive a certification of substantial completion with, if applicable, a list of deficient items yet to be completed. **AIA Document G704 "Certification of Substantial Completion"** is to be issued unless another standard form is required by the Owner.
  - 3. The Owner will occupy all of the building as specified in Section 01 11 00 – Summary of Work.
- B. Final Cleaning
  - 1. Execute final cleaning prior to final project acceptance.
  - 2. Clean interior and exterior surfaces and finishes soiled by construction work. Replace any materials or finishes unable to be cleaned to its original condition.
  - 3. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
  - 4. Clean debris from roofs, gutters, downspouts and interior roof drainage systems.
  - 5. Clean site, sweep paved areas, rake clean landscaped surfaces.
  - 6. Remove waste and surplus materials, rubbish and construction facilities from site.
- C. Adjusting
  - 1. Adjust operating products and equipment to ensure smooth and unhindered operation.



**PROJECT CLOSEOUT REQUIREMENTS**  
**SECTION 01 70 00**

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- D. Final Completion
1. Upon completion of the specific requirements set forth during the Substantial Completion Inspection and all other requirements of the contract documents, the Contractor shall submit written certification (on Contractor's letterhead) that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with contract requirements and is ready for the Architect's review.
  2. Schedule a final walk-thru inspection with the Architect and Owner.

1.3 PROJECT RECORD DOCUMENTS

- A. Project Record Documents are to be submitted at the end of the project:
1. Include the following:
    - a. Drawings
    - b. Specifications.
    - c. Addenda.
    - d. Change Orders and other modifications to the Contract.
    - e. Reviewed Shop Drawings, Product Data and Samples.
    - f. Manufacturer's Instruction for assembly, installation, and adjusting.
  2. Maintain on site, one (1) set of the above record documents; record actual revisions to the Work.
  3. Ensure entries are complete and accurate, enabling future reference by Owner.
  4. Store record documents separate from documents used for construction.
  5. Record information concurrent with construction progress.
  6. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
    - a. Manufacturer's name and product model and number.
    - b. Product substitutions or alternates utilized.
    - c. Changes made by Addenda and modifications.
  7. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
    - a. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
    - b. All modifications, additions, deletions, etc. to construction which are at variance with or in addition to the information shown on the original drawings.
    - c. All modifications, additions, deletions, etc. to utilities, pipes, conduits, etc. for all site work and construction which are at variance with or in addition to the information shown on the original drawings.
    - d. Field changes of dimension and detail.
    - e. Details not on original Contract drawings.
  8. Upon completion of the work and as a prerequisite to Final Payment, the Contractor shall submit to the Architect one (1) set of drawings showing all exact and appropriate information as noted above.

#### 1.4 CLOSEOUT SUBMITTAL

##### A. Submittal Format:

1. Submit data bound in 8-1/2 x 11 inch (A4) text pages, provide three (3), D-side ring binders with durable plastic covers.
2. Prepare binder cover with printed title "CLOSEOUT DOCUMENTS", title of project, and subject matter of binder when multiple binders are required.
3. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
4. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
5. Contents: Prepare Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
  - a. **Part 1**: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
  - b. **Part 2**: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
    - 1) List of equipment.
    - 2) Parts list for each component.
    - 3) Operating instructions.
    - 4) Maintenance instructions for equipment and systems.
    - 5) Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
  - c. **Part 3**: Project documents and certificates, including the following:
    - 1) Project Record Documents as enumerated previously in this Section.
    - 2) Certificates.
    - 3) Originals of system and product warranties and bonds.

#### 1.5 FINAL CHANGE ORDER

- A. Prior to submitting for final payment, if applicable to the contract, a "reconciliation" change order will be issued adjusting Unit Price quantities and any pending time extensions.
- B. Upon execution of the final change order, the final application for payment may be prepared.

**PROJECT CLOSEOUT REQUIREMENTS**  
**SECTION 01 70 00**

---

1.6 FINAL APPLICATION FOR PAYMENT

- A. Submit final Application for Payment identifying the total adjusted Contract Sum, previous payments, and sum remaining due. Refer to Section 01 29 00 – Payment Application Procedures regarding application preparation.
- B. Attach to the final Application for Payment the following documents
  1. *'Contractor's Affidavit of Payment of Debts and Claims'* – **AIA Document G706 (current edition)**.
  2. *'Contractor's Affidavit of Release of Liens'*- **AIA Document G706A (current edition)**
  3. *'Consent of Surety to Final Payment'* – **AIA DocumentG707 (current edition)**
- C. Printed (Copyrighted) Documents: One of each of the above forms (**AIA 706, 706A and 707**) must be prepared on an original document with a red label. The completed original application may be copied as required prior to signing and sealing.
- D. Forms may be purchased on-line directly from the AIA. Link to the following: <https://documentsondemand.aia.org/>.
- E. Electronic Documents: An electronic version of the AIA Documents must be produced under licensed agreement from the American Institute of Architects and may be photocopied as required prior to signing and sealing.
- F. Electronic (scanned) copies, computer reproductions, or photocopies of authentic documents will not be accepted.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

PROJECT:	<b>Fuller Warren Bldg (DEO)</b>	OWNER'S PROJECT NO.		A/R/C PROJECT NO.	<b>18052.00-</b>
CONTRACTOR:					
<b>Closeout Submittal Checklist</b>					

**Substantial Completion**

- 1- Request for Substantial Completion Inspection (submitted by Contractor)
- 2- "Certification of Substantial Completion" - **AIA Doc G704** (by Architect Owner)   
*or OWNER FURNISHED FORM*

**Final Completion**

- 1- Contractor's Certification of Contract Completion (submitted by Contractor)
- 2- "Certificate of Final Completion" (issued by Architect and Owner)   
*or OWNER FURNISHED FORM*

**Record Documents**

- 1- Drawings (Marked up Plans Indicating As-Built Conditions)
- 2- Specifications
- 3- Addenda
- 4- Change Orders and Other Modification Directives
- 5- Submittals (Shop Drawings, Product Data and Samples)
- 6- Manufacturer's Instructions for Assembly, Installation and Adjusting (As Applicable)
- 7- Asbestos Containing Roof Materials (ACRM) Documents/Permits (As Applicable)
- 8- UL "Letter of Findings" (Lightning Protection) (As Applicable)
- 9- Operation and Maintenance Data (As Applicable)
- 10- Spare Parts and Maintenance Materials (As Applicable)

**Warranties**

- 1- Manufacturer's Warranty - Submit Manufacturer's Standard NDL Warranty   
Provide Warranty for each roof system installed
  - 2- Applicator's Warranty (Submit Warranty Form included in Project Manual)
  - 3- Other Applicable Material and Labor Warranties 
    - a.
    - b.
    - c.
- (expand list as required)

**Final Application for Payment**

- 1- Final Application and Certificate for Payment - **AIA Document G702**
- 2- Contractor's Affidavit of Payment of Debts and Claims - **AIA Document G706**
- 3- Consent of Surety to Final Payment - **AIA Document G707**
- 4- Contractor's Affidavit of Release of Liens - **AIA Document G706A**
- 5- Subcontractor and Supplier Final Lien Waivers 
  - a.
  - b.

**A/R/C Associates, Incorporated**

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Orlando, Florida 32803  
(407) 896-7875 FAX (407) 898-6043

**PROJECT CLOSEOUT DOCUMENTATION**

(checklist)

PROJECT:	<b>Fuller Warren Bldg (DEO)</b>	OWNER'S PROJECT NO.		A/R/C PROJECT NO.	<b>18052.00-</b>
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CONTRACTOR:	
-------------	--

**Closeout Submittal Checklist**

c.  
(expand list as required)

PART 1 GENERAL

1.1 SUMMARY

- A. The information included within and attached to this section has been provided as information to the Bidder to assist with their understanding of the existing project conditions, the design intent of the documents, and their minimum responsibilities as a contractor to confirm the existing conditions.
- B. None of the information or recommendations contained within any of the documents attached to this section may be referenced in an effort to determine the design intent of the bidding documents.
- C. Section Includes:
  - a. Test Cut Data from November 11, 2019 (Roof Area 1/A), 2 pages
  - b. Thermal Calculations at Roof Areas 1/A (Lower Roof), 1 page
  - c. Link to website with field investigation photographs.
- D. Related Sections:
  - 1. Section 01 11 00 – Summary of Work

1.2 EXISTING PROJECT / SITE CONDITIONS

- A. Field Investigation: A field investigation of the Fuller Warren Building was conducted by A/R/C Associates, Incorporated on November 11, 2018. During which times 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 off 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 record drawings provided by the Owner and 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.

**EXISTING CONDITION ASSESSMENT**  
**SECTION 02 25 29**

---

- 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. We believe most pertinent information available from these sources has already been integrated into these bidding and construction documents.
- D. Roof System Test Cuts: As part of those site investigations, Four (4) test cuts were performed at various locations on the two roof areas of the Lower & Upper roof of the Building. Data from those test cuts are attached at the end of this section, and included only for informational purposes.
- E. Field Photographs: As part of that site investigation, our office also took numerous photographs of the various conditions for reference during our design process, those are also being made accessible through a website, the link for which is:

<https://www.dropbox.com/sh/dt1pmp8p50qncm2/AABKXgYu5c8Y4kD5uitFG-sla?dl=0>

Contact A/R/C Associates for link: [Jewel@arc-arc.com](mailto:Jewel@arc-arc.com) or call 407 896-7875

- 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 visible existing conditions of Project, including elements subject to damage or to movement during reroofing.
    - 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.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION



Project Name: Fuller Warren Bldg. (DEO)

Project No.: 18052.00

Roof Area 1/C

	Material	Resistance	Existing	Proposed
<b>1. Outside Surface (air film)</b>				
	Winter-Heat Flow Up-Wind 15 mph	0.17	_____	_____
	Summer-Heat Flow Down-Wind 7 ½ mph	0.25	0.25	0.25
<b>2. Built-up Roofing ( ¾ “) 3 ply</b>		0.33	0.33	0.33
<b>3. Roof Insulation</b>				
a.	Perlite: .75 (E) x 2.8 R/Inch		2.10	_____
b.	Isocyanurate: 2.75” AVG. (E) / 4.5 AVG. (P) x 5.56 R/Inch		15.29	25.02
c.	Fiberglass Board _____ x 4.3 R/Inch		_____	_____
d.	Other: (Add) 1/4” Gypsum cover Board	0.45	_____	0.45
<b>4. Preliminary Roof – Two mopped No. 15 felt</b>		0.12	_____	_____
	One Layer No. 43 coated base sheet	0.06	_____	_____
<b>5. Roof Deck/Materials</b>				
a.	Structural Concrete: 6” x .08 R/Inch		0.48	0.48
b.	Gypsum Concrete: _____ x .60 R/Inch		_____	_____
	Gypsum Form Board: _____ “ x .90 R/Inch		_____	_____
	Fiberglass Form Board: _____ “ 4.0 R/Inch		_____	_____
c.	Lightweight Insulating Concrete:		_____	_____
	1:4 mix: 3” (Existing)” x 1.11 R/Inch		_____	_____
	1:6 mix: _____ x 1.315 R/Inch		_____	_____
	Styrofoam: _____ x 4.0 R/Inch		_____	_____
d.	Wood Decks		_____	_____
	2” Nominal Plank (1 ½ “)	1.89	_____	_____
	1” Nominal Plank ( ¾ “)	0.94	_____	_____
	¾” Plywood	0.93	_____	_____
	½” Plywood	0.62	_____	_____
f.	Steel	0.00	_____	_____
<b>6. Dead Air Space-Not Vented</b>		0.85	0.85	0.85
<b>7. Ceiling</b>				
a.	Suspended Acoustical Lay-in	1.50	_____	_____
b.	Plaster Board – ¾”	0.68	_____	_____
c.	Plaster Board – ½”	0.45	_____	_____
d.	Plaster/Metal Lath – ¾”	0.47	_____	_____
<b>8. Inside Surface – Still Air (air film)</b>				
	Winter-Heat Flow Up	0.61	_____	_____
	Summer-Heat Flow Down	0.92	0.92	0.92
	<b>R<sub>T</sub></b>		17.87*	26.43*

\* The new 2017 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-25 for new construction. Other R-Value information is shown for a full roof assembly presentation.





Architecture  
Roof Consulting  
Construction Technology

A/R/C  
Associates  
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# ROOF CUT DATA

PROJECT NAME: 215 MARKET ST  
33RD STREET JAIL  
PROJECT # 18052.00 DATE: 11/7/18

ROOF CUT NO.: 1

ROOF AREA : 1/A

MEMBRANE:

MOD. BITUMEN CAP/INTERPLY

PRELIMINARY ROOF

INSULATION :

3/4" PERLITE BOARD

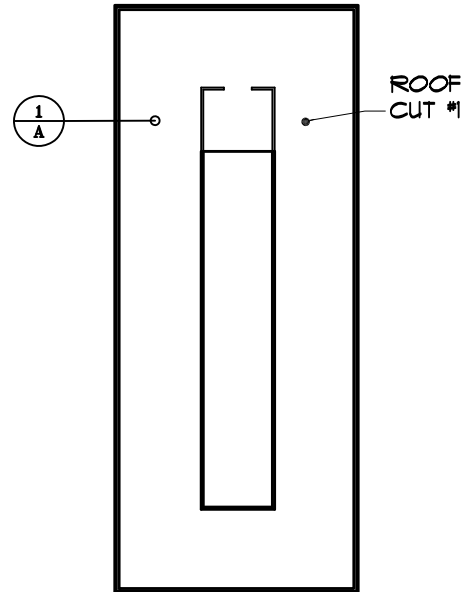
2" TAPERED RIGID ISO BD.

DECK :

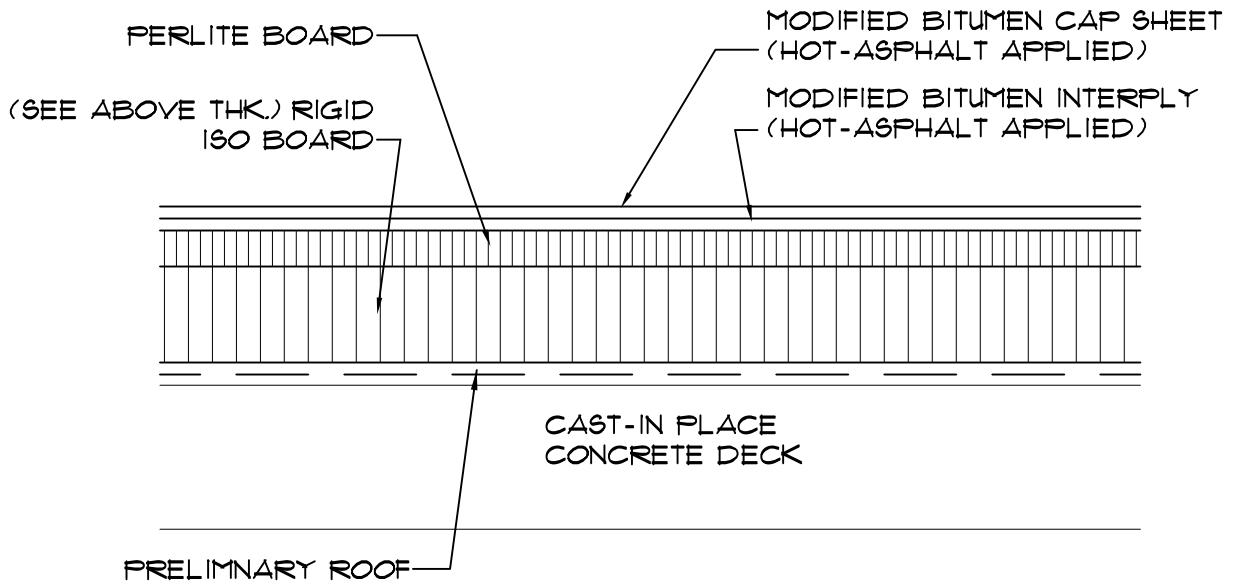
CAST IN-PLACE CONC. DECK

REMARKS :

HOT ASPHALT APP. MEMBRANE



OVERPLAN PLAN  
NOT TO SCALE





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# ROOF CUT DATA

PROJECT NAME: 215 MARKET ST  
33RD STREET JAIL

PROJECT # 18052.00 DATE: 11/7/18

ROOF CUT NO.: 2 & 3

ROOF AREA : 1/B

MEMBRANE:

MOD. BITUMEN CAP/INTERPLY

INSULATION :

3/4" PERLITE BOARD

(RC#2) 3½ TAP. RIGID ISO BD.

(RC#3) 3 TAP. RIGID ISO BD.

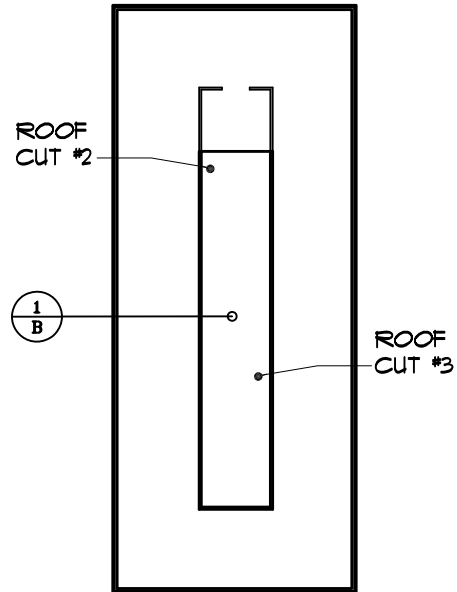
DECK :

(2" AVG.) ZONOLITE LT. WT. CONC./

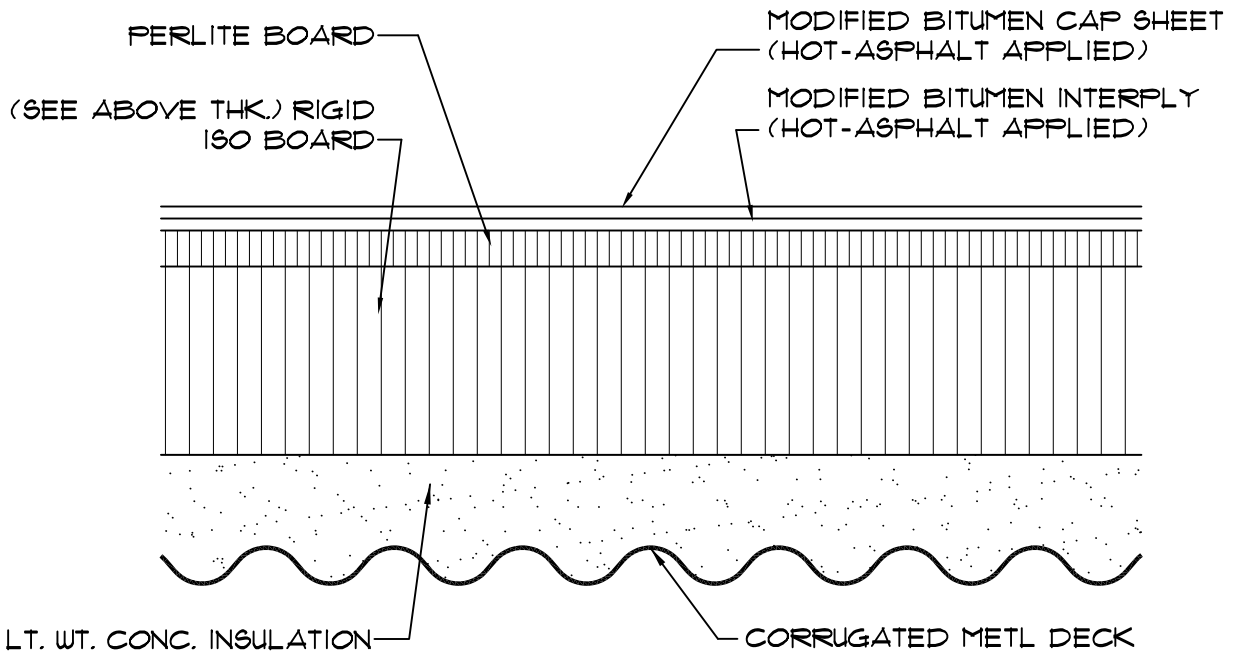
CORRUGATED MTL. DECK

REMARKS :

HOT ASPHALT APP. MEMBRANE



OVERPLAN PLAN  
NOT TO SCALE



PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Demolition of designated roofing and removal of materials from site.

1.2 RELATED SECTIONS

- A. Division 1 - General Requirements

1.3 QUALIFICATIONS

- A. Demolition Firm: Company specializing in performing the Work of this Section with minimum five years documented experience.

1.4 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition of roofing, safety of adjacent structures, dust control and disposal.
- 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.
- D. Conform to applicable regulatory procedures when hazardous or contaminated materials are present.

1.5 SCHEDULING

- A. Schedule work under the provisions of Division 1.
- B. Schedule Work to coincide with new reroofing work.
- C. 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. Maintain protected egress from and access to adjacent existing buildings at all times.
- C. Cease operations immediately if adjacent structures appear to be in danger. Notify Architect. Do not resume operations until directed.
- D. Conduct operations with minimum interference to public or private accesses. Maintain egress and access at all times.

3.3 DEMOLITION

- A. Remove demolished materials from site.
- B. Do not burn or bury materials on site. Leave site in clean condition.
- C. Remove temporary work.
- D. 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. Nailers and blocking,
  - 2. Field fabricated expansion joint curbs and curb extensions,
  - 3. Preservative treatment of wood where indicated.
  
- B. Related Sections:
  - 1. Section 07 51 00 – Preparation for Re-roofing
  - 2. Section 07 54 16 – Thermoplastic Single-ply Roofing (Fully Adhered)
  - 3. Section 07 62 00 – Sheet Metal Flashing and Trim

**1.2 REFERENCES**

- A. American Wood-Preservers' Association:
  - 1. AWPA Standard U1, UC 1-4 - All Timber Products - Preservative Treatment by Pressure Process.
  - 2. AWPA Standard U1, UCF A and B - Structural Lumber - Fire-Retardant Treatment by Pressure Process.
  
- B. ASTM International:
  - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
  
- C. National Fire Protection Association:
  - 1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.
  
- D. Southern Pine Inspection Bureau:
  - 1. SPIB - Standard Grading Rules for Southern Pine Lumber.
  
- E. Underwriters Laboratories Inc.:
  - 1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
  
- F. 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.

**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 2010 Florida Building Code requirements.

### PART 2 PRODUCTS

#### 2.1 MATERIALS

- A. Lumber Grading Rules: SPIB.
- B. Miscellaneous Framing/Blocking: Stress Group D 1x and 2x No. 2 Grade Southern Yellow Pine species, 19 percent maximum moisture content, pressure preservative treated where indicated or required by the building code.
- C. Plywood Sheathing/Decking: (If required) APA/EWA Structural I, 5/8" thickness (unless otherwise noted), Grade: CDX; pressure treated with preservative and/or fire retardant (FRT) where indicated or required by the building code. Exposure Durability: Exposure 1.

#### 2.2 ACCESSORIES

- A. Fasteners and Anchors:
1. All fasteners: Stainless steel for high humidity and treated wood locations, hot dipped galvanized steel elsewhere.
  2. Nails: ASTM F1667; ring-shanked, except as otherwise directed.
  3. Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolt or ballistic fastener for anchorages to steel.

### 2.3 FACTORY WOOD TREATMENT

- A. Wood Preservative (Pressure Treatment) for wood (exterior, above ground): AWPA U1, use category 3 (UC3) using water borne preservative with 0.25 pounds per cubic foot of wood product.
- B. Wood Preservative (Pressure Treatment) for wood (exterior, in contact with ground): AWPA U1, use category 4 (UC4) using water borne preservative with 0.40 pounds per cubic foot of wood product.
- C. Fire Retardant Treatment for plywood: FRT plywood shall be impregnated with chemicals by a pressure process and shall have a flamespread index of 25 or less when tested in accordance with ASTM E-84. "Standard Test Method for Surface Burning Characteristics of Building Materials (ASTM 1988).

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Division 01 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify substrate conditions are ready to receive blocking, curbing and framing.

### 3.2 PREPARATION

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

### 3.3 INSTALLATION

- A. General:
  - 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 and roof if 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.
- 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 roofing system in preparation for a new roof membrane system.
- B. Related Sections
  - 1. Section 02 41 19 - Selective Demolition
  - 2. Section 06 10 00 - Rough Carpentry
  - 3. Section 07 54 16 – Thermoplastic Single-ply Roofing (Fully Adhered)

**1.2 DESCRIPTION OF WORK**

- A. Roof Areas “1/A” where indicated: Remove existing roof membrane system, copings, perimeter flashings, base flashing, counter-flashings, pitch pans down to the existing lightweight insulating concrete deck on metal deck.
- B. Roof Areas “1/B” where indicated: Remove existing roof membrane system, copings, perimeter flashings, base flashing, counter-flashings, edge metal, vent stack flashing down to the existing lightweight insulating concrete deck. Remove abandoned equipment and penetrations, in-fill deck.
- C. Remove and replace any damaged or deteriorated blocking, nailers and decking.

**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 Section 01 33 00.
- B. Product Data: Provide product description and specification information of roof materials and accessories as may be specified elsewhere.
- C. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

**1.5 PRE-INSTALLATION CONFERENCE**

- A. Attend conference specified in Section 01 30 00.
- B. Coordinate a demo walk-thru with owner and Architect's representative prior to installation of new system over structural deck.

1.6 PROJECT CONDITIONS

- A. Existing Conditions
  - 1. The preliminary 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 Procurement Division of Orange County Government for resolution prior to bidding. Failure to report these conflicts and problems places 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 coordinated 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:

**PREPARATION FOR RE-ROOFING**  
**SECTION 07 51 00**

---

- |    |                 |               |
|----|-----------------|---------------|
| 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.

**3.3 MATERIAL REMOVAL**

- A. Remove metal counter flashings
- B. Remove roofing membrane, perimeter base flashings, flashings around roof protrusions, pitch pans and pockets
- C. Remove damaged insulation and fasteners, cant strips and blocking.
- D. Repair existing wood and lightweight insulating concrete deck surface to provide smooth working surface for new roof system.

**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.

**PREPARATION FOR RE-ROOFING**  
**SECTION 07 51 00**

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- C. Testing will identify the exact condition of existing materials and their reuse, repair or removal.

END OF SECTION

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Drawings, the general provisions of the Contract, including General and Supplementary Conditions and Division 01 requirements apply to work in this Section
  2. Single-ply thermoplastic roofing system, insulation, flashing and roofing accessories, integrally related to roof installation,
  3. Manufacturer's Notice of Intent to Issue Roof Warranty form, to be submitted at the time of bid.
  4. Applicator Warranty for Roofing form, to be submitted upon completion of the project.
- B. Related Sections:
1. Section 02 41 16 – Selective Demolition:
  2. Section 06 10 53 – Rough Carpentry: Wood nailers, blocking and curbs.
  3. Section 07 51 00 – Preparation for Re-Roofing
  4. Section 07 62 00 – Sheet Metal Flashing and Trim

**1.2 REFERENCES**

- A. ASTM International
1. ASTM D 471 - Test Methods For The Effects of Rubber- Liquid Properties
  2. ASTM D 751 - Test Method of Coated Fabrics
  3. ASTM D 882 - Test Method for Tensile Properties of Thin Plastic Sheathing
  4. ASTM D 1204 - Test Method for Linear Dimensional Changes of Non-rigid Thermoplastic Sheeting or Film at Elevated Temperature
  5. ASTM D 2136 - Test Method for Coated Fabricates -Low Temperature Bend Test
  6. ASTM D 2240 - Test Method for Rubber Property
  7. ASTM D 6754 - Standard Specification for Ketone Ethylene Ester Based Sheet Roofing
  8. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials
- B. NFPA
1. NFPA 255 - Test of Surface Burning Characteristics of Building Materials
- C. FM Global
1. FM - Roof Assembly Classifications
  2. FM DS 1-28 – Wind Loads to Roof Systems and Roof Deck Securement
  3. FM 4450 – Approval Standard for Class 1 Insulated Steel Deck Roofs
- D. NRCA (National Roofing Contractors Association)
1. NRCA - Roofing and Waterproofing Manual

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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- E. Underwriters Laboratories, Inc.
  - 1. UL - Fire Hazard Classifications
  - 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 DESIGN REQUIREMENTS / PROJECT DESCRIPTION

- A. Fully adhere PVC / Elvaloy based thermoplastic single-ply membrane with woven polyester fabric reinforcement to a 1/4" thick gypsum roof board which has been fully adhered to new Rigid Board System.
  - 1. Insulations Systems (1/A) – Install ¼" per foot along exterior perimeter / Install 1/8" per foot between center of drain sumps at structural concrete deck.
  - 2. Insulation System (1/B) – Install ¼" per foot – Mechanically fasten to Structural Steel joist below metal deck.
  - 3. Insulation System (1/C) – Install ¼" per foot – at structural concrete deck
  - 4. Upon completion a 20 year NDL manufacturer's weather tightness warranty with a wind rider for the project design pressures is to be provided.
- B. Install tapered rigid insulation prior to gypsum roof cover board application at isolated and defined locations to form drainage crickets between the roof drainage scuppers.

1.4 SUBMITTALS

- A. Submit under provisions of Division 01.
- B. Product Data: Provide membrane materials, base flashing materials, insulation, fanfold insulation board and vapor retarders.
- C. Manufacturer's Installation Instructions: Indicate special precautions required for seaming the membrane.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Field Reports: Submit under provisions of Division 01.
- F. Contractor shall submit certification from a Florida Registered Engineer showing that the new roof system meets or exceeds current ASCE 7-10 requirements. (Provide supporting calculations)
- G. All products used shall be asbestos free.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual except where NRCA details differ from the project manual details.

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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- B. Maintain one copy of the NRCA document on site.
- C. Work that is closely associated with flexible sheet roofing, including vapor barriers, insulation, flashing and counterflashing, expansion joints (if applicable), and joint sealers, is to be performed by the installing applicator of the primary roofing system.

**1.6 QUALIFICATIONS**

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with five years current documented experience.
- B. Applicator: A single installer specializing in performing the work of this section with three current years documented experience and approved by system manufacturer.
  - 1. The installation shall be done by a roofer approved in writing by the manufacturer of the thermoplastic material 10 days prior to Bidding.
- C. Supervisor: Maintain a full-time non-working supervisor, on job site during roofing work in progress. Supervisor shall have five current years minimum documented experience of roofing work similar to scope of specified roofing.
- D. Manufacturer's Field Inspection and Services Representative:
  - 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.
    - a. Initial pre-installation meeting.
    - b. Site visits at maximum of one week intervals.
    - c. Prior to Substantial Completion inspection, a final inspection shall be made by manufacturer's representative.
    - d. Called meetings.

**1.7 REGULATORY REQUIREMENTS**

- A. Conform to applicable code for roof assembly fire hazard requirements and regulations of jurisdictional authorities, 2017 (Sixth) Edition Florida Building Code.
- B. All roofing materials to be Class A as tested in compliance with ASTM E 108 -Standard Test Methods for Fire Tests of Roof Coverings.
- C. Thermal Resistance: Roofing system with thermal resistance properties of insulating materials, designated by R-values, as noted in Construction Documents.
- D. Material Safety Data Sheets (MSDS): For all roofing products.
- E. Contractor shall submit certification from a Florida Registered Engineer showing that the new roof system meets or exceeds ASCE 7 requirements. (Provide supporting calculations or Florida product approvals of a tested system.)

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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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.
- B. Installer: Provide two copies of all certifications to Architect prior to beginning roofing work.

1.9 PRE-INSTALLATION CONFERENCE

- A. Convene meeting one week prior to commencing work of this section at project site, with 72 hours' minimum notice to participants. Meeting to include Contractor, Roofer, and Subcontractors, governing authorities, test agencies, product manufacturers, Architect and the Owner Representative.
- 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/

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver to site, store, protect, and handle products under provisions of 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. Deliver enough material to allow continuous work.
- E. Store rolls, cans and drums of cements, primers, and coatings, on end and over clean raised platforms.
- F. 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 F or below 40 degrees F.
  - 4. Temperatures over 110 degrees F or below 40 degrees F.
  - 5. Mud, dust, sand, oil and grease.



**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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- G. Select and operate material handling equipment and store materials to keep from damaging existing construction or applied roofing.
- H. Immediately remove and dispose of wet materials.
- I. Comply with fire, safety, and environmental protection regulations.
- J. Do not store materials on roof decks, nor position roofing installation equipment on roof decks, in concentrations exceeding design live loads.
- K. Take special precautions against traffic on roofing when ambient temperature is above 80-degree F. Avoid heavy traffic on the work during installation.

**1.11 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 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.

**1.12 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.

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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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. Only the facility administrator is permitted in the facility.
  - 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 liquids or adhesive materials.
  - 6. Powder driven shot fasteners are not permitted.
  - 7. 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.
  - 8. Protect building and adjacent surfaces from spillage and repair or replace damaged materials at no cost to Owner.
  
- B. 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 educational facilities are restricted to usage according to the following provisions:
  - 1. 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:
    - a. The name of the substance to be used;
    - b. Where the substance is to be used; and
    - c. When the substance is to be used.
  - 2. 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 residents, instructors and the general public.

1.14 COORDINATION

- A. Coordinate work under provisions of Division 1.
  
- B. Coordinate the work with installing associated wood blocking and nailers, roofing, expansion joints and area dividers, and metal flashing as the work of this section proceeds.

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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1.15 SEQUENCING

- A. Organize operations so work can simultaneously proceed on the various aspects including roofing 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 WARRANTY

- A. Applicator's Warranty: Three (3) year workmanship warranty. (Refer to "*Applicator's Warranty for Roofing*" at end of this Section). Submit upon completion of Work.
- B. Manufacturer's Warranty: Twenty (20) year 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*" at end of this Section). Submit at time of bid.
- C. 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.
- 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.

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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**PART 2 PRODUCTS**

**2.1 THERMOPLASTIC ROOFING SYSTEM**

- A. New single-ply thermoplastic roofing membrane shall be either smooth or fleece backed and intended to be fully adhered to the underlying roof substrate material from the following category of chemical composition. Roofing membrane system shall have Florida Product Approval and comply with ASCE 7 and the 2017 (Sixth) Edition Florida Building Code wind uplift requirements as defined by the documents for this project:
1. PVC thermoplastic, 60 mil minimum thickness, polyester reinforced membrane which meets or exceeds all requirements of ASTM D-4434, Type III. Color is to be neutral cream or white. Approved products are as follows:
    - a. Carlisle / Syntec Sure-Flex PVC 60
    - b. Duro-Last Roofing, Inc. Duro-Last 60
    - c. GAF Materials Corporation EverGuard EGSR 60
    - d. Johns Manville JM PVC 60
    - e. Sika Sarnafil S327
  2. Elvaloy (KEE) thermoplastic, 45 mil minimum thickness, polyester reinforced membrane which meets or exceeds all requirements of ASTM D 4344, Type III or D 6754, and with a minimum Elvaloy content of 25% by weight. Membrane is to be fully adhered; all seams and joints are to be heat-welded. Provide supplemental mechanical fastening as may be required by the roofing membrane manufacturer. Color is to be neutral cream or white. Approved products are as follows:
    - a. Carlisle Syntec Systems Sure-Flex KEE Membrane
    - b. Duro-Last, Inc. Duro-Last EV Membrane
    - c. Flex Membrane International Flex MF/R Membrane
    - d. GAF Building Products Everguard PVC XK Membrane
    - e. Johns Manville JM PVC Membrane
    - f. Seamen Corporation Fibertite 8540 SM Membrane
    - g. At the contractor's option, a fleece-backed membrane may be used of equivalent or greater PVC membrane thickness.
- B. Manufacturers and Approved Products:
1. Obtain primary thermoplastic roofing from a single manufacturer and provide secondary materials only as recommended by the manufacturer of the primary material, as specified.
  2. The Drawings are generic and not based on a specific manufacturer. Detail deviations will be accepted so as to permit utilization of the selected manufacturer's standard products and details when, in the Design Professional's judgment, such deviations do not materially detract from the original design concept or intended performance.
    - a. Submit proposed deviations to Design Professional for approval in writing prior to ordering materials that are in the category of substitutions.

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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3. Membrane substitutions are not permitted without prior approval by the architect.

## 2.2 MECHANICAL FASTENERS

- A. For mechanically fastened anchorage of roof system components base sheet and rigid board insulation: Fastener type shall be ES Twin Loc-Nail (or architect approved equivalent). The attachment pattern to be as defined by the manufacturer based on the specific project conditions and published test reports for their product.
- B. For fastening flashing to wood: Stainless steel annular threaded, 11 or 12 gage shanks, 1" long, driven through a minimum 30 gage 1" diameter flat stainless steel cap.
- C. For all other locations: Provide size, type, material and finish as required, matching material being fastened.

## 2.3 SHEET MATERIALS:

- A. Base Sheet: ASTM D-4601, Type II glass fiber base sheet.

## 2.4 ROOF MEMBRANE ADHESIVE

- A. Membrane Adhesive:
  1. Manufacturer approved adhesive for selected membrane.

## 2.5 BITUMINOUS MATERIALS

- A. Dry-in Membrane: 40 mil thick, polyester reinforced, SBS modified asphalt waterproofing and underlayment membrane sheet, approved products are limited to the following:
  1. Boral TileSeal HT
  2. Interwrap Titanium PSU 30
  3. Protecto-Wrap Rainproof-40
  4. Soprema Sopralene Stick
  5. Tamko TW Metal and Tile underlayment.
  6. Architect approved (prior to bidding) equivalent product.
- A. Asphalt Primer: ASTM D41.
- B. Plastic Cement: ASTM D4586, Type II, cutback asphalt type (non-asbestos).
- C. Modified Bitumen Adhesive: SBS modified asphalt adhesive; such as; "Matrix SB" by US Intec, or manufacturer-approved equivalent.

## 2.6 INSULATION AND ROOF COVER BOARD ADHESIVE

- A. Membrane Adhesive:
  1. Manufacturer approved adhesive for selected membrane.

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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- B. Insulation and Roof Cover Board Adhesive:
  - 1. Acceptable adhesives: Any FM Listed Foam Adhesives or Adhesives approved by roofing system manufacturers
- C. Contractor to submit certification based on pull tests showing adhesive meets current ASCE 7 and 2017 (Sixth) Florida Building Code wind up-lift requirements.

## 2.7 INSULATION

- A. Polyisocyanurate Insulation: Closed cell glass fiber reinforced type, conforming to the following:
  - 1. Board Density: 2.0 pounds per cubic foot.
  - 2. Board Size: 4 feet x 4 feet.
  - 3. Board Thickness-
    - a. (Upper & Elevator Roofs) 1/4" per ft. tapered board, 1.5" starting thickness.
    - b. (Lower Roofs) 1/4" & 1/8" per ft. tapered board, 3.5" starting thickness.
  - 4. Tapered Crickets: 1/2" per foot tapered board to counter primary slope.
  - 5. Compressive Strength: 25 psi per ASTM D 1621
  - 6. Facing: Factory applied skin of glass fiber facing on both faces.
  - 7. Board Edges: Square.
  - 8. Water Absorption: Maximum of 1% (volume) in accordance with ASTM C209.
  - 9. Foam Core Flame Spread: 25 Max. - ASTM E-84 (Tunnel Test).
  - 10. UL Fire Rating: Conforms to ANSI / UL, Class A.
- B. Tapered Edge Strips for Use with Tapered Insulation: 12" wide, 1/2" per foot tapered preformed units of material matching insulation at crickets. 12" x 1 1/2" at perimeter where occurs, see plans.
- C. Batt Insulation: ASTM C665; preformed glass fiber batt conforming to the following:
  - 1. Thermal Resistance: R of 19 for walls. R of 13 for expansion joint curbs.
  - 2. Facing: Faced on one side with asphalt treated Kraft paper.
  - 3. Flame/Smoke Properties: In accordance with ASTM E84.

## 2.8 GYPSUM ROOF BOARD

- A. 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.
  - 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 x 1/4" thick.
  - 4. Compressive Strength: Nominal 900 psi in accordance with ASTM C 473
  - 5. Water Absorption: Maximum 10% in accordance with ASTM C 1177
  - 6. Board Edges: Square.
  - 7. UL Fire Rating: Conforms to ANSI/UL, Class A.

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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8. Flame Spread/Smoke Developed: ASTM E 84 – 0/0
- B. Contractor's Option: 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 x 1/4" thick.
  4. Compressive Strength: Nominal 1800 psi in accordance with ASTM C 473.
  5. Water Absorption: 10 In accordance with ASTM C 1177
  6. Board Edges: Square.
  7. UL Fire Rating: Conforms to ANSI/UL, Class A.
  8. Flame Spread/Smoke Developed: ASTM E 84.

2.9 DOUBLE SIDED ADHESIVE FLASHING TAPE

- A. 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

2.10 SEALANTS: As specified in Section 07900.

2.11 SEALANT PRIMER: As recommended by the sealant manufacturer to suit application.

2.12 MISCELLANEOUS MATERIALS:

- A. All other materials and accessories, not specifically described, but required for a complete and proper installation of roofing, shall be products of, or recommended by the primary roof material manufacturer and with Architect's approval.

**PART 3 EXECUTION**

**3.1 GENERAL**

- 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 or patching, the entire area or section of roofing shall be replaced. This shall mean from edge to edge of roof.

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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- B. Manufacturer's Installation Requirements:
  - 1. In addition to the specified procedures, the roofing installer shall install roofing in accordance with the procedures required by the roofing material manufacturer for the proper execution of the work and issuance of the warranty.
  - 2. The roofing installer shall review the specified procedures for possible conflicts, prior to Bidding, for resolution by Architect.
  
- C. Watertightness Imperative:
  - 1. The work specified shall not preclude the use of procedures that will maintain the building watertight. Therefore, the Contractor, while conforming to these contract documents, shall utilize skill and procedures to keep water out of these buildings while construction is in progress.
  - 2. At the end of each day's roofing installation and prior to the onset of inclement weather, the new section of roofing shall be temporarily sealed with cut-offs to the unfinished substrates, projections through the roof and to the surrounding intersections so that no moisture may enter roofing or into structure before work resumes. Remove cutoffs before work resumes.
  
- D. Insurance Code Compliance:
  - 1. Install system for (and test where required to show) compliance with governing regulations and with the following requirements.
    - a. Underwriters Laboratories "Class A" Fire Classified.
    - b. Current Florida Building Code and ASCE 7 wind up-lift resistance criteria
  
- E. Coordinate the installation of insulation, roofing sheets, flashing, stripping, coatings and surfacings, so that membrane edges are not exposed to precipitation or exposed overnight. Provide cutoffs at end of each day's work to cover exposed sheets and insulation.

### 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 eaves.
- D. Verify deck surfaces are dry.
- E. Verify roof openings, curbs, pipes, conduit, sleeves, ducts, roof drains and vents through roof are solidly set.
  
- 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



**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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3.3 INSTALLATION REQUIREMENTS

- A. Protect other work from spillage of 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", the 2017 (Sixth) Edition Florida Building Code and ASCE 7 for **Nominal 121 mph**; Ultimate **156 mph** wind up-lift resistance.

3.4 PREPARATION OF EXISTING CONCRETE OVER DECK

- A. Test the deck dryness with moisture meter.
- B. Insure that deck surface is sufficiently clean and free of debris to receive the application of the preliminary roof membrane. Fully prime concrete deck surface.

3.5 PREPARATION FOR INSULATION APPLICATION

- A. Rigid insulation is to be installed over the structural deck system prior to the installation of the membrane system.
- 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 a completed waterproof 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.

3.6 INSTALLATION OF RIGID INSULATION

- A. System descriptions (See the Roof Characteristics Schedule on Sheet A01 in the project drawings for specific roof areas):
  - 1.  $\frac{1}{4}$ " &  $\frac{1}{8}$ " per foot tapered insulation
  - 2. Install  $\frac{1}{2}$ " per foot finish slope crickets behind mechanical units or curbs.
  - 3. Install tapered edge strips where indicated to create flush transition
- B. Install rigid insulation per the project plans and details, valley lines are to extend out from the roof drains at an approximate 45 degree angle. Adhere or fasten as approved by the manufacturer.
  - 1. Where  $\frac{1}{4}$ " per foot transitions with  $\frac{1}{8}$ " per, field angle required for smooth transition at valley

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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- C. Install crickets on "high" side of roof top equipment curbs prior to installation of the gypsum roof board. Adhere with a manufacturer approved insulation adhesive.
- D. Install 8' x 8' sumps at all internal roof drains as shown in the plans and details provided.
- E. Adhere or fasten a subsequent layer of 1/4" minimum thickness, fiberglass reinforced gypsum cover board over the tapered rigid insulation board system with a manufacturer approved insulation adhesive or fastener, (butt boards tightly). Cover all joints with tape (if required by the manufacturer) and fully prime top surface of the gypsum cover board.
- F. Apply tapered edge strips or cementitious filler compound as necessary to provide a smooth transition between slight elevation changes at the edge of the tapered rigid insulation or the gypsum roof board.

**3.7 APPLYING GYPSUM COVER BOARD**

- A. Apply boards laid in parallel courses with long joints continuous and no joints broken. Mitering of taper boards at valleys, in lieu of lacing is required.
- B. Edge of boards shall be butted firmly to adjoining board with no gaps. Smooth any surface irregularities or unevenness between boards in top layer of boards prior to roofing.
- C. Loose lay insulation boards over tapered insulation and cut to fit as needed, removing excess debris and extra pieces.
- D. Contractor shall insure that slopes indicated on the drawings are "finish" slopes, regardless of irregularities and deviations in the roof deck or substrate.
- E. Fully adhere or fasten a single layer of the gypsum roof board to the rigid insulation per the manufacturer.
- F. Prior to roof membrane application, remove excess dust from surface of board insulation by brooming, blowing and/or vacuuming.

**3.8 APPLYING THERMOPLASTIC ROOFING SYSTEM (FULLY ADHERED)**

- A. General:
  - 1. Organize the various aspects of the work so at the end of each day the area completed on that day is substantially complete.
- B. Field Sheets (Prefabricated Rolls)
  - 1. Un-roll approximately 30 feet of the membrane and position the roll over the properly installed/prepared substrate. Pull the tail back over the roll to expose a workable area (approx. 30') of substrate.

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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2. Apply a 100% continuous coat of adhesive to the substrate, (and underside of membrane if using "contact" adhesive).
- C. Procedure:
1. The amount of substrate that can be coated with a workable amount of adhesive will be determined by application method, ambient temperature, humidity and available man power.
  2. To insure proper application and curing of the adhesive, it is recommended that the outside air temperature be above 40 F.
  3. Adhesive may be applied by roller or by spraying.
  4. Roller applied adhesive should utilize a solvent resistant 1/2" nap roller.
  5. Spray applied adhesive must be spread out by roller to insure a smooth, even, 100% coverage of the substrate with no globs, puddles or similar irregularities.
  6. Allow the solvents in the adhesive to dissipate to the point that the adhesive is stringy to the touch. Do not allow adhesive to "dry out" completely.
- D. Hot Air Welding:
1. General:
    - a. All field seams exceeding 10 feet in length shall be welded with an approved automatic welder.
    - b. All field seams must be clean and dry prior to initiating any field welding.
    - c. Remove foreign materials from the seams (dirt, oils, etc.) with acetone or approved alternative. Use clean cotton cloths and allow approximately five minutes for solvents to dissipate before initiating the automatic welder. Do not use denim or synthetic rags for cleaning.
    - d. All welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld.
  2. Hand Welding
    - a. The lap or seam area of the membrane would be intermittently tack welded to hold the membrane in place.
    - b. The back "interior" edge of the membrane shall be welded first, with a thin, continuous weld to concentrate heat along the exterior edge of the lap during the final welding pass.
    - c. The nozzle of the hand-held hot air welder shall be inserted into the lap at a 45° angle to the lap. Once the polymer on the material begins to flow, a hand roller shall be used to apply pressure at a right angle to the tip of the hand welder. Properly welded seams shall utilize a 1-1/2" wide nozzle, to create a homogeneous weld, a minimum of 1-1/2" in width.
    - d. Smaller nozzles may be used for corners and other field detailing, maintaining a minimum 1" weld.
  3. Automatic Machine Welding:
    - a. Proper welding of the membrane can be achieved with a variety of automatic welding equipment. Refer to manufacturer's specific recommendations and requirements.
    - b. Follow all manufacturer's instructions for the safe operation of the automatic welder.

## THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING

### SECTION 07 54 16

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- c. Follow local code requirements for electric supply, grounding and surge protection.
- d. The use of a dedicated, portable generator is highly recommended to insure a consistent electrical supply, with fluctuations that can interfere with weld consistency.
- e. Properly welded seams shall utilize a 1-1/2" wide nozzle, to create a homogeneous weld, a minimum of 1-1/2" in width.

#### 3.9 FLASHING

- A. Clean all vents and stacks to bare metal. All protrusions must be properly secured to the roof deck with approved fasteners. Remove and discard all lead, pipe and drain flashing. Flash all penetrations according to approved details.
- B. Remove all loose and/or deteriorated flashing.
- C. All flashing shall be fully adhered to properly prepared, approved substrates with manufacturer's recommended mastic applied in sufficient quantity to insure total adhesion.
- D. The base flange of all membrane flashing shall extend out on to the plane of the deck, beyond the wood nailer to a maximum width of 8 inches.
- E. Vertical flashing shall be terminated no less than 8 inches above the plane of the deck with approved termination bar and counterflashing or metal cap flashing.
- F. Complete all inside and outside corner flashing details with the manufacturers preformed corners or an approved field fabrication detail.
- G. Probe all seams with a dull pointed probe to insure the weld has created a homogeneous bond.
- H. Install penetration accessories in strict accordance with approved details. Insure penetrations accessories have not impeded in any way the working specification.

#### 3.10 METAL FLASHING

- A. All flashing metal to be bonded to the roof membrane are to be fabricated from manufacturer approved PVC coated 0.040" aluminum. Refer project details and to Section 07 62 00 – Sheet Metal Flashing and Trim.
- B. Fasten all metal flashing to wood nailers or approved substrate with approved fasteners 8 inches on center.
- C. Break and install coated metal in accordance with approved details. Insure proper attachment with 1/4-inch expansion joints and the installation of a minimum 2-inch bond breaker tape prior to sealing the joint.

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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3.11 COMPLETION

- A. Remove any and all debris, excess materials and scrap of any kind from the roof and surrounding premises prior to demobilization.
- B. Inspect all field welds, detailing and terminations to insure a 100% watertight installation.

3.12 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Contract Documents.
- B. Correct identified defects or irregularities.
- C. Require site attendance of roofing and insulation materials manufacturers during installation of the Work.

3.13 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 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. Where existing sod has been damaged, install new sod in an acceptable manner blending the edges of new sod to existing surrounding sod.
    - a. Do not place new sod over existing sod. Excavate so that top plane of new sod will conform to adjacent plane of existing sod. Match new sod with existing sod type

3.14 PROTECTION

- A. Protect building surfaces against damage from roofing work.
- B. Protect surfaces where traffic must continue over finished roof membrane.
- 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.

**THERMOPLASTIC SINGLE-PLY MEMBRANE ROOFING**  
**SECTION 07 54 16**

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- D. Repair or replace the roofing and associated work to a condition free of damage and deterioration at time of substantial 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 submittal. 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 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 wind uplift pressures due to gale force winds and windstorms below a nominal wind speed of 112 mph and below the following "Unfactored / (Nominal) Wind Uplift Pressures as calculated per the Florida Building Code and ASCE 7:

	<u>Upper Roof / Lower Roof</u>
a) Interior of Roof (Zone 1):	- 31 psf / - 37 psf
b) Perimeter of Roof (Zone 2):	- 52 psf / - 57 psf
c) Corners of Roof (Zone 3):	- 78 psf. / - 81 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: **Two (2) 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, seam failure, improper attachment of roofing to decking or insulation to decking, waves and fish-mouths in the sheet waterproofing, improper flashing attachment, water ponding, improper installation of roof drains and scuppers, improper installation of roof curbs, 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, wind above the design limits of this project.
  - b) fire;
  - c) failure of roofing system substrate or structure (including cracking, settlement, excessive deflection, deterioration, and decomposition).
2. 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.

APPLICATOR'S WARRANTY  
FOR ROOFING - page 2

3. 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.
4. 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.
5. The definition of faulty roofing components or roofing in disrepair includes, but is not limited to the following:
  - A. Blisters in roofing.
  - B. Improper attachment of roofing to decking or insulation to decking.
  - C. Cracks or ridging in roofing membranes.
  - D. Delamination, shears or tears in membrane.
  - E. Improper flashing attachment.
  - F. Water ponding.
  - G. Improper installation of roof drains and scuppers.
  - H. Improper installation of roof curbs.
  - I. Defects in the quality of work or materials.
  - J. Leaks of any kind.
6. 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

(SEAL)

Witness:

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

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**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section includes:
  - 1. Flashings and Counterflashings
  - 2. Miscellaneous Sheet Metal at all Roof Areas
  - 3. Accessories
  
- B. Related Sections:
  - 1. Section 06 10 00 - Miscellaneous Rough Carpentry: Wood blocking and curb extensions.
  - 2. Section 07 54 16 – Thermoplastic Single-ply Roofing (Fully Adhered)
  - 3. Section 07 90 00 – Joint Sealers
  
- C. References:
  - 1. ASTM International:
    - a. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
    - b. ASTM A755/A755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
    - c. ASTM B32 - Standard Specification for Solder Metal.
    - d. ASTM B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
    - e. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
    - f. ASTM D4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
    - g. 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:
    - 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.

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

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- D. Samples:
  - 1. Submit two samples 12 x 12 inch in size illustrating a typical external corner, internal corner, material and finish.

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 document on site.

1.4 QUALIFICATIONS

- A. Fabricator and Installer: Company specializing in sheet metal work with minimum three years documented experience.

1.5 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.

1.6 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.

1.7 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 167; Type 304, soft temper, 22 ga. or 24 ga. thickness unless otherwise specified; smooth 2B finish.

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

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- B. Coated Sheet Metal for Thermoplastic Roofs: Membrane manufacturer's approved coating laminated to 0.040" thick, mill finish aluminum, ASTM B 209, alloy 3003.
- C. Aluminum: ASTM B 209, alloy 3003, Temper H14, AA-C22A41 mill finish or prefinished as noted by details; thickness as noted by details and schedule within this section.
- D. If any of above is noted to be prefinished, exposed surfaces shall be factory painted with a full strength fluoropolymer finish. Paint shall contain 75% KYNAR 500 resin and applied, (0.80 mil thickness), over manufacturer's primer, (0.20 mil thickness), with a total system thickness of 1.00 mil per ASTM D 1400. Gloss to be 20-30% per ASTM d 523 at 60 degrees.

## 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 steel rivet.
  - 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.
  - 5. 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.
- C. Fasteners: Stainless steel: Fastener size and penetrations into various substrates should be as follows:
  - 1. Wood: 1/4 inch diameter 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.

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

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- E. Dry-in Membrane: Forty (40) mils thick, polyester reinforced, SBS modified asphalt waterproofing and underlayment membrane sheet as defined within section 07 54 16.
- F. Protective Backing Paint (bituminous coating): FS-TT-C 494; Cold applied asphalt mastic, SSPC paint 12 compounded for 15 mil dry film thickness per coat.
- G. Sealant: Sealant specified in Section 07 90 00.
- H. Plastic Cement: ASTM D 4586, Type I.
- I. 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.
- J. Splash Pads: Precast concrete type, of size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.
- K. Solder: ASTM B 32; type suitable for application and material being soldered.
- L. Sheet Metal Adhesive for aluminum and PVC coated metal: Utilize a 2 component methacrylate adhesive system, approved products are:
  - 1. SciGrip SG300 series adhesive as manufactured by SCIGRIP Americas, 600 Ellis Road, Durham, NC 27703. Contact: (887) 477-4583, ([www.scigrip.com](http://www.scigrip.com)).
  - 2. Weld-on SS300 series adhesive as manufactured by IPS Structural Adhesives, Inc., 600 Ellis Road, Durham, NC 27703. Contact: (887) 477-4583, ([www.ipscorp.com](http://www.ipscorp.com)).
  - 3. Partite 7300 or 7400 series adhesive as manufactured by Parson Adhesives, Inc., 3345 Auburn Road, Suite 107, Rochester Hills, MI 48309. Contact: (248) 299-5585, ([www.parsonadhesives.com](http://www.parsonadhesives.com)).
  - 4. The above products have been represented locally by North American Composites, 3715 North Frontage Road, Lakeland, FL 33810. Contact: (800) 241-5817. ([www.nacomposites.com](http://www.nacomposites.com)).
  - 5. Architect approved equal.

### 2.3 FABRICATION

- A. Form sections shape indicated on Drawings, accurate in size, square, and free from distortion or defects. Form pieces in longest possible lengths.
- B. Edge metal to be formed with two separate pieces (fascia metal & deck flange) which are assembled as a fabrication in the shop.

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

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- C. Fabricate cleats of same material as fascia metal, one gage heavier, interlocking with hemmed edge of flashing.
- 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 fascia metal corners from one piece with minimum 18 inch long legs; solder for rigidity, seal with sealant. Deck flange to be a single piece cut and hemmed to fit corner of building, assemble with fascia metal in shop.
- G. At all metal roofing termination and transition assemblies / flashing which are to be fabricated using pre-finished metal per the project details; utilize the specified sheet metal adhesive in lieu of soldering or welding, unless noted otherwise by the details.
- H. Pre-tem edges of stainless steel sheet. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean.
- I. 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.
- J. Fabricate vertical faces with bottom edge formed outward 3/4 inch and hemmed to form drip.
- K. Fabricate flashings to allow toe to extend 1 1/2" over wood nailers. Return and brake edges.
- L. Fabricate accessories in profile and size to suit gutters and downspouts.
  - 1. Anchorage Devices: In accordance with SMACNA requirements.
  - 2. Gutter Supports: Brackets. Straps.
  - 3. Downspout Supports: Brackets.
- M. Seal metal joints.

2.4 FINISH

- A. Flashing metal is typically left exposed as mill finish, prepare stainless steel surfaces in accordance with Section 09 90 00 to be painted only if specifically indicated by the project documents.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mils when dissimilar metals are in contact.

- C. Isolate dissimilar metals with accepted isolation paint or other accepted materials.

### 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.
- 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.



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

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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 as certain compliance with specified requirements.

3.5 SCHEDULE

	Location	Metal Type	Thickness	Finish
A.	Typ. Drip Edge	Aluminum	0.040"	PVC Coated
B.	Skirt Metal/Cap Flashing	Aluminum	0.040"	PVC Coated
C.	Parapet Coping Cap	Aluminum	0.040"	PVC Coated
D.	Continuous Cleat	Aluminum	0.050"	Mill Finish
E.	Reglet Receiver	Stainless Steel	24 gage	Mill finish
F.	Counterflashings	Stainless Steel	24 gage	Mill finish
G.	Thru-wall Scuppers	Aluminum	0.040"	PVC Coated
H.	Escutcheon Trim	Aluminum	0.040"	PVC Coated
I.	Gooseneck Vent. Fab.	Stainless Steel	24 gage	Mill finish
J.	Miscellaneous metal flashing	Stainless Steel Aluminum	24 gage 0.040"	Mill finish PVC Coated

END OF SECTION

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section includes sealants and joint backing, and accessories.
- B. Related Sections:
  - 1. Section 07 54 16 – Thermoplastic Single-ply Roofing (Fully Adhered)
  - 2. Section 07 62 00 – Sheet Metal Flashing and Trim

**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. Products Data: Submit data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.
- C. Samples: Submit two samples, 1/4 x 6 inch 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 63 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.

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 63 00 - Product Requirements
- B. Products Description:
  - 1. Silicone Sealant (Type S): ASTM C 920, Grade NS, Class 25. Use single component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, non sagging type; color as selected or match adjacent finish materials. Acceptable Manufacturers:
    - a. Dow Corning                      Product: 795
    - b. GE                                      Product: Silpruf
    - c. Pecora Corporation      Product: 860 / 863 / 864
    - d. Tremco                              Product: Spectrem II
    - e. Architect approved equal.
  - 2. Polyurethane Sealant (Type S): ASTM C 920, Grade NS, Class 25. Use single component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, non sagging type; color as selected or match adjacent finish materials. Acceptable Manufacturers:
    - a. Sika                                      Product: 1A
    - b. Sonneborn                      Product: NP-1
    - c. Architect approved equal.

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
  - 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. Width/depth ratio of 2 : 1.
  2. Neck dimension no greater than 1/2 of joint width.
  3. 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         | Type: Silicone | Color to match metal          |
| B. | Metal to CMU/Stucco    | Type: Silicone | Color to match metal          |
| C. | Metal to Roof Membrane | Type: Urethane | Color to match metal          |
| D. | CMU / Stucco joints    | Type: Urethane | Color to match Paint selected |
| E. | Roof Membrane to CMU   | Type: Urethane | Color to match Membrane       |

END OF SECTION

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Piping insulation, jackets and accessories.
- B. Thermal insulation of roof drains to minimize condensation within interior of building.
- C. Where applicable, non combustibile pipe insulation to fully wrap all PVC plastic pipe and fittings within a return air ceiling plenum to comply with surface burning characteristics of ASTM E 84 and the Florida Mechanical Code, Section M602.2.2.1.

**1.2 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION**

- A. Section 22 14 13 - Plumbing Piping: Placement of hangers and hanger inserts.
- B. Section 22 14 26 – Roof Drains

**1.3 REFERENCES**

- A. ASTM C 585 - Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).
- B. ASTM C 921 - Properties of Jacketing Materials for Thermal Insulation.
- C. ASTM E 84 - Surface Burning Characteristics of Building Materials
- D. NFPA - Surface Burning Characteristics of Building Materials
- E. UL 723 - Surface Burning Characteristics of Building Materials

**1.4 SUBMITTALS**

- A. Submit under provisions of Division 01.
- B. Product Data: Provide product description, list of materials and thickness for each service, and locations.
- C. Samples: Submit two samples of any representative size illustrating each insulation type.
- D. Manufacturer's Installation Instructions: Indicate procedures which ensure acceptable workmanship and installation standards will be achieved.

**1.5 QUALITY ASSURANCE**

- A. Materials: Flame spread/smoke developed rating of 25/50 or less in accordance with ASTM E 84.

- B. Existing Conditions
  - 1. This project involves the installation of insulation on new and/or existing roof drainage piping located below the roof deck within the building envelope. Contractor to verify existing 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.

1.6 APPLICATOR QUALIFICATIONS: Company specializing in performing the work of this section with minimum of three years' experience

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver to site, store, protect, and handle products under provisions of Division 1.
- B. Deliver materials to site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- C. Store insulation in original wrapping and protect from weather and construction traffic.
- D. Protect insulation against dirt, water, chemical, and mechanical damage.

PART 2 PRODUCTS

2.1 GLASS FIBER INSULATION

- A. Manufacturers:
  - 1. Knauf.
  - 2. CertainTeed
  - 3. Johns Manville
  - 4. Owens Corning
- B. Insulation: ASTM C 547; 1 inch thick, rigid molded, noncombustible.
  - 1. 'K' ('ksi') value: ASTM C 335-89, 0.23 at 75 degrees F.
  - 2. Maximum Moisture Absorption: 0.2 percent by volume.
  - 3. Surface Burning Characteristics: Flame Spread less than 25; smoke developed less than 50 per ASTM E 84.
- C. Vapor Barrier Jacket



1. White kraft paper reinforced with glass fiber yarn and bonded to aluminized film.
2. Moisture Vapor Transmission: ASTM E 96-90; 0.02 perm inches.
3. Secure with self sealing longitudinal laps and butt strips.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean, foreign material removed, and dry.

#### 3.2 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. On exposed piping, locate insulation and cover seams in least visible locations.
- C. Insulate pipes conveying fluids:
  1. Provide vapor barrier jackets, factory applied or field applied.
  2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe.
  3. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations.
  4. Insulate entire system including fittings and bottom of roof drains (around deck).
- D. Inserts and Shields:
  1. Insert Location: Between support shield and piping and under the finish jacket.
  2. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
  3. Shields: Galvanized steel between pipe hangers and inserts.
- E. Finish insulation at supports, protrusions, and interruptions.

#### 3.3 TOLERANCE

- A. Substituted insulation materials shall provide thermal resistance within 10 percent at normal conditions, as materials indicated and comply with surface burning characteristics of ASTM E 84.

#### 3.4 INSULATION SCHEDULE

- A. Plumbing Systems
- B. Primary Roof Drainage within Building
- C. Roof Drain Bodies

END OF SECTION

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Installation of roof drain piping and pipe fittings.
- B. Installation of new roof drains.
- C. Installation of new HVAC condensate pipes.

**1.2 PRODUCTS INSTALLED BUT NOT FURNISHED IN THIS SECTION**

- A. Section 22 07 19 – Piping Insulation.
- B. Section 22 14 26 - Plumbing Specialties: Roof drains.

**1.3 REFERENCES**

- A. ASTM D-1785 - PVC Plastic Pipe, Schedule 40.
- B. ASTM D-2466 - PVC Plastic Pipe Fittings, Schedule 40.
- C. ASTM D-2855 - Making Solvent-Cemented Joints with PVC Pipe and Fittings.

**1.4 SUBMITTALS**

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Provide data on pipe materials, pipe fittings, and accessories. Provide manufacturers catalog information.

**1.5 PROJECT RECORD DOCUMENTS**

- A. Submit under provisions of Division 01.
- B. Record actual locations of installed piping runs.

**1.6 QUALIFICATIONS**

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section shall have a minimum five years experience.
- B. Installer: Company specializing in performing the work of this section shall have a minimum three years documented experience

1.7 REGULATORY REQUIREMENTS

- A. Perform Work in accordance with Florida Department of Education and current National Plumbing code requirements.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver to site, store, protect and handle products under provisions of Section : 01 66 00.
- B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 PRODUCTS

2.1 PIPING AND ACCESSORIES

- A. PVC Pipe: ASTM D-2729, Schedule 40 DWV; Type I, four, six and eight (4, 6 & 8) inch pvc pipe:
  - 1. Fittings: Schedule 40 PVC.
  - 2. Joints: ASTM D-2855-96(2002), solvent weld with ASTM D-2564 solvent cement.
- B. Clevis Hangars: Carbon steel; plain finish; size to accommodate four, six and eight (4, 6 & 8) inch pvc pipe and one and one-half (1½") inch pipe insulation:
- C. C Clamps: Low carbon steel with hardened steel cup point set screw; plain finish;
- D. Continuous Threaded Rod: Low carbon steel; plain finish; rod diameter sized for clevis hangars and beam clamps; length to accommodate pipe slope and ceiling space.
- E. HVAC Unit Condensate Pipe:
  - 1. Pipes and "P" Traps: Schedule 40 PVC.
- F. No-Hub Couplings; Used with vent pipe extensions
  - 1. Cast Iron, Steel and PVC Pipe Extension Couplings: Anaco SD Series 4000 Husky, or Clamp-All Torque 125 No-Hub Coupling.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions under provisions of Division 01.
- B. Verify locations of new roof drains and drain piping. Coordinate with roofing applicator to interface roof drains with roof work. Locate and mark locations of new roof drains on roof surface and confirm acceptability of locations with architect before installations.

3.2 PREPARATION

- A. Cut pipe to required length and remove burrs.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment.

3.3 CUTTING AND PATCHING

- A. All labor required for cutting and patching of roof decks, walls, ceilings, floors and sidewalks shall be furnished by the plumbing installer.

3.4 INSTALLATION OF NEW ROOF DRAINAGE SYSTEM

- A. Install replacement roof drains and emergency overflow drains in accordance with the manufacturer's instructions at locations indicated on drawings.
- B. Support each roof drain using two 2 inch by 2 inch by 3/16 inch support angle. Angles shall be installed when drains fall between or a maximum of one (1) foot away from structural members. Install between structural support members and clamp angles to support members.
- C. Installation of Piping and Accessories :
  - 1. Install drain piping in accordance with applicable plumbing code and recognized industry practices. Provide a permanent leakproof piping system.
  - 2. Install each pipe run with minimum joints and couplings. Align piping accurately at connections, within 1/16 inch misalignment tolerance.
  - 3. Locate interior conductor piping runs, vertically and horizontally. Avoid diagonal runs where possible. Orient runs parallel with walls and column lines. Locate using diagrams, details and notations if not otherwise indicated. Run piping in shortest route which does not obstruct usable space or block access for servicing building and its equipment. Hold piping close to walls, overhead construction, columns and other structural and permanent-enclosures elements of building; limits clearance to 1 inch outside insulation. Piping shall be concealed from view unless noted.
  - 4. Where required, remove existing piping and install new sized piping along existing run.
- D. Installation of Hangars, Supports, Anchors and Shields :
  - 1. Install pipe hangars, support rods, clamps and attachments to support piping properly from building structure: Install supports at each structural member (steel joist or beam) and not to exceed **4 feet** on center, install hanger at each change in direction of piping.
  - 2. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers and other accessories.

3.5 HVAC CONDENSATE DRAIN PIPE

- A. Install PVC condensate lines and 'p' traps on every unit requiring such. Run condensate lines to closest roof drain.

3.6 ERECTION TOLERANCES

- A. Slope piping to drain at minimum slope of 1/4 inch per foot (2%) for piping 3 inch and smaller, and 1/8 inch per foot (1%) for piping 4 inches and larger. Piping may require a specific positive drainage slope for ceiling space limited in height which has been noted on the drawings. Contact architect if conflicts occur due to ceiling cavity height.
- B. Provide pipe support per details.

3.7 TESTING

- A. Test existing and new roof drains. Rod out existing drains before reroofing and every drain after reroofing work is completed. Plug and fill the complete drainage system with water to level of highest drain or opening above roof. System shall hold test water 30 minutes without leaks.

3.8 ROOF DRAIN PIPING INSULATION

- A. After successful testing of roof drainage system, insulate piping and existing system as specified in Section 22 07 19.

END OF SECTION

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes: Roof Drains: Installation of new primary & secondary drains
- B. Related Sections
  - 1. Section 07 54 16 – Thermoplastic Single-ply Roofing (Fully Adhered)
  - 2. Section 22 14 13 - Plumbing Piping.

**1.2 REFERENCES**

- A. ANSI (American National Standards Institute)
  - 1. A112.21.2 - Roof Drains

**1.3 DESCRIPTION OF WORK**

- A. Remove and replace existing roof drain assemblies with new drains where indicated on plans. New and replacement drains shall be per product description in Part 2 of this Section.

**1.4 SUBMITTALS**

- A. Submit under provisions of Section 01 33 00
- B. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.
- C. Manufacturer's Installation Instructions: Indicate assembly and support requirements.

**1.5 PROJECT RECORD DOCUMENTS**

- A. Submit under provisions of Division 01.

**1.6 OPERATION AND MAINTENANCE DATA**

- A. Submit under provisions of Division 01.

**1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver to site, store, protect and handle products under provisions of Section 01 60 00.
- B. Accept roof drains on site in original factory packaging. Inspect for damage.

1.8 PROJECT/SITE CONDITIONS

- A. 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.

PART 2 PRODUCTS

2.1 ROOF DRAINS (Replacement)

- A. Manufacturers:
  - 1. J.R. Smith Model 1010 (Basis of Design)
  - 2. Zurn
  - 3. Josam
  - 4. Wade
- B. Roof Drains:
  - 1. Body: Lacquered cast iron with sump. Threaded bottom or optional side discharge outlet suitable for application.
  - 2. Dome: Removable cast iron with vandal proof screws.
  - 3. Accessories: Membrane flange and membrane clamp with integral gravel stop, with adjustable under deck clamp and roof sump receiver.
  - 4. Nipple: Single end threaded Cast iron or steel nipple of sufficient length (min. 8") for use with no-hub connection to PVC. Type per drain manufacturer.
  - 5. Unless otherwise noted match size of replacement drain to existing drain being removed.
- C. Overflow drain:
  - 1. Zurn Model ZC100-C-R-W2-ST or equivalent product from above listed manufacturer

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify that all existing roof leader piping has been cleaned and tested for proper operation prior to proceeding with the installation of roof drains
- B. Coordinate cutting and forming of roof construction to receive drains.

3.2 INSTALLATION

- A. Roof Drain Replacement (New installation)
  - 1. Install in accordance with manufacturer's instructions

3.3 TESTING

- A. Test existing primary and secondary roof drains. Rod out existing drains before reroofing and every drain after reroofing work is completed. Plug and fill the complete drainage system with water to level of highest drain or opening above roof. System shall hold test water 30 minutes without leaks.

3.4 ROOF DRAIN INSULATION

- A. After successful testing of roof drainage system, insulate piping and existing piping system as specified in Section 22 07 19.

END OF SECTION



**BASIC MECHANICAL 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 01 - General Requirements

**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 01.
- 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 current and applicable Florida Building and Mechanical Codes.

**1.6 PROJECT/SITE CONDITIONS**

- A. Existing Conditions:
  - 1. This project involves mechanical work on an existing building. 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 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.

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

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4. 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. 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.
  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.

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

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- 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 REQUIREMENTS  
SECTION 23 00 00**

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**PERFORMANCE LOG DATA SHEET: EXHAUST FAN**

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

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

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

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

Exhaust Fan: \_\_\_\_\_

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

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

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

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

Rated Voltage: \_\_\_\_\_

Fan Motor Amperage Actual: \_\_\_\_\_

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

General Description of physical appearance of the unit and associated duct work:

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**BASIC MECHANICAL 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: \_\_\_\_\_

For R.P.M.

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 of physical appearance 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; raising of curbs and supports.
  - 3. Extension of branch circuit and equipment connections due to 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.

**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 –current edition.

**1.5 SUBMITTALS**

- A. Submit under provisions of Section 01 33 00.
- 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.), current edition.
- B. Life Safety: NFPA 101 Life Safety Code, current edition.

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

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- 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.

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 Section 01 11 00.
- B. Coordinate all work with Roofing Contract.
- 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

## BASIC ELECTRICAL REQUIREMENTS SECTION 26 05 00

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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: Use anchors and fasteners of a type designed and intended for use in the base material to which the material or support is to be attached and capable of supporting the intended load and withstanding any associated stresses and vibrations. 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 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.



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

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